PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

HERNIC FERROCHROME (PTY) LTD

JUNE 2017

Consulting

Purpose of Report

HERNIC FERROCHROME wishes to add/expand/upgrade activities to their current mining and smelting operations which require Environmental Authorization in terms of the provisions of the Mineral and Petroleum Resources Development Act (MPRDA), the National Environmental Management Act (NEMA), the National Environmental Management: Waste Act (NEMWA), the National Environmental Management Air Quality Act (NEMAQA), as well as the National Water Act (NWA).

Based on the nature of the proposed activities, the necessary applications have to be supported *inter alia* by a Scoping and Environmental Impact Assessment and Reporting (S&EIR) Process as provided for in the 2014 EIA Regulations (GNR 982 of 4 December 2014). In view of the fact that HERNIC operates as a mine, the administrative process is that of the "Single Environmental System" with DMR being the Competent Authority.

The DMR has developed Reporting Templates in support of the "Single Environmental System", (Scoping Report, Basic Assessment Report, Environmental Impact Assessment Report as well as Environmental Management Programme Report), with strict instructions of the content requirements. The DMR Templates essentially represent a summary by the Environmental Assessment Practitioner (EAP) of more comprehensive information and requires that supporting details be provided as Appendices to the DMR Template Report.

This Draft EMPr emulates the DMR Template for Part B – Environmental Management Programme Report and is presented in conjunction with the Part A - Scope of Assessment and Environmental Impact Assessment Report.

Report Reference Numbers

JMA Project: JMA/10462
JMA Report: Prj6072
DMR Ref: NW 30/5/1/2/3/2/1/(308) EM
& NW 30/5/1/2/3/2/1/(396) EM

Report Status

Final Draft
Volume 1 of 1
Version – 01

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TABLE OF CONTENTS

APPENDICES/ANNEXURES

APPENDIX 1(A): **CV of the Environmental Assessment Practitioner (EAP)**

APPENDIX 3(A): **HERNIC Operations Composite Site Map**

APPENDIX 4(A): **HERNIC Process and Materials Characterization Report**

APPENDIX 8(A): **SHEQ Toolbox Talk Forum Programme for 2017**

ABREVIATIONS

AEL	**:**	Air Emission Licence
BBS	**:**	Behaviour Based Safety
BIC	**:**	Bushveld Igneous Complex
CA	**:**	Competent Authority
CV	:	Curriculum Vitae
CRP	**:**	Chrome Recovery Plant
DEA	:	Department of Environmental Affairs
DEAT	**:**	Department of Environmental Affairs and Tourism
DEDECT	:	Department of Economic Development, Environment, Conservation and Tourism (North West)
DMR	:	Department of Mineral Resources
DMS	:	Dense Medium Separation
DWA	:	Department of Water Affairs
DWAF	:	Department of Water Affairs and Forestry
DWS	:	Department of Water and Sanitation
EA	:	Environmental Authorisation
EAP	:	Environmental Assessment Practitioner
EIA	:	Environmental Impact Assessment
EMP	:	Environmental Management Plan
EMPR	:	Environmental Management Programme Report
GN	:	Government Notice
GNR	:	Government Notice Report
HDPE	:	High Density Polyethylene
HMS	:	Heavy Medium Separation
IAP's	:	Interested and Affected Parties
ISO	:	International Organisation of Standardization
IWULA	:	Integrated Water Use Licence Application
IWWMP	:	Integrated Water and Waste Management Plan
LOM	:	Life of Mine
MG	:	Middle Group
MPRDA	:	Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)
NEMA	:	National Environmental Management Act (Act No. 107 of 1998)
NEMAQA	:	National Environmental Management Air Quality (Act No. 39 of 2004)
NEMWA	:	National Environmental Management: Waste Act (Act No. 59 of 2008)
NWA	:	National Water Act (Act No. 36 of 1998)
OB	:	Ore Beneficiation
OHSAS	:	Occupational Health and Safety Advisory Services
PCD	:	Pollution Control Dam
PGM	:	Platinum Group Minerals
READ	:	Rural, Environmental and Agricultural Development (North West)
RLS	:	Rustenburg Layered Suite
ROD	:	Record of Decision
ROM	:	Run Of Mine
RWD	:	Return Water Dam
SACNASP	:	South African Council for Natural Scientific Professions
SAHRA	:	South African Heritage Resources Agency
SBR	:	Sequencing Batch Reactor
S&EIR	:	Scoping and Environmental Impact Reporting
TSF	:	Tailings Storage Facility
UFS	:	University of the Free State
UG	:	Upper Group
WLA	:	Waste Licence Application

EXECUTIVE SUMMARY

This section will be attended to once the EIA Public Participation has been completed

1. DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

1.1. DETAILS OF THE EAP WHO PREPARED THE REPORT

Table 1.1(a): Details of the Environmental Assessment Practitioner (EAP)

Project Consultancy	JMA Consulting (Pty) Ltd
Company Registration	2005/039663/07
Professional Affiliation	South African Council for Natural Scientific Professions (SACNASP)
Contact Person	Mr Jasper Muller (Pr. Sci. Nat.)
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1.2. EXPERTISE OF THE EAP

The Environmental Assessment Practitioner (EAP) for this project was Mr Jasper Lodewyk Muller (Pr. Sci. Nat.).

1.2.1. Qualifications of the EAP

Jasper Muller holds the following degrees:

- B.Sc. from the UFS (1979) with major subjects Geology and Geohydrology.
- B.Sc. (Honns) from the UFS (1980) with field of specialization Geohydrology.
- M.Sc. (cum laude) from the UFS (1984) with field of specialization Geohydrology.

Jasper Muller holds a Professional Registration with SACNASP since 1986 – 400073/86. He is registered as a professional scientist in two categories:

- Earth Science
- Environmental Science

1.2.2. Past Experience of the EAP

Jasper Muller started his working career with the then Department of Water Affairs (DWA) in 1981 and was employed as geohydrologist with the Groundwater Division.

Later that year he joined the Institute for Groundwater Studies as a researcher, a position he held until June 1986. During his tenure at the IGS, his field of research was numerical groundwater flow and mass transport modelling.

Upon his registration as Professional Scientist in 1986, he left the IGS and joined the Consulting Firm Terradata (Pty) Ltd where he was in charge of the Groundwater Division.

In 1987 he moved to the consulting firm Environmental Science Services (ESS) where he was appointed as Divisional Manager for the Environmental Water Division. It was during this time at ESS that he started his career in the field of Environmental Science.

In 1988 he started his own consulting firm (JMA) and has been active as the Managing Director of this company for 28 years now.

During these 28 years, Jasper Muller has been involved as Specialist Scientist and/or EAP in the compilation and overall management of projects related to more than 300 Specialist Studies, EIA's, EMP's, EMPR's, IWULA's, IWWMP's and/or WLA's.

1.3. CV OF THE EAP

A Synoptic CV of the EAP is attached as **APPENDIX 1(A)** to this EMPr.

It is furthermore confirmed that all these details are also contained in sections 1.1, 1.2 and 1.3 of the EIAR (Part A).

2. DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

This Draft EMPr is compiled to serve two purposes:

- In the first instance must it contain the EMP for the proposed new activities for which authorization is applied for;
- In the second instance must it represent the combined and consolidate EMPr for the entire HERNIC Operations (Mining and Smelting).

In order to support these objectives, both the EIAR (Part A) as well as the Draft EMPr (Part B) deals comprehensively with both, all existing activities at HERNIC (which have already been authorized), as well as with all proposed new activities for which authorization is now applied for.

The description of the Aspects of all the existing as well as the new proposed activities was derived through a structured process during compilation of the EIAR (Part A) in order to ensure that the resulting EMPr is comprehensive and therefore provides for the management and mitigation of all significant impacts associated with the HERNIC Operations. It is herewith confirmed that this process is described in detail in Chapter 8 of the EIAR (Part A).

In short the Aspects were identified and described as follows:

- The entire HERNIC site, comprising both the mining and smelting activities was surveyed and each activity occurring on site was identified and described in detail.
- The team of environmental specialists then assessed each activity in order to identify aspects related to that activity that could cause environmental impacts associated with their field of specialization e.g. Soils, Vegetation, Surface Water, Noise, etc.
- The end result was a Table comprising three columns:
    - Column 1: HERNIC Activity
    - Column 2: Aspects Identified for each Activity
    - Column 3: Environmental Components Potentially Impacted

The outcome of this exercise is shown in Table 2(a). This Table forms the basis from which the Impacts were then identified and described and upon which both the Impact Assessment as well as the Management Plan are based.

Table 2(a): Aspects Identified for each HERNIC Activity (Existing and Proposed)

HERNIC Activity	Aspect	Environmental Component(s) Affected
CURRENT ACTIVITY AND INFRASTRUCTURE AND PROCESS (SECTION 4.2 IN SCOPING REPORT)		
Access Roads	Road Surface	Infrastructure, Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Traffic, Visuals
	Road Verge	Soils, Groundwater, Surface Water, Plant Life, Air Quality, Noise, Traffic, Visuals
Railway Lines	Railroad and Rail Vehicles	Soils, Land Capability, Surface Water, Plant Life, Animal Life, Wetlands, Aquatic Ecosystems, Air Quality, Noise, Visuals
Security Fence and Access	Fences and Booms	Surface Water, Animal Life, Aquatic Ecosystems, Air Quality, Noise, Visuals
Water Supply	Canal and Pump Station	Infrastructure, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Power Supply	Eskom Yard and Substations	Infrastructure, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Overhead Power Lines	Infrastructure, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Gas Supply	Propane Gas Tanks	Air Quality
	Oxygen Gas Tank	
	Argon Gas Tank	
Fuel Supply	Diesel Fuel Tanks	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Internal Roads	Road Surface	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Road Verge	Soils, Groundwater, Surface Water, Air Quality, Noise, Visuals
Office Complexes	Building Material	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Morula Mining Shaft Complex	Decline Shafts	Soils, Groundwater, Surface Water, Air Quality, Noise, Visuals
	Water Storage Dams	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Offices and Workshops	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Ore/Waste Rock Transfer House	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Change House Complex	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Conveyors	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Grout Plant	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Peoples Walkway	Soils, Groundwater, Surface Water, Plant Life, Aquatic Ecosystems, Air Quality, Noise, Visuals

HERNIC Activity	Aspect	Environmental Component(s) Affected
	Emergency ROM Stockpile	Topography, Soils, Groundwater, Surface Water, Plant Life, Animal Life, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Topsoil Stockpile	Topography, Soils, Surface Water, Plant Life, Animal Life, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Redundant Explosives Magazine	Soils, Groundwater, Surface Water, Plant Life, Animal Life, Aquatic Ecosystems, Air Quality, Noise, Visuals
Morula Mining Opencast Operation	Water Abstraction and Pipelines	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Steep Slopes/Uneven Surfaces	Topography, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Existence of the Void	Geology, Groundwater, Surface Water, Air Quality, Noise, Visuals
Morula Mining Underground Operation	Underground Mining	Geology, Geochemistry, Groundwater
Morula Mining Accommodation	Building Material	Soils, Groundwater, Surface Water, Plant Life, Animal Life, Aquatic Ecosystems, Air Quality, Noise, Visuals
Mine Waste Rock Dump	Storage of Waste Rock on un-lined footprint	Topography, Soils, Groundwater, Surface Water, Plant Life, Animal Life, Air Quality, Visuals
Mine Sewage Plant	Sludge Drying Beds	Soils, Groundwater, Surface Water, Plant Life, Animal Life, Aquatic Ecosystems, Air Quality, Noise, Visuals
Storm Water Berms and Canals	Reduction of Run-off to Natural Resource	Soils, Groundwater, Surface Water, Wetlands, Aquatic Ecosystems, Air Quality, Noise, Visuals
Morula Dewatering Dam	Facility to be decommissioned – Evaluate impact and provide management measures for Operational Phase. Impact evaluation and management measures for Decommissioning Phase addressed later as a new activity.	
	Storage of Process Water	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Plant Life, Animal Life
General Plant Infrastructure	Building Material	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Clinic	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Laboratory	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Canteen	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Change House/Laundry	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Raw Materials Stockpile Area 1	Storage of Raw Materials	Topography, Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Raw Materials Stockpile Area 2	Storage of Raw Materials	Topography, Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Ore Beneficiation Plant – Crushing and Screening	Transport of Ore	Infrastructure, Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Traffic, Visuals

HERNIC Activity	Aspect	Environmental Component(s) Affected
	Crushing and Screening	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Storage of Mixed Materials	Topography, Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Ore Beneficiation Plant – Lumpy Section (HMS Plant)	HMS Waste Material	Topography, Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Mixed Material Stockpiling and Screening	Storage of Mixed Materials	Topography, Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Returns Materials Stockpiles	Storage of Returns Materials	Topography, Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Pelletizing and Sintering Plants 1 & 2	Structure/Complex	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Gaseous Emissions	Air Quality, Visuals
	Particulate Matter Emissions	
Furnaces 1, 2, 3 and 4	Structure/Complex	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Gaseous Emissions	Air Quality, Visuals
	Particulate Matter Emissions	
Ferrochrome Break Floor Area	Mechanical Activity	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Finished Product Plant	Storage of Final Product	Topography, Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Slag Stockpiling Areas	Storage of Slag	Topography, Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Primary Chrome Recovery Plant	Current Arising Slag Loading	Topography, Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Crushing and Screening Plant	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Stockpiling of Product	Topography, Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Stockpiling of Waste	Topography, Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Fine Slag Processing Plant (Secondary CRP)	Activity discussed under New Activities	
Product Rail Dispatch Area	Product Stockpiles	Infrastructure, Topography, Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Platinum Group Minerals (PGM) Plant	Pumping of PGM Feed Material	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals

HERNIC Activity	Aspect	Environmental Component(s) Affected
	Spiral Plant	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Ball Milling	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Thickening and Flotation Process	Soils, Groundwater, Surface Water, Aquatic Ecosystems
	Pump Tailings to TSF	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Internal Transport and Contractors Yard and Wash Bay	Gaseous Emissions	Air Quality, Visuals
	Particulate Matter Emissions	Air Quality, Visuals
Redundant Historic Bag Plant	Building Material	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Redundant Old Civil Workshop	Building Material	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Rehabilitated Quarry Area	Uneven Surfaces	Topography, Surface Water, Aquatic Ecosystems, Air Quality, Visuals
Historic Slimes Dams (1 & 2)	Facilities to be decommissioned. Currently not Operational. Decommissioning of Activity discussed later under New Activities	
H:H Slimes Dam and Return Water Dam (RWD)	Phase 1 of H:H Slimes Dam to be decommissioned. Currently not Operational. Activity discussed later under new activities.	
	RWD Dam	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
HERNIC Tailings Storage Facility (TSF) and Return Water Dam (RWD)	Disposal to TSF	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	RWD Dam	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Salvage Yard	Yard Footprint	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Sewage Plant	Sludge Drying Beds	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
OB Plant Fines in Open Pit (Slurry)	Disposal of OB plant Fines in Open Pit	Topography, Soils, Geology, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
OB Plant Coarse Waste in Open Pit (Trucks)	Disposal of OB Plant Coarse Waste in Open Pit	Topography, Soils, Geology, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals

HERNIC Activity	Aspect	Environmental Component(s) Affected
Plant Drinking Water Dam	Dam Footprint	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Plant Drinking Water Treatment Plant	Sand Filters	Soils, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Chlorination Pump	Soils, Groundwater, Surface Water, Aquatic Ecosystems
Plant Process Water Dam and Silt Traps	Storage of Process Water/ Silt	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Dam Liner	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
OB Plant Return Water Dam	Storage of Process Water	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Chrome Recovery Plant Process Water Dam	Storage of Process Water	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Storm Water Management Berms and Canals	Reduction of Run-off to Natural Resource	Soils, Groundwater, Surface Water, Wetlands, Aquatic Ecosystems, Air Quality, Noise, Visuals
Plant Storm Water Pollution Control Dam (PCD)	Storage of Process Water	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Emergency Dam	Expansion of the Storm Water Process Water Dam. Currently not Operational.	
Abstraction Boreholes	Cone of Depression	Groundwater
Groundwater Treatment Plant	Settling Pond A & B	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Dosing Pump	Soils, Groundwater, Surface Water, Aquatic Ecosystems
Alloys Smelting Plant Air Quality Control Systems	Gaseous Emissions	Air Quality, Visuals
	Particulate Matter Emissions	Air Quality, Visuals

HERNIC Activity	Aspect	Environmental Component(s) Affected
PROPOSED NEW ACTIVITIES/ EXPANSIONS/ UPGRADES (SECTION 4.3 IN SCOPING REPORT)		
Decommissioning of two Historic Slimes Dams	Excavate Historic Slimes	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Transport Historic Slimes to H:H Slimes Dam	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Dispose Historic Slimes on H:H Slimes Dam	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Decommissioning of Phase 1 of the H:H Slimes Dam	Capping of H:H Slimes Dam	Soils, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Development and Expansion of the Process Water and Storm Water Canal System including Silt Traps	Reduction of Run-off to Natural Resource	Soils, Groundwater, Surface Water, Wetlands, Aquatic Ecosystems, Air Quality, Noise, Visuals
Development of the Morula PCD	Clearance of Vegetation	Soils, Surface Water, Plant Life, Animal Life, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Storage of Process Water	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Expansion of Storm Water PCD No. 1	Clearance of Vegetation	Soils, Surface Water, Plant Life, Animal Life, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Storage of Process Water	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Development of Storm Water PCD No. 2	Clearance of Vegetation	Soils, Surface Water, Plant Life, Animal Life, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Storage of Process Water	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Development of Storm Water PCD No. 3	Clearance of Vegetation	Soils, Surface Water, Plant Life, Animal Life, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Storage of Process Water	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Development of Storm Water PCD No. 4	Clearance of Vegetation	Soils, Surface Water, Plant Life, Animal Life, Aquatic Ecosystems, Air Quality, Noise, Visuals

HERNIC Activity	Aspect	Environmental Component(s) Affected
	Storage of Process Water	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Expansion of the OB Plant Process Water Dam	Clearance of Vegetation	Soils, Surface Water, Plant Life, Animal Life, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Storage of Process Water	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Expansion of the Plant Process Water Dam	Clearance of Vegetation	Soils, Surface Water, Plant Life, Animal Life, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Storage of Process Water	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Expansion of the CRP Process Water Dam	Clearance of Vegetation	Soils, Surface Water, Plant Life, Animal Life, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Storage of Process Water	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Decommissioning of the Morula Dewatering Dam	Dewatering of Dam	Soils, Groundwater, Surface Water, Plant Life, Animal Life, Aquatic Ecosystems
	Removal of contaminated sediment on basin	Soils, Surface Water, Plant Life, Animal Life, Aquatic Ecosystems
	Flatten & Shape Dam Walls	Topography, Soils, Surface Water, Plant Life, Animal Life, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Re-vegetate	Soils, Surface Water, Plant Life, Animal Life, Aquatic Ecosystems, Air Quality, Noise, Visuals
Development of a New Salvage Yard	Clearance of Vegetation	Soils, Surface Water, Plant Life, Animal Life, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Yard Footprint	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Expansion of the Tap Hole Fume Extraction System	Gaseous Emissions	Air Quality, Visuals
	Particulate Matter Emissions	Air Quality
	Scrubber Effluent	Soils, Groundwater, Surface Water, Aquatic Ecosystems
Expansion of the Finished Product Plant Dust Abatement System	Gaseous Emissions	Air Quality, Visuals
	Particulate Matter Emissions	Air Quality
	Scrubber Effluent	Soils, Groundwater, Surface Water, Aquatic Ecosystems
Expansion of the OB Plant Tailings Storage Facility (TSF)	Clearance of Vegetation	Soils, Surface Water, Plant Life, Animal Life, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Stabilisation of Facility	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals

HERNIC Activity	Aspect	Environmental Component(s) Affected
	Walls	
	Disposal to TSF	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Slag Sand at the Fine Slag Processing Plant	Feed Material from CRP	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Screening and Separation Plant	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Spiral Plant	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Fine Chrome Bin (product)	Topography, Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Slag Sand	Topography, Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Water Recovery Sumps	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Coarse Slag at the CRP	Screening Plant	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Stockpiling of Coarse Slag	Topography, Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
Re-Use of Mine Waste Rock at the Mine Waste Rock Stockpile	Crushing and Screening Plant	Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals
	Stockpiling of Waste Rock Product	Topography, Soils, Groundwater, Surface Water, Aquatic Ecosystems, Air Quality, Noise, Visuals

3. COMPOSITE SITE MAP

The composite site map is attached as **APPENDIX 3(A)** to this Draft EMPr. A small scale copy of the map is attached as Figure 3(a) below.

The map was compiled over an extended period of time:

- Right at the outset of this project, a high resolution aireal photograph was compiled to capture all existing infrastructure and activities related to the HERNIC Mining and Smelting Operations. This photograph forms the backdrop to the composite map.
- The proposed localities and layouts for the proposed new activities at HERNIC were then also plotted on the map. This includes the civil engineering designs.
- The EAP and the team of environmental specialists then conducted extensive site inspections followed by quantitative baseline studies and then compiled individual environmental features maps for their respective environmental components.
- The EAP then compiled a composite map for the entire site, showing all existing, as well as proposed new activities, associated infrastructure and environmental features.

This map therefore covers the entire HERNIC activity area, including Mining and Smelting Operations and therefore supports this combined and consolidated EMPr. An electronic version of the map allows for zooming into areas of interest in order to view more detail related to activity infrastructure and environmental features.

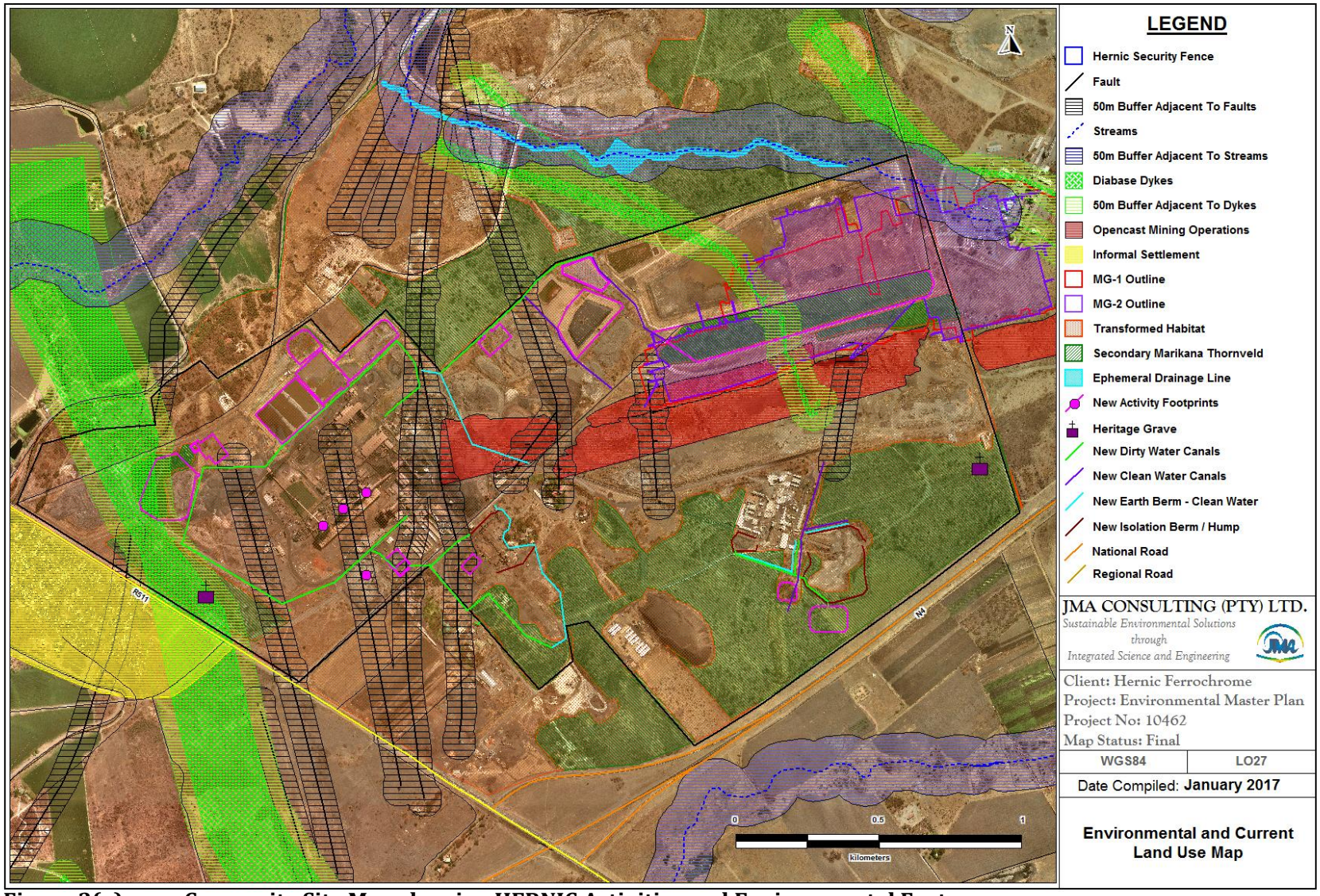

Figure 3(a): Composite Site Map showing HERNIC Activities and Environmental Features

4. DESCRIPTION OF IMPACT MANAGEMENT OBJECTIVES

4.1. DETERMINATION OF MANAGEMENT AND CLOSURE OBJECTIVES

The Management and Closure Objectives for the site are informed by the Environmental Setting and Conditions as present on and around the HERNIC Site. The Environmental Baseline Descriptions compiled by the Environmental Specialists and which is described in section 7.4 of the EIAR (Part A), informs the Desired Post Closure Environmental Condition.

Whereas the overall objectives are to prevent impacts and to restore the environment to its pre-mining status, this, for mining sites, is seldom realistically achievable.

The Management and Closure Objectives listed for twenty relevant Environmental Components in Table 4.1(a) were therefore derived using the pre-mining environmental condition as point of departure, but was formulated subject to recognizing, considering and taking cognizance of site specific conditions, the nature of activities, residual impacts post closure and finally the feasibility for the implementation of effective remediation measures.

The objectives listed in columns 2 and 3 of Table 4.1(a) form the basis from which to determine measurable/auditable management objectives during the operational and decommissioning phases and relinquishment criteria in the event that an Application for a Closure Certificate is lodged with the DMR upon formal decommission and closure of the site.

The following Environmental Components were considered:

- Socio-Cultural/ Socio-Economic Environment
- Archaeological and Heritage Environment
- Palaeontological Environment
- Land Use
- Current Status of Infrastructure (Roads)
- Blasting and Vibration Environment
- Traffic Aspects
- Climate/Meteorology
- Topography
- Soils and Land Capability
- Geology and Geochemistry
- Groundwater Environment
- Surface Water Environment
- Plant Life Environment
- Animal Life Environment
- Wetland Environment
- Aquatic Ecosystems Environment
- Air Quality Environment
- Noise Environment
- Visual Aspects

Table 4.1(a): Management and Closure Objectives as per Environmental Component

Environmental Component	Management Objective	Post Closure Phase Management Outcomes (Relinquishment Criteria)
Socio-Cultural/ Socio-Economic Environment	Positive Community Liaisons.	Sustainable Socio-Cultural/ Economic Legacy to be Visible.
Archaeological and Heritage Environment	No Impact on the Heritage Resources (two Graveyards).	No Residual Impact on the Heritage Resources to be present.
Palaeontological Environment	No Impact on the Palaeontological Resources (Fossils).	No Residual Impact on the Palaeontological Resources to be present.
Land Use	Stable, Self-Sustaining Locally Indigenous Vegetative Cover.	Post Closure Land Use of Extensive Grazing to be supported.
Infrastructure (Roads)	Good and Safe Road Conditions.	Road Conditions that Pose No Safety Risk.
Blasting and Vibration Environment	Minimize Damage to Surface Infrastructure.	No Damage to Surface Infrastructure
Traffic Aspects	Ensure Free Flowing Traffic.	No congestion of Traffic at and around HERNIC Operations.
Topography	Minimize Alteration to the Natural Elevation and Slope of the Topography.	Existence of Stable Landforms and Free-Draining Surfaces.
Soils and Land Capability	Stable Soil Cover related to Final Slope and Vegetative Cover. Grazing Capability Class to be Achieved.	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
Geology and Geochemistry	No Management Objective proposed.	No Management Outcomes proposed.
Groundwater Environment	Prevent Contamination of Groundwater Resources. Prevent Depletion of Groundwater Resources.	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
Surface Water Environment	Prevent Contamination of Receiving Environment. Ensure that clean Storm Water Run-Off is Free-Draining.	Surface Water Quality to be Complaint with Resource Quality Objectives. No Visible Signs of Surface Water Ponding.
Plant Life Environment	Stable, Self-Sustaining Locally Indigenous Vegetative Cover that Supports the Post Closure Land Use. Absence of Invasive Alien Species.	Stable, Self-Sustaining Locally Indigenous Vegetative Cover that Supports the Post Closure Land Use. Absence of Invasive Alien Species.
Animal Life Environment	Stable, Self-Sustaining Locally Indigenous Vegetative Cover that Supports the Post Closure Land Use.	Increase in Faunal Species Abundance and Diversity.
Wetland Environment	Prevent Contamination of Receiving Environment. Ensure that Storm Water Run-Off is Free-Draining. Stable, Self-Sustaining Freshwater Ecological Systems.	No Visible Signs of Surface Water Ponding. Surface Water Quality to be Complaint with Resource Quality Objectives. Increase in monitored Parameters defining Wetland Integrity such as PES, EIS and Ecological Service Provision.
Aquatic Ecosystems Environment	Improve/Maintain the Ecological Status of the Aquatic Ecosystems (River Health).	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
Air Quality Environment	Maintain Acceptable Air Quality Limits in terms of Gaseous Emissions, Particulate Matter Emissions and Dust-Fall-Out as specified in the Air Emission Licence (AEL).	Air Quality to be Compliant with the Conditions set out in the AEL.

Environmental Component	Management Objective	Post Closure Phase Management Outcomes (Relinquishment Criteria)
Noise Environment	Maintain Acceptable Noise Level (SANS 10103:2008 (Urban)) at Surrounding Receptors.	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
Visual Aspects	Reasonable Dust and Stack Emissions. Non-Intrusive Shapes in Natural Landscape.	No residual visible air quality impact. Final landforms to present no visual intrusion within the Surrounding Natural Landscape.

4.2. MANAGEMENT OF ENVIRONMENTAL DAMAGE AND PUMPING OF WATER

The EIAR describes the potential impacts to the environment as associated with each and every activity at HERNIC, for each of the operations' life cycle phases in detail in Chapter 9.

This is done for both the existing activities at HERNIC as well as for the proposed new activities for which application is made for the first time.

In Chapter 9, the EIAR considers all the relevant Economic, Cultural, and Biophysical Environmental Aspects and provides guidance on the type of mitigation and management that would be required to mitigate environmental damage and pollution.

With specific reference to the pumping of extraneous water and the prevention of ecological degradation two impacts have been identified that would require attention:

- Pumping of groundwater from the rehabilitated open pit in the event that the post closure groundwater level in the pit reaches elevations that would support the lateral migration of potentially contaminated groundwater from the open pit into the receiving surface water (decant) and groundwater (seepage) environments.

This issue will be investigated and dealt with once the open pit has been rehabilitated and once information of the post closure in-pit groundwater quality and saturation levels become available. This will be generated through monitoring of groundwater levels and quality as provided for the groundwater monitoring plan.

- Pumping of groundwater from the existing groundwater pollution plume at HERNIC with the view of intercepting the contaminants and to prevent them from entering the receiving environment beyond the HERNIC perimeter. This action is already active and the Groundwater Remediation Plan proposed by the groundwater specialist proposes to expand the existing remediation abstraction system. The pumped water is treated in a Water Treatment Plant (WTP).

Full details on this system is given in the Integrated Water Use License Application (IWULA) and is documented in the Integrated Water and Waste Management Plan (IWWMP).

4.3. POTENTIAL RISK OF ACID MINE DRAINAGE (AMD)

A detailed sampling, analyses and characterization assessment was conducted for HERNIC, the outcome of which was documented in a Process and Materials Characterization Report. This report is attached as **APPENDIX 4(A)** to this report.

Chapter 11 of this report deals specifically with the potential for the generation of AMD. The report concludes that the only material at HERNIC with any potential to generated AMD, is the char, coke and anthracite raw materials stockpiled at the two Raw Materials Stockpile areas.

4.4. INVESTIGATION AND EVALUATION OF AMD IMPACT

Although the potential do exist for AMD to be generated from the char, coke and anthracite stockpiles at the two Raw Materials Stockpile areas, the potential environmental impacts related to this are managed.

The potential impact from AMD is investigated through an on-going surface water and groundwater monitoring programme aimed at identifying the possible presence of AMD in the water resources.

4.5. ENGINEERING/MINE DESIGN SOLUTIONS TO IMPACTS FROM AMD

The mining activities at HERNIC do not have the potential to generated AMD. The only potential for the generation of AMD exists at the two Raw Materials Stockpile Areas at the smelting plant. At these areas the management measures to deal with AMD generation and migration are:

- The char, coke and anthracite stockpiles are reworked and managed to restrict the residence time of any new material on the stockpiles to no longer than 90 days. This effectively removes the material prior to it having had sufficient time to generate AMD.

This therefore prevents any groundwater contamination from occurring.

- The stockpile areas are furthermore located within the delineated “dirty water area” and hence all surface storm water run-off from both these areas will be isolated and reticulated to and contained within the relevant Strom Water PCD’s servicing that specific area.

This effectively prevents any surface water contamination from occurring.

4.6. MEASURES TO REMEDY RESIDUAL/CUMULATIVE AMD IMPACTS

Residual and cumulative AMD impacts would manifest as a contaminated footprint (soils) and/or groundwater pollution plume at the two Raw Materials Stockpile Areas. Should these impacts manifest during the operational phase, the measures proposed for the decommissioning phase for soil (removal and remediation of footprint soils) and for groundwater pollution (groundwater remediation abstraction and treatment plan) will effectively deal with any residual and/or cumulative AMD related impacts.

4.7. WATER USE REQUIREMENTS (VOLUMES/RATES) – WATER BALANCE

Full details on the water use requirements, as well as the water and salt balance for HERNIC , is given in the Integrated Water Use License Application Report (IWULAR) and is also documented in the Integrated Water and Waste Management Plan (IWWMP).

A detailed water balance and salt balance was compiled for HERNIC in support of the IWULA, a full discussion of which is contained in the Surface Water Specialist Report appended to the EIAR – **APPENDIX 7(J)**. A schematic representation of the Water Balance and the Salt Balance is given in Figure 4.7(a) and Figure 4.7(b) respectively.

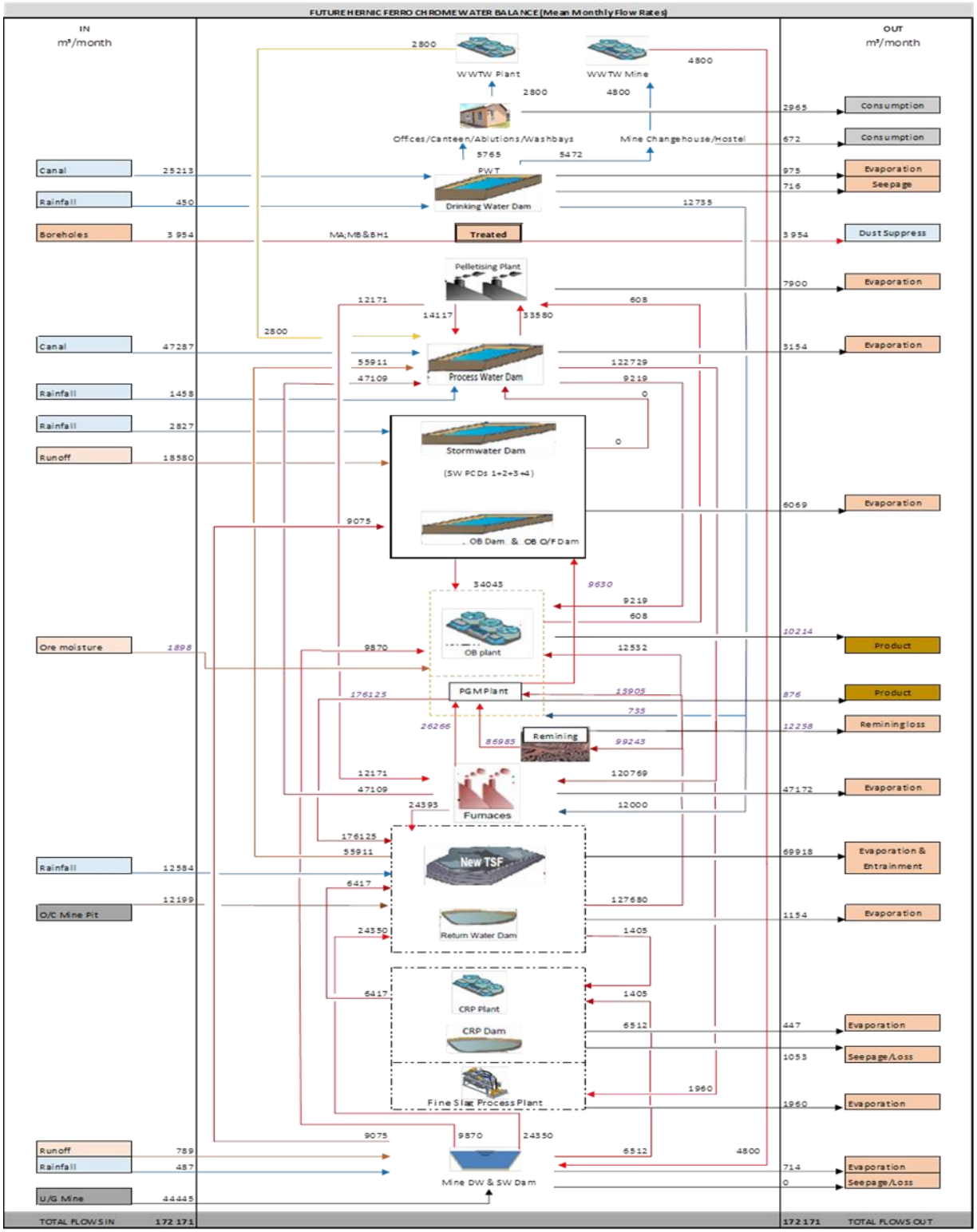

Figure 4.7(a) Updated (2017) Integrated Mine and Smelter Water Balance

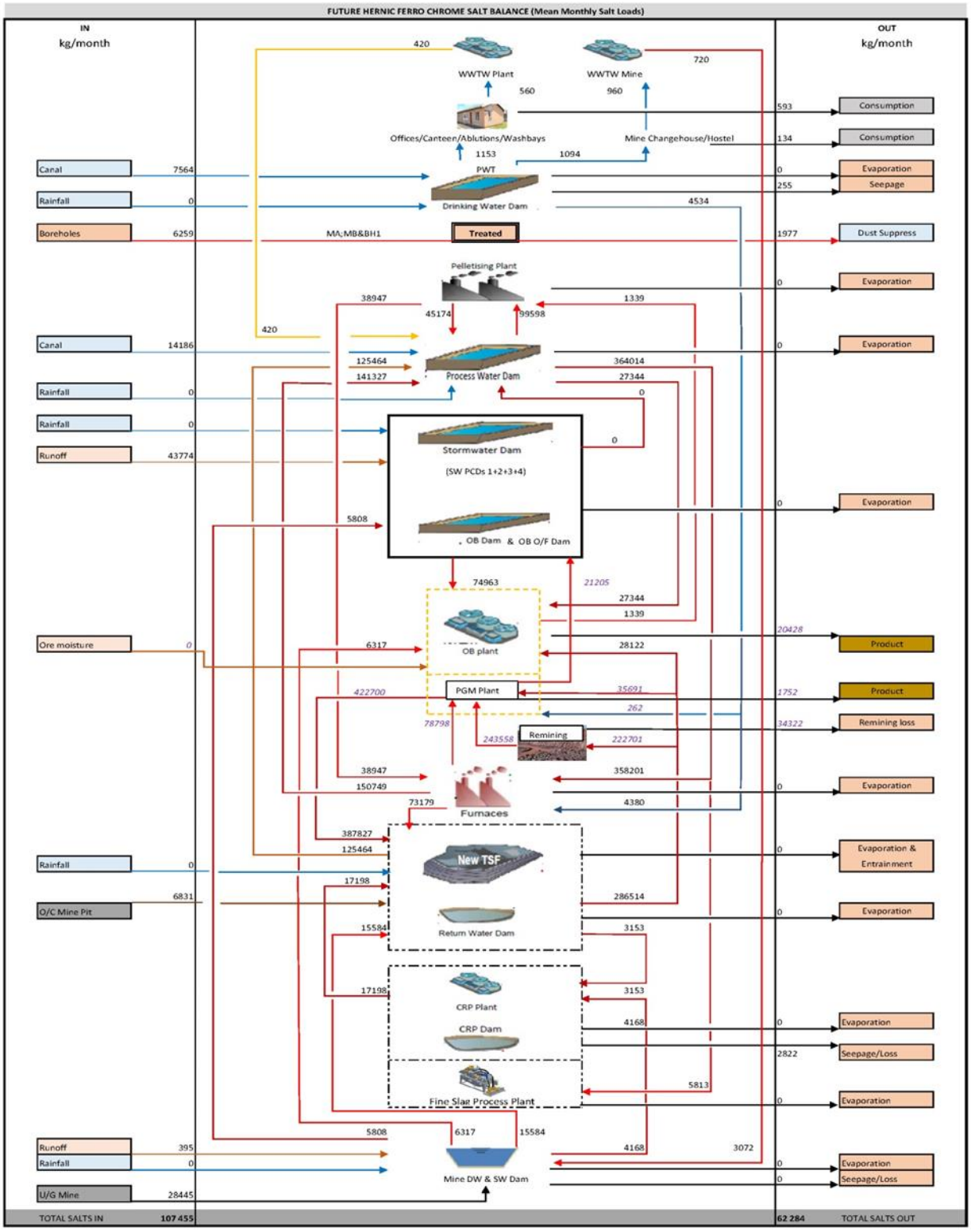

Figure 4.7(b): Updated (2017) Integrated Mine and Smelter Salt Balance

4.8. WATER USE LICENSE APPLICATION

An Integrated Water Use License Application is being prepared and will be formally lodged within the same authorization time frame as this EIA/EMP

The application will be lodged with the DWS Hartebeestpoort Regional Office. A pre-application meeting was held with officials from this office and the DWS has conducted their site inspection in preparation for the IWULA.

The relevant information will also be made available for Public Participation purposes in the same Stakeholder Consultation process as for this EIA/EMP.

5. ENVIRONMENTAL MANAGEMENT PLAN

This Chapter forms the back bone of the Environmental Management Programme Report (Part B). In order to provide continuity with the Environmental Impact Assessment Report (Part A), the required information, which is supplied strictly in the DMR Template Format, was compiled for the four different life cycle phases (construction, operational, decommissioning and post closure) and for each of the identified/described HERNIC Ferrochrome activities as described in Chapter 4 of the EIAR. The Table structure is similar to what was used in Chapter 9 of the EIAR.

5.1. IMPACT MANAGEMENT MEASURES

The first Table requested in the DMR template, relates to the measures required to mitigate impacts and to rehabilitate the environment affected by the undertaking of any listed activity (all activities at HERNIC Ferrochrome) in their respective phases.

Four Tables (5.1(a), 5.1(b), 5.1(c) and 5.1(d)) were compiled, one for each life cycle phase of the activities identified in the EIAR.

Each Table comprises six columns:

1.	Activity:	Carried forward from the EIA Tables in Part A - (Tables 9.1(a) – 9.1(d))
2.	Size and Scale:	Accurately measured from the Composite Site Map and Design Reports
3.	Environmental Aspects Affected:	Carried forward from the EIA Tables in Part A - Tables 9.1(a) – 9.1(d))
4.	Mitigation Measures:	As obtained from the Specialist Reports
5.	Compliance with Standards:	As obtained from the Specialist Reports
6.	Time Period for Implementation:	In which phase (and if required when in the phase) the measures are required

These Tables follow logically on from the Impact Significance Rating Tables in Chapter 9 of Part A - the EIAR.

Table 5.1(a): Construction Phase Impact Management Measures

Construction Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
NEW PROPOSED ACTIVITIES					
Development and Expansion of the Process Water and Storm Water Canal System including Silt Traps	Total length of canal system exceeds 1000 *m* in length and exceeds the peak throughput of 120 *l/s*	Socio-Economic Economic Efficiency	**Measure 1:** Utilise local contractors.	Social and Labour Plan	Construction Phase
		Socio-Cultural Demographic Process	**Measure 1:** Avoid recruiting directly or through sub-contractors from the adjacent informal settlement.	Social and Labour Plan	Construction Phase
		Soil Horizon	**Measure 1:** Excavate in-situ 'topsoil' or overburden 'waste' or non-waste' to the required depth. Developed infrastructure areas: Dispose of (in an appropriate facility) or re-process 'waste' or 'non-waste' overburden that is most likely to be encountered/ excavated in these areas; Establish a 'topsoil' berm from excavated soil material adjacent to the canals (entire length on the downslope side); Do not establish berms in highly developed areas; Transport excess excavated 'dirty' soil (polluted) to 'dirty' 'topsoil' stockpiles.	Chamber of Mines Guidelines	Construction Phase
		Surface Water Quantity	**Measure 1:** Pump out ponding water from excavated foundations and divert all other surface water run-off past the construction works into the natural environment.	Surface Water Quantity Reserve and WUL	Construction Phase
		Plant Life Habitat and Diversity	**Measure 1:** Ensure that any reduction in runoff to natural resources stays within the permitted parameters of the ecological reserve.	Ecological Reserve and WUL	Construction Phase
		Animal Life Habitat and Diversity	**Measure 1**: Ensure that any reduction in runoff to natural resources stays within the permitted parameters of the ecological reserve.	Ecological Reserve and WUL	Construction Phase
		Wetlands Habitat, FSP and PES	**Measure 1:** Ensure that any reduction in runoff to natural resources stays within the permitted parameters of the ecological reserve through minimisation of the extent of the dirty water area created.	Ecological Reserve and WUL	Construction Phase
		Aquatic Ecosystem Habitat and Biodiversity	**Measure 1:** Ensure that any reduction in runoff to natural resources stays within the permitted parameters of the ecological reserve. **Measure 2:** Very strict control of water consumption must take place and detailed monitoring must take place and where all water usage must continuously be optimised.	Ecological Reserve and WUL	Construction Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase
Development of the Morula PCD	0.60 *ha* (25 000 m^3)	Socio-Economic Economic Efficiency	**Measure 1:** Utilise local contractors.	Social and Labour Plan	Construction Phase
		Socio-Cultural Demographic Process	**Measure 1:** Avoid recruiting directly or through sub-contractors from the adjacent informal settlement.	Social and Labour Plan	Construction Phase

Construction Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Development of the Morula PCD	0.60 *ha* (25 000 m^3)	Soil Horizon	**Measure 1:** Strip in-situ 'topsoils' during development/expansion. Polluted areas: Transport excess stripped 'dirty' soil (polluted) to 'dirty' 'topsoil' stockpiles. Non-Polluted areas (undeveloped natural areas): Transport excess stripped 'clean' soil (non-polluted) to 'clean' 'topsoil' stockpiles. Re-vegetate (locally indigenous grasses) the 'topsoil' stockpiles.	Chamber of Mines Guidelines	Construction Phase
		Surface Water Quantity	**Measure 1:** Pump out ponding water from excavated foundations and divert all other surface water run-off past the construction works into the natural environment. **Measure 2:** Optimise size of PCD during design.	Design of Small Dams and Water Balance	Construction Phase
		Plant Life Habitat and Diversity	**Measure 1:** Avoid placement of PCD in sensitive floral habitat. **Measure 2:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:100 year storm event.	Sensitivity Map in Floral Report, Surface Water Balance Report and WUL	Construction Phase
		Animal Life Habitat and Diversity	**Measure 1:** Avoid placement of PCD in sensitive floral habitat. **Measure 2:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:100 year storm event.	Sensitivity Map in Faunal Report, Surface Water Balance Report and WUL	Construction Phase
		Wetlands Habitat, FSP and PES	**Measure 1:** Avoid placement of PCD in sensitive wetland habitat. **Measure 2:** Ensure that clearance of vegetation is kept to the project footprint, that clearance is performed in a phased manner and that effective storm water and erosion management measures are implemented. **Measure 3:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:50 year storm event.	Sensitivity Map in Wetland Report, Storm Water Management Plan, Surface Water Balance Report and WUL	Construction Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Avoid placement of PCD within natural drainage lines; flood lines, riparian zones or their associated buffer zones. **Measure 2:** Ensure that alien species proliferation along road verges and fences is managed and controlled according to an alien and invasive species management strategy. **Measure 3:** Erosion control and storm water and dirty water management.	Sensitivity Map in the Wetland Report, NEMBA (Act 10 of 2004): Alien and Invasive Species Regulations (GN R598 of 2014), Ecological Reserve and WUL	Construction Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Consider alternative options to vehicles with combustion engines.	AEL	Construction Phase
		Noise Ambient Sound Levels and Noise Incidents	**Measure 1:** Replace reverse hooters with non-tonal noise alarms.	SANS 10103:2008 (Urban)	Construction Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase

Construction Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Expansion of Storm Water PCD No.1	2.30 *ha* (73 400 m^3)	Socio-Economic Economic Efficiency	**Measure 1:** Utilise local contractors.	Social and Labour Plan	Construction Phase
		Socio-Cultural Demographic Process	**Measure 1:** Avoid recruiting directly or through sub-contractors from the adjacent informal settlement.	Social and Labour Plan	Construction Phase
		Soil Horizon	**Measure 1:** Strip in-situ 'topsoils' during development/expansion. Polluted areas: Transport excess stripped 'dirty' soil (polluted) to 'dirty' 'topsoil' stockpiles. Non-Polluted areas (undeveloped natural areas): Transport excess stripped 'clean' soil (non-polluted) to 'clean' 'topsoil' stockpiles. Re-vegetate (locally indigenous grasses) the 'topsoil' stockpiles.	Chamber of Mines Guidelines	Construction Phase
		Surface Water Quantity	**Measure 1:** Pump out ponding water from excavated foundations and divert all other surface water run-off past the construction works into the natural environment. **Measure 2:** Optimise size of PCD during design.	Design of Small Dams & Water Balance	Construction Phase
		Plant Life Habitat and Diversity	**Measure 1:** Avoid placement of PCD in sensitive floral habitat. **Measure 2:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:100 year storm event.	Sensitivity Map in Floral Report, Surface Water Balance Report and WUL	Construction Phase
		Animal Life Habitat and Diversity	**Measure 1:** Avoid placement of PCD in sensitive floral habitat. **Measure 2:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:100 year storm event.	Sensitivity Map in Faunal Report, Surface Water Balance Report and WUL	Construction Phase
		Wetlands Habitat, FSP and PES	**Measure 1:** Avoid placement of PCD in sensitive wetland habitat. **Measure 2:** Ensure that clearance of vegetation is kept to the project footprint, that clearance is performed in a phased manner and that effective storm water and erosion management measures are implemented. **Measure 3:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:50 year storm event.	Sensitivity Map in Wetland Report, Storm Water Management Plan, Surface Water Balance Report and WUL	Construction Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Avoid placement of PCD within natural drainage lines; flood lines, riparian zones or their associated buffer zones. **Measure 2:** Ensure that alien species proliferation along road verges and fences is managed and controlled according to an alien and invasive species management strategy. **Measure 3:** Erosion control and storm water and dirty water management.	Sensitivity Map in the Wetland Report, NEMBA (Act 10 of 2004): Alien and Invasive Species Regulations (GN R598 of 2014), Ecological Reserve and WUL	Construction Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Consider alternative options to vehicles with combustion engines.	AEL	Construction Phase

Construction Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Expansion of Storm Water PCD No.1	2.30 *ha* (73 400 m^3)	Noise Ambient Sound Levels and Noise Incidents	**Measure 1:** Replace reverse hooters with non-tonal noise alarms.	SANS 10103:2008 (Urban)	Construction Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase
Development of Storm Water PCD No. 2	2.20 *ha* (65 600 m^3)	Socio-Economic Economic Efficiency	**Measure 1:** Utilise local contractors.	Social and Labour Plan	Construction Phase
		Socio-Cultural Demographic Process	**Measure 1:** Avoid recruiting directly or through sub-contractors from the adjacent informal settlement.	Social and Labour Plan	Construction Phase
		Soil Horizon	**Measure 1:** Strip in-situ 'topsoils' during development/expansion. Polluted areas: Transport excess stripped 'dirty' soil (polluted) to 'dirty' 'topsoil' stockpiles. Non-Polluted areas (undeveloped natural areas): Transport excess stripped 'clean' soil (non-polluted) to 'clean' 'topsoil' stockpiles. Re-vegetate (locally indigenous grasses) the 'topsoil' stockpiles.	Chamber of Mines Guidelines	Construction Phase
		Surface Water Quantity	**Measure 1:** Pump out ponding water from excavated foundations and divert all other surface water run-off past the construction works into the natural environment. **Measure 2:** Optimise size of PCD during design.	Design of Small Dams & Water Balance	Construction Phase
		Plant Life Habitat and Diversity	**Measure 1:** Avoid placement of PCD in sensitive floral habitat. **Measure 2:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:100 year storm event.	Sensitivity Map in Floral Report, Surface Water Balance Report and WUL	Construction Phase
		Animal Life Habitat and Diversity	**Measure 1:** Avoid placement of PCD in sensitive floral habitat. **Measure 2:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:100 year storm event.	Sensitivity Map in Faunal Report, Surface Water Balance Report and WUL	Construction Phase
		Wetlands Habitat, FSP and PES	**Measure 1:** Avoid placement of PCD in sensitive wetland habitat. **Measure 2:** Ensure that clearance of vegetation is kept to the project footprint, that clearance is performed in a phased manner and that effective storm water and erosion management measures are implemented. **Measure 3:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:50 year storm event.	Sensitivity Map in Wetland Report, Storm Water Management Plan, Surface Water Balance Report and WUL	Construction Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Avoid placement of PCD within natural drainage lines; flood lines, riparian zones or their associated buffer zones. **Measure 2:** Ensure that alien species proliferation along road verges and fences is managed and controlled according to an alien and invasive species management strategy. **Measure 3:** Erosion control and storm water and dirty water management.	Sensitivity Map in the Wetland Report, NEMBA (Act 10 of 2004): Alien and Invasive Species Regulations (GN R598 of 2014), Ecological Reserve and WUL	Construction Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase

Construction Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Development of Storm Water PCD No. 2	2.20 *ha* (65 600 m^3)	Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Consider alternative options to vehicles with combustion engines.	AEL	Construction Phase
		Noise Ambient Sound Levels and Noise Incidents	**Measure 1:** Replace reverse hooters with non-tonal noise alarms.	SANS 10103:2008 (Urban)	Construction Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase
Development of Storm Water PCD No. 3	0.60 *ha* (23 020 m^3)	Socio-Economic Economic Efficiency	**Measure 1:** Utilise local contractors.	Social and Labour Plan	Construction Phase
		Socio-Cultural Demographic Process	**Measure 1:** Avoid recruiting directly or through sub-contractors from the adjacent informal settlement.	Social and Labour Plan	Construction Phase
		Soil Horizon	**Measure 1:** Strip in-situ 'topsoils' during development/expansion. Polluted areas: Transport excess stripped 'dirty' soil (polluted) to 'dirty' 'topsoil' stockpiles. Non-Polluted areas (undeveloped natural areas): Transport excess stripped 'clean' soil (non-polluted) to 'clean' 'topsoil' stockpiles. Re-vegetate (locally indigenous grasses) the 'topsoil' stockpiles.	Chamber of Mines Guidelines	Construction Phase
		Surface Water Quantity	**Measure 1:** Pump out ponding water from excavated foundations and divert all other surface water run-off past the construction works into the natural environment. **Measure 2:** Optimise size of PCD during design.	Design of Small Dams & Water Balance	Construction Phase
		Plant Life Habitat and Diversity	**Measure 1:** Avoid placement of PCD in sensitive floral habitat. **Measure 2:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:100 year storm event.	Sensitivity Map in Floral Report, Surface Water Balance Report and WUL	Construction Phase
		Animal Life Habitat and Diversity	**Measure 1:** Avoid placement of PCD in sensitive floral habitat. **Measure 2:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:100 year storm event.	Sensitivity Map in Faunal Report, Surface Water Balance Report and WUL	Construction Phase
		Wetlands Habitat, FSP and PES	**Measure 1:** Avoid placement of PCD in sensitive wetland habitat. **Measure 2:** Ensure that clearance of vegetation is kept to the project footprint, that clearance is performed in a phased manner and that effective storm water and erosion management measures are implemented. **Measure 3:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:50 year storm event.	Sensitivity Map in Wetland Report, Storm Water Management Plan, Surface Water Balance Report and WUL	Construction Phase

Construction Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Development of Storm Water PCD No. 3	0.60 *ha* (23 020 m^3)	Aquatic Ecosystems Bio-Diversity	**Measure 1:** Avoid placement of PCD within natural drainage lines; flood lines, riparian zones or their associated buffer zones. **Measure 2:** Ensure that alien species proliferation along road verges and fences is managed and controlled according to an alien and invasive species management strategy. **Measure 3:** Erosion control and storm water and dirty water management.	Sensitivity Map in the Wetland Report, NEMBA (Act 10 of 2004): Alien and Invasive Species Regulations (GN R598 of 2014), Ecological Reserve and WUL	Construction Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Consider alternative options to vehicles with combustion engines.	AEL	Construction Phase
		Noise Ambient Sound Levels and Noise Incidents	**Measure 1:** Replace reverse hooters with non-tonal noise alarms.	SANS 10103:2008 (Urban)	Construction Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase
Development of Storm Water PCD No. 4	0.05 *ha* (275 m^3)	Socio-Economic Economic Efficiency	**Measure 1:** Utilise local contractors.	Social and Labour Plan	Construction Phase
		Socio-Cultural Demographic Process	**Measure 1:** Avoid recruiting directly or through sub-contractors from the adjacent informal settlement.	Social and Labour Plan	Construction Phase
		Soil Horizon	**Measure 1:** Strip in-situ 'topsoils' during development/expansion. Polluted areas: Transport excess stripped 'dirty' soil (polluted) to 'dirty' 'topsoil' stockpiles. Non-Polluted areas (undeveloped natural areas): Transport excess stripped 'clean' soil (non-polluted) to 'clean' 'topsoil' stockpiles. Re-vegetate (locally indigenous grasses) the 'topsoil' stockpiles.	Chamber of Mines Guidelines	Construction Phase
		Surface Water Quantity	**Measure 1:** Pump out ponding water from excavated foundations and divert all other surface water run-off past the construction works into the natural environment. **Measure 2:** Optimise size of PCD during design.	Design of Small Dams & Water Balance	Construction Phase
		Plant Life Habitat and Diversity	**Measure 1:** Avoid placement of PCD in sensitive floral habitat. **Measure 2:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:100 year storm event.	Sensitivity Map in Floral Report, Surface Water Balance Report and WUL	Construction Phase
		Animal Life Habitat and Diversity	**Measure 1:** Avoid placement of PCD in sensitive floral habitat. **Measure 2:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:100 year storm event.	Sensitivity Map in Faunal Report, Surface Water Balance Report and WUL	Construction Phase

Construction Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Development of Storm Water PCD No. 4	0.05 *ha* (275 m^3)	Wetlands Habitat, FSP and PES	**Measure 1:** Avoid placement of PCD in sensitive wetland habitat. **Measure 2:** Ensure that clearance of vegetation is kept to the project footprint, that clearance is performed in a phased manner and that effective storm water and erosion management measures are implemented. **Measure 3:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:50 year storm event.	Sensitivity Map in Wetland Report, Storm Water Management Plan, Surface Water Balance Report and WUL	Construction Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Avoid placement of PCD within natural drainage lines; flood lines, riparian zones or their associated buffer zones. **Measure 2:** Ensure that alien species proliferation along road verges and fences is managed and controlled according to an alien and invasive species management strategy. **Measure 3:** Erosion control and storm water and dirty water management.	Sensitivity Map in the Wetland Report, NEMBA (Act 10 of 2004): Alien and Invasive Species Regulations (GN R598 of 2014), Ecological Reserve and WUL	Construction Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Consider alternative options to vehicles with combustion engines.	AEL	Construction Phase
		Noise Ambient Sound Levels and Noise Incidents	**Measure 1:** Replace reverse hooters with non-tonal noise alarms.	SANS 10103:2008 (Urban)	Construction Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase
Expansion of the OB Plant Process Water Dam	1.82 *ha* (45 300 m^3)	Socio-Economic Economic Efficiency	**Measure 1:** Utilise local contractors.	Social and Labour Plan	Construction Phase
		Socio-Cultural Demographic Process	**Measure 1:** Avoid recruiting directly or through sub-contractors from the adjacent informal settlement.	Social and Labour Plan	Construction Phase
		Soil Horizon	**Measure 1:** Strip in-situ 'topsoils' during development/expansion. Polluted areas: Transport excess stripped 'dirty' soil (polluted) to 'dirty' 'topsoil' stockpiles. Non-Polluted areas (undeveloped natural areas): Transport excess stripped 'clean' soil (non-polluted) to 'clean' 'topsoil' stockpiles. Re-vegetate (locally indigenous grasses) the 'topsoil' stockpiles.	Chamber of Mines Guidelines	Construction Phase
		Surface Water Quantity	**Measure 1:** Pump out ponding water from excavated foundations and divert all other surface water run-off past the construction works into the natural environment.	Not Applicable	Construction Phase

Construction Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Expansion of the OB Plant Process Water Dam	1.82 *ha* (45 300 m^3)	Plant Life Habitat and Diversity	**Measure 1:** Avoid placement of Process Water Dam in sensitive floral habitat. **Measure 2:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:100 year storm event.	Sensitivity Map in Floral Report, Surface Water Balance Report and WUL	Construction Phase
		Animal Life Habitat and Diversity	**Measure 1:** Avoid placement of Process Water Dam in sensitive floral habitat. **Measure 2:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:100 year storm event.	Sensitivity Map in Faunal Report, Surface Water Balance Report and WUL	Construction Phase
		Wetlands Habitat, FSP and PES	**Measure 1:** Avoid placement of Process Water Dam in sensitive wetland habitat. **Measure 2:** Ensure that clearance of vegetation is kept to the project footprint, that clearance is performed in a phased manner and that effective storm water and erosion management measures are implemented. **Measure 3:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:50 year storm event.	Sensitivity Map in Wetland Report, Storm Water Management Plan, Surface Water Balance Report and WUL	Construction Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Avoid placement of PCD within natural drainage lines; flood lines, riparian zones or their associated buffer zones. **Measure 2:** Ensure that alien species proliferation along road verges and fences is managed and controlled according to an alien and invasive species management strategy. **Measure 3:** Erosion control and storm water and dirty water management.	Sensitivity Map in the Wetland Report, NEMBA (Act 10 of 2004): Alien and Invasive Species Regulations (GN R598 of 2014), Ecological Reserve and WUL	Construction Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Consider alternative options to vehicles with combustion engines.	AEL	Construction Phase
		Noise Ambient Sound Levels and Noise Incidents	**Measure 1:** Replace reverse hooters with non-tonal noise alarms.	SANS 10103:2008 (Urban)	Construction Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase
Expansion of the Plant Process Water Dam	3.35 *ha* (76 000 m^3)	Socio-Economic Efficiency	**Measure 1:** Utilise local contractors.	Social and Labour Plan	Construction Phase
		Socio-Cultural Demographic Process	**Measure 1:** Avoid recruiting directly or through sub-contractors from the adjacent informal settlement.	Social and Labour Plan	Construction Phase
		Soil Horizon	**Measure 1:** Strip in-situ 'topsoils' during development/expansion. Polluted areas: Transport excess stripped 'dirty' soil (polluted) to 'dirty' 'topsoil' stockpiles. Non-Polluted areas (undeveloped natural areas): Transport excess stripped 'clean' soil (non-polluted) to 'clean' 'topsoil' stockpiles. Re-vegetate (locally indigenous grasses) the 'topsoil' stockpiles.	Chamber of Mines Guidelines	Construction Phase

Construction Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Expansion of the Plant Process Water Dam	3.35 *ha* (76 000 m^3)	Surface Water Quantity	**Measure 1:** Pump out ponding water from excavated foundations and divert all other surface water run-off past the construction works into the natural environment. **Measure 2:** Optimise size of PWD during design.	Design of Small Dams & Water Balance	Construction Phase
		Plant Life Habitat and Diversity	**Measure 1:** Avoid placement of Process Water Dam in sensitive floral habitat. **Measure 2:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:100 year storm event.	Sensitivity Map in Floral Report, Surface Water Balance Report and WUL	Construction Phase
		Animal Life Habitat and Diversity	**Measure 1:** Avoid placement of Process Water Dam in sensitive floral habitat. **Measure 2:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:100 year storm event.	Sensitivity Map in Faunal Report, Surface Water Balance Report and WUL	Construction Phase
		Wetlands Habitat, FSP and PES	**Measure 1:** Avoid placement of Process Water Dam in sensitive wetland habitat. **Measure 2:** Ensure that clearance of vegetation is kept to the project footprint, that clearance is performed in a phased manner and that effective storm water and erosion management measures are implemented. **Measure 3:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:50 year storm event.	Sensitivity Map in Wetland Report, Storm Water Management Plan, Surface Water Balance Report and WUL	Construction Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Avoid placement of PCD within natural drainage lines; flood lines, riparian zones or their associated buffer zones. **Measure 2:** Ensure that alien species proliferation along road verges and fences is managed and controlled according to an alien and invasive species management strategy. **Measure 3:** Erosion control and storm water and dirty water management.	Sensitivity Map in the Wetland Report, NEMBA (Act 10 of 2004): Alien and Invasive Species Regulations (GN R598 of 2014), Ecological Reserve and WUL	Construction Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Consider alternative options to vehicles with combustion engines.	AEL	Construction Phase
		Noise Ambient Sound Levels and Noise Incidents	**Measure 1:** Replace reverse hooters with non-tonal noise alarms.	SANS 10103:2008 (Urban)	Construction Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase
		Socio-Economic Efficiency	**Measure 1:** Utilise local contractors.	Social and Labour Plan	Construction Phase
		Socio-Cultural Demographic Process	**Measure 1:** Avoid recruiting directly or through sub-contractors from the adjacent informal settlement.	Social and Labour Plan	Construction Phase

Construction Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Expansion of the CRP Silt Trap Process Water Dam	0.27 *ha* (9000 m^3)	Soil Horizon	**Measure 1:** Strip in-situ 'topsoils' during development/expansion. Polluted areas: Transport excess stripped 'dirty' soil (polluted) to 'dirty' 'topsoil' stockpiles. Non-Polluted areas (undeveloped natural areas): Transport excess stripped 'clean' soil (non-polluted) to 'clean' 'topsoil' stockpiles. Re-vegetate (locally indigenous grasses) the 'topsoil' stockpiles.	Chamber of Mines Guidelines	Construction Phase
		Surface Water Quantity	**Measure 1:** Pump out ponding water from excavated foundations and divert all other surface water run-off past the construction works into the natural environment. **Measure 2:** Optimise size of PWD during design.	Design of Small Dams & Water Balance	Construction Phase
		Plant Life Habitat and Diversity	**Measure 1:** Avoid placement of Process Water Dam in sensitive floral habitat. **Measure 2:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:100 year storm event.	Sensitivity Map in Floral Report, Surface Water Balance Report and WUL	Construction Phase
		Animal Life Habitat and Diversity	**Measure 1:** Avoid placement of Process Water Dam in sensitive floral habitat. **Measure 2:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:100 year storm event.	Sensitivity Map in Faunal Report, Surface Water Balance Report and WUL	Construction Phase
		Wetlands Habitat, FSP and PES	**Measure 1:** Avoid placement of Process Water Dam in sensitive wetland habitat. **Measure 2:** Ensure that clearance of vegetation is kept to the project footprint, that clearance is performed in a phased manner and that effective storm water and erosion management measures are implemented. **Measure 3:** Ensure that the water storage facility is managed as 'zero-discharge' facilities and that all facilities are designed to accommodate a 1:50 year storm event.	Sensitivity Map in Wetland Report, Storm Water Management Plan, Surface Water Balance Report and WUL	Construction Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Avoid placement of PCD within natural drainage lines; flood lines, riparian zones or their associated buffer zones. **Measure 2:** Ensure that alien species proliferation along road verges and fences is managed and controlled according to an alien and invasive species management strategy. **Measure 3:** Erosion control and storm water and dirty water management.	Sensitivity Map in the Wetland Report, NEMBA (Act 10 of 2004): Alien and Invasive Species Regulations (GN R598 of 2014), Ecological Reserve and WUL	Construction Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Consider alternative options to vehicles with combustion engines.	AEL	Construction Phase
		Noise Ambient Sound Levels and Noise Incidents	**Measure 1:** Replace reverse hooters with non-tonal noise alarms.	SANS 10103:2008 (Urban)	Construction Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase

Construction Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Development of a New Salvage Yard	0.65 *ha*	Socio-Economic Economic Efficiency	**Measure 1:** Utilise local contractors.	Social and Labour Plan	Construction Phase
		Socio-Cultural Demographic Process	**Measure 1:** Avoid recruiting directly or through sub-contractors from the adjacent informal settlement.	Social and Labour Plan	Construction Phase
		Soil Horizon	**Measure 1:** Scrape off the overburden 'waste' or non-waste' overlying the in-situ soils where it occurs, and dispose of (in an appropriate facility) or re-process as applicable. Excavate in-situ 'topsoil' to the required depth during the construction of the 'clean' water diversion drain and 'dirty' water intercept drains.	Chamber of Mines Guidelines	Construction Phase
		Surface Water Quality	**Measure 1:** Pump out ponding water from excavated foundations and divert all other surface water run-off past the construction works into the natural environment. **Measure 2:** Optimise size of salvage yard during design.	SANS 1200D Earthworks & Water Balance	Construction Phase
		Plant Life Habitat and Diversity	**Measure 1:** Avoid placement of the new salvage yard in sensitive floral habitat.	Sensitivity Map in Floral Report	Construction Phase
		Animal Life Habitat and Diversity	**Measure 1:** Avoid placement of the new salvage yard in sensitive faunal habitat.	Sensitivity Map in Faunal Report	Construction Phase
		Wetlands Habitat, FSP and PES	**Measure 1:** Ensure that clearance of vegetation is kept to the project footprint, that clearance is performed in a phased manner and that effective storm water and erosion management measures are implemented.	Storm water Management Plan	Construction Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Avoid placement of the new salvage yard within natural drainage lines; flood lines, riparian zones or their associated buffer zones; Minimise loss of aquatic features where possible through planning and suitable layouts. **Measure 2:** Limit the footprint area of the construction activity to what is absolutely essential in order to minimise the loss of clean water runoff areas and the concomitant recharge of streams in the area. **Measure 3:** All soils compacted as a result of construction activities falling outside of development footprint areas should be ripped and profiled. As much vegetation growth as possible should be promoted within the proposed construction area during all phases in order to protect soils and vegetation clearance should be kept to a minimum as the biomass in the area is not very high and so hence the plants will not grow quickly.	Sensitivity Map in the Wetland Report, NEMBA (Act 10 of 2004): Alien and Invasive Species Regulations (GN R598 of 2014), Ecological Reserve and WUL	Construction Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Consider alternative options to vehicles with combustion engines.	AEL	Construction Phase

Construction Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Development of a New Salvage Yard	0.65 *ha*	Noise Ambient Sound Levels and Noise Incidents	**Measure 1:** Replace reverse hooters with non-tonal noise alarms.	SANS 10103:2008 (Urban)	Construction Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase
Expansion of the Taphole Fume Extraction System	-	Socio-Economic Economic Efficiency	**Measure 1:** Utilise local contractors.	Social and Labour Plan	Construction Phase
		Socio-Cultural Demographic Process	**Measure 1:** Avoid recruiting directly or through sub-contractors from the adjacent informal settlement	Social and Labour Plan	Construction Phase
Expansion of the Finished Product Plant Dust Abatement System	-	Socio-Economic Economic Efficiency	**Measure 1:** Utilise local contractors	Social and Labour Plan	Construction Phase
		Socio-Cultural Demographic Process	**Measure 1:** Avoid recruiting directly or through sub-contractors from the adjacent informal settlement	Social and Labour Plan	Construction Phase
Southern Expansion of the Ore Beneficiation (OB) Plant Tailings Storage Facility (TSF) and associated RWD	8.0 *ha*	Socio-Economic Economic Efficiency	**Measure 1:** Utilise local contractors	Social and Labour Plan	Construction Phase
		Socio-Cultural Demographic Process	**Measure 1:** Avoid recruiting directly or through sub-contractors from the adjacent informal settlement.	Social and Labour Plan	Construction Phase
		Surface Water Quantity	**Measure 1:** Protect footprint liner from damage during construction. **Measure 2:** Pump out ponding water into the clean water canal. **Measure 3:** Optimise size of TSF during design.	Engineer's Design Specifications, Design of Small Dams and Water Balance	Construction Phase
		Topography Morphology	**Measure 1:** Limit expansion to footprint area.	Design Specifications	Construction Phase
		Soil Horizon	**Measure 1:** Strip in-situ vertic 'topsoils' during expansion of TSF. Non-Polluted areas: Transport excess excavated 'clean' soil (non-polluted) to 'clean' 'topsoil' stockpiles (since majority of footprint expansion and drain occurs in undeveloped natural areas). Polluted areas: Transport excess excavated 'dirty' soil (polluted) to 'dirty' 'topsoil' stockpiles. Construct an earth 'clean' water diversion drain surrounding the upslope sections of the TSF, together with its adjacent soil berm (entire length on the downslope side); Compact the vertic soil base and downslope (not upslope) side-wall of the drain to achieve a relatively impermeable compacted-'re-moulded' soil 'seal' layer. Re-vegetate (locally indigenous grasses) the 'topsoil' stockpiles and the drain berm.	Chamber of Mines Guidelines	Construction Phase

Construction Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Southern Expansion of the Ore Beneficiation (OB) Plant Tailings Storage Facility (TSF) and associated RWD	8.0 *ha*	Plant Life Habitat and Diversity	**Measure 1:** Avoid expansion of the TSF into sensitive floral habitat. **Measure 2:** Ensure that the TSF is managed as 'zero-discharge' facility and that the facility is designed to accommodate a 1:100 year storm event.	Sensitivity Map in Floral Report, Surface Water Balance Report and WUL	Construction Phase
		Animal Life Habitat and Diversity	**Measure 1:** Avoid expansion of the TSF into sensitive faunal habitat. **Measure 2:** Ensure that the TSF is managed as 'zero-discharge' facility and that the facility is designed to accommodate a 1:100 year storm event.	Sensitivity Map in Faunal Report, Surface Water Balance Report and WUL	Construction Phase
		Wetlands Habitat, FSP and PES	**Measure 1:** Ensure that clearance of vegetation is kept to the project footprint, that clearance is performed in a phased manner and that effective storm water and erosion management measures are implemented.	Storm Water Management Plan	Construction Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Avoid expansion of TSF within natural drainage lines; flood lines, riparian zones or their associated buffer zones; Minimise loss of aquatic features where possible through planning and suitable layouts. **Measure 2:** Limit the footprint area of the construction activity to what is absolutely essential in order to minimise the loss of clean water runoff areas and the concomitant recharge of streams in the area. **Measure 3:** All soils compacted as a result of construction activities falling outside of development footprint areas should be ripped and profiled. As much vegetation growth as possible should be promoted within the proposed construction area during all phases in order to protect soils and vegetation clearance should be kept to a minimum as the biomass in the area is not very high and so hence the plants will not grow quickly.	Sensitivity Map in the Wetland Report, NEMBA (Act 10 of 2004): Alien and Invasive Species Regulations (GN R598 of 2014), Ecological Reserve and WUL	Construction Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Consider alternative options to vehicles with combustion engines.	AEL	Construction Phase
		Noise Ambient Sound Levels and Noise Incidents	**Measure 1:** Replace reverse hooters with non-tonal noise alarms.	SANS 10103:2008 (Urban)	Construction Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan.	AEL	Construction Phase

Construction Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Re-Use (Screening, Stockpiling, Internal Use and/or Selling) of Fine Slag at the Fine Slag Processing Plant	3.24 *ha*	Socio-Economic Economic Efficiency	**Measure 1:** Utilise local contractors.	Social and Labour Plan	Construction Phase
		Socio-Cultural Demographic Process	**Measure 1:** Avoid recruiting directly or through sub-contractors from the adjacent informal settlement.	Social and Labour Plan	Construction Phase
Re-Use (Screening, Stockpiling, Internal Use and/or Selling) of Course Slag at the Chrome Recovery Plant	11.47 *ha*	Socio-Economic Economic Efficiency	**Measure 1:** Utilise local contractors.	Social and Labour Plan	Construction Phase
		Socio-Cultural Demographic Process	**Measure 1:** Avoid recruiting directly or through sub-contractors from the adjacent informal settlement.	Social and Labour Plan	Construction Phase
Re-Use (Screening, Stockpiling, Internal Use and/or Selling) of Mine Waste Rock at the Mine Waste Rock Stockpile	6.08 *ha*	Socio-Economic Economic Efficiency	**Measure 1:** Utilise local contractors.	Social and Labour Plan	Construction Phase
		Socio-Cultural Demographic Process	**Measure 1:** Avoid recruiting directly or through sub-contractors from the adjacent informal settlement.	Social and Labour Plan	Construction Phase

Table 5.1(b): Operational Phase Impact Management Measures

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
CURRENT ACTIVITIES AND INFRASTRUCTURE AND PROCESSES					
Hernic Operations	386.45 *ha*	Socio-Cultural Cultural Processes	**Measure 1:** Improve communication and attend to local grievances as per the Social and Labour Plan	Social and Labour Plan	Operational Phase
		Socio-Cultural Geographic Processes	**Measure 1:** Improve communication on environmental matters as per Environmental Awareness Plan and attend to air quality aspects as per Air Quality Management Plan	Air Quality Specialist Report	Operational Phase
		Socio-Cultural Institutional Processes	**Measure 1:** Improve communication on environmental matters as per Environmental Awareness Plan and attend to reporting of environmental monitoring as per Environmental Monitoring Plan	Environmental Awareness Plan	Operational Phase
		Socio-Economic Economic Efficiency	**Measure 1:** Preferential procurement and effective socio-economic upliftment programmes as per the Social and Labour Plan	Social and Labour Plan	Operational Phase
		Socio-Economic Economic Equity	**Measure 1:** Preferential procurement as per Social and Labour Plan	Social and Labour Plan	Operational Phase
		Socio-Economic Economic Equity	**Measure 1:** Enhance business sustainability and growth through effective environmental management as per the EMPr	EMPr	Operational Phase
		Socio-Economic Economic Equity	**Measure 1:** Implement effective socio-economic upliftment programmes as per the Social and Labour Plan	Social and Labour Plan	Operational Phase
		Socio-Economic Economic Stability	**Measure 1:** Implement non-mining business development programmes as per the Social and Labour Plan.	Social and Labour Plan	Operational Phase
		Socio-Economic Economic Stability	**Measure 1:** Develop and implement Optimal Resource Use Plan (water/electricity, etc.)	Optimal Resource Use Plan	Operational Phase
		Noise Ambient Sound Levels and Noise Incidents	**Measure 1:** No daytime management measures proposed. **Measure 2:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 3 and 4. **Measure 3:** A noise emission audit to determine the source of significant noises. **Measure 4:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	SANS 10103:2008 (Urban)	Operational Phase
Access Roads	R511 and R566	Traffic Demand	**Measure 1:** Transport the mine products during daylight off-peak hours for safety purposes. **Measure 2:** Road Safety Awareness Campaigns. **Measure 3:** Encourage use of large capacity vehicles.	Roads Authority	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Access Roads	R511 and R566	Soil Horizon	**Measures 1:** Monitor and maintain vegetative (grass) basal cover in the surrounds; Sample/fertilize the 'topsoil' berms once every 3 -4 years in spring in order to maintain vegetative basal cover, thereby limiting soil erosion; No grazing or burning allowed. Maintain local drainage features (direct/contain 'dirty' water runoff and keep 'clean' water away); Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from impacting these areas.	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measures 1:** Report, monitor and clean up accidental spillages immediately; Sweep roads/verges periodically. Spray water for dust suppression; Tarpaulin covers over haul truck and rail vehicle bins to limit dust; Monitor dust.	Chamber of Mines Guidelines	Operational Phase
		Surface Water Quality	**Measure 1:** Close transport trucks with tarpaulin sheet during transport. **Measure 2:** Clean road surfaces and storm water ditches on regular basis.	Surface Water Quality Reserve and WUL	Operational Phase
		Plant Life Bio-Diversity	**Measure 1:** Ensure that alien species proliferation is managed and controlled according to an alien and invasive species management strategy.	Ecological Reserve and NEMBA (Act 10 of 2004): Alien and Invasive Species Regulations (GNR 598 of 2014)	Operational Phase
		Animal Life Bio-Diversity	**Measure 1:** Implement a 60km/h speed limit on all internal roads and place signboards where roads traverse sensitive faunal habitat, warning motorists of the possibility of faunal collisions.	Speed Limit on Mine	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Clear spills as per ongoing emergency response plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
Railway Lines	Offtake at Pendoring Siding	Soil Horizon	**Measures 1:** Monitor and maintain vegetative (grass) basal cover in the surrounds; Sample/fertilize the 'topsoil' berms once every 3 -4 years in spring in order to maintain vegetative basal cover, thereby limiting soil erosion; No grazing or burning allowed. Maintain local drainage features (direct/contain 'dirty' water runoff and keep 'clean' water away); Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from impacting these areas.	Chamber of Mines Guidelines	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Railway Lines	Offtake at Pendoring Siding	Soil Contamination	**Measures 1:** Report, monitor and clean up accidental spillages immediately; Sweep roads/verges periodically. Spray water for dust suppression; Tarpaulin covers over haul truck and rail vehicle bins to limit dust; Monitor dust.	Chamber of Mines Guidelines	Operational Phase
		Surface Water Quality	**Measure 1:** Close transport trucks with tarpaulin sheets during transport. **Measure 2:** Clean railway line storm water drains on regular basis.	Surface Water Quality Reserve and WUL	Operational Phase
		Animal Life Bio-Diversity	**Measure 1:** Implement a 60km/h speed limit on all internal roads and place signboards where roads traverse sensitive faunal habitat, warning motorists of the possibility of faunal collisions.	Speed Limit on Mine	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Clear spills as per ongoing emergency response plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
Security Fence and Access	9.76 *km* in length	Animal Life Habitat	**Measure 1:** Ensure that fences are permeable for smaller faunal species to allow movement through the fences. Establish a pass-through every 50m for the conveyors.	Ecological Reserve	Operational Phase
Water Supply	Hartbeespoort Irrigation Canal (northern perimeter of site)	Soil Horizon	**Measures 1:** Monitor and repair water piping leaks; Monitor and maintain earth Bund walls along piping routes.	Chamber of Mines Guidelines	Operational Phase
Power Supply	Eskom Yard 0.47 *ha*	Animal Life Bio-Diversity	**Measure 1:** Place bird-flappers in areas where power lines traverse sensitive faunal habitat such as freshwater features	Ecological Reserve	Operational Phase
Gas Supply	150 - 200 *tonnes/month* of Propane gas, Oxygen tank (25 000 *l*) Argon gas tank (800 *l*)	No Significant Environmental Impacts anticipated during the Operational Phase			
Fuel Supply	Three 23 000 *l* Diesel tanks	Soil Contamination	**Measures 1:** Construct a sloped concrete pad with a sump at the fuel tank/vehicle filling site (if not currently present); Clean concrete pad and sump periodically; Report, monitor and clean up accidental spillages immediately. **Measures 2:** Maintain local drainage features (direct/contain 'dirty' water run-off and keep 'clean' water away); Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from entering this area.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Responsible personnel to inspect the Diesel Fuel Tanks and Collection Sumps for evidence of potential spillages / leaks. **Measure 2:** Any leaks and spillages are to be reported to the relevant personnel, after which the area is to be cleaned up accordingly.	Groundwater Quality Reserve and WUL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Fuel Supply	Three 23 000 *l* Diesel tanks	Surface Water Quality	**Measure 1:** Clear spills as per the ongoing emergency response plan. **Measure 2:** Regular Inspections of the Tanks and Collection Sumps as per maintenance plan. **Measure 3:** Capture surface water spillages in dirty areas as per water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Plant Life Bio-Diversity	**Measure 1:** Clear spills as per the ongoing emergency response plan. **Measure 2:** Regular Inspections of the Tanks and Collection Sumps as per maintenance plan	Ecological Reserve and SABS Standards for Storage of Fuel	Operational Phase
		Animal Life Bio-Diversity	**Measure 1:** Clear spills as per the ongoing emergency response plan. **Measure 2:** Regular Inspections of the Tanks and Collection Sumps as per maintenance plan	Ecological Reserve and SABS Standards for Storage of Fuel	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Clear spills as per the ongoing emergency response plan. **Measure 2:** Regular Inspections of the Tanks and Collection Sumps as per maintenance plan. **Measure 3:** Capture surface water spillages in dirty areas as per water management plan	Ecological Reserve and SABS Standards for Storage of Fuel	Operational Phase
Internal Roads	Tar and Gravel	Soil Horizon	**Measures 1:** Monitor and maintain vegetative (grass) basal cover in the surrounds; Sample/fertilize the 'topsoil' berms once every 3 -4 years in spring in order to maintain vegetative basal cover, thereby limiting soil erosion; No grazing or burning allowed. Maintain local drainage features (direct/contain 'dirty' water runoff and keep 'clean' water away); Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from impacting these areas.	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measures 1:** Report, monitor and clean up accidental spillages immediately; Sweep roads/verges periodically. Spray water for dust suppression; Tarpaulin covers over haul truck and rail vehicle bins to limit dust; Monitor dust.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** No process water should be used for dust suppression. Only groundwater abstracted from the underground workings or groundwater abstracted from the groundwater remediation abstraction boreholes (once treated at the treatment plant) should be used for dust suppression. **Measure 2:** Monitor & report the quality (quarterly) and quantity (monthly) of water used for dust suppression. **Measure 3:** Continue monitoring the groundwater resource quality.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Clear spills as per the ongoing emergency response plan.	Surface Water Quality Reserve and WUL	Operational Phase
		Plant Life Bio-Diversity	**Measure 1:** Ensure that alien species proliferation is managed and controlled according to an alien and invasive species management strategy.	Ecological Reserve and NEMBA (Act 10 of 2004): Alien and Invasive Species Regulations (GNR 598 of 2014)	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Internal Roads	Tar and Gravel	Animal Life Bio-Diversity	**Measure 1:** Implement a 60km/h speed limit on all internal roads and place signboards where roads traverse sensitive faunal habitat, warning motorists of the possibility of faunal collisions.	Speed Limit on Mine	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
Administration Office Complexes	Total Area Occupied 2.90 *ha*	No Significant Environmental Impacts anticipated during the Operational Phase			
Morula Mining Shaft Complex	88.41 *ha*	Topography Morphology	**Measure 1:** Minimise unnecessary soil stripping on site. **Measure 2:** Conduct stockpiling in accordance with specifications of soil scientist. **Measure 3:** Stockpile ROM material according to operational requirements. **Measure 4:** Confine stockpiles to designated footprint areas	Chamber of Mines Guidelines	Operational Phase
		Soil Horizon	**Measures 1**: Monitor and maintain vegetative (lawn) basal cover in the vicinity and surrounds; Fertilise lawn soils annually upon commencement of the rainy season.	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measures 1:** Scrape up and remove the thick historically 'waste'/'non-waste' materials layer over extensive areas; Scrape up and remove daily generated/spilled 'wastes'/'non-wastes' on a continual basis (especially before the rainy season); Transport 'wastes' to the designated 'waste' storage facility (TSF if potentially polluting), and the 'non-wastes' to the opencast pit (if potentially non-polluting), or re-process as applicable; Tarpaulin cover over haul truck bin to limit dust. Clean up spillages of hazardous materials/chemicals or oils; Clean the existing concrete pads inside these structures; Maintain the roofed area and concrete pads in order to prevent the ingress of rainfall or run-off; Spray water for dust suppression when necessary. **Measures 2:** Monitor and maintain optimum functioning (remove siltation and vegetation) of the earth 'clean' water diversion drain surrounding the upslope sections of the relevant 'Infrastructure' areas, together with the drains adjacent soil berm as well as the earth 'dirty' water intercept drain/berm surrounding the downslope sections of the relevant 'Infrastructure' areas. The aforementioned will limit 'clean' water run-off from entering the 'Infrastructure' areas, as well as intercept 'dirty' water seepage and run-off derived from the 'Infrastructure' areas respectively. Institute all possible measures (e.g. additional concrete slabs, secondary drains, and berms) to encourage the run-off of 'dirty' water and rain water into drains, rather than allowing trapped water to infiltrate/leach through the 'waste'/'non-waste' layers, and thereafter into the buried in-situ soils (underlying a number of these areas) and water-tables.	Chamber of Mines Guidelines	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Morula Mining Shaft Complex	88.41 *ha*	Soil Contamination	**Measures 1:** Sweep up spilled material periodically. Spray water onto the raw materials that are to be transported by conveyor before these materials are deposited on the conveyor, the aforementioned for dust suppression.	Chamber of Mines Guidelines and Soil Scientist	Operational Phase
		Soil Fertility	**Measure 1:** Monitoring required. Sample/Fertilize the 'topsoil' stockpile once every 3 - 4 years in spring in order to maintain soil fertility and vegetative (grass) basal cover, thereby limiting soil erosion and continually refreshing the reproductive seed-bank. Vegetative cover should be comprised of self-sustaining indigenous (to the area) 'grasses', while indigenous trees and shrubs may re-colonise naturally. Mature seeded grass may be mown from elsewhere and then spread out on areas of the pile that display a poor grass basal cover. No grazing or burning allowed.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quantity	**Measure 1:** Minimize groundwater cone of depression extent and optimize groundwater abstraction by pumping water directly from the shaft during the operational phase and not from adjacent abstraction boreholes. **Measure 2:** Monitor groundwater levels adjacent to the decline shaft in the dedicated weathered zone groundwater monitoring boreholes.	Groundwater Quantity Reserve and WUL	Operational Phase
		Groundwater Quality	**Measure 1:** The water levels in the dams are to be operated below the calculated Maximum Operating Level (MOL) at all times. **Measure 2:** Monitor groundwater resource quality and quantity (water levels) at dedicated weathered zone monitoring boreholes adjacent to the dams. **Measure 3:** Any adverse trends in the groundwater quality recorded from the dedicated groundwater monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Plant Life Habitat	**Measure 1:** Ensure that topsoil stockpiles are vegetated with indigenous and endemic species and that alien species proliferation is monitored and managed.	Ecological Reserve and NEMBA (Act 10 of 2004): Alien and Invasive Species Regulations (GNR 598 of 2014)	Operational Phase
		Animal Life Habitat	**Measure 1**: Ensure that fences are permeable for smaller faunal species to allow movement through the fences. Establish a pass-through every 50m for the conveyors.	Ecological Reserve	Operational Phase
		Wetlands Habitat, FSP and PES	**Measure 1:** Minimize groundwater influx into mine through grouting of decline shaft walls. **Measure 2:** Monitor groundwater levels as per groundwater monitoring plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Morula Mining Shaft Complex	88.41 *ha*	Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Visual Aspects Visual Intrusion Landscape Morphology	**Measure 1:** Restrict footprints to delineated areas and manage size, shape and height of stockpiles as per operational plan	AEL	Operational Phase
Morula Mining Opencast Operation Including Hydro-Mining of Fines	67.58 *ha*	Topography Morphology	**Measure 1:** Reshape disturbed pit area and flatten steep slopes. **Measure 2:** Surface stones/boulders and remnants must be buried. **Measure 3:** Even out all rough surfaces. **Measure 4:** Backfill deep voids/depressions.	Chamber of Mines Guidelines	Operational Phase
		Topography Stability	**Measure 1:** Conduct efficient ongoing rehabilitation as per the decommissioning and closure plan	Chamber of Mines Guidelines	Operational Phase
		Soil Horizon	**Measures 1:** Monitor soil erosion. Significant Soil Erosion is highly unlikely given that the post-rehabilitation slopes are generally well below the determined critical minimum erosion slope of 6.4 degrees (11.2 % percentage grade), in point two degrees (majority). Thus the existing 'topsoiling' depth that currently generally varies from 30-60cm (post-disturbance/mining Grazing Capability class) will not be reduced by erosion, and the Land Capability will thus not change. The client has already monitored the post-disturbance Land Capability by means of the current soil survey. Pick up (glean) and dispose of the surface small stones and rocks that occur on the surface in some areas, since these impact on the Land Capability. Surface stone/rock presently varies between 5-10 % of surface cover. Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from entering these areas.	Chamber of Mines Guidelines	Operational Phase
		Soil Fertility	**Measures 1:** Monitor soil fertility and vegetative basal cover. Sample/Fertilize the 'topsoiled' rehabilitated areas once every 3 -4 years in spring in order to maintain soil fertility and vegetative (grass) basal cover, thereby limiting soil erosion and continually refreshing the reproductive seed-bank. Vegetative cover should be comprised of self-sustaining indigenous (to the area) 'grasses', while indigenous trees and shrubs may re-colonise naturally. Mature seeded grass may be mown from elsewhere and then spread out in rehabilitated areas that display a poor grass basal cover. Remove alien (non-indigenous) vegetation and weeds that may sprout in the rehabilitated (and other) areas. The existing grass basal cover in the rehabilitated areas currently meets the standard required for the stated end-land use of Extensive Grazing. **Measure 2:** No grazing or burning allowed until the post-closure phase.	Chamber of Mines Guidelines	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Morula Mining Opencast Operation Including Hydro-Mining of Fines	67.58 *ha*	Soil Contamination	**Measures 1:** Construct a vegetated berm from 'softs' material (weathering rock and fines) around the outer boundary of the opencast (rock dumps/open void) footprint area, only along those sections where this feature was not already previously constructed during the Construction phase (certain sections, particularly along the southern boundary). The objective of this berm feature is to intercept 'dirty' water rainfall run-off derived from the opencast area. Vegetated 'topsoil' stockpile berms should already exist (as they do in some sections) adjacent (downslope) of the 'softs' berms. These 'topsoil' 'stockpile' berms are comprised of soil that was previously stripped during the construction phase, and that will be utilised for rehabilitation 'topsoiling' purposes during the closure phase. The spraying of water for dust suppression will be beneficial during mechanical operations related to the back-filling process, but not during the 'topsoiling' process as the raised moisture content will in this case lead to soil compaction; Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust. Although extensive sections of the opencast area have been back-filled ('moving' opencast) and re-graded (re-sloped) [as indicated on the map set by the term 'level' – slope 1 -2 degrees], these areas still remain to be 'topsoiled' and re-vegetated. Furthermore, many sections of the back-filled opencast area have not yet been re-graded, while two opencast final void sections remain to be back-filled with potentially non-polluting spoil, waste rock, and 'waste' from the plants. The completion of these rehabilitation operations will be ongoing throughout the operational and closure phases of the project. Detailed rehabilitation information is provided in the Impact/Mitigation Tables for the closure phase. **Measures 2:** Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from seeping into these areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quantity	**Measure 1:** Minimise cone of depression extent by abstracting water directly from the opencast pits and not from adjacent abstraction boreholes. **Measure 2:** Monitor groundwater levels adjacent to the opencast pits in dedicated weathered zone groundwater monitoring boreholes.	Groundwater Quantity Reserve and WUL	Operational Phase
		Groundwater Quality	**Measure 1:** Drill and construct groundwater monitoring boreholes within the rehabilitated opencast pits once backfilled with Waste Rock and shaped at the surface, to monitor the quality of the water in the rehabilitated pit. **Measure 2:** Monitor groundwater resource quality at dedicated weathered zone monitoring boreholes adjacent to the rehabilitated opencast pits. Measure 3: Any adverse trends in the groundwater quality recorded from the dedicated monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Minimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Morula Mining Opencast Operation Including Hydro-Mining of Fines	67.58 *ha*	Wetlands Habitat, FSP and PES	**Measure 1:** Include this area in the annual rehabilitation plan as well as in the decommissioning and closure plan	FRDCP	Operational Phase
		Aquatic Ecosystems Habitat and Bio-Diversity	**Measure 1:** Include this area in the annual rehabilitation plan as well as in the decommissioning and closure plan	FRDCP	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
Morula Mining Underground Operation	To 450 *m* to 500 *m* below surface	Ground Vibration	**Measure 1:** Blast according to the blasting plan. Measure 2: Conduct vibration monitoring as per the blasting monitoring plan	United States Bureau of Mine criteria for Safe Blasting and Blasting Specialist	Operational Phase
		Groundwater Quantity	**Measure 1:** Minimise cone of depression extent by abstracting water directly from the underground workings and not from adjacent abstraction boreholes. **Measure 2:** Monitor groundwater levels adjacent to and above the underground workings in the dedicated weathered zone groundwater monitoring boreholes.	Groundwater Quantity Reserve and WUL	Operational Phase
		Wetlands Habitat, FSP and PES	**Measure 1:** Minimize groundwater influx into mine through minimization of structural disturbance during and after mining as per the mining work programme. Measure 2: Monitor groundwater levels as per groundwater monitoring plan	Ecological Reserve and WUL	Operational Phase
Morula Mining Accommodation	1.91 *ha*	No Significant Environmental Impacts anticipated during the Operational Phase			
Mine Waste Rock Dump	5.89 *ha*	Topography Morphology	**Measure 1:** Conduct dumping in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Remove waste rock dump footprints by placing the waste rock back into the opencast pits, once space becomes available, as part of the rehabilitation thereof. **Measure 2:** Monitor groundwater resource quality at dedicated weathered zone monitoring boreholes adjacent to the unlined waste rock dumps.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Mine Waste Rock Dump	5.89 *ha*	Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Visual Aspects Visual Intrusion Landscape Morphology	**Measure 1:** Restrict footprints to delineated areas and manage size, shape and height of mine waste rock dump as per operational plan	AEL	Operational Phase
Mine Sewage Plant	0.18 *ha*	Soil Contamination	**Measures 1**: Monitor levels of 'dirty' water seepage from the drying beds into the underlying/surrounding soils, and maintain the existing features. The dried up sewage sludge material must be scraped up periodically and utilised as a 'topsoil' fertiliser in Opencast areas that are being rehabilitated on an ongoing basis.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Maintain and operate sludge drying beds according to sewerage plant maintenance and operational plan	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Monitor discharge water quality as per surface water monitoring plan. **Measure 2:** Maintain sewerage plant as per operational plan.	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Monitor discharge water quality as per surface water monitoring plan. **Measure 2:** Maintain sewerage plant as per operational plan.	Ecological Reserve and WUL	Operational Phase
Morula Mine Storm Water Berms and Canals	To be Upgraded	Soil Contamination	**Measure 1:** Monitor and maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water. Promote water flow in the canals/drains in order to limit seepage below those that may be poorly sealed. Dredged material from the canals/drains must either be disposed of in the TSF (high pollution potential) or re-processed (plant), but not dumped on the canal/drain walls or in surrounding areas.	Chamber of Mines Guidelines and Soil Scientist	Operational Phase
		Surface Water Quantity	**Measure 1:** Minimize interception volumes through effective design as per water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Plant Life Habitat and Diversity	**Measure 1:** Minimize interception volumes through effective design as per water management plan	Ecological Reserve and WUL	Operational Phase
		Animal Life Habitat and Diversity	**Measure 1:** Minimize interception volumes through effective design as per water management plan	Ecological Reserve and WUL	Operational Phase
		Wetlands Habitat, FSP and PES	**Measure 1:** Minimize interception volumes through effective design as per water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystem Habitat and Biodiversity	**Measure 1:** Minimize interception volumes through effective design as per water management plan	Ecological Reserve and WUL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Morula Dewatering Dam	1.05 *ha*	Soil Contamination	**Measure 1:** Monitor seepage from the dams and maintain these features. Monitor and maintain optimum functioning (remove siltation and vegetation) of the earth 'dirty' water intercept drain downslope of each dam, together with its adjacent soil berm (entire length on the downslope side). Dredged material from the dams and drains must either be disposed of in the TSF (high pollution potential) or re-processed (plant), but not dumped on the dam/drain walls or in surrounding areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** The water level in the dam is to be operated below the calculated Maximum Operating Level (MOL) at all times, until the dam is replaced by the Morula Pollution Control Dam. **Measure 2:** Monitor groundwater resource quality and quantity (water levels) at dedicated weathered zone monitoring boreholes adjacent to the dam. **Measure 3:** Any adverse trends in the groundwater quality recorded from the dedicated groundwater monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
Alloys Smelting Plant General Infrastructure	4.8 *ha*	Soil Horizon	**Measures 1:** Monitor and maintain vegetative (lawn) basal cover in the vicinity and surrounds; Fertilise lawn soils annually upon commencement of the rainy season.	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measures 1:** Monitor accidental oil/chemical spillages; Clean up spills immediately; Discuss further during Induction Training. Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from entering these areas.	Chamber of Mines Guidelines	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Alloys Smelting Plant General Infrastructure	4.8 *ha*	Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL	Operational Phase
Raw Materials Stockpile Area 1	5.15 *ha*	Topography Morphology	**Measure 1:** Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measures 1:** Sweep up accumulated raw material layers off the concrete pad (if present) periodically when necessary; Construct concrete pads if they do not already exist. Institute all possible measures (e.g. secondary drains, and berms) to encourage the run-off of 'dirty' water and rain water into drains, rather than allowing trapped water to infiltrate into the buried in-situ soils (underlying the area) and water-tables; Spray water for raw material dust suppression; Do not spray excessive volumes of water (that drains through the pile) onto the anthracite/coal stockpiles as this may lead to 'acid rock drainage' to the underlying layers; Cover the anthracite/coal (and other potentially polluting) stockpiles with a portable impermeable sheet during the rainy season for the same reason. Tarpaulin cover over haul truck and rail vehicle bins to limit dust. Soil compaction is not an issue since the underlying soils are deeply buried. **Measures 2:** Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from entering these areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Monitor groundwater resource quality at dedicated weathered zone monitoring boreholes adjacent to the raw material stockpiles. **Measure 2:** Any adverse trends in the groundwater quality recorded from the dedicated groundwater monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Raw Materials Stockpile Area 2	4.68 *ha*	Topography Morphology	**Measure 1:** Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measures 1:** Sweep up accumulated raw material layers off the concrete pad (if present) periodically when necessary; Construct concrete pads if they do not already exist. Institute all possible measures (e.g. secondary drains, and berms) to encourage the run-off of 'dirty' water and rain water into drains, rather than allowing trapped water to infiltrate into the buried in-situ soils (underlying the area) and water-tables; Spray water for raw material dust suppression; Do not spray excessive volumes of water (that drains through the pile) onto the anthracite/coal stockpiles as this may lead to 'acid rock drainage' to the underlying layers; Cover the anthracite/coal (and other potentially polluting) stockpiles with a portable impermeable sheet during the rainy season for the same reason. Tarpaulin cover over haul truck and rail vehicle bins to limit dust. Soil compaction is not an issue since the underlying soils are deeply buried. **Measures 2:** Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from entering these areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Monitor groundwater resource quality at dedicated weathered zone monitoring boreholes adjacent to the raw material stockpiles. **Measure 2:** Any adverse trends in the groundwater quality recorded from the dedicated groundwater monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Ore Beneficiation Plant – Crushing and Screening	5.57 *ha*	Soil Contamination	**Measures 1:** Scrape up and process the historical accumulated layer that is spread out in these sites before commencing with new material; Institute all possible measures (e.g. secondary drains, and berms) to encourage the run-off of 'dirty' water and rain water into drains, rather than allowing trapped water to infiltrate into the buried in-situ soils (underlying some of these areas) and water-tables; Spray water for dust suppression. Tarpaulin cover over haul truck bins to limit dust. **Measures 2:** Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from entering these areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Minimize stockpile sizes and provide concrete slabs where practical. **Measure 2:** Optimize storm water run-off diversion, interception and containment as per water management plan. **Measure 3:** Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
Ore Beneficiation Plant – Lumpy and Fines Section (HMS and Spiral Plants)	0.29 *ha*	Soil Contamination	**Measures 1:** Firstly scrape up and remove the accumulated historical 'waste' layer that is spread out over extensive areas; Clean up and remove 'wastes' on a continual ongoing basis (especially in spring before the rainy season); Institute all possible measures (e.g. additional concrete slabs, secondary drains, and berms) to encourage the run-off of 'dirty' water and rain water into drains, rather than allowing trapped water to infiltrate into the buried in-situ soils (underlying the area) and water-tables; Spray water for dust suppression. Transport 'wastes' to the opencast pit (if potentially non-polluting) or a designated 'waste' storage facility (TSF if potentially polluting); Tarpaulin cover over haul truck bin to limit dust; Bund walls along slurry piping routes (if any). **Measures 2:** Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from entering these areas.	Chamber of Mines Guidelines	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Ore Beneficiation Plant – Lumpy and Fines Section (HMS and Spiral Plants)	0.29 *ha*	Groundwater Quality	**Measure 1:** Minimize stockpile sizes and provide concrete slabs where practical. **Measure 2:** Optimize storm water run-off diversion, interception and containment as per water management plan. **Measure 3:** Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
Mixed Material Stockpiling and Screening	15.43 *ha*	Topography Morphology	**Measure 1:** Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measures 1:** Soil Contamination: Scrape up and process the historical accumulated layer that is spread out in these sites before commencing with new material; Institute all possible measures (e.g. secondary drains, and berms) to encourage the run-off of 'dirty' water and rain water into drains, rather than allowing trapped water to infiltrate into the buried in-situ soils (underlying some of these areas) and water-tables; Spray water for dust suppression. Tarpaulin cover over haul truck bins to limit dust. **Measures 2:** Soil Contamination: Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from entering these areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Minimize stockpile sizes and provide concrete slabs where practical. **Measure 2:** Optimize storm water run-off diversion, interception and containment as per water management plan. **Measure 3:** Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Mixed Material Stockpiling and Screening	15.43 *ha*	Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
Returns Materials Stockpiles	5.44 *ha*	Topography Morphology	**Measure 1:** Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measures 1:** Scrape up and process the historical accumulated layer that is spread out in these sites before commencing with new material; Institute all possible measures (e.g. secondary drains, and berms) to encourage the run-off of 'dirty' water and rain water into drains, rather than allowing trapped water to infiltrate into the buried in-situ soils (underlying some of these areas) and water-tables; Spray water for dust suppression. Tarpaulin cover over haul truck bins to limit dust. **Measures 2:** Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from entering these areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Minimize stockpile sizes and provide concrete slabs where practical. **Measure 2:** Optimize storm water run-off diversion, interception and containment as per water management plan. **Measure 3:** Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Pelletizing and Sintering Plants 1 & 2	4.14 *ha*	Soil Contamination	**Measures 1:** Firstly, scrape up and remove the generally thick historically accumulated 'waste'/'non-waste' materials layer that is spread out over extensive areas; Secondly, scrape up and remove daily generated/spilled 'wastes'/'non-wastes' on a continual ongoing basis (especially in spring before the rainy season); Transport 'wastes' to the designated 'waste' storage facility (TSF if potentially polluting), and the 'non-wastes' to the opencast pit (if potentially non-polluting), or re-process as applicable; Tarpaulin cover over haul truck bin to limit dust. Monitor and Clean up spillages of hazardous materials/chemicals or oils; Periodically clean the existing concrete pads inside these structures; Maintain the roofed area and concrete pads in order to prevent the ingress of rainfall or run-off; Periodically Spray water for dust suppression when necessary. **Measures 2:** Monitor and maintain optimum functioning (remove siltation and vegetation) of the earth 'clean' water diversion drain surrounding the upslope sections of the relevant 'Infrastructure' areas, together with the drains adjacent soil berm (entire length on the downslope side); as well as the earth 'dirty' water intercept drain/berm surrounding the downslope sections of the relevant 'Infrastructure' areas. The aforementioned will limit 'clean' water run-off from entering the 'Infrastructure' areas, as well as intercept 'dirty' water seepage and run-off derived from the 'Infrastructure' areas respectively. Institute all possible measures (e.g. additional concrete slabs, secondary drains, and berms) to encourage the run-off of 'dirty' water and rain water into drains, rather than allowing trapped water to infiltrate/leach through the 'waste'/'non-waste' layers, and thereafter into the buried in-situ soils (underlying a number of these areas) and water-tables.	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measures 1:** Contaminated Land Assessment soil/'waste'/'non-waste' samples (already collected, and stored in deep freeze) must be analysed and interpreted in order to identify downwind (mostly) areas that are impacted by Smelter Fallout, as well as potential solutions to any potential identified issues; Monitor emissions and dust, both in the plant and downwind areas; Ongoing implementation of appropriate pollution reducing measures that are currently in place; Ongoing maintenance of equipment and processes that are designed to reduce emissions and dust; Clean up and dispose of accumulated 'waste' material layers (particularly fines); Tarpaulin covers over haul truck bins to limit dust; Spray water to limit blown dust in 'safe' 'non-heat'/'non-electrical' areas only!![Maintain concrete pad and drain for potential future scrubber effluent spillages].	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Optimize storm water run-off diversion, interception and containment as per water management plan. **Measure 2:** Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Pelletizing and Sintering Plants 1 & 2	4.14 *ha*	Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Air Quality Particulate Matter	**Measure 1:** Control particulate matter emissions as per the air quality management plan	AEL	Operational Phase
		Air Quality Gaseous Emissions	**Measure 1:** Control gaseous emissions as per the air quality management plan	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression and Particulate Matter Emissions control as per the air quality management plan	AEL	Operational Phase
Furnaces 1, 2, 3 and 4	1.30 *ha*	Soil Contamination	**Measures 1:** Firstly, scrape up and remove the generally thick historically accumulated 'waste'/'non-waste' materials layer that is spread out over extensive areas; Secondly, scrape up and remove daily generated/spilled 'wastes'/'non-wastes' on a continual ongoing basis (especially in spring before the rainy season); Transport 'wastes' to the designated 'waste' storage facility (TSF if potentially polluting), and the 'non-wastes' to the opencast pit (if potentially non-polluting), or re-process as applicable; Tarpaulin cover over haul truck bin to limit dust. Monitor and Clean up spillages of hazardous materials/chemicals or oils; Periodically clean the existing concrete pads inside these structures; Maintain the roofed area and concrete pads in order to prevent the ingress of rainfall or run-off; Periodically Spray water for dust suppression when necessary.	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measures 1:** Monitor and maintain optimum functioning (remove siltation and vegetation) of the earth 'clean' water diversion drain surrounding the upslope sections of the relevant 'Infrastructure' areas, together with the drains adjacent soil berm (entire length on the downslope side); as well as the earth 'dirty' water intercept drain/berm surrounding the downslope sections of the relevant 'Infrastructure' areas. The aforementioned will limit 'clean' water run-off from entering the 'Infrastructure' areas, as well as intercept 'dirty' water seepage and run-off derived from the 'Infrastructure' areas respectively. Institute all possible measures (e.g. additional concrete slabs, secondary drains, and berms) to encourage the run-off of 'dirty' water and rain water into drains, rather than allowing trapped water to infiltrate/leach through the 'waste'/'non-waste' layers, and thereafter into the buried in-situ soils (underlying a number of these areas) and water-tables.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Optimize storm water run-off diversion, interception and containment as per water management plan. **Measure 2:** Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Furnaces 1, 2, 3 and 4	1.30 *ha*	Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Air Quality Particulate Matter	**Measure 1:** Control particulate matter emissions as per the air quality management plan	AEL	Operational Phase
		Air Quality Gaseous Emissions	**Measure 1:** Control gaseous emissions as per the air quality management plan	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression and Particulate Matter Emissions control as per the air quality management plan	AEL	Operational Phase
Ferrochrome Break Floor Area	1.30 *ha*	Soil Contamination	**Measure 1:** Sweep up accumulated product fines off the concrete pad periodically when necessary; Institute all possible measures (e.g. secondary drains, and berms) to encourage the run-off of 'dirty' water and rain water into drains, rather than allowing trapped water to infiltrate into the buried in-situ soils (underlying the area) and water-tables; Spray water for chrome fines dust suppression. Tarpaulin cover over haul truck and rail vehicle bins to limit dust. **Measures 2:** Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from entering these areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Optimize storm water run-off diversion, interception and containment as per water management plan. **Measure 2:** Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Finished Product Plant	2.50 *ha*	Traffic Demand	M**easure 1:** Manage traffic demand to coincide with daytime and off-peak hours	Roads Authority	Operational Phase
		Topography Morphology	**Measure 1:** Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measure 1:** Sweep up accumulated product fines off the concrete pad periodically when necessary; Institute all possible measures (e.g. secondary drains, and berms) to encourage the run-off of 'dirty' water and rain water into drains, rather than allowing trapped water to infiltrate into the buried in-situ soils (underlying the area) and water-tables; Spray water for chrome fines dust suppression. Tarpaulin cover over haul truck and rail vehicle bins to limit dust. **Measures 2:** Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from entering these areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Optimize storm water run-off diversion, interception and containment as per water management plan. **Measure 2:** Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Cover trucks as per the transport contract	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
Slag Stockpiling Areas	6.30 *ha*	Topography Morphology	**Measure 1:** Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Chamber of Mines Guidelines	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Slag Stockpiling Areas	6.30 *ha*	Soil Contamination	**Measures 1:**Firstly, scrape up and remove the generally thick historically accumulated slag layer that is spread out over extensive areas; Secondly, scrape up and remove daily generated slag on a continual ongoing basis (especially in spring before the rainy season); Sell or re-process scraped up slag as applicable; Tarpaulin cover over haul truck bin to limit dust. Institute all possible measures (e.g. secondary drains, and berms) to encourage the run-off of 'dirty' water and rain water into drains, rather than allowing trapped water to infiltrate into the buried in-situ soils (underlying the area) and water-tables; Spray water for dust suppression. **Measures 2:** Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from entering these areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Re-work the current arising slag stockpiles as quickly as possible, in order to reduce the residence time of the slag material at the surface. **Measure 2:** Monitor groundwater resource quality at dedicated weathered zone monitoring boreholes adjacent to the current arising slag stockpiles. **Measure 3:** Any adverse trends in the groundwater quality recorded from the dedicated groundwater monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
Primary Chrome Recovery Plant	10.58 *ha*	Topography Morphology	**Measure 1:** Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measures 1:** Sweep up accumulated product fines off the concrete pad periodically when necessary; Institute all possible measures (e.g. secondary drains, and berms) to encourage the run-off of 'dirty' water and rain water into drains, rather than allowing trapped water to infiltrate into the buried in-situ soils (underlying the area) and water-tables; Spray water for chrome fines dust suppression. Tarpaulin cover over haul truck and rail vehicle bins to limit dust.	Chamber of Mines Guidelines	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Primary Chrome Recovery Plant	10.58 *ha*	Soil Contamination	**Measures 1:** Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from entering these areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Re-work the slag stockpiles at the Primary CRP as quickly as possible, in order to reduce the residence time of the slag material at the surface. **Measure 2:** Monitor groundwater resource quality at dedicated weathered zone monitoring boreholes adjacent to the Primary CRP slag stockpiles. **Measure 3:** Any adverse trends in the groundwater quality recorded from the dedicated groundwater monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
Fine Slag Processing Plant (Secondary CRP)	3.24 *ha*	Topography Morphology	**Measure 1:** Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measures 1:** Sweep up accumulated product fines off the concrete pad periodically when necessary; Institute all possible measures (e.g. secondary drains, and berms) to encourage the run-off of 'dirty' water and rain water into drains, rather than allowing trapped water to infiltrate into the buried in-situ soils (underlying the area) and water-tables; Spray water for chrome fines dust suppression. Tarpaulin cover over haul truck and rail vehicle bins to limit dust.	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measures 1:** Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from entering these areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Minimize stockpile sizes. **Measure 2:** Optimize storm water run-off diversion, interception and containment as per water management plan. **Measure 3:** Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality Reserve and WUL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Fine Slag Processing Plant (Secondary CRP)	3.24 *ha*	Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
Product Rail Dispatch Area	1.00 *ha*	Topography Morphology	**Measure 1:** Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measure 1:** Sweep up accumulated product fines off the concrete pad periodically when necessary; Institute all possible measures (e.g. secondary drains, and berms) to encourage the run-off of 'dirty' water and rain water into drains, rather than allowing trapped water to infiltrate into the buried in-situ soils (underlying the area) and water-tables; Spray water for chrome fines dust suppression. Tarpaulin cover over haul truck and rail vehicle bins to limit dust. **Measures 2:** Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from entering these areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Minimize stockpile sizes. **Measure 2:** Optimize storm water run-off diversion, interception and containment as per water management plan. **Measure 3:** Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Product Rail Dispatch Area	1.00 *ha*	Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
Platinum Group Minerals (PGM) Plant	1.22 *ha*	Soil Contamination	**Measures 1:** Firstly, scrape up and remove the generally thick historically accumulated 'waste'/'non-waste' materials layer that is spread out over extensive areas; Secondly, scrape up and remove daily generated/spilled 'wastes'/'non-wastes' on a continual ongoing basis (especially in spring before the rainy season); Transport 'wastes' to the designated 'waste' storage facility (TSF if potentially polluting), and the 'non-wastes' to the opencast pit (if potentially non-polluting), or re-process as applicable; Tarpaulin cover over haul truck bin to limit dust. Monitor and Clean up spillages of hazardous materials/chemicals or oils; Periodically clean the existing concrete pads inside these structures; Maintain the roofed area and concrete pads in order to prevent the ingress of rainfall or run-off; Periodically Spray water for dust suppression when necessary.	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measures 1:** Monitor and maintain optimum functioning (remove siltation and vegetation) of the earth 'clean' water diversion drain surrounding the upslope sections of the relevant 'Infrastructure' areas, together with the drains adjacent soil berm (entire length on the downslope side); as well as the earth 'dirty' water intercept drain/berm surrounding the downslope sections of the relevant 'Infrastructure' areas. The aforementioned will limit 'clean' water run-off from entering the 'Infrastructure' areas, as well as intercept 'dirty' water seepage and run-off derived from the 'Infrastructure' areas respectively. Institute all possible measures (e.g. additional concrete slabs, secondary drains, and berms) to encourage the run-off of 'dirty' water and rain water into drains, rather than allowing trapped water to infiltrate/leach through the 'waste'/'non-waste' layers, and thereafter into the buried in-situ soil	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measure 1:** Dust Suppression as per the air quality management plan	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Optimize storm water run-off diversion, interception and containment as per water management plan. **Measure 2:** Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Platinum Group Minerals (PGM) Plant	1.22 *ha*	Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
Internal Transport and Contractors Yard and Wash Bay	3.81 *ha*	Soil Contamination	**Measures 1:** Clean up and dispose of accumulated 'waste' material layers (particularly fines); Tarpaulin covers over haul truck bins to limit dust; Spray water to limit blown dust in 'safe' 'non-heat'/'non-electrical' areas	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Clear up spillages as per the emergency response plan. **Measure 2:** Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
Redundant Historic Bag Plant	0.43 *ha*	Not Operational - No Significant Environmental Impacts anticipated during the Operational Phase			
Redundant Old Civil Workshop	1.92 *ha*	Not Operational - No Significant Environmental Impacts anticipated during the Operational Phase			
Rehabilitated Quarry Area	2.60 *ha*	Not Operational - No Significant Environmental Impacts anticipated during the Operational Phase			
Historic Slimes Dams (1 & 2)	0.44 *ha*	Not Operational - Scheduled for Decommissioning and Closure Phase			
H:H Slimes Dam and Return Water Dam (RWD)	4.52 *ha*	Soil Contamination	**Measures 1:** Monitor seepage from the dams and maintain these features. Monitor and maintain optimum functioning (remove siltation and vegetation) of the earth 'dirty' water intercept drain downslope of each dam, together with its adjacent soil berm.	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measure 1:** Dredged material from the dams and drains must either be disposed of in the TSF (high pollution potential) or re-processed (plant), but not dumped on the dam/drain walls or in surrounding areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Responsible engineer to inspect and record the status / integrity of the dam. **Measure 2:** The water level in the dam is to be operated below the calculated Maximum Operating Level (MOL) at all times. **Measure 3:** Monitor groundwater resource quality and quantity (water levels) at dedicated weathered zone monitoring boreholes adjacent to the dam. **Measure 4:** Any adverse trends in the groundwater quality recorded from the dedicated groundwater monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	WUL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
H:H Slimes Dam and Return Water Dam (RWD)	4.52 *ha*	Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Operate the dam storage levels as per the water management plan. **Measure 2:** Clear up spillages as per the emergency response plan	Surface Water Quality Reserve and WUL	Operational Phase
		Plant Life Habitat, Bio-Diversity	**Measure 1:** Operate the dam storage levels as per the water management plan. **Measure 2:** Clear up spillages as per the emergency response plan	Ecological Reserve and WUL	Operational Phase
		Animal Life Habitat, Bio-Diversity	**Measure 1:** Operate the dam storage levels as per the water management plan. **Measure 2:** Clear up spillages as per the emergency response plan	Ecological Reserve and WUL	Operational Phase
		Wetlands Habitat, FSP and PES	**Measure 1:** Operate the dam storage levels as per the water management plan. **Measure 2:** Clear up spillages as per the emergency response plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Operate the dam storage levels as per the water management plan. **Measure 2:** Clear up spillages as per the emergency response plan	Ecological Reserve and WUL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** No mitigation possible	AEL	Operational Phase
HERNIC Tailings Storage Facility (TSF) including the Southern Expansion of the TSF and Return Water Dam (RWD)	37.24 *ha*	Topography Morphology	**Measure 1:** Conduct disposal on the TSF in strict accordance with standard civil engineering stability design criteria as well as subject to conditions as per the TSF operational plan	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measure 1:** Monitor seepage from the dams and maintain these features. Monitor and maintain optimum functioning (remove siltation and vegetation) of the earth 'dirty' water intercept drain downslope of each dam, together with its adjacent soil berm (entire length on the downslope side).	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measure 1:** Dredged material from the dams and drains must either be disposed of in the TSF (high pollution potential) or re-processed (plant), but not dumped on the dam/drain walls or in surrounding areas.	Chamber of Mines Guidelines	Operational Phase
		Soil Horizon (Erosion)	**Measure 1:** Monitor soil erosion, and monitor and maintain the vegetative cover of the 'topsoil' dam walls. Soil Erosion may be reduced by reducing side-slopes to < 6.4 degrees (11.2 % percentage grade) where necessary. Mature seeded grass may be mown from elsewhere and then spread out on the dam walls that display a poor grass basal cover; No grazing or burning allowed.	Chamber of Mines Guidelines	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
HERNIC Tailings Storage Facility (TSF) including the Southern Expansion of the TSF and Return Water Dam (RWD)	37.24 *ha*	Groundwater Quality	**Measure 1:** Responsible engineer to inspect and record the status / integrity of the dam. **Measure 2:** The water level in the dam is to be operated below the calculated Maximum Operating Level (MOL) at all times. **Measure 3:** Monitor groundwater resource quality and quantity (water levels) at dedicated weathered zone monitoring boreholes adjacent to the dam. **Measure 4:** Any adverse trends in the groundwater quality recorded from the dedicated groundwater monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Operate the dam storage levels as per the water management plan. **Measure 2:** Clear up spillages as per the emergency response plan	Surface Water Quality Reserve and WUL	Operational Phase
		Plant Life Habitat, Bio-Diversity	**Measure 1:** Operate the dam storage levels as per the water management plan. **Measure 2:** Clear up spillages as per the emergency response plan	Ecological Reserve and WUL	Operational Phase
		Animal Life Habitat, Bio-Diversity	**Measure 1:** Operate the dam storage levels as per the water management plan. **Measure 2:** Clear up spillages as per the emergency response plan	Ecological Reserve and WUL	Operational Phase
		Wetlands Habitat, FSP and PES	**Measure 1:** Operate the dam storage levels as per the water management plan. **Measure 2:** Clear up spillages as per the emergency response plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Operate the dam storage levels as per the water management plan. **Measure 2:** Clear up spillages as per the emergency response plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** No mitigation possible	AEL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Existing Salvage Yard	0.68 *ha*	Soil Contamination	**Measure 1:** Monitor and Clean up spillages of used hazardous materials/chemicals or oils. Periodically Scrape off the overburden 'waste' or non-waste' fines material that accumulates overlying the concrete pads or in-situ soils, and dispose of (in an appropriate facility) or re-process as applicable. Periodically clean the concrete pads. Spray water for dust suppression when necessary. Maintain the roofed area and concrete pads. Re-use or sell off unwanted materials as soon as possible. Measures 2: Monitor and maintain optimum functioning (remove siltation and vegetation) of the earth 'clean' water diversion drain surrounding the upslope sections of the Yard Footprint, together with its adjacent soil berm (entire length on the downslope side); as well as the earth 'dirty' water intercept drain/berm surrounding the downslope sections of the Yard Footprint. The aforementioned will limit 'clean' water run-off from entering the salvage yard, as well as intercept 'dirty' water run-off derived from the salvage yard respectively.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Clear up spillages as per the emergency response plan. **Measure 2:** Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
Alloys Plant Sewage Plant	0.28 *ha*	Soil Contamination	**Measure 1:** Monitor levels of 'dirty' water seepage from the drying beds into the underlying/surrounding soils, and maintain the existing features. The dried up sewage sludge material must be scraped up periodically and utilised as a 'topsoil' fertiliser in Opencast areas that are being rehabilitated on an ongoing basis during the Operational and Closure phases.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Maintain and operate sludge drying beds according to sewerage plant maintenance and operational plan	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Monitor discharge water quality as per surface water monitoring plan. **Measure 2:** Maintain sewerage plant as per operational plan.	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Monitor discharge water quality as per surface water monitoring plan. **Measure 2:** Maintain sewerage plant as per operational plan.	Ecological Reserve and WUL	Operational Phase
OB Plant Fines in Open Pit (Slurry)	Open Pit Area 53.11 *ha*	Groundwater Quality	**Measure 1:** Characterize and classify fine waste. **Measure 2:** Monitor groundwater within the rehabilitated opencast pit, as well as beyond pit perimeter as per groundwater monitoring plan	Groundwater Quality Reserve and WUL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
OB Plant Fines in Open Pit (Slurry)	Open Pit Area 53.11 *ha*	Groundwater Quality	**Measure 1:** Characterize and classify coarse waste. **Measure 2:** Monitor groundwater within the rehabilitated opencast pit, as well as beyond pit perimeter as per groundwater monitoring plan	Groundwater Quality Reserve and WUL	Operational Phase
OB Plant Coarse Waste in Open Pit (Trucks)	Open Pit Area 53.11 *ha*	Air Quality Dust Fallout	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
Plant Drinking Water Dam	1.05 *ha*	No Significant Environmental Impacts anticipated during the Operational Phase			
Plant Drinking Water Treatment Plant	0.06 *ha*	No Significant Environmental Impacts anticipated during the Operational Phase			
Plant Process Water Dam and Silt Traps	3.63 *ha*	Refer to New Proposed Activities in the Section below			
Ore Beneficiation (OB) Plant Return Water Dam (RWD)	1.73 *ha*	Refer to New Proposed Activities in the Section below			
Chrome Recovery Plant (CRP) Process Water Dam	0.57 *ha*	Refer to New Proposed Activities in the Section below			
Alloys Plant Storm Water Management Berms and Canals	To be Upgraded	Refer to New Proposed Activities in the Section below			
Plant Storm Water Pollution Control Dam (PCD)	1.92 *ha*	Refer to New Proposed Activities in the Section below			
Emergency Dam (Expansion of the Storm Water Process Water Dam)	1.62 *ha*	Refer to New Proposed Activities in the Section below			
Abstraction Boreholes	Three Abstraction Boreholes	Groundwater Quantity	**Measure 1:** Only abstract the authorised volume of groundwater from each of the 3 authorised abstraction boreholes. **Measure 2:** Optimise the abstraction of groundwater from each of the 3 boreholes so that the daily abstraction volumes remain consistent and do not fluctuate.	Groundwater Quantity Reserve and WUL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Abstraction Boreholes	Three Abstraction Boreholes	Groundwater Quality	**Measure 1:** Only abstract the authorised volume of groundwater from each of the 3 authorised abstraction boreholes. **Measure 2:** Optimise the abstraction of groundwater from each of the 3 boreholes so that the daily abstraction volumes remain consistent and do not fluctuate.	Groundwater Quality Reserve and WUL	Operational Phase
Groundwater Treatment Plant	0.17 *ha*	Soil Contamination	**Measure 1:** Monitor, repair leaks, and clean up accidental spillages.	Chamber of Mines Guidelines	Operational Phase
		Surface Water Quantity	**Measure 1:** Minimize interception volumes through effective design as per water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Provision of sufficient capacity for storage of untreated groundwater	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Operate the pond operational and storage levels as per the water management plan. **Measure 2:** Clear up spillages as per the emergency response plan	Ecological Reserve and WUL	Operational Phase
Alloys Smelting Plant Air Quality Control Systems		Air Quality Particulate Matter	**Measure 1:** Maintain air quality abatement systems as per air quality management plan	AEL	Operational Phase
NEW PROPOSED ACTIVITIES					
New Process Water and Storm Water Canal System including Silt Traps	Total length of canal system exceeds 1000 *m* in length and exceeds the peak throughput of 120 *l/s*	Soil Contamination	**Measures 1:** Monitor and maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water. Promote water flow in the canals/drains in order to limit seepage below those that may be poorly sealed. Dredged material from the canals/drains must either be disposed of in the TSF (high pollution potential) or re-processed (plant), but not dumped on the canal/drain walls or in surrounding areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Minimize infiltration through storage control as per the water management plan. **Measure 2:** Monitor groundwater quality as per the groundwater monitoring plan.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Morula Pollution Control Dam (PCD)	0.60 *ha* (25 000 m^3)	Soil Contamination	**Measures 1:** Monitor seepage from the dams and maintain these features. Monitor and maintain optimum functioning (remove siltation and vegetation) of the earth 'dirty' water intercept drain downslope of each dam, together with its adjacent soil berm (entire length on the downslope side). **Measure 2:** Dredged material from the dams and drains must either be disposed of in the TSF (high pollution potential) or re-processed (plant), but not dumped on the dam/drain walls or in surrounding areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Responsible engineer to inspect and record the status / integrity of the dam. **Measure 2:** The water level in the dam is to be operated below the calculated Maximum Operating Level (MOL) at all times. **Measure 3:** Implement groundwater monitoring plan adjacent to the dam. **Measure 4:** Monitor groundwater resource quality and quantity (water levels) at dedicated boreholes adjacent to the dam. **Measure 5:** Any adverse trends in the groundwater quality recorded from the dedicated groundwater monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
New Storm Water Pollution Control Dam (PCD) No. 1	2.30 *ha* (73 400 m^3)	Soil Contamination	**Measures 1:** Monitor seepage from the dams and maintain these features. Monitor and maintain optimum functioning (remove siltation and vegetation) of the earth 'dirty' water intercept drain downslope of each dam, together with its adjacent soil berm (entire length on the downslope side). **Measure 2:** Dredged material from the dams and drains must either be disposed of in the TSF (high pollution potential) or re-processed (plant), but not dumped on the dam/drain walls or in surrounding areas.	Chamber of Mines Guidelines	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Storm Water Pollution Control Dam (PCD) No. 1	2.30 *ha* (73 400 m^3)	Groundwater Quality	**Measure 1:** Responsible engineer to inspect and record the status / integrity of the dam. **Measure 2:** The water level in the dam is to be operated below the calculated Maximum Operating Level (MOL) at all times. **Measure 3:** Implement groundwater monitoring plan adjacent to the dam. **Measure 4:** Monitor groundwater resource quality and quantity (water levels) at dedicated boreholes adjacent to the dam. **Measure 5:** Any adverse trends in the groundwater quality recorded from the dedicated groundwater monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
New Storm Water Pollution Control Dam (PCD) No. 2	2.20 *ha* (65 600 m^3)	Soil Contamination	**Measures 1:** Monitor seepage from the dams and maintain these features. Monitor and maintain optimum functioning (remove siltation and vegetation) of the earth 'dirty' water intercept drain downslope of each dam, together with its adjacent soil berm (entire length on the downslope side). **Measure 2:** Dredged material from the dams and drains must either be disposed of in the TSF (high pollution potential) or re-processed (plant), but not dumped on the dam/drain walls or in surrounding areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Responsible engineer to inspect and record the status / integrity of the dam. **Measure 2:** The water level in the dam is to be operated below the calculated Maximum Operating Level (MOL) at all times. **Measure 3:** Implement groundwater monitoring plan adjacent to the dam. **Measure 4:** Monitor groundwater resource quality and quantity (water levels) at dedicated boreholes adjacent to the dam. **Measure 5:** Any adverse trends in the groundwater quality recorded from the dedicated groundwater monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Storm Water Pollution Control Dam (PCD) No. 2	2.20 *ha* (65 600 m^3)	Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
New Storm Water Pollution Control Dam (PCD) No. 3	0.60 *ha* (23 020 m^3)	Soil Contamination	**Measures 1:** Monitor seepage from the dams and maintain these features. Monitor and maintain optimum functioning (remove siltation and vegetation) of the earth 'dirty' water intercept drain downslope of each dam, together with its adjacent soil berm (entire length on the downslope side). **Measure 2:** Dredged material from the dams and drains must either be disposed of in the TSF (high pollution potential) or re-processed (plant), but not dumped on the dam/drain walls or in surrounding areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Responsible engineer to inspect and record the status / integrity of the dam. **Measure 2:** The water level in the dam is to be operated below the calculated Maximum Operating Level (MOL) at all times. **Measure 3:** Implement groundwater monitoring plan adjacent to the dam. **Measure 4:** Monitor groundwater resource quality and quantity (water levels) at dedicated boreholes adjacent to the dam. **Measure 5:** Any adverse trends in the groundwater quality recorded from the dedicated groundwater monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
New Storm Water Pollution Control Dam (PCD) No. 4	0.05 *ha* (275 m^3)	Soil Contamination	**Measures 1:** Monitor seepage from the dams and maintain these features. Monitor and maintain optimum functioning (remove siltation and vegetation) of the earth 'dirty' water intercept drain downslope of each dam, together with its adjacent soil berm (entire length on the downslope side). **Measure 2:** Dredged material from the dams and drains must either be disposed of in the TSF (high pollution potential) or re-processed (plant), but not dumped on the dam/drain walls or in surrounding areas.	Chamber of Mines Guidelines	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Storm Water Pollution Control Dam (PCD) No. 4	0.05 *ha* (275 m^3)	Groundwater Quality	**Measure 1:** Responsible engineer to inspect and record the status / integrity of the dam. **Measure 2:** The water level in the dam is to be operated below the calculated Maximum Operating Level (MOL) at all times. **Measure 3:** Implement groundwater monitoring plan adjacent to the dam. **Measure 4:** Monitor groundwater resource quality and quantity (water levels) at dedicated boreholes adjacent to the dam. **Measure 5:** Any adverse trends in the groundwater quality recorded from the dedicated groundwater monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
New Ore Beneficiation (OB) Plant Process Water Dam	1.82 *ha* (45 300 m^3)	Soil Contamination	**Measures 1:** Monitor seepage from the dams and maintain these features. Monitor and maintain optimum functioning (remove siltation and vegetation) of the earth 'dirty' water intercept drain downslope of each dam, together with its adjacent soil berm (entire length on the downslope side). **Measure 2:** Dredged material from the dams and drains must either be disposed of in the TSF (high pollution potential) or re-processed (plant), but not dumped on the dam/drain walls or in surrounding areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Responsible engineer to inspect and record the status / integrity of the dam. **Measure 2:** The water level in the dam is to be operated below the calculated Maximum Operating Level (MOL) at all times. **Measure 3:** Implement groundwater monitoring plan adjacent to the dam. **Measure 4:** Monitor groundwater resource quality and quantity (water levels) at dedicated boreholes adjacent to the dam. **Measure 5:** Any adverse trends in the groundwater quality recorded from the dedicated groundwater monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Ore Beneficiation (OB) Plant Process Water Dam	1.82 *ha* (45 300 m^3)	Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
New Plant Process Water Dam	3.35 *ha* (76 000 m^3)	Soil Contamination	**Measures 1:** Monitor seepage from the dams and maintain these features. Monitor and maintain optimum functioning (remove siltation and vegetation) of the earth 'dirty' water intercept drain downslope of each dam, together with its adjacent soil berm (entire length on the downslope side). **Measure 2:** Dredged material from the dams and drains must either be disposed of in the TSF (high pollution potential) or re-processed (plant), but not dumped on the dam/drain walls or in surrounding areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Responsible engineer to inspect and record the status / integrity of the dam. **Measure 2:** The water level in the dam is to be operated below the calculated Maximum Operating Level (MOL) at all times. **Measure 3:** Implement groundwater monitoring plan adjacent to the dam. **Measure 4:** Monitor groundwater resource quality and quantity (water levels) at dedicated boreholes adjacent to the dam. **Measure 5:** Any adverse trends in the groundwater quality recorded from the dedicated groundwater monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
New Chrome Recovery Plant (CRP) Process Water Dam	0.27 *ha* (9000 m^3)	Soil Contamination	**Measures 1:** Monitor seepage from the dams and maintain these features. Monitor and maintain optimum functioning (remove siltation and vegetation) of the earth 'dirty' water intercept drain downslope of each dam, together with its adjacent soil berm (entire length on the downslope side). **Measure 2:** Dredged material from the dams and drains must either be disposed of in the TSF (high pollution potential) or re-processed (plant), but not dumped on the dam/drain walls or in surrounding areas.	Chamber of Mines Guidelines	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Chrome Recovery Plant (CRP) Process Water Dam	0.27 *ha* (9000 m^3)	Groundwater Quality	**Measure 1:** Responsible engineer to inspect and record the status / integrity of the dam. **Measure 2:** The water level in the dam is to be operated below the calculated Maximum Operating Level (MOL) at all times. **Measure 3:** Implement groundwater monitoring plan adjacent to the dam. **Measure 4:** Monitor groundwater resource quality and quantity (water levels) at dedicated boreholes adjacent to the dam. **Measure 5:** Any adverse trends in the groundwater quality recorded from the dedicated groundwater monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
New Salvage Yard	0.65 *ha*	Soil Contamination	**Measure 1:** Monitor and Clean up spillages of used hazardous materials/chemicals or oils. Periodically Scrape off the overburden 'waste' or non-waste' fines material that accumulates overlying the concrete pads or in-situ soils, and dispose of (in an appropriate facility) or re-process as applicable. Periodically clean the concrete pads. Spray water for dust suppression when necessary. Maintain the roofed area and concrete pads. Re-use or sell off unwanted materials as soon as possible. Measures 2: Monitor and maintain optimum functioning (remove siltation and vegetation) of the earth 'clean' water diversion drain surrounding the upslope sections of the Yard Footprint, together with its adjacent soil berm (entire length on the downslope side); as well as the earth 'dirty' water intercept drain/berm surrounding the downslope sections of the Yard Footprint. The aforementioned will limit 'clean' water run-off from entering the salvage yard, as well as intercept 'dirty' water run-off derived from the salvage yard respectively.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Clear up spillages as per the emergency response plan. **Measure 2:** Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Optimize the interception of surface water as per the water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Intercept and contain dirty water as per the water management plan	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Salvage Yard	0.65 *ha*	Aquatic Ecosystems Bio-Diversity	**Measure 1:** Intercept and contain dirty water as per the water management plan	Ecological Reserve and WUL	Operational Phase
New Tap Hole Fume Extraction System	-	Air Quality Particulate Matter and Gaseous Emissions	**Measure 1:** Maintain air quality abatement systems as per air quality management plan	AEL	Operational Phase
New Finished Product Plant Dust Abatement System	-	Air Quality Particulate Matter and Gaseous Emissions'	**Measure 1:** Maintain air quality abatement systems as per air quality management plan	AEL	Operational Phase
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Slag Sand at the Fine Slag Processing Plant	3.24 *ha*	Topography Morphology	**Measure 1:** Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measures 1:** Firstly, scrape up and remove the generally thick historically accumulated slag layer that is spread out over extensive areas; Secondly, scrape up and remove daily generated slag on a continual ongoing basis (especially in spring before the rainy season); Sell or re-process scraped up slag as applicable; Tarpaulin cover over haul truck bin to limit dust. Institute all possible measures (e.g. secondary drains, and berms) to encourage the run-off of 'dirty' water and rain water into drains, rather than allowing trapped water to infiltrate into the buried in-situ soils (underlying the area) and water-tables; Spray water for dust suppression. **Measures 2:** Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from entering these areas.	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Re-work the current arising slag stockpiles as quickly as possible, in order to reduce the residence time of the slag material at the surface. **Measure 2:** Monitor groundwater resource quality at dedicated weathered zone monitoring boreholes adjacent to the current arising slag stockpiles. **Measure 3:** Any adverse trends in the groundwater quality recorded from the dedicated groundwater monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Minimize interception volumes through effective design as per water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Provide silt traps to improve water quality in recovery sumps	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Clear up spillages as per the emergency response plan	Ecological Reserve and WUL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Slag Sand at the Fine Slag Processing Plant	3.24 *ha*	Air Quality Fugitive Dust	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Coarse Slag at the Chrome Recovery Plant (CRP)	11.47 *ha*	Topography Morphology	**Measure 1:** Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measure 1:** Firstly, scrape up and remove the generally thick historically accumulated slag layer that is spread out over extensive areas; Secondly, scrape up and remove daily generated slag on a continual ongoing basis (especially in spring before the rainy season); Sell or re-process scraped up slag as applicable; Tarpaulin cover over haul truck bin to limit dust. Institute all possible measures (e.g. secondary drains, and berms) to encourage the run-off of 'dirty' water and rain water into drains, rather than allowing trapped water to infiltrate into the buried in-situ soils (underlying the area) and water-tables; Spray water for dust suppression. **Measures 2:** Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from entering these areas.	Chamber of Mines Guidelines	Operational Phase
		Soil Horizon	**Measure 1:** Avoid unnecessary disturbance of underlying soils	Chamber of Mines Guidelines	Operational Phase
		Groundwater Quality	**Measure 1:** Re-work the current arising slag stockpiles as quickly as possible, in order to reduce the residence time of the slag material at the surface. **Measure 2:** Monitor groundwater resource quality at dedicated weathered zone monitoring boreholes adjacent to the current arising slag stockpiles. **Measure 3:** Any adverse trends in the groundwater quality recorded from the dedicated groundwater monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and WUL	Operational Phase
		Surface Water Quantity	**Measure 1:** Minimize interception volumes through effective design as per water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Surface Water Quality	**Measure 1:** Provide silt traps to improve water quality in recovery sumps	Surface Water Quality Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Clear up spillages as per the emergency response plan	Ecological Reserve and WUL	Operational Phase

Operational Phase Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Coarse Slag at the Chrome Recovery Plant (CRP)	11.47 *ha*	Air Quality Fugitive Dust	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase
Re-Use of Mine Waste Rock at the Mine Waste Rock Stockpile	6.08 *ha*	Topography Morphology	**Measure 1:** Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Chamber of Mines Guidelines	Operational Phase
		Soil Contamination	**Measure 1:** Scrape up and process the historical accumulated layer that is spread out in these sites before commencing with new material; Institute all possible measures (e.g. secondary drains, and berms) to encourage the run-off of 'dirty' water and rain water into drains, rather than allowing trapped water to infiltrate into the buried in-situ soils (underlying some of these areas) and water-tables; Spray water for dust suppression. Tarpaulin cover over haul truck bins to limit dust. **Measures 2:** Maintain optimum functioning (remove siltation and vegetation) of the 'dirty' water run-off intercept drains/berms to the PCD's, as well as the 'clean' water diversion drains/berms. The aforementioned will limit 'dirty' and 'clean' run-off water derived from elsewhere from entering these areas.	Chamber of Mines Guidelines	Operational Phase
		Surface Water Quantity	**Measure 1:** Minimize interception volumes through effective design as per water management plan	Surface Water Quantity Reserve and WUL	Operational Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Optimize the interception of surface water as per the water management plan	Ecological Reserve and WUL	Operational Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Clear up spillages as per the emergency response plan	Ecological Reserve and WUL	Operational Phase
		Air Quality Fugitive Dust	**Measure 1:** Dust suppression as per the air quality management plan	AEL	Operational Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL	Operational Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust Suppression as per the air quality management plan	AEL	Operational Phase

Table 5.1(c): Decommissioning and Closure Phase Impact Management Measures

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
CURRENT ACTIVITIES AND INFRASTRUCTURE AND PROCESSES					
Hernic Operations	386.45 *ha*	Socio Cultural Geographic Processes	**Measure 1:** Improve communication and attend to local grievances as per the Social and Labour Plan. **Measure 2:** Improve communication on environmental matters as per Environmental Awareness Plan and attend to reporting of environmental monitoring as per Environmental Monitoring Plan.	Social and Labour Plan and Environmental Awareness Plan	Decommissioning Phase
		Heritage, Archaeological and Palaeontological	**Measure 1:** Clearly demarcate and fence graveyards sites. **Measure 2:** Communicate localities to all decommissioning and closure contractors.	SAHRA	Decommissioning Phase
		Socio Economic Economic Efficiency	**Measure 1:** Implement effective retrenchment packages and support local suppliers in transitioning to other industries	Social and Labour Plan	Decommissioning Phase
		Socio Economic Economic Equity	**Measure 1:** Plan projects with exit strategy in collaboration with beneficiaries	Social and Labour Plan	Decommissioning Phase
		Topography Morphology	**Measure 1:** Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Hernic Operations	386.45 *ha*	Surface Water Quality	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Minimize gaseous emissions through vehicle maintenance plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure, buildings e.g. pelletizing plant and furnaces etc. as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Access Roads	It is proposed that the access roads remain and not be decommissioned as they will be beneficial in supporting the post closure land use				
Railway Lines	It is proposed that the railway lines remain and not be decommissioned as they will be beneficial in supporting the post closure land use				
Security Fence and Access	It is proposed that the security fence and access remain and not be decommissioned as it will be beneficial in supporting the post closure land use				
Water Supply	It is proposed that the water supply infrastructure remain and not be decommissioned as it will be beneficial in supporting the post closure land use				
Power Supply	It is proposed that the power supply infrastructure remain and not be decommissioned as it will be beneficial in supporting the post closure land use				
Gas Supply	No Significant Impact anticipated during the Decommissioning and Closure Phase				

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Fuel Supply	Three 23 000 *l* Diesel tanks	Soil Horizon	**Measure 1:** Re-grade (re-slope) to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Remove loose rocks and stony material. **Measure 2:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling'.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction. 'Topsoil' the removed facilities footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Scrape up and remove the thick (> 40cm - > 100 cm) historical 'waste' or 'non-waste' layer that is spread throughout some areas (surrounding buildings and on dirt roads), exposing the underlying in-situ soils. Demolish and remove facilities from the site. Remove imported concrete/stone/rock foundations/platforms/surfaces from the site. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/ drains/ berms, that may remain in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measures 1:** Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') problematic areas, as well as those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Fuel Supply	Three 23 000 *l* Diesel tanks	Land Capability	**Measure 1:** The stated planned End Land Capability is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Responsible personnel to inspect the Diesel Fuel Tanks and Collection Sumps for evidence of potential spillages / leaks. **Measure 2:** Any leaks and spillages are to be reported to the relevant personnel, after which the area is to be cleaned up accordingly.	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Fuel Supply	Three 23 000 *l* Diesel tanks	Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Internal Roads	Tar and Gravel	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Re-grade (re-slope) to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Remove loose rocks and stony material. **Measure 2:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling'.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction. 'Topsoil' the removed road footprints with 'topsoil' sourced from the adjacent (to the roads) 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Minimal 'topsoiling' of excavated foundations/holes/erosion in the removed building areas. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Internal Roads	Tar and Gravel	Soil Contamination	**Measure 1:** Scrape up and remove the thin (10-40cm) historical 'waste' or 'non-waste' layer that is spread throughout some areas (surrounding buildings, and on dirt roads), exposing the underlying in-situ soils. Demolish and remove facilities/features from the site. Remove imported concrete/stone/rock foundations/platforms/surfaces from the site. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/drains/berms, that may remain in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** Functional surface cover (basal, canopy) to be achieved naturally. Mature Seeded 'Grass' must be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') only those problematic areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measures 1:** The stated planned End Land Capability is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** No process water should be used for dust suppression. Only groundwater abstracted from the underground workings or groundwater abstracted from the groundwater remediation abstraction boreholes (once treated at the treatment plant) should be used for dust suppression. **Measure 2:** Monitor & report the quality (quarterly) and quantity (monthly) of water used for dust suppression. **Measure 3:** Continue monitoring the groundwater resource quality.	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1**: Remove all dirty waste cover layers & dispose in open cast. **Measure 2:** Ripping to minimum 150mm depth of all hard surfaces and discing of abandoned surfaces. **Measure 3:** Monitor surface runoff free draining and runoff quality.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1**: Remove all dirty waste cover layers & dispose in open cast. **Measure 2:** Ripping to minimum 150mm depth of all hard surfaces and discing of abandoned surfaces. **Measure 3:** Monitor surface runoff free draining and runoff quality.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Internal Roads	Tar and Gravel	Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Administration Office Complexes	It is proposed that the administration office complexes remain and not be decommissioned as they will be beneficial in supporting the post closure land use				

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Morula Mining Shaft Complex	88.41 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Re-grade to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Remove loose rocks and stony material. Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. Restore Soil Distribution to some measure by the process of 'topsoiling'. Avoid unnecessary disturbance of any underlying/surrounding in-situ soils that may already be present at the 'topsoil' stockpile sites. The previously established slope of the stockpile will have been altered, while the vegetative cover will have been removed due to the removal of 'topsoil' material for rehabilitation 'topsoiling' purposes elsewhere. Re-establishing reduced slopes (<= 6.4 degrees, 11.2 % percentage grade) and a high grass basal cover will limit soil erosion on the side-slopes of the material remaining in the stockpiles. The maintenance of the soil berm on the downslope boundaries of the stockpiles will intercept run-off/eroded soil derived from the stockpile, and thereby preventing siltation of the surrounds.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction. 'Topsoil' the removed road footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Minimal 'topsoiling' of excavated foundations/holes/erosion in the removed building areas. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3/4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) 'grass' cover. 'Topsoil' stockpiles should ideally not exceed a maximum depth of 1.5 – 2.5m, as greater depths can lead to anaerobic conditions developing in the pile; a reduction in soil fertility; the accelerated loss of the reproductive seed-bank; and compaction. Sample/Fertilize the Remaining 'topsoil' stockpile immediately after re-grading, and once every 3/4 years in spring in order to maintain soil fertility and vegetative basal cover, thereby limiting soil erosion and continually refreshing the reproductive seed-bank. Utilise live topsoil to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Morula Mining Shaft Complex	88.41 *ha*	Soil Contamination	**Measures 1: Dust:** Spray water for dust suppression. Tarpaulin cover over haul truck bins. Re-vegetate the entire 'rehabilitated' Opencast area in order to limit run-off and dust. **Run-off:** Maintain/establish the low vegetated 'topsoil' berm that exists around the outer boundary of the opencast footprint area, to intercept 'dirty' water rainfall run-off derived from the opencast area. In areas where a 'soft's berm presently exists instead of a 'topsoil' berm, the former must be removed and replaced with the latter. **Leaching:** Establish a freely draining final landscape, in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through potentially polluting contaminated 'waste' layers. **Order of Horizons:** Vertic A-horizon 'topsoil'; 'Soft's material; - Hard overburden rock and lime rich materials ('breaker' layer to the upward capillary movement of polluted/acid water; lime will neutralize Acid Rock/Mine Drainage to certain extent); and Potentially polluting residual 'wastes' (smelter related) / spoil material (mining related). The latter materials must never directly underlie the 'topsoil', since this may lead to pollution / ARD contaminating the overlying 'topsoil' layers by capillary action. **'Waste':** Do not dispose of potentially polluting 'waste' materials from the 'Infrastructure' area in the Opencast void. Only materials determined to be relatively potentially non-polluting (low pollution potential) may currently be disposed of in the void of the Opencast pit. Do not utilise 'dirty' 'topsoil' that was historically mixed with potentially polluting 'waste' materials. Rock dumps/stockpiles (Opencast area, Morula Mining), Mixed Materials stockpiles (Alloys Smelting Plant Facilities), and Waste (HMS and CRP waste, OB Plant fines waste, OB Plant coarse waste): Remove rock/mixed materials dumps/stockpiles; and Scrape up and remove the thick (> 40cm - > 100 cm) historical underlying layer that is spread throughout these processing and stockpiling areas, exposing the underlying in-situ soils. Transport and dispose of the remaining aforementioned materials in the void of the Opencast pit provided that they are potentially non-polluting. The same applies to the HMS and CRP waste, OB Plant fines waste, and OB Plant coarse waste materials/areas. Re-grade, 'topsoil', sample, fertilise, and re-vegetate the footprints of the aforementioned areas in the various Infrastructure areas. Wash residual 'wastes' from elsewhere off the machinery before utilising the machinery for transportation of 'topsoil' or rehabilitation 'topsoiling' purposes. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/drains/berms, that may remain in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Morula Mining Shaft Complex	88.41 *ha*	Land Use	**Measure 1:** Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') problematic areas, as well as those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated End Land Capability for the rehabilitated HERNIC areas in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). The End Land Capability of the Grazing Capability class depth standard will easily be achieved by 'topsoiling' in the majority of the Opencast area. The End Land Capability of the limited steep to very steep sections of the Opencast area will remain Mining (i.e. Non-Grazing capability class), given that these slopes will consequently be non- or poorly- 'topsoiled'/vegetated. The End Land Capability in the three rehabilitated areas (last three Aspects in the list) currently meets the 'topsoiling' depth standard (50-60cm, 30-50cm, and 20-30cm respectively) required for the post-disturbance Grazing Capability class.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Clear surrounding surfaces of all ore or rock materials and dispose at opencast. **Measure 2:** Dismantle, demolish all build infrastructure & foundations to 1m below n.g.l. clearing surfaces and remove. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. **Measure 4:** Demolish storage dams with base foundations to 1m below n.g.l. clearing surfaces and remove. **Measure 5:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. **Measure 6:** Complete water treatment process. Empty treated water from Storage Dams and use for dust suppression and watering of vegetation	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Morula Mining Shaft Complex	88.41 *ha*	Surface Water Quality	**Measure 1:** Clear surrounding surfaces of all ore or rock materials and dispose at opencast. **Measure 2:** Dismantle, demolish all build infrastructure & foundations to 1m below n.g.l. clearing surfaces and remove. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. **Measure 4**: Demolish storage dams with base foundations to 1m below n.g.l. clearing surfaces and remove. **Measure 5:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. **Measure 6:** Complete water treatment process. Empty treated water from Storage Dams and use for dust suppression and watering of vegetation	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Morula Mining Shaft Complex	88.41 *ha*	Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Morula Mining Opencast Operation	67.58 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Topsoil' the entire re-graded opencast footprint. Vegetated 'topsoil' stockpile berms should already exist adjacent of the 'soft's berms. Utilise vertic 'topsoil' material for 'topsoiling' purposes given that this broad soil group occurs extensively; and furthermore in order to maintain soil/vegetative continuity with the surrounding areas. **Measure 2:** Fill the Opencast voids with the discarded rock/soft's that have remained on site in the Opencast footprint; as well as with potentially non-polluting materials from the Infrastructure/ processing/stockpiling areas. Establish a freely draining final landscape in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. Re-grade the opencast footprint to < 6.4 degrees/ 11.2 % percentage grade. Match surface level of undisturbed surrounds. Slope cannot practically be reduced to this extent for limited sections of the Opencast area, and these sections will not be able to be effectively 'topsoiled'/re-vegetated either. Such areas must be re-sloped to approximately 16.0 degrees, and thereafter re-vegetated using ecological restoration principles and phytoremediation. Surface rocks may be laid out along the contours in such areas, functioning to slow run-off, trap sediments, and thereby create suitable conditions/habitat for the germination of seeds. The recommended maximum gradient for material dumped on level to gently sloping terrain is at least 1v: 3h (18.4 degrees or 33.0 % percentage grade), the least erosion occurring if the slope angle reduces in the direction of the toe of the pediment (i.e. concave).	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Morula Mining Opencast Operation	67.58 *ha*	Soil Fertility	**Measure 1:** Utilize tracked vehicles for 'topsoil' handling during the dry season in order to minimise compaction. Do not spray water during the 'topsoiling' process as the raised moisture content will in this case lead to soil compaction. Rip final re-sloped surface to reduce compaction. Remove loose rocks and stony material. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Sewerage sludge derived from the sludge drying beds of the two sewage plants may be spread out in the Opencast area as 'compost'/mulch.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1: Dust:** Spray water for dust suppression. Haul trucks and vehicle traffic must obey speed limits. Tarpaulin cover over haul truck bins. Re-vegetate the entire 'rehabilitated' Opencast area in order to limit run-off and dust. **Run-off:** Maintain/establish the low vegetated 'topsoil' berm that exists around the outer boundary of the opencast (rock dumps/open void) footprint area, to intercept 'dirty' water rainfall run-off derived from the opencast area. In areas where a 'soft's (weathering rock and fines) berm presently exists instead of a 'topsoil' berm, the former must be removed and replaced with the latter. Re-vegetate the entire 'rehabilitated' Opencast area in order to limit run-off and dust. **Leaching:** Establish a freely draining positive final landscape in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. **Order of Horizons:** Vertic A-horizon 'topsoil'; 'Soft's material (may be accessed by plant roots); - Hard overburden rock and lime rich materials ('breaker' layer to the upward capillary movement of polluted/acid water; lime will neutralize Acid Rock/Mine Drainage to certain extent); and Potentially polluting residual historical 'wastes' (smelter related) / spoil material (mining related). The latter materials must never directly underlie the 'topsoil', since this may lead to pollution / ARD contaminating the overlying 'topsoil' layers by capillary action. **'Waste':** Do not dispose of potentially polluting 'waste' materials from the 'Infrastructure' area in the Opencast void, because such materials will impact the groundwater-table. Such materials must be disposed of in an appropriate facility (e.g. TSF or Slimes Dumps). Only materials determined to be relatively potentially non-polluting (low pollution potential) may currently be disposed of in the void of the Opencast pit.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Morula Mining Opencast Operation	67.58 *ha*		Do not utilise 'dirty' 'topsoil' that was historically mixed with potentially polluting 'waste' materials. Rock dumps/stockpiles (Opencast area, Morula Mining), Mixed Materials stockpiles (Alloys Smelting Plant Facilities), and Waste (HMS and CRP waste, OB Plant fines waste, OB Plant coarse waste): Remove rock/mixed materials dumps/stockpiles; and Scrape up and remove the (> 40cm - > 100 cm) historical underlying layer that is spread throughout these processing and stockpiling areas, exposing the underlying in-situ soils. Transport (haul truck) and dispose of the remaining aforementioned materials in the void of the Opencast pit provided that they are potentially non-polluting. The same applies to the HMS and CRP waste, OB Plant fines waste, and OB Plant coarse waste materials/areas. Re-grade, 'topsoil', sample, fertilise, and re-vegetate the footprints of the aforementioned areas in the various Infrastructure areas. Wash residual 'wastes' from elsewhere off the machinery before utilising the machinery for transportation of 'topsoil' or rehabilitation 'topsoiling' purposes. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/drains/berms, that may remain in perpetuity downslope of the Opencast area. The aforementioned will limit 'clean' and 'dirty' water run-off and seepage derived from elsewhere from entering the filled (buried) Opencast pit voids. Monitor leached contamination on an ongoing basis via interpolation of the data from the downslope boreholes. Excavate additional boreholes where deemed necessary, purify the pumped water accordingly, and release back to the environment.		
		Land Use	**Measure 1:** Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. No grazing or burning allowed until vegetation is well established in the post-closure phase. However, certain sections will remain Mining due to steep to very steep slopes that will consequently not be able to be effectively 'topsoiled'/re-vegetated either. Such areas must be re-sloped to approximately 16.0 degrees if possible, and thereafter re-vegetated using ecological restoration principles and phytoremediation. **Measure 2:** No grazing or burning allowed in such areas, either currently or in the future.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Morula Mining Opencast Operation	67.58 *ha*	Land Capability	**Measure 1:** The stated End Land Capability for the rehabilitated HERNIC areas in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). The End Land Capability of the Grazing Capability class depth standard will easily be achieved by 'topsoiling' in the majority of the Opencast area. The End Land Capability of the limited steep to very steep sections of the Opencast area will remain Mining (i.e. Non-Grazing capability class), given that these slopes will consequently be non- or poorly- 'topsoiled'/vegetated. The End Land Capability in the three rehabilitated areas (last three Aspects in the list) currently meets the 'topsoiling' depth standard (50-60cm, 30-50cm, and 20-30cm respectively) required for the post-disturbance Grazing Capability class.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Drill and construct groundwater monitoring boreholes within the rehabilitated opencast pits once backfilled with Waste Rock and shaped at the surface, to monitor the quality of the water in the rehabilitated pit. **Measure 2:** Monitor groundwater resource quality at dedicated weathered zone monitoring boreholes adjacent to the rehabilitated opencast pits. **Measure 3:** Any adverse trends in the groundwater quality recorded from the dedicated monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Dismantle, uninstall and remove all pipe systems. Demolish and remove concrete plinth up to 1m below n.g.l.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Dismantle, uninstall and remove all pipe systems. Demolish and remove concrete plinth up to 1m below n.g.l.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan.	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Morula Mining Opencast Operation	67.58 *ha*	Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated.	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Morula Mining Underground Operation	To 450 *m* to 500 *m* below surface	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Subsided Areas: A sufficient safety factor (leaving un-mined pillars) was built into the underground design. Thus surface subsidence is unlikely. Measures for subsided areas include the following: Re-grade (re-slope) to a slope of <= 6.4 degrees (11.2 % percentage grade) in order to re-establish a free draining final topography. The ideal aim is to achieve the pre-subsidence slope grade, slope shape (contours), drainage density and drainage pattern. Limited 'topsoiling' (vertic 'topsoil') and re-vegetation (locally indigenous grasses) may be necessary in order to promote the free flow of rainfall run-off and limit erosion. Limited 'topsoil' stockpiles should have been held in reserve for use in repair work during the operational, closure and post-closure	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Morula Mining Underground Operation	To 450 *m* to 500 *m* below surface		phases. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/drains/berms, that may remain in perpetuity. The aforementioned will limit 'clean' and 'dirty' water run-off and seepage derived from elsewhere from entering the subsided areas. Decline Shafts: Plug the surface of the shaft with concrete; re-grade (re-slope) the surface where necessary; establish a freely draining positive final landscape, rip compacted surfaces only; pick up loose rocks; 'topsoiling'; soil sampling; ameliorate/fertilise soils; mow/spread mature 'seeded' grass; thereafter re-vegetation where necessary.		
		Soil Fertility	**Measure 1:** Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** Subsided Areas: Re-grading and limited 'topsoiling' in order to re-establish a free draining final topography, as well as re-vegetation of 'topsoiled' or re-graded areas in order to limit soil erosion and re-establish the pre-disturbance land use. No grazing or burning allowed until re-vegetated areas are well established. Decline Shafts: The stated End Land Use for the rehabilitated HERNIC areas in general is Extensive Grazing. The aforementioned will be able to be attained in the Decline Shaft areas. **Measure 2:** No grazing or burning allowed until re-vegetated areas are well established.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** Subsided Areas: Re-grading and limited 'topsoiling' in order to re-establish a free draining final topography. Decline Shafts: The stated End Land Capability for the rehabilitated HERNIC areas in general is the Chamber of Mines Grazing Capability Class. Thus 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). The End Land Capability class will be achieved by 'topsoiling' appropriately.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Morula Mining Underground Operation	To 450 *m* to 500 *m* below surface	Surface Water Quality	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Morula Mining Accommodation	It is proposed that the accommodation complex remain and not be decommissioned as they will be beneficial in supporting the post closure land use.				
		Heritage, Archaeological and Palaeontological	**Measure 1:** Clearly demarcate and fence graveyards sites. **Measure 2:** Communicate localities to all decommissioning and closure contractors.	Closure Objective as per FRDCP	Decommissioning Phase
Mine Waste Rock Dump	5.89 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Topsoil' the entire re-graded opencast footprint. Vegetated 'topsoil' stockpile berms should already exist adjacent of the 'soft's berms. Alternatively source soil 'topsoil' from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for 'topsoiling' purposes given that this broad soil group occurs extensively; and furthermore in order to maintain soil/vegetative continuity with the surrounding areas. Fill the Opencast voids with the discarded rock/soft's that have remained on site in the Opencast footprint; as well as with potentially non-polluting materials from the Infrastructure/processing/stockpiling areas. Establish a freely draining positive final landscape in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. Re-grade (re-slope) the opencast footprint to < 6.4 degrees/ 11.2 % percentage grade (erosion slope calculated for vertic 'topsoil' material based on the soil erodibility nomograph) where possible. Match surface level of undisturbed surrounds. Slope cannot practically be reduced to this extent for limited sections of the Opencast area, and these sections will thus not be able to be effectively 'topsoiled'/re-vegetated either (given soil erosion on steep slopes). Such areas must be re-sloped to approximately 16.0 degrees if possible, and thereafter re-vegetated using ecological restoration principles and phytoremediation. Surface rocks may be laid out along the contours in such areas, the aforementioned functioning to slow run-off, trap sediments, and thereby create suitable conditions/habitat for the germination of seeds. The recommended maximum gradient for material dumped on level to gently sloping terrain (therefore also TSF's, and sections of the Opencast area) is at least 1v: 3h (18.4 degrees or 33.0 % percentage grade), the least erosion occurring if the slope angle reduces in the direction of the toe of the pediment (i.e. concave). One of the key findings of extensive surveys and experimental work carried out by the University of the Witwatersrand between 1996 and 2009 was as follows: grass persistence and erosion control were increased, and irrigation decreased, by TSF slope reduction to < 16.0 degrees.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Mine Waste Rock Dump	5.89 *ha*	Soil Fertility	**Measure 1:** Utilize tracked vehicles for 'topsoil' handling during the dry season in order to minimise compaction. Do not spray water during the 'topsoiling' process as the raised moisture content will in this case lead to soil compaction. Rip final re-sloped surface to reduce compaction. Remove loose rocks and stony material. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Sewerage sludge derived from the sludge drying beds of the two sewage plants may be spread out in the Opencast area as 'compost'/mulch.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1: Dust:** Spray water for dust suppression. Tarpaulin cover over haul truck bins. Re-vegetate the entire 'rehabilitated' Opencast area in order to limit run-off and dust. **Run-off:** Maintain/establish the low vegetated 'topsoil' berm that exists around the outer boundary of the opencast (rock dumps/open void) footprint area, to intercept 'dirty' water rainfall run-off derived from the opencast area. In areas where a 'soft's (weathering rock and fines) berm presently exists instead of a 'topsoil' berm, the former must be removed and replaced with the latter. **Leaching:** Establish a freely draining positive final landscape in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. **Order of Horizons:** Vertic A-horizon 'topsoil'; 'Soft's material; - Hard overburden rock and lime rich materials ('breaker' layer to the upward capillary movement of polluted/acid water; lime will neutralize Acid Rock/Mine Drainage to certain extent); and Potentially polluting residual historical 'wastes' (smelter related) / spoil material (mining related). The latter materials must never directly underlie the 'topsoil', since this may lead to pollution / ARD contaminating the overlying 'topsoil' layers by capillary action. **'Waste':** Do not dispose of potentially polluting 'waste' materials from the 'Infrastructure' area in the Opencast void, because such materials will impact the groundwater-table. Such materials must be disposed of in an appropriate facility (e.g. TSF or Slimes Dumps). Only materials determined to be relatively potentially non-polluting (low pollution potential) may currently be disposed of in the void of the Opencast pit. Do not utilise 'dirty' 'topsoil' that was historically mixed with potentially polluting 'waste' materials. Rock dumps/stockpiles (Opencast area, Morula Mining), Mixed Materials stockpiles (Alloys Smelting Plant Facilities), and Waste (HMS and CRP waste, OB Plant fines waste, OB Plant coarse waste):	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Mine Waste Rock Dump	5.89 *ha*		Remove rock/mixed materials dumps/stockpiles; and Scrape up and remove the (> 40cm - > 100 cm) historical underlying layer that is spread throughout these processing and stockpiling areas, exposing the underlying in-situ soils. Transport and dispose of the remaining aforementioned materials in the void of the Opencast pit provided that they are potentially non-polluting. The same applies to the HMS and CRP waste, OB Plant fines waste, and OB Plant coarse waste materials/areas. Re-grade, 'topsoil', sample, fertilise, and re-vegetate the footprints of the aforementioned areas in the various Infrastructure areas. Wash residual 'wastes' from elsewhere off the machinery before utilising the machinery for transportation of 'topsoil' or rehabilitation 'topsoiling' purposes. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/drains/berms, that may remain in perpetuity downslope of the Opencast area. The aforementioned will limit 'clean' and 'dirty' water run-off and seepage derived from elsewhere from entering the filled (buried) Opencast pit voids. Monitor leached contamination on an ongoing basis via interpolation of the data from the downslope boreholes. Excavate additional boreholes where deemed necessary, purify the pumped water accordingly, and release back to the environment.		
		Land Use	**Measure 1:** The stated End Land Use for the rehabilitated HERNIC areas in general is Extensive Grazing. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or burning allowed until vegetation is well established in the post-closure phase. However, certain sections will remain Mining due to steep to very steep slopes that will consequently not be able to be effectively 'topsoiled'/re-vegetated either. Such areas must be re-sloped to approximately 16.0 degrees if possible, and thereafter re-vegetated using ecological restoration principles and phytoremediation.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Mine Waste Rock Dump	5.89 *ha*	Land Capability	**Measure 1:** The stated End Land Capability for the rehabilitated HERNIC areas in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). The End Land Capability of the Grazing Capability class depth standard will easily be achieved by 'topsoiling' in the majority of the Opencast area. The End Land Capability of the limited steep to very steep sections of the Opencast area will remain Mining (i.e. Non-Grazing capability class), given that these slopes will consequently be non- or poorly- 'topsoiled'/vegetated. The End Land Capability in the three rehabilitated areas (last three Aspects in the list) currently meets the 'topsoiling' depth standard (50-60cm, 30-50cm, and 20-30cm respectively) required for the post-disturbance Grazing Capability class.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Complete crushing and selling of waste rock. **Measure 2:** Clear remainder of waste rock and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Complete crushing and selling of waste rock. **Measure 2:** Clear remainder of waste rock and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated.	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Mine Waste Rock Dump	5.89 *ha*	Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Mine Sewage Plant	0.18 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. Removed 'Dam Features'). **Measure 2:** Re-grade (re-slope) Removed 'Dam Features' footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 5.7 degrees / 10.0 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Permanent 'Dam Features': Soil Erosion may be reduced by reducing side-slopes to < 5.7 degrees / 10.0 % percentage grade where necessary.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Mine Sewage Plant	0.18 *ha*	Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded Removed 'Dam Features' with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for the topsoiling' exercise; given firstly that the material has natural sealing properties (important given the potentially polluting nature of the Removed 'Dam Features'), and secondly that this broad soil group occurs extensively. Removed and Permanent 'Dam Features': Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) locally indigenous 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measures 1:** De-water the 'Dam Features' by means of evaporation, and if necessary pumping and purification. Scrape up the sediments on the base/walls of the 'Dam Features', and dispose of in the TSF. Remove imported concrete/stone/rock walls and dispose of in the opencast pit if potentially non-polluting, or in the TSF if potentially polluting. Push the walls of the 'Dam Features' into the void of the dam, thereby achieving a relatively level surface that approximates the surrounding landscape. Spray water for dust suppression. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust. Construct a seal layer (compacted-'re-moulded' soil layer) directly overlying potentially highly-polluting rehabilitated features only. Furthermore, the base of the 'Dam Features' should also have been well sealed with an impermeable membrane and a compacted-'re-moulded' soil layer, during construction. Thus the infiltration of rainwater is not likely to be an issue. Finally 'topsoil' the Removed 'Dam Features'.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. Removed 'Dam Features': The End Land Use of the Removed 'Dam Features' may be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass'. However, should all of the contaminated soils/'wastes' have been effectively removed from the various sites, then the End Land Use of Extensive Grazing may be attained. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
			Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. Furthermore, probable side-slopes of > 5.7 degrees/ 10.0 % percentage grade will consequently be poorly- 'topsoiled'/re-vegetated.		
		Land Capability	**Measure 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Removed 'Dam Features': The End Land Capability of the Removed 'Dam Features' will be Grazing or Arable in terms of topsoiling depth; but may be downgraded to Industrial due to potential Soil Contamination. The End Land Capability of the Permanent 'Dam Features' side-slopes that remain in perpetuity will be Industrial (non-grazing capability class), due to potential Soil Contamination and probably side-slopes of > 5.7 degrees/ 10.0 % percentage grade that will consequently be poorly- or non-'topsoiled'/vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
Mine Sewage Plant	0.18 *ha*	Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Clear sludge from beds and demolish concrete beds. Dispose concrete at Open Cast. **Measure 2:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Clear sludge from beds and demolish concrete beds. Dispose concrete at Open Cast. **Measure 2:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Mine Sewage Plant	0.18 *ha*	Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Morula Mine Storm Water Berms and Canals	Refer to New Proposed Activities in the Section below (Table 9.1(b))				
Morula Dewatering Dam	1.05 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives are to restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features. **Measure 2:** The dewatering dam side-slopes will have ideally been re-graded (re-sloped) to < 5.7 degrees/ 10.0 % percentage grade due to the compacted-'remoulded' vertic seal that underlies the vertic 'topsoil' material.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Morula Dewatering Dam	1.05 *ha*	Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded slimes dams. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) locally indigenous 'grass' cover. Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** No 'wastes' require to be scraped up in these areas. Construct a seal layer (compacted-'re-moulded' soil layer) directly overlying potentially highly-polluting features that will remain in perpetuity only. Possibly a compacted-'re-moulded' vertic soil 'seal' layer.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. The End Land Use of the re-graded Slimes Dams that will remain in perpetuity will be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass'. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). The End Land Capability of the Slimes Dams that remain in perpetuity will be Industrial (non-grazing capability class), due to potential contamination.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Divert surface run-off from re-vegetated portion of dam into natural environment.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Divert surface run-off from re-vegetated portion of dam into natural environment.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Morula Dewatering Dam	1.05 *ha*	Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Alloys Smelting Plant General Infrastructure	4.8 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Alloys Smelting Plant General Infrastructure	4.8 *ha*	Soil Horizon	**Measure 1:** Re-grade (re-slope) to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds where possible. Establish a freely draining final landscape. Remove loose rocks and stony material. **Measure 2:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling'.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction. 'Topsoil' the removed road footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Minimal 'topsoiling' of excavated foundations/holes/erosion in the removed building areas. Utilise live topsoil to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Scrape up and remove the thin (10-40cm) historical 'waste' or 'non-waste' layer that is spread throughout some areas (surrounding buildings, and on dirt roads), exposing the underlying in-situ soils. Demolish and remove facilities/features from the site. Remove imported concrete/stone/rock foundations/platforms/surfaces from the site. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/drains/berms, that may remain in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** Functional surface cover (basal, canopy) to be achieved naturally. Mature Seeded 'Grass' must be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') only those problematic areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated planned End Land Capability is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Alloys Smelting Plant General Infrastructure	4.8 *ha*	Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Dismantle, Recover materials from plant infrastructure & buildings sell and or remove from site. **Measure 2:** Demolish and clear services, infrastructure and concrete paved surfaces and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient. **Measure 4:** Allow intercepted water from SW PCD 1A and 1B to evaporate. . Use water for dust suppression and vegetation to establish. Excess water to be pumped to TSF for evaporation. **Measure 5:** Remove SW PCD 1A & 1B once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and available clean material stockpiles. Level & grade surface and vegetate.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Dismantle, Recover materials from plant infrastructure & buildings sell and or remove from site. **Measure 2:** Demolish and clear services, infrastructure and concrete paved surfaces and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient. **Measure 4:** Allow intercepted water from SW PCD 1A and 1B to evaporate. . Use water for dust suppression and vegetation to establish. Excess water to be pumped to TSF for evaporation. **Measure 5:** Remove SW PCD 1A & 1B once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and available clean material stockpiles. Level & grade surface and vegetate.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Alloys Smelting Plant General Infrastructure	4.8 *ha*	Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Raw Materials Stockpile Area 1	5.15 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Re-grade to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. **Measure 2:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. Restore Soil Distribution to some measure by the process of 'topsoiling'.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Raw Materials Stockpile Area 1	5.15 *ha*	Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction. 'Topsoil' the removed facilities/ features/ dumps/ stockpiles footprints with 'topsoil' sourced from the adjacent 'topsoil' berms (where present), or alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Scrape up and remove the thick (> 40cm - > 100 cm) historical 'waste' or 'non-waste' layer that is spread throughout some areas (surrounding buildings, and on dirt roads), exposing the underlying in-situ soils. Demolish and remove dumps/ stockpiles from the site. Remove imported concrete/stone/rock foundations/platforms/surfaces from the site. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/ drains/ berms, that may remain in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The End Land Use of these areas may remain Industrial due to residual Soil Contamination. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') problematic areas, as well as those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated planned End Land Capability is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Raw Materials Stockpile Area 1	5.15 *ha*	Surface Water Quantity	**Measure 1:** Remove tanks and moveable transport infrastructure from area. **Measure 2:** Clear and remove all raw materials stockpiles. **Measure 3:** Demolish and clear services, infrastructure and concrete paved surfaces with plinths and dispose at Open Cast. **Measure 4:** Re-instate free draining surfaces by grading level unevenness, ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Remove tanks and moveable transport infrastructure from area. **Measure 2:** Clear and remove all raw materials stockpiles. **Measure 3:** Demolish and clear services, infrastructure and concrete paved surfaces with plinths and dispose at Open Cast. **Measure 4:** Re-instate free draining surfaces by grading level unevenness, ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Raw Materials Stockpile Area 1	5.15 *ha*	Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Raw Materials Stockpile Area 2	4.68 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Re-grade (re-slope) to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Remove loose rocks and stony material. **Measure 2:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling'.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction. 'Topsoil' the removed dumps/ stockpiles footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or source soil from the 'topsoil' stockpiles. Utilise live topsoil to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize the 'topsoil' after 'topsoiling' and once every 3/4 years thereafter. Do not fertilise the soils in areas displaying healthy existing 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Scrape up and remove the thick (> 40cm - > 100 cm) historical 'waste' or 'non-waste' layer that is spread throughout some areas (surrounding buildings, and on dirt roads), exposing the underlying in-situ soils. Demolish and remove dumps/ stockpiles from the site. Remove imported concrete/ stone/ rock foundations/ platforms/ surfaces from the site. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/ drains/ berms, that may remain in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Raw Materials Stockpile Area 2	4.68 *ha*	Land Use	**Measure 1:** The End Land Use of these areas may remain Industrial due to residual Soil Contamination. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') problematic areas, as well as those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated planned End Land Capability is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Remove tanks and moveable transport infrastructure from area. **Measure 2:** Clear and remove all raw materials stockpiles. **Measure 3:** Demolish and clear services, infrastructure and concrete paved surfaces with plinths and dispose at Open Cast. **Measure 4:** Re-instate free draining surfaces by grading level unevenness, ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Remove tanks and moveable transport infrastructure from area. **Measure 2:** Clear and remove all raw materials stockpiles. **Measure 3:** Demolish and clear services, infrastructure and concrete paved surfaces with plinths and dispose at Open Cast. **Measure 4:** Re-instate free draining surfaces by grading level unevenness, ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Raw Materials Stockpile Area 2	4.68 *ha*	Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Ore Beneficiation Plant – Crushing and Screening	5.57 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Topsoil' the entire re-graded (re-sloped) opencast footprint. Vegetated 'topsoil' stockpile berms should already exist adjacent (downslope) of the 'soft's berms. Alternatively source soil 'topsoil' from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for 'topsoiling' purposes given that this broad soil group occurs extensively; and furthermore in order to maintain soil/vegetative continuity with the surrounding areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Ore Beneficiation Plant – Crushing and Screening	5.57 *ha*		**Measures 2:** Fill the Opencast voids with the discarded rock/soft's that have remained on site in the Opencast footprint; as well as with potentially non-polluting materials from the Infrastructure/ processing/ stockpiling areas. Establish a freely draining positive final landscape without ridges/hollows, in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. Re-grade (re-slope) the opencast footprint to < 6.4 degrees/ 11.2 % percentage grade where possible. Match surface level of undisturbed surrounds. Slope cannot practically be reduced to this extent for limited sections of the Opencast area, and these sections will thus not be able to be effectively 'topsoiled'/re-vegetated either (given soil erosion on steep slopes). Such areas must be re-sloped to approximately 16.0 degrees if possible, and thereafter re-vegetated using ecological restoration principles and phytoremediation. Surface rocks may be laid out along the contours in such areas, the aforementioned functioning to slow run-off, trap sediments, and thereby create suitable conditions/habitat for the germination of seeds. The recommended maximum gradient (Chamber of Mines) for material dumped on level to gently sloping terrain (therefore also TSF's, and sections of the Opencast area) is at least 1v: 3h (18.4 degrees or 33.0 % percentage grade), the least erosion occurring if the slope angle reduces in the direction of the toe of the pediment (i.e. concave). One of the key findings of extensive surveys and experimental work carried out by the University of the Witwatersrand between 1996 and 2009 was as follows: grass persistence and erosion control were increased, and irrigation decreased, by TSF slope reduction to < 16.0 degrees.		
		Soil Fertility	**Measure 1:** Utilize tracked vehicles for 'topsoil' handling during the dry season in order to minimise compaction. Do not spray water during the 'topsoiling' process as the raised moisture content will in this case lead to soil compaction. Rip final re-sloped surface to reduce compaction. Remove loose rocks and stony material. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Sewerage sludge derived from the sludge drying beds of the two sewage plants may be spread out in the Opencast area as 'compost'/mulch.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Ore Beneficiation Plant – Crushing and Screening	5.57 *ha*	Soil Contamination	**Measure 1: Dust:** Spray water for dust suppression. Tarpaulin cover over haul truck bins. Re-vegetate the entire 'rehabilitated' Opencast area in order to limit run-off and dust. **Run-off:** Maintain/establish the low vegetated 'topsoil' berm that exists around the outer boundary of the opencast (rock dumps/open void) footprint area, to intercept 'dirty' water rainfall run-off derived from the opencast area. In areas where a 'soft's (weathering rock and fines) berm presently exists instead of a 'topsoil' berm, the former must be removed and replaced with the latter. **Leaching:** Establish a freely draining final landscape in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. **Order of Horizons:** Vertic A-horizon 'topsoil'; 'Soft's material; - Hard overburden rock and lime rich materials ('breaker' layer to the upward capillary movement of polluted/acid water; lime will neutralize Acid Rock/Mine Drainage to certain extent); and Potentially polluting residual historical 'wastes' (smelter related) / spoil material (mining related). The latter materials must never directly underlie the 'topsoil', since this may lead to pollution / ARD contaminating the overlying 'topsoil' layers by capillary action. **'Waste':** Do not dispose of potentially polluting 'waste' materials from the 'Infrastructure' area in the Opencast void. Such materials must be disposed of in an appropriate facility (e.g. TSF or Slimes Dumps). Only materials determined to be relatively potentially non-polluting (low pollution potential) may currently be disposed of in the void of the Opencast pit. Do not utilise 'dirty' 'topsoil' that was historically mixed with potentially polluting 'waste' materials. Rock dumps/stockpiles (Opencast area, Morula Mining), Mixed Materials stockpiles (Alloys Smelting Plant Facilities), and Waste (HMS and CRP waste, OB Plant fines waste, OB Plant coarse waste): Remove rock/mixed materials dumps/stockpiles; and Scrape up and remove the thick (> 40cm - > 100 cm) historical underlying layer that is spread throughout these processing and stockpiling areas, exposing the underlying in-situ soils. Transport and dispose of the remaining materials in the void of the Opencast pit provided that they are potentially non-polluting. The same applies to the HMS and CRP waste, OB Plant fines waste, and OB Plant coarse waste materials/areas. Re-grade, 'topsoil', sample, fertilise, and re-vegetate the footprints of the areas in the various Infrastructure areas. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/drains/berms, that may remain in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Ore Beneficiation Plant – Crushing and Screening	5.57 *ha*	Land Use	**Measure 1:** The stated End Land Use for the rehabilitated HERNIC areas in general is Extensive Grazing. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or burning allowed until vegetation is well established in the post-closure phase. However, certain sections will remain Mining due to steep to very steep slopes that will consequently not be able to be effectively 'topsoiled'/re-vegetated either. Such areas must be re-sloped to approximately 16.0 degrees if possible, and thereafter re-vegetated using ecological restoration principles and phytoremediation.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated End Land Capability for the rehabilitated HERNIC areas in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). The End Land Capability of the Grazing Capability class depth standard will easily be achieved by 'topsoiling' in the majority of the Opencast area. The End Land Capability of the limited steep to very steep sections of the Opencast area will remain Mining (i.e. Non-Grazing capability class), given that these slopes will consequently be non- or poorly- 'topsoiled'/vegetated. The End Land Capability in the three rehabilitated areas (last three Aspects in the list) currently meets the 'topsoiling' depth standard (50-60cm, 30-50cm, and 20-30cm respectively) required for the post-disturbance Grazing Capability class.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Remove plant infrastructure, demolish services and concrete plinths & foundations to a depth of 1m below n.g.l. and dispose at Open Cast. **Measure 2:** Remove and clear all materials, waste and slag stockpiles and dispose to open cast. **Measure 3:** Re-instate free draining surfaces, backfilling local depressions and ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Ore Beneficiation Plant – Crushing and Screening	5.57 *ha*	Surface Water Quality	**Measure 1:** Remove plant infrastructure, demolish services and concrete plinths & foundations to a depth of 1m below n.g.l. and dispose at Open Cast. **Measure 2:** Remove and clear all materials, waste and slag stockpiles and dispose to open cast. **Measure 3:** Re-instate free draining surfaces, backfilling local depressions and ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises.	Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Ore Beneficiation Plant – Crushing and Screening	5.57 *ha*		**Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.		
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Ore Beneficiation Plant – Lumpy and Fines Section (HMS and Spiral Plants)	0.29 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Topsoil' the entire re-graded opencast footprint. Vegetated 'topsoil' stockpile berms should already exist adjacent of the 'soft's berms. Alternatively source soil 'topsoil' from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for 'topsoiling' purposes given that this broad soil group occurs extensively; and furthermore in order to maintain soil/vegetative continuity with the surrounding areas. **Measures 2:** Fill the Opencast voids with the discarded rock/soft's that have remained on site in the Opencast footprint; as well as with potentially non-polluting materials from the Infrastructure/ processing/ stockpiling areas. Establish a freely draining final landscape, in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. Re-grade the opencast footprint to < 6.4 degrees/ 11.2 % percentage grade. Match surface level of undisturbed surrounds. Slope cannot practically be reduced to this extent for limited sections of the Opencast area, and these sections will thus not be able to be effectively 'topsoiled'/re-vegetated either (given soil erosion on steep slopes). Such areas must be re-sloped to approximately 16.0 degrees if possible, and thereafter re-vegetated using ecological restoration principles and phytoremediation. Surface rocks may be laid out along the contours in such areas, the aforementioned functioning to slow run-off, trap sediments, and thereby create suitable conditions/habitat for the germination of seeds. The recommended maximum gradient for material dumped on level to gently sloping terrain is at least 1v: 3h (18.4 degrees or 33.0 % percentage grade), the least erosion occurring if the slope angle reduces in the direction of the toe of the pediment (i.e. concave).	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Ore Beneficiation Plant – Lumpy and Fines Section (HMS and Spiral Plants)	0.29 *ha*	Soil Fertility	**Measure 1:** Utilize tracked vehicles for 'topsoil' handling during the dry season in order to minimise compaction. Do not spray water during the 'topsoiling' process as the raised moisture content will in this case lead to soil compaction. Rip final re-sloped surface to reduce compaction. Remove loose rocks and stony material. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Sewerage sludge derived from the sludge drying beds of the two sewage plants may be spread out in the Opencast area as 'compost'/mulch.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1: Dust:** Spray water for dust suppression. Tarpaulin cover over haul truck bins. Re-vegetate the entire 'rehabilitated' Opencast area in order to limit run-off and dust. **Run-off:** Maintain/establish the low vegetated 'topsoil' berm that exists around the outer boundary of the opencast (rock dumps/open void) footprint area, to intercept 'dirty' water rainfall run-off derived from the opencast area. In areas where a 'soft's (weathering rock and fines) berm presently exists instead of a 'topsoil' berm, the former must be removed and replaced with the latter. **Leaching:** Establish a freely draining final landscape, in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. **Order of Horizons:** Vertic A-horizon 'topsoil'; 'Soft's material; - Hard overburden rock and lime rich materials ('breaker' layer to the upward capillary movement of polluted/acid water; lime will neutralize Acid Rock/Mine Drainage to certain extent); and Potentially polluting residual historical 'wastes' (smelter related) / spoil material (mining related). The latter materials must never directly underlie the 'topsoil', since this may lead to pollution / ARD contaminating the overlying 'topsoil' layers by capillary action. **'Waste':** Do not dispose of potentially polluting 'waste' materials from the 'Infrastructure' area in the Opencast void, because such materials will impact the groundwater-table. Such materials must be disposed of in an appropriate facility (e.g. TSF or Slimes Dumps). Only materials determined to be relatively potentially non-polluting (low pollution potential) may currently be disposed of in the void of the Opencast pit. Do not utilise 'dirty' 'topsoil' that was historically mixed with potentially polluting 'waste' materials. Rock dumps/stockpiles (Opencast area, Morula Mining), Mixed Materials stockpiles (Alloys Smelting Plant Facilities), and Waste (HMS and CRP waste, OB Plant fines waste, OB Plant coarse waste).	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Ore Beneficiation Plant – Lumpy and Fines Section (HMS and Spiral Plants)	0.29 *ha*		Remove rock/mixed materials dumps/stockpiles; and Scrape up and remove the generally thick (> 40cm - > 100 cm) historical underlying layer that is spread extensively throughout these processing and stockpiling areas, exposing the underlying in-situ soils. Transport (haul truck) and dispose of the remaining aforementioned materials in the void of the Opencast pit provided that they are potentially non-polluting. The same applies to the HMS and CRP waste, OB Plant fines waste, and OB Plant coarse waste materials/areas. Re-grade, 'topsoil', sample, fertilise, and re-vegetate the footprints of the aforementioned areas in the various Infrastructure areas. Wash residual 'wastes' from elsewhere off the machinery before utilising the machinery for transportation of 'topsoil' or rehabilitation 'topsoiling' purposes. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/drains/berms, that may remain in perpetuity downslope of the Opencast area. The aforementioned will limit 'clean' and 'dirty' water run-off and seepage derived from elsewhere from entering the filled (buried) Opencast pit voids. Monitor leached contamination on an ongoing basis via interpolation of the data from the downslope boreholes. Excavate additional boreholes where deemed necessary, purify the pumped water accordingly, and release back to the environment.		
		Land Use	**Measure 1:** The stated End Land Use for the rehabilitated HERNIC areas in general is Extensive Grazing. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or burning allowed until vegetation is well established in the post-closure phase. However, certain sections will remain Mining due to steep to very steep slopes that will consequently not be able to be effectively 'topsoiled'/re-vegetated either. Such areas must be re-sloped to approximately 16.0 degrees if possible, and thereafter re-vegetated using ecological restoration principles and phytoremediation.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Ore Beneficiation Plant – Lumpy and Fines Section (HMS and Spiral Plants)	0.29 *ha*	Land Capability	**Measure 1:** The stated End Land Capability for the rehabilitated HERNIC areas in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). The End Land Capability of the Grazing Capability class depth standard will easily be achieved by 'topsoiling' in the majority of the Opencast area. The End Land Capability of the limited steep to very steep sections of the Opencast area will remain Mining (i.e. Non-Grazing capability class), given that these slopes will consequently be non- or poorly- 'topsoiled'/vegetated. The End Land Capability in the three rehabilitated areas (last three Aspects in the list) currently meets the 'topsoiling' depth standard (50-60cm, 30-50cm, and 20-30cm respectively) required for the post-disturbance Grazing Capability class.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Demolish and clear services, infrastructure and concrete paved surfaces to a depth of 1m below n.g.l. and dispose at Open Cast. **Measure 2:** Remove and clear all materials stockpiles by selling or dispose to open cast. **Measure 3:** Re-instate free draining surfaces, backfilling local depressions and ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Demolish and clear services, infrastructure and concrete paved surfaces to a depth of 1m below n.g.l. and dispose at Open Cast. **Measure 2:** Remove and clear all materials stockpiles by selling or dispose to open cast. **Measure 3:** Re-instate free draining surfaces, backfilling local depressions and ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Ore Beneficiation Plant – Lumpy and Fines Section (HMS and Spiral Plants)	0.29 *ha*	Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Mixed Material Stockpiling and Screening	15.43 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Mixed Material Stockpiling and Screening	15.43 *ha*	Soil Horizon	**Measure 1:** Topsoil' the entire re-graded opencast footprint. Vegetated 'topsoil' stockpile berms should already exist adjacent of the 'soft's berms. Alternatively source soil 'topsoil' from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for 'topsoiling' purposes given that this broad soil group occurs extensively; and furthermore in order to maintain soil/ vegetative continuity with the surrounding areas. **Measures 2:** Fill the Opencast voids with the discarded rock/soft's that have remained on site in the Opencast footprint; as well as with potentially non-polluting materials from the Infrastructure/ processing/ stockpiling areas. Establish a freely draining positive final landscape without ridges/hollows, in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. Re-grade the opencast footprint to < 6.4 degrees/ 11.2 % percentage grade (erosion slope calculated for vertic 'topsoil' material based on the soil erodibility nomograph) where possible. Match surface level of undisturbed surrounds. Slope cannot practically be reduced to this extent for limited sections of the Opencast area, and these sections will thus not be able to be effectively 'topsoiled'/re-vegetated either (given soil erosion on steep slopes). Such areas must be re-sloped to approximately 16.0 degrees if possible, and thereafter re-vegetated using ecological restoration principles and phytoremediation. Surface rocks may be laid out along the contours in such areas, the aforementioned functioning to slow run-off, trap sediments, and thereby create suitable conditions/habitat for the germination of seeds. The recommended maximum gradient for material dumped on level to gently sloping terrain is at least 1v: 3h (18.4 degrees or 33.0 % percentage grade), the least erosion occurring if the slope angle reduces in the direction of the toe of the pediment (i.e. concave).	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles for 'topsoil' handling during the dry season in order to minimise compaction. Do not spray water during the 'topsoiling' process as the raised moisture content will in this case lead to soil compaction. Rip final re-sloped surface to reduce compaction. Remove loose rocks and stony material. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Sewerage sludge derived from the sludge drying beds of the two sewage plants may be spread out in the Opencast area as 'compost'/mulch.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Mixed Material Stockpiling and Screening	15.43 *ha*	Soil Contamination	**Measure 1: Dust:** Spray water for dust suppression. Tarpaulin cover over haul truck bins. Re-vegetate the entire 'rehabilitated' Opencast area in order to limit run-off and dust. **Run-off:** Maintain/establish the low vegetated 'topsoil' berm that exists around the outer boundary of the opencast (rock dumps/open void) footprint area, to intercept 'dirty' water rainfall run-off derived from the opencast area. In areas where a 'soft's (weathering rock and fines) berm presently exists instead of a 'topsoil' berm, the former must be removed and replaced with the latter. **Leaching:** Establish a freely draining final landscape, in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. **Order of Horizons:** Vertic A-horizon 'topsoil'; 'Soft's material; - Hard overburden rock and lime rich materials ('breaker' layer to the upward capillary movement of polluted/acid water; lime will neutralize Acid Rock/Mine Drainage to certain extent); and Potentially polluting residual historical 'wastes' (smelter related) / spoil material (mining related). The latter materials must never directly underlie the 'topsoil', since this may lead to pollution / ARD contaminating the overlying 'topsoil' layers by capillary action. **'Waste':** Do not dispose of potentially polluting 'waste' materials from the 'Infrastructure' area in the Opencast void, because such materials will impact the groundwater-table. Such materials must be disposed of in an appropriate facility. Only materials determined to be relatively potentially non-polluting may currently be disposed of in the void of the Opencast pit. Do not utilise 'dirty' 'topsoil' that was historically mixed with potentially polluting 'waste' materials. Rock dumps/stockpiles (Opencast area, Morula Mining), Mixed Materials stockpiles (Alloys Smelting Plant Facilities), and Waste (HMS and CRP waste, OB Plant fines waste, OB Plant coarse waste): Remove rock/mixed materials dumps/stockpiles; and Scrape up and remove the thick (> 40cm - > 100 cm) historical underlying layer that is spread throughout these processing and stockpiling areas, exposing the underlying in-situ soils. Transport and dispose of the remaining aforementioned materials in the void of the Opencast pit provided that they are potentially non-polluting. The same applies to the HMS and CRP waste, OB Plant fines waste, and OB Plant coarse waste materials/areas. Re-grade, 'topsoil', sample, fertilise, and re-vegetate the footprints of the aforementioned areas in the various Infrastructure areas. Wash residual 'wastes' from elsewhere off the machinery before utilising the machinery for transportation of 'topsoil' or rehabilitation 'topsoiling' purposes. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Mixed Material Stockpiling and Screening	15.43 *ha*		potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/drains/berms, that may remain in perpetuity downslope of the Opencast area. The aforementioned will limit 'clean' and 'dirty' water run-off and seepage derived from elsewhere from entering the filled (buried) Opencast pit voids. Monitor leached contamination on an ongoing basis via interpolation of the data from the downslope boreholes. Excavate additional boreholes where deemed necessary, purify the pumped water accordingly, and release back to the environment.		
		Land Use	**Measure 1:** The stated End Land Use for the rehabilitated HERNIC areas in general is Extensive Grazing. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or burning allowed until vegetation is well established in the post-closure phase. However, certain sections will remain Mining due to steep to very steep slopes that will consequently not be able to be effectively 'topsoiled'/re-vegetated either. Such areas must be re-sloped to approximately 16.0 degrees if possible, and thereafter re-vegetated using ecological restoration principles and phytoremediation.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated End Land Capability for the rehabilitated HERNIC areas in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). The End Land Capability of the Grazing Capability class depth standard will easily be achieved by 'topsoiling' in the majority of the Opencast area. The End Land Capability of the limited steep to very steep sections of the Opencast area will remain Mining (i.e. Non-Grazing capability class), given that these slopes will consequently be non- or poorly- 'topsoiled'/vegetated. The End Land Capability in the three rehabilitated areas (last three Aspects in the list) currently meets the 'topsoiling' depth standard (50-60cm, 30-50cm, and 20-30cm respectively) required for the post-disturbance Grazing Capability class.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Mixed Material Stockpiling and Screening	15.43 *ha*	Surface Water Quantity	**Measure 1:** Demolish and clear services, infrastructure and concrete paved surfaces to a depth of 1m below n.g.l. and dispose at Open Cast. **Measure 2:** Remove and clear all materials stockpiles by selling or dispose to open cast. **Measure 3:** Re-instate free draining surfaces, backfilling local depressions and ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Demolish and clear services, infrastructure and concrete paved surfaces to a depth of 1m below n.g.l. and dispose at Open Cast. **Measure 2:** Remove and clear all materials stockpiles by selling or dispose to open cast. **Measure 3:** Re-instate free draining surfaces, backfilling local depressions and ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Mixed Material Stockpiling and Screening	15.43 *ha*	Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Returns Materials Stockpiles	5.44 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Topsoil' the entire re-graded opencast footprint. Vegetated 'topsoil' stockpile berms should already exist adjacent of the 'soft's berms. Alternatively source soil 'topsoil' from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for 'topsoiling' purposes given that this broad soil group occurs extensively; and furthermore in order to maintain soil/vegetative continuity with the surrounding areas. **Measure 2:** Fill the Opencast voids with the discarded rock/soft's that have remained on site in the Opencast footprint; as well as with potentially non-polluting materials from the Infrastructure/ processing/ stockpiling areas. Establish a freely draining final landscape without ridges/hollows, in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. Re-grade the opencast footprint to < 6.4 degrees/ 11.2 % percentage grade where possible. Match surface level of undisturbed surrounds. Slope cannot practically be reduced to this extent for limited sections of the Opencast area, and these sections will thus not be able to be effectively 'topsoiled'/re-vegetated either. Such areas must be re-sloped to approximately 16.0 degrees, and thereafter re-vegetated using ecological restoration principles and phytoremediation. Surface rocks may be laid out along the contours in such areas, the aforementioned functioning to slow run-off, trap sediments, and thereby create suitable conditions/habitat for the germination of seeds. The recommended maximum gradient for material dumped on level to gently sloping terrain is at least 1v: 3h (18.4 degrees or 33.0 % percentage grade), the least erosion occurring if the slope angle reduces in the direction of the toe of the pediment (i.e. concave).	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Returns Materials Stockpiles	5.44 *ha*	Soil Fertility	**Measure 1:** Utilize tracked vehicles for 'topsoil' handling during the dry season in order to minimise compaction. Do not spray water during the 'topsoiling' process as the raised moisture content will in this case lead to soil compaction. Rip final re-sloped surface to reduce compaction. Remove loose rocks and stony material. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Sewerage sludge derived from the sludge drying beds of the two sewage plants may be spread out in the Opencast area as 'compost'/mulch.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1: Dust:** Spray water for dust suppression. Tarpaulin cover over haul truck bins. Re-vegetate the entire 'rehabilitated' Opencast area in order to limit run-off and dust. **Run-off:** Maintain/establish the low vegetated 'topsoil' berm that exists around the outer boundary of the opencast footprint area, to intercept 'dirty' water rainfall run-off derived from the opencast area. In areas where a 'soft's berm presently exists instead of a 'topsoil' berm, the former must be removed and replaced with the latter. **Leaching:** Establish a freely draining final landscape without ridges/hollows, in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. **Order of Horizons:** Vertic A-horizon 'topsoil'; 'Soft's material (may be accessed by plant roots); - Hard overburden rock and lime rich materials ('breaker' layer to the upward capillary movement of polluted/acid water; lime will neutralize Acid Rock/Mine Drainage to certain extent); and Potentially polluting residual historical 'wastes' (smelter related) / spoil material (mining related). The latter materials must never directly underlie the 'topsoil', since this may lead to pollution / ARD contaminating the overlying 'topsoil' layers by capillary action. **'Waste':** Do not dispose of potentially polluting 'waste' materials from the 'Infrastructure' area in the Opencast void, because such materials will impact the groundwater-table. Such materials must be disposed of in an appropriate facility. Only materials determined to be relatively potentially non-polluting (low pollution potential) may currently be disposed of in the void of the Opencast pit. Do not utilise 'dirty' 'topsoil' that was historically (during stockpiling) mixed with potentially polluting 'waste' materials. Rock dumps/stockpiles (Opencast area, Morula Mining), Mixed Materials stockpiles (Alloys Smelting Plant Facilities), and Waste (HMS and CRP waste, OB Plant fines waste, OB Plant coarse waste): Remove rock/mixed materials dumps/stockpiles;	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Returns Materials Stockpiles	5.44 *ha*		and Scrape up and remove the generally thick (> 40cm - > 100 cm) historical underlying layer that is spread extensively throughout these processing and stockpiling areas, exposing the underlying in-situ soils. Transport (haul truck) and dispose of the remaining aforementioned materials in the void of the Opencast pit provided that they are potentially non-polluting. The same applies to the HMS and CRP waste, OB Plant fines waste, and OB Plant coarse waste materials/areas. Re-grade, 'topsoil', sample, fertilise, and re-vegetate the footprints of the aforementioned areas in the various Infrastructure areas. Wash residual 'wastes' from elsewhere off the machinery before utilising the machinery for transportation of 'topsoil' or rehabilitation 'topsoiling' purposes. General: Maintain optimum functioning (attend to leaks, clear blockages, remove vegetation and remove siltation) of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/drains/berms, that may remain in perpetuity downslope of the Opencast area. The aforementioned will limit 'clean' and 'dirty' water run-off and seepage derived from elsewhere from entering the filled (buried) Opencast pit voids. Monitor leached contamination on an ongoing basis via interpolation of the data from the downslope boreholes. Excavate additional boreholes where deemed necessary, purify the pumped water accordingly, and release back to the environment.		
		Land Use	**Measure 1:** The stated End Land Use for the rehabilitated HERNIC areas in general is Extensive Grazing. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or burning allowed until vegetation is well established in the post-closure phase. However, certain sections will remain Mining due to steep to very steep slopes that will consequently not be able to be effectively 'topsoiled'/re-vegetated either. Such areas must be re-sloped to approximately 16.0 degrees if possible, and thereafter re-vegetated using ecological restoration principles and phytoremediation.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Returns Materials Stockpiles	5.44 *ha*	Land Capability	**Measure 1:** The stated End Land Capability for the rehabilitated HERNIC areas in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). The End Land Capability of the Grazing Capability class depth standard will easily be achieved by 'topsoiling' in the majority of the Opencast area. The End Land Capability of the limited steep to very steep sections of the Opencast area will remain Mining (i.e. Non-Grazing capability class), given that these slopes will consequently be non- or poorly- 'topsoiled'/vegetated. The End Land Capability in the three rehabilitated areas (last three Aspects in the list) currently meets the 'topsoiling' depth standard (50-60cm, 30-50cm, and 20-30cm respectively) required for the post-disturbance Grazing Capability class.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Demolish and clear services, infrastructure and concrete paved surfaces to a depth of 1m below n.g.l. and dispose at Open Cast. **Measure 2:** Remove and clear all materials stockpiles by selling or dispose to open cast. **Measure 3:** Re-instate free draining surfaces, backfilling local depressions and ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Demolish and clear services, infrastructure and concrete paved surfaces to a depth of 1m below n.g.l. and dispose at Open Cast. **Measure 2:** Remove and clear all materials stockpiles by selling or dispose to open cast. **Measure 3:** Re-instate free draining surfaces, backfilling local depressions and ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Returns Materials Stockpiles	5.44 *ha*	Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Pelletizing and Sintering Plants 1 & 2	4.14 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Re-grade (re-slope) to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material [based on soil erodibility nomograph]. Match surface level of undisturbed surrounds where possible. Establish a freely draining final landscape. Remove loose rocks and stony material. **Measure 2:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling'.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Pelletizing and Sintering Plants 1 & 2	4.14 *ha*	Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction (before 'topsoiling'). 'Topsoil' the removed facilities/ features/ dumps/ stockpiles footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Scrape up and remove the thick (> 40cm - > 100 cm) historical 'waste' or 'non-waste' layer that is spread throughout some areas (surrounding buildings, and on dirt roads), exposing the underlying in-situ soils. Demolish and remove facilities/ features/ dumps/ stockpiles from the site. Remove imported concrete/stone/rock foundations/platforms/surfaces from the site. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/ drains/ berms, that may remain in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The End Land Use of these areas may remain Industrial due to residual Soil Contamination. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') problematic areas, as well as those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated planned End Land Capability is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Pelletizing and Sintering Plants 1 & 2	4.14 *ha*	Surface Water Quantity	**Measure 1:** Dismantle, Recover materials from plant infrastructure & buildings sell and or remove from site. **Measure 2:** Demolish and clear services, infrastructure and concrete paved surfaces to a depth of 1m below n.g.l. and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Dismantle, Recover materials from plant infrastructure & buildings sell and or remove from site. **Measure 2:** Demolish and clear services, infrastructure and concrete paved surfaces to a depth of 1m below n.g.l. and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Pelletizing and Sintering Plants 1 & 2	4.14 *ha*	Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Furnaces 1, 2, 3 and 4	1.30 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Re-grade to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. **Measure 2:** Avoid unnecessary disturbance of any underlying/ surrounding in-situ soils that may already be present at the site. Restore Soil Distribution to some measure by the process of 'topsoiling'.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction. 'Topsoil' the removed facilities/ features/ dumps/ stockpiles footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize the 'topsoil' immediately after 'topsoiling' and once every 3/ 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Scrape up and remove the thick (> 40cm - > 100 cm) historical 'waste' or 'non-waste' layer that is spread throughout some areas (surrounding buildings, and on dirt roads), exposing the underlying in-situ soils. Demolish and remove facilities/ features/ dumps/ stockpiles from the site. Remove imported concrete/stone/rock foundations/platforms/surfaces from the site.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Furnaces 1, 2, 3 and 4	1.30 *ha*		Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/ drains/ berms, that may remain in perpetuity.		
		Land Use	**Measure 1:** The End Land Use of these areas may remain Industrial due to residual Soil Contamination. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') problematic areas, as well as those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated planned End Land Capability is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Dismantle, Recover materials from plant infrastructure & buildings sell and or remove from site. **Measure 2:** Demolish and clear services, infrastructure and concrete paved surfaces to a depth of 1m below n.g.l. and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Dismantle, Recover materials from plant infrastructure & buildings sell and or remove from site. **Measure 2:** Demolish and clear services, infrastructure and concrete paved surfaces to a depth of 1m below n.g.l. and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Furnaces 1, 2, 3 and 4	1.30 *ha*	Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Ferrochrome Break Floor Area	1.30 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Re-grade to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. **Measure 2:** Avoid unnecessary disturbance of any underlying/ surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling'.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction. 'Topsoil' the removed facilities/ features/ dumps/ stockpiles footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize the 'topsoil' immediately after 'topsoiling' and once every 3/ 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Scrape up and remove the thick (> 40cm - > 100 cm) historical 'waste' or 'non-waste' layer that is spread throughout some areas (surrounding buildings, and on dirt roads), exposing the underlying in-situ soils. Demolish and remove facilities/ features from the site. Remove imported concrete/ stone/ rock foundations/ platforms/ surfaces from the site. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/ drains/ berms, that may remain in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The End Land Use of these areas may remain Industrial due to residual Soil Contamination. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') problematic areas, as well as those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Ferrochrome Break Floor Area	1.30 *ha*	Land Capability	**Measure 1:** The stated planned End Land Capability is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Demolish and clear services, infrastructure and concrete paved surfaces to a depth of 1m below n.g.l. and dispose at Open Cast. **Measure 2:** Re-instate free draining surfaces, backfilling local depressions and ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Demolish and clear services, infrastructure and concrete paved surfaces to a depth of 1m below n.g.l. and dispose at Open Cast. **Measure 2:** Re-instate free draining surfaces, backfilling local depressions and ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas.	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Ferrochrome Break Floor Area	1.30 *ha*		**Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.		
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Finished Product Plant	2.50 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Re-grade to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. **Measure 2:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils that may already be present at the site. Restore Soil Distribution to some measure by the process of 'topsoiling'.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction. 'Topsoil' the removed facilities/ features/ dumps/ stockpiles footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Finished Product Plant	2.50 *ha*	Soil Contamination	**Measure 1:** Scrape up and remove the thick (> 40cm - > 100 cm) historical 'waste' or 'non-waste' layer that is spread throughout some areas (surrounding buildings, and on dirt roads), exposing the underlying in-situ soils (when present). Demolish and remove facilities/ features/ dumps/ stockpiles from the site. Remove imported concrete/stone/rock foundations/platforms/surfaces from the site. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/ drains/ berms, that may remain in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measures 1:** The End Land Use of these areas may remain Industrial due to residual Soil Contamination. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') problematic areas, as well as those areas where the spread seeded 'grass' did not germinate/create cover. No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measures 1:** The stated planned End Land Capability is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Dismantle, Recover materials from plant infrastructure & buildings and remove from site. **Measure 2:** Demolish and clear civil services, infrastructure and concrete paved surfaces and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Finished Product Plant	2.50 *ha*	Surface Water Quality	**Measure 1:** Dismantle, Recover materials from plant infrastructure & buildings and remove from site. **Measure 2:** Demolish and clear civil services, infrastructure and concrete paved surfaces and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Finished Product Plant	2.50 *ha*	Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Slag Stockpiling Areas	6.30 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. Restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. removed slag dumps). **Measure 2:**Re-grade (re-slope) removed facility/feature footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds where possible. Establish a freely draining final landscape. Slope cannot easily be reduced to this extent for a permanent Slag Dump, and will thus not be able to be 'topsoiled'/re-vegetated either (given soil erosion on steep slopes). Thus, slag dumps must be re-vegetated using ecological restoration principles and phytoremediation.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction. Remove loose rocks and stony material. 'Topsoil' the removed slag dump footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) locally indigenous 'grass' cover. Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Scrape up and remove the thick (> 40cm - > 100 cm) historical slag layer that is spread throughout the temporary slag processing and stockpiling areas, exposing the underlying in-situ soils. Demolish and remove dumps/ stockpiles from the sites. Remove imported concrete/stone/rock foundations/platforms/pads/surfaces from the sites, and dispose of in the opencast pit.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Slag Stockpiling Areas	6.30 *ha*		Consolidate all unwanted slags at one permanent slag stockpile, or alternatively dispose of in the opencast pit only if potentially non-polluting; the aforementioned after selling-off that portion of the slags that are potentially 'non-polluting/feasible/required. Spray water for dust suppression. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust. Construct a seal layer directly overlying potentially highly-polluting slag dumps that will remain in perpetuity only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/drains/berms, that may remain in perpetuity upslope/downslope (respectively) of potentially polluting rehabilitated areas (e.g. previous slag dump footprints) or permanent features (e.g. slag dump). Monitor leached contamination on an ongoing basis via interpolation of the data from the downslope boreholes. Excavate additional boreholes where deemed necessary, purify the pumped water accordingly, and release back to the environment.		
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). The End Land Use of the slag dumps that remain in perpetuity will be Industrial, due to potential contamination and probably steep (unlikely to be less than 18.4 degrees after re-grading) side-slopes that are consequently non- or poorly- 'topsoiled'/vegetated. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Slag Stockpiling Areas	6.30 *ha*	Land Capability	**Measure 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). The aforementioned applies to the removed slag footprints. The End Land Capability of the slag dumps that remain in perpetuity will be Industrial (non-grazing capability class), due to potential contamination and probably steep (unlikely to be less than 18.4 degrees after re-grading) side-slopes that are consequently non- or poorly-'topsoiled'/vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Use stockpiles (Mixed Material, Slag & Arising's) to rehabilitated open cast by backfilling. **Measure 2:** Remainder of stockpiles to be consolidated and shaped to stable side slopes and minimised footprints. **Measure 3:** SW PCD 3 to be maintained to intercept runoff from the remainder of stockpile footprints. **Measure 4:** Install additional clean water diversion berms and drains to reduce affected area containing these remnants of stockpiles.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Use stockpiles (Mixed Material, Slag & Arising's) to rehabilitated open cast by backfilling. **Measure 2:** Remainder of stockpiles to be consolidated and shaped to stable side slopes and minimised footprints. **Measure 3:** SW PCD 3 to be maintained to intercept runoff from the remainder of stockpile footprints. **Measure 4:** Install additional clean water diversion berms and drains to reduce affected area containing these remnants of stockpiles.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Slag Stockpiling Areas	6.30 *ha*	Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Primary Chrome Recovery Plant	10.58 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Re-grade to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. **Measure 2:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling'.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction. 'Topsoil' the removed facilities/ features/ dumps/ stockpiles footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Primary Chrome Recovery Plant	10.58 *ha*		Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) 'grass' cover.		
		Soil Contamination	**Measure 1:** Scrape up and remove the thick (> 40cm - > 100 cm) historical 'waste' or 'non-waste' layer that is spread throughout some areas (surrounding buildings, and on dirt roads), exposing the underlying in-situ soils. Demolish and remove facilities/ features/ dumps/ stockpiles from the site. Remove imported concrete/stone/rock foundations/platforms/surfaces from the site. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/ drains/ berms, that may remain in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The End Land Use of these areas may remain Industrial due to residual Soil Contamination. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Thus, Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') problematic areas, as well as those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated planned End Land Capability is the Chamber of Mines Grazing Capability Class. Thus 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Remove all stockpiles (slag & waste slag) sell and/or dispose in open cast. **Measure 2:** Dismantle Demolish and removed Plant/Process infrastructure **Measure 3:** Ripping to minimum 150mm depth of all hard surfaces and levelling with discing of abandoned surfaces.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Primary Chrome Recovery Plant	10.58 *ha*		**Measure 4:** Concrete SW Drains and receiving SW PCD2s to remain & maintained. **Measure 5:** Clean-up of all dirty areas by removal of coarse and fine slag and waste slag material stockpiles. **Measure 6:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. **Measure 7:** Monitor runoff water quality in SW PCD2. **Measure 8:** Remove dam liner and backfill & grade surface		
		Surface Water Quality	**Measure 1:** Remove all stockpiles (slag & waste slag) sell and/or dispose in open cast. **Measure 2:** Dismantle Demolish and removed Plant/Process infrastructure **Measure 3:** Ripping to minimum 150mm depth of all hard surfaces and levelling with discing of abandoned surfaces. **Measure 4:** Concrete SW Drains and receiving SW PCD2s to remain & maintained. **Measure 5:** Clean-up of all dirty areas by removal of coarse and fine slag and waste slag material stockpiles. **Measure 6:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. **Measure 7:** Monitor runoff water quality in SW PCD2. **Measure 8:** Remove dam liner and backfill & grade surface	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas.	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Primary Chrome Recovery Plant	10.58 *ha*		**Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.		
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Fine Slag Processing Plant (Secondary CRP)	3.24 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives are to restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. removed slag dumps). **Measure 2:** Re-grade (re-slope) removed facility/feature footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Slope cannot easily be reduced to this extent for a permanent Slag Dump, and will thus not be able to be 'topsoiled'/re-vegetated either (given soil erosion on steep slopes). Thus, slag dumps must be re-vegetated using ecological restoration principles and phytoremediation.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Fine Slag Processing Plant (Secondary CRP)	3.24 *ha*	Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction (before 'topsoiling'). Remove loose rocks and stony material. 'Topsoil' the removed slag dump footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) locally indigenous 'grass' cover. Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Scrape up and remove the thick (> 40cm - > 100 cm) historical slag layer that is spread throughout the temporary slag processing and stockpiling areas, exposing the underlying in-situ soils. Demolish and remove facilities/ features/ dumps/ stockpiles from the sites. Remove imported concrete/stone/rock foundations/platforms/pads/surfaces from the sites, and dispose of in the opencast pit. Consolidate all unwanted slags at one permanent slag stockpile, or alternatively dispose of in the opencast pit only if potentially non-polluting; the aforementioned after selling-off that portion of the slags that are potentially 'non-polluting/feasible/required. Spray water for dust suppression. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust. Construct a seal layer directly overlying potentially highly-polluting slag dumps that will remain in perpetuity only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/drains/berms, that may remain in perpetuity upslope/downslope (respectively) of potentially polluting rehabilitated areas (e.g. previous slag dump footprints) or permanent features (e.g. slag dump). Monitor leached contamination on an ongoing basis via interpolation of the data from the downslope boreholes. Excavate additional boreholes where deemed necessary, purify the pumped water accordingly, and release back to the environment.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Fine Slag Processing Plant (Secondary CRP)	3.24 *ha*	Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). The End Land Use of the slag dumps that remain in perpetuity will be Industrial, due to potential contamination and probably steep (unlikely to be less than 18.4 degrees after re-grading) side-slopes that are consequently non- or poorly- 'topsoiled'/vegetated. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). The aforementioned applies to the removed slag footprints. The End Land Capability of the slag dumps that remain in perpetuity will be Industrial (non-grazing capability class), due to potential contamination and probably steep (unlikely to be less than 18.4 degrees after re-grading) side-slopes that are consequently non- or poorly-'topsoiled'/vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Remove plant; demolish concrete sumps and plinths 1m below n.g.l. **Measure 2:** Clean-up yard by removal of fine slag sand stockpiles. **Measure 3:** Re-instate natural surfaces by dismantling & demolishing plant infrastructure. **Measure 4:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Measure 5: SW PCD 2 and canal system to be maintained until area has been rehabilitated.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Fine Slag Processing Plant (Secondary CRP)	3.24 *ha*	Surface Water Quality	**Measure 1:** Remove plant; demolish concrete sumps and plinths 1m below n.g.l. **Measure 2:** Clean-up yard by removal of fine slag sand stockpiles. **Measure 3:** Re-instate natural surfaces by dismantling & demolishing plant infrastructure. **Measure 4:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. **Measure 5:** SW PCD 2 and canal system to be maintained until area has been rehabilitated.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises.	Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Fine Slag Processing Plant (Secondary CRP)	3.24 *ha*		**Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.		
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Product Rail Dispatch Area	1.00 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. Restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. removed slag dumps). **Measure 2:** Re-grade (re-slope) removed facility/feature footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Slope cannot easily be reduced to this extent for a permanent Slag Dump, and will thus not be able to be 'topsoiled'/re-vegetated either (given soil erosion on steep slopes). Thus, slag dumps must be re-vegetated using ecological restoration principles and phytoremediation.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction (before 'topsoiling'). Remove loose rocks and stony material. 'Topsoil' the removed slag dump footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) locally indigenous 'grass' cover. Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Product Rail Dispatch Area	1.00 *ha*	Soil Contamination	**Measure 1:** Scrape up and remove the thick (> 40cm - > 100 cm) historical 'waste' or 'non-waste' layer that is spread throughout some areas (surrounding buildings, and on dirt roads), exposing the underlying in-situ soils. Demolish and remove facilities/ features/ dumps/ stockpiles from the site. Remove imported concrete/stone/rock foundations/platforms/surfaces from the site. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/ drains/ berms, that may remain in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The End Land Use of these areas may remain Industrial due to residual Soil Contamination. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') problematic areas, as well as those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated planned End Land Capability is the Chamber of Mines Grazing Capability Class. Thus 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Dismantle, Recover materials from plant infrastructure & buildings and remove from site. **Measure 2:** Demolish and clear civil services, infrastructure and concrete paved surfaces and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Product Rail Dispatch Area	1.00 *ha*	Surface Water Quality	**Measure 1:** Dismantle, Recover materials from plant infrastructure & buildings and remove from site. **Measure 2:** Demolish and clear civil services, infrastructure and concrete paved surfaces and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Product Rail Dispatch Area	1.00 *ha*	Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Platinum Group Minerals (PGM) Plant	1.22 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Re-grade to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. **Measure 2:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils that may already be present at the site. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling'.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction (before 'topsoiling'). 'Topsoil' the removed facilities/ features/ dumps/ stockpiles footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Scrape up and remove the thick (> 40cm - > 100 cm) historical 'waste' or 'non-waste' layer that is spread throughout some areas (surrounding buildings, and on dirt roads), exposing the underlying in-situ soils. Demolish and remove facilities/ features/ dumps/ stockpiles from the site. Remove imported concrete/stone/rock foundations/platforms/surfaces from the site. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/ drains/ berms, that may remain in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Platinum Group Minerals (PGM) Plant	1.22 *ha*	Land Use	**Measure 1:** The End Land Use of these areas may remain Industrial due to residual Soil Contamination. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') problematic areas, as well as those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2**: No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated planned End Land Capability is the Chamber of Mines Grazing Capability Class. Thus 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Remove plant & processing infrastructure, demolish services and concrete plinths & foundations to a depth of 1m below n.g.l. and dispose at Open Cast. **Measure 2:** Remove and clear all dirty surfaces and dispose to open cast. **Measure 3:** PGM Platform material should be used to backfill PCD basins and excess for open cast rehabilitation. **Measure 4:** Re-instate free draining surfaces, ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Remove plant & processing infrastructure, demolish services and concrete plinths & foundations to a depth of 1m below n.g.l. and dispose at Open Cast. **Measure 2:** Remove and clear all dirty surfaces and dispose to open cast. **Measure 3:** PGM Platform material should be used to backfill PCD basins and excess for open cast rehabilitation. **Measure 4:** Re-instate free draining surfaces, ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Platinum Group Minerals (PGM) Plant	1.22 *ha*	Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Internal Transport and Contractors Yard and Wash Bay	3.81 *ha*	Heritage, Archaeological and Palaeontological	**Measure 1:** Clearly demarcate and fence graveyards sites. **Measure 2:** Communicate localities to all decommissioning and closure contractors.	Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Internal Transport and Contractors Yard and Wash Bay	3.81 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Re-grade to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. **Measure 2:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils that may already be present at the site. Restore Soil Distribution to some measure by the process of 'topsoiling'.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction. 'Topsoil' the removed facilities/ features/ dumps/ stockpiles footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Scrape up and remove the thick (> 40cm - > 100 cm) historical 'waste' or 'non-waste' layer that is spread throughout some areas (surrounding buildings, and on dirt roads), exposing the underlying in-situ soils. Demolish and remove facilities/ features/ dumps/ stockpiles from the site. Remove imported concrete/stone/rock foundations/platforms/surfaces from the site. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/ drains/ berms, that may remain in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The End Land Use of these areas may remain Industrial due to residual Soil Contamination. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') problematic areas, as well as those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Internal Transport and Contractors Yard and Wash Bay	3.81 *ha*	Land Capability	**Measure 1:** The stated planned End Land Capability is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm, but preferably more (>= 60 cm – Arable Capability Class depth standard). Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Dismantle, Recover materials from plant infrastructure & buildings and remove from site. **Measure 2:** Demolish and clear civil services, infrastructure and concrete paved surfaces and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Dismantle, Recover materials from plant infrastructure & buildings and remove from site. **Measure 2:** Demolish and clear civil services, infrastructure and concrete paved surfaces and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Internal Transport and Contractors Yard and Wash Bay	3.81 *ha*	Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Redundant Historic Bag Plant	0.43 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Re-grade to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. **Measure 2:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. Restore Soil Distribution to some measure by the process of 'topsoiling'.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction. 'Topsoil' the removed facilities/ features/ dumps/ stockpiles footprints with 'topsoil' sourced from the adjacent 'topsoil' berms or alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Redundant Historic Bag Plant	0.43 *ha*	Soil Contamination	**Measure 1:** Scrape up and remove the thick (> 40cm - > 100 cm) historical 'waste' or 'non-waste' layer that is spread throughout some areas (surrounding buildings, and on dirt roads), exposing the underlying in-situ soils. Demolish and remove facilities/ features/ dumps/ stockpiles from the site. Remove imported concrete/stone/rock foundations/platforms/surfaces from the site. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/ drains/ berms, that may remain in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The End Land Use of these areas may remain Industrial due to residual Soil Contamination. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') problematic areas, as well as those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated planned End Land Capability is the Chamber of Mines Grazing Capability Class. Thus 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Redundant Historic Bag Plant	0.43 *ha*	Surface Water Quantity	**Measure 1:** Dismantle, Recover materials from plant infrastructure & buildings sell and or remove from site. **Measure 2:** Demolish and clear services, infrastructure and concrete paved surfaces and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient. **Measure 4:** Allow intercepted water from SW PCD 1A and 1B to evaporate. . Use water for dust suppression and vegetation to establish. Excess water to be pumped to TSF for evaporation. **Measure 5:** Remove SW PCD 1A & 1B once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and available clean material stockpiles. Level & grade surface and vegetate.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Dismantle, Recover materials from plant infrastructure & buildings sell and or remove from site. **Measure 2:** Demolish and clear services, infrastructure and concrete paved surfaces and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient. **Measure 4:** Allow intercepted water from SW PCD 1A and 1B to evaporate. . Use water for dust suppression and vegetation to establish. Excess water to be pumped to TSF for evaporation. **Measure 5:** Remove SW PCD 1A & 1B once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and available clean material stockpiles. Level & grade surface and vegetate.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Redundant Historic Bag Plant	0.43 *ha*	Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Redundant Old Civil Workshop	1.92 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Re-grade undisturbed surrounding slopes of 1-4 degrees, but < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. **Measure 2:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils that may be present at the site. Restore Soil Distribution to some measure by the process of 'topsoiling'.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Redundant Old Civil Workshop	1.92 *ha*	Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction. 'Topsoil' the removed facilities/ features/ dumps/ stockpiles footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Scrape up and remove the thick (> 40cm - > 100 cm) historical 'waste' or 'non-waste' layer that is spread extensively throughout some areas (surrounding buildings, and on dirt roads), exposing the underlying in-situ soils. Demolish and remove facilities/ features/ dumps/ stockpiles from the site. Remove imported concrete/stone/rock foundations/platforms/surfaces from the site. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/ drains/ berms, that may remain in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measures 1:** The End Land Use of these areas may remain Industrial due to residual Soil Contamination. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') problematic areas, as well as those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measures 1:** The stated planned End Land Capability is the Chamber of Mines Grazing Capability Class. Thus 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Redundant Old Civil Workshop	1.92 *ha*	Surface Water Quantity	**Measure 1:** Dismantle, Recover materials from plant infrastructure & buildings and remove from site. **Measure 2:** Demolish and clear civil services, infrastructure and concrete paved surfaces and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Dismantle, Recover materials from plant infrastructure & buildings and remove from site. **Measure 2:** Demolish and clear civil services, infrastructure and concrete paved surfaces and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Redundant Old Civil Workshop	1.92 *ha*	Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Rehabilitated Quarry Area	2.60 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Topsoil' the entire re-graded opencast footprint. Vegetated 'topsoil' stockpile berms should already exist adjacent of the 'soft's berms. Alternatively source soil 'topsoil' from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for 'topsoiling' purposes given that this broad soil group occurs extensively; and furthermore in order to maintain soil/vegetative continuity with the surrounding areas. **Measure 2:** Fill the Opencast voids with the discarded rock/soft's that have remained on site in the Opencast footprint; as well as with potentially non-polluting materials from the Infrastructure/ processing/ stockpiling areas. Establish a freely draining positive final landscape without ridges/hollows, in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. Re-grade the opencast footprint to < 6.4 degrees/ 11.2 % percentage grade. Match surface level of undisturbed surrounds. Slope cannot practically be reduced to this extent for limited sections of the Opencast area, and these sections will thus not be able to be effectively 'topsoiled'/re-vegetated either (given soil erosion on steep slopes). Such areas must be re-sloped to approximately 16.0 degrees if possible, and thereafter re-vegetated using ecological restoration principles and phytoremediation.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Rehabilitated Quarry Area	2.60 *ha*		Surface rocks may be laid out along the contours in such areas, the aforementioned functioning to slow run-off, trap sediments, and thereby create suitable conditions/habitat for the germination of seeds. The recommended maximum gradient for material dumped on level to gently sloping terrain is at least 1v: 3h (18.4 degrees or 33.0 % percentage grade), the least erosion occurring if the slope angle reduces in the direction of the toe of the pediment (i.e. concave).		
		Soil Fertility	**Measure 1:** Utilize tracked vehicles for 'topsoil' handling during the dry season in order to minimise compaction. Do not spray water during the 'topsoiling' process as the raised moisture content will in this case lead to soil compaction. Rip final re-sloped surface to reduce compaction. Remove loose rocks and stony material. Utilise live topsoil to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Sewerage sludge derived from the sludge drying beds of the two sewage plants may be spread out in the Opencast area as 'compost'/mulch.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1: Dust:** Spray water for dust suppression. Tarpaulin cover over haul truck bins. Re-vegetate the entire 'rehabilitated' Opencast area in order to limit run-off and dust. **Run-off:** Maintain/establish the low vegetated 'topsoil' berm that exists around the outer boundary of the opencast footprint area, to intercept 'dirty' water rainfall run-off derived from the opencast area. In areas where a 'soft's berm presently exists instead of a 'topsoil' berm, the former must be removed and replaced with the latter. **Leaching:** Establish a freely draining final landscape, in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. **Order of Horizons:** Vertic A-horizon 'topsoil'; 'Soft's material; - Hard overburden rock and lime rich materials ('breaker' layer to the upward capillary movement of polluted/acid water; lime will neutralize Acid Rock/Mine Drainage to certain extent); and Potentially polluting residual historical 'wastes' (smelter related) / spoil material (mining related). The latter materials must never directly underlie the 'topsoil', since this may lead to pollution / ARD contaminating the overlying 'topsoil' layers by capillary action. **'Waste':** Do not dispose of potentially polluting 'waste' materials from the 'Infrastructure' area in the Opencast void, because such materials will impact the groundwater-table. Such materials must be disposed of in an appropriate facility.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Rehabilitated Quarry Area	2.60 *ha*		Only materials determined to be relatively potentially non-polluting (low pollution potential) may currently be disposed of in the void of the Opencast pit. Do not utilise 'dirty' 'topsoil' that was historically (during stockpiling) mixed with potentially polluting 'waste' materials. Rock dumps/stockpiles (Opencast area, Morula Mining), Mixed Materials stockpiles (Alloys Smelting Plant Facilities), and Waste (HMS and CRP waste, OB Plant fines waste, OB Plant coarse waste): Remove rock/mixed materials dumps/stockpiles; and Scrape up and remove the generally thick (> 40cm - > 100 cm) historical underlying layer that is spread extensively throughout these processing and stockpiling areas, exposing the underlying in-situ soils. Transport (haul truck) and dispose of the remaining aforementioned materials in the void of the Opencast pit provided that they are potentially non-polluting. The same applies to the HMS and CRP waste, OB Plant fines waste, and OB Plant coarse waste materials/areas. Re-grade, 'topsoil', sample, fertilise, and re-vegetate the footprints of the aforementioned areas in the various Infrastructure areas. Wash residual 'wastes' from elsewhere off the machinery before utilising the machinery for transportation of 'topsoil' or rehabilitation 'topsoiling' purposes. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/drains/berms, that may remain in perpetuity downslope of the Opencast area. The aforementioned will limit 'clean' and 'dirty' water run-off and seepage derived from elsewhere from entering the filled (buried) Opencast pit voids. Monitor leached contamination on an ongoing basis via interpolation of the data from the downslope boreholes. Excavate additional boreholes where deemed necessary, purify the pumped water accordingly, and release back to the environment.		

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Rehabilitated Quarry Area	2.60 *ha*	Land Use	**Measure 1:** The stated End Land Use for the rehabilitated HERNIC areas in general is Extensive Grazing. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or burning allowed until vegetation is well established in the post-closure phase. However, certain sections will remain Mining due to steep to very steep slopes that will consequently not be able to be effectively 'topsoiled'/re-vegetated either. Such areas must be re-sloped to approximately 16.0 degrees if possible, and thereafter re-vegetated using ecological restoration principles and phytoremediation.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated End Land Capability for the rehabilitated HERNIC areas in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm but preferably more (>= 60 cm – Arable Capability Class depth standard). The End Land Capability of the Grazing Capability class depth standard will easily be achieved by 'topsoiling' in the majority of the Opencast area. The End Land Capability of the limited steep to very steep sections of the Opencast area will remain Mining (i.e. Non-Grazing capability class), given that these slopes will consequently be non- or poorly- 'topsoiled'/vegetated. The End Land Capability in the three rehabilitated areas (last three Aspects in the list) currently meets the 'topsoiling' depth standard (50-60cm, 30-50cm, and 20-30cm respectively) required for the post-disturbance Grazing Capability class.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Monitor & maintain surface cover soil and vegetation.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Monitor & maintain surface cover soil and vegetation.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Rehabilitated Quarry Area	2.60 *ha*	Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Historic Slimes Dams (1 & 2)	0.44 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. Restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features **Measure 2:** The slimes/dewatering dam side-slopes will have been re-graded to < 5.7 degrees/ 10.0 % percentage grade due to the compacted-'remoulded' vertic seal that underlies the vertic 'topsoil' material.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Historic Slimes Dams (1 & 2)	0.44 *ha*	Soil Fertility	**Measure 1**: Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded slimes dams. Fertilize the 'topsoil' after 'topsoiling' and once every 3/ 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing locally indigenous 'grass' cover. Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measures 1:** No 'wastes' require to be scraped up in these areas. Construct a seal layer directly overlying potentially highly-polluting features that will remain in perpetuity only.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. Thus 'Topsoiling' depth >= 25 cm but preferably more (>= 60 cm – Arable Capability Class depth standard). The End Land Capability of the Slimes Dams that remain in perpetuity will be Industrial (non-grazing capability class), due to potential contamination.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Identify areas where groundwater remediation is required. **Measure 2:** Monitor groundwater quality.	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Minimising interception of surface water by isolating slimes dams area and diverting water around the slimes dams. **Measure 2:** Operate excavation with sufficient bund walls to prevent spillages. **Measure 3:** Close transport trucks with tarpaulin sheet during transport. **Measure 4:** Clean road surfaces and storm water ditches on regular basis.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Minimising interception of surface water by isolating slimes dams area and diverting water around the slimes dams. **Measure 2:** Operate excavation with sufficient bund walls to prevent spillages. **Measure 3:** Close transport trucks with tarpaulin sheet during transport. **Measure 4:** Clean road surfaces and storm water ditches on regular basis.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Historic Slimes Dams (1 & 2)	0.44 *ha*	Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Decommissioning of Phase 1 of the H:H Slimes Dam	4.52 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. Restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. re-graded slimes or tailings dams). **Measure 2:** The slimes/dewatering dam side-slopes will have ideally been re-graded (re-sloped) to < 5.7 degrees/ 10.0 % percentage grade due to the compacted-'remoulded' vertic seal that underlies the vertic 'topsoil' material.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded slimes dams. Fertilize 'topsoil' immediately after 'topsoiling' and once every 3/4 years thereafter. Do not fertilise the soils in areas displaying healthy existing locally indigenous 'grass' cover. Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** No 'wastes' require to be scraped up in these areas. Construct a seal layer directly overlying potentially highly-polluting features that will remain in perpetuity only. Sealed with various appropriate impermeable Membrane liner seals to prevent infiltration of rain water; possibly with an overlying compacted -'re-moulded' vertic soil 'seal' layer. The base of these features was also well sealed with an impermeable membrane and a compacted-'re-moulded' soil layer, during construction. Thus the infiltration of rainwater is not likely to be an issue.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. The End Land Use of the re-graded Slimes Dam that will remain in perpetuity will be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. Thus 'Topsoiling' depth >= 25 cm but preferably more (>= 60 cm – Arable Capability Class depth standard). The End Land Capability of the Slimes Dams that remain in perpetuity will be Industrial (non-grazing capability class), due to potential contamination.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Decommissioning of Phase 1 of the H:H Slimes Dam	4.52 *ha*	Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Maintain and monitor site including access control and warning signage on surrounding security fence. **Measure 2:** Monitor liner condition, water level & water quality in RWD. **Measure 3:** Monitor groundwater quality to confirm liner efficiency. **Measure 4:** Monitor water level & water quality in RWD. **Measure 5:** Monitor & maintain clean runoff diversion drains directing runoff away from RWD. **Measure 6:** Only old seep drains from capped HH Slimes Dam to discharge to RWD.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Maintain and monitor site including access control and warning signage on surrounding security fence. **Measure 2:** Monitor liner condition, water level & water quality in RWD. **Measure 3:** Monitor groundwater quality to confirm liner efficiency. **Measure 4:** Monitor water level & water quality in RWD. **Measure 5:** Monitor & maintain clean runoff diversion drains directing runoff away from RWD. **Measure 6:** Only old seep drains from capped HH Slimes Dam to discharge to RWD.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas.	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Decommissioning of Phase 1 of the H:H Slimes Dam	4.52 *ha*		**Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.		
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
HERNIC Tailings Storage Facility (TSF) and Return Water Dam (RWD)	37.24 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measures 1:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. Restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. re-graded slimes or tailings dams). **Measure 2:** Slope cannot easily be reduced to this extent for the side-slopes of a permanent TSF. Thus, the TSF side-slopes must be re-sloped to approximately 16.0 degrees and thereafter re-vegetated using ecological restoration principles and phytoremediation. However, the flat crest of the TSF may easily be 'topsoiled' and re-vegetated. The recommended maximum gradient for material dumped on level to gently sloping terrain (therefore also 'rehabilitated' 'topsoiled' tailings/slimes dams, pollution control/return water/process water dams, evaporation ponds, and potentially polluting dumps) is at least 1v: 3h (18.4 degrees or 33.0 % percentage grade), the least erosion occurring if the slope angle reduces in the direction of the toe of the pediment (i.e. concave). One of the key findings of extensive surveys and experimental work carried out by the University of the Witwatersrand between 1996 and 2009 was as follows: grass persistence and erosion control were increased, and irrigation decreased, by TSF slope reduction to < 16.0 degrees.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
HERNIC Tailings Storage Facility (TSF) and Return Water Dam (RWD)	37.24 *ha*	Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded TSF with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil to replenish soil micro-flora before re-vegetation. Sewerage sludge derived from the sludge drying beds of the two sewage plants may be spread out on the TSF as 'compost'/mulch. Sample and analyse the 'topsoil'. Fertilize the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) locally indigenous 'grass' cover. Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Tailings erosion from the side-slopes of the TSF will be intercepted by the paddock walls upslope of the paddocks; Immediately scrape up any tailings spills/accumulation (unlikely to be any since over-topping of the TSF is carefully controlled) in the paddocks area and re-deposit on top of the TSF. Spray water for dust suppression. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust. The decision regarding the necessity for the placement of a compacted-'remoulded' vertic soil seal underlying the vertic 'topsoil' material on top of the TSF will be determined by the pollution potential of the tailings stored in the TSF (refer to relevant Specialist Study Report). Furthermore, the base of the TSF was also well sealed with an impermeable membrane and a compacted-'re-moulded' soil layer, during construction. Thus the infiltration of rainwater is not likely to be an issue. Topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. The End Land Use of the re-graded Slimes Dams and the TSF that will remain in perpetuity will be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). Furthermore, in the case of the TSF, the probably steep (unlikely to be less than 18.4 degrees after re-grading) side-slopes will consequently be poorly- 'topsoiled'/re-vegetated. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
HERNIC Tailings Storage Facility (TSF) and Return Water Dam (RWD)	37.24 *ha*		Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.		
		Land Capability	**Measures 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). The End Land Capability of the TSF side-slopes that remains in perpetuity will be Industrial (non-grazing capability class), due to potential contamination and probably steep (unlikely to be less than 18.4 degrees after re-grading) side-slopes that are consequently non- or poorly- 'topsoiled'/vegetated. The End Land Capability of the TSF crest, as well as the Slimes Dams that remain in perpetuity will be Industrial (non-grazing capability class), due to potential contamination.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Shape crest towards penstocks (Beaching Profile) with day walls to provide for freeboard. Penstocks to be used for crest drainage. **Measure 2:** Rehabilitate crest by covering with a turf layer of 450mm followed with 200mm topsoil (GLB+ Landfill capping standard). **Measure 3:** Side slopes of TSF to be erosion protected (soil saver product and soiled filled geocells) and vegetated. **Measure 4:** Monitor water quality in RWD and remove dam when quality complies with norms. Rehabilitation of RWD to be similar to SW PCD rehabilitation.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Shape crest towards penstocks (Beaching Profile) with day walls to provide for freeboard. Penstocks to be used for crest drainage. **Measure 2:** Rehabilitate crest by covering with a turf layer of 450mm followed with 200mm topsoil (GLB+ Landfill capping standard). **Measure 3:** Side slopes of TSF to be erosion protected (soil saver product and soiled filled geocells) and vegetated. **Measure 4:** Monitor water quality in RWD and remove dam when quality complies with norms. Rehabilitation of RWD to be similar to SW PCD rehabilitation.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
HERNIC Tailings Storage Facility (TSF) and Return Water Dam (RWD)	37.24 *ha*	Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Existing Salvage Yard	0.68 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Re-grade to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Existing Salvage Yard	0.68 *ha*		**Measure 2:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils that may already be present at the site. Restore Soil Distribution to some measure by the process of 'topsoiling'. not fertilise the soils in areas displaying healthy existing 'grass' cover.		
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction (before 'topsoiling'). 'Topsoil' the removed facilities/ features/ dumps/ stockpiles footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Scrape up and remove the thick (> 40cm - > 100 cm) historical 'waste' or 'non-waste' layer that is spread throughout some areas (surrounding buildings, and on dirt roads), exposing the underlying in-situ soils. Demolish and remove facilities/ features/ dumps/ stockpiles from the site. Remove imported concrete/stone/rock foundations/platforms/surfaces from the site. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/ drains/ berms, that may remain in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The End Land Use of these areas may remain Industrial due to residual Soil Contamination. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') problematic areas, as well as those areas where the spread seeded 'grass' did not germinate/create cover. No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated planned End Land Capability is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Existing Salvage Yard	0.68 *ha*	Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Dismantle, Recover materials from plant infrastructure & buildings sell and or remove from site. **Measure 2:** Demolish and clear services, infrastructure and concrete paved surfaces and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient. **Measure 4:** Allow intercepted water from SW PCD 1A and 1B to evaporate. . Use water for dust suppression and vegetation to establish. Excess water to be pumped to TSF for evaporation. **Measure 5:** Remove SW PCD 1A & 1B once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and available clean material stockpiles. Level & grade surface and vegetate.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Dismantle, Recover materials from plant infrastructure & buildings sell and or remove from site. **Measure 2:** Demolish and clear services, infrastructure and concrete paved surfaces and dispose at Open Cast. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient. **Measure 4:** Allow intercepted water from SW PCD 1A and 1B to evaporate. . Use water for dust suppression and vegetation to establish. Excess water to be pumped to TSF for evaporation. **Measure 5:** Remove SW PCD 1A & 1B once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and available clean material stockpiles. Level & grade surface and vegetate.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Existing Salvage Yard	0.68 *ha*	Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Alloys Plant Sewage Plant	0.28 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Removed 'Dam Features': Avoid unnecessary disturbance of any underlying/surrounding in-situ soils that may already be present at the site. Restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. Removed 'Dam Features'). **Measure 2:** Removed 'Dam Features': Re-grade Removed 'Dam Features' footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 5.7 degrees / 10.0 % percentage grade for vertic 'topsoil' material.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Alloys Plant Sewage Plant	0.28 *ha*		Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Permanent 'Dam Features': Soil Erosion may be reduced by reducing side-slopes to < 5.7 degrees / 10.0 % percentage grade where necessary.		
		Soil Fertility	**Measure 1:** Removed 'Dam Features': Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded (re-sloped) Removed 'Dam Features' with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for the topsoiling' exercise; given firstly that the material has natural sealing properties (important given the potentially polluting nature of the Removed 'Dam Features', and secondly that this broad soil group occurs extensively. Removed and Permanent 'Dam Features': Utilise live topsoil to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize the 'topsoil' immediately after 'topsoiling' and once every 3/4 years thereafter. Do not fertilise the soils in areas displaying healthy existing locally indigenous 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Removed 'Dam Features': The majority of the 'Dam Features' will be removed/'rehabilitated as follows: De-water the 'Dam Features' by means of evaporation, and if necessary pumping and purification. Scrape up the sediments on the base/walls of the 'Dam Features', and dispose of in the TSF. Remove imported concrete/stone/rock walls and dispose of in the opencast pit if potentially non-polluting, or in the TSF if potentially polluting. Push the walls of the 'Dam Features' into the void of the dam, thereby achieving a relatively level surface that approximates the surrounding landscape. Spray water for dust suppression. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust. The decision regarding the necessity for the placement of a compacted-'remoulded' vertic soil seal; overlying an impermeable membrane; and underlying the vertic 'topsoil' material on top of the removed/ 'rehabilitated' 'Dam Features' will be determined by the pollution potential of the re-graded features. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Furthermore, the base of the 'Dam Features' should also have been well sealed with an impermeable membrane and a compacted-'re-moulded' soil layer, during construction. Thus the infiltration of rainwater is not likely to be an issue. Finally 'topsoil' the Removed 'Dam Features'. Permanent 'Dam Features': A number of the 'Dam Features' (Pollution Control Dams) may remain in use in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Alloys Plant Sewage Plant	0.28 *ha*	Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. Removed 'Dam Features': The End Land Use of the Removed 'Dam Features' may be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). However, should all of the contaminated soils/'wastes' have been effectively removed from the various sites, then the End Land Use of Extensive Grazing may be attained. Functional surface cover to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas. Permanent Dam Features': The End Land Use of the Permanent 'Dam Features' that will remain in perpetuity will be Industrial due to potential Soil Contamination.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Removed 'Dam Features': The End Land Capability of the Removed 'Dam Features' will be Grazing or Arable in terms of topsoiling depth; but may be downgraded to Industrial due to potential Soil Contamination. Permanent 'Dam Features': The End Land Capability of the Permanent 'Dam Features' side-slopes that remain in perpetuity will be Industrial (non-grazing capability class), due to potential Soil Contamination and probably side-slopes of > 5.7 degrees/ 10.0 % percentage grade that will consequently be poorly- or non-'topsoiled'/vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Clear sludge from beds and demolish concrete beds. Dispose concrete at Open Cast. **Measure 2:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Alloys Plant Sewage Plant	0.28 *ha*	Surface Water Quality	**Measure 1:** Clear sludge from beds and demolish concrete beds. Dispose concrete at Open Cast. **Measure 2:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
OB Plant Fines in Open Pit (Slurry)	Open Pit Area 53.11 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Topsoil' the entire re-graded (re-sloped) opencast footprint. Vegetated 'topsoil' stockpile berms should already exist adjacent of the 'soft's berms. Alternatively source soil 'topsoil' from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for 'topsoiling' purposes given that this broad soil group occurs extensively; and furthermore in order to maintain soil/vegetative continuity with the surrounding areas. **Measure 2:** Fill the Opencast voids with the discarded rock/soft's that have remained on site in the Opencast footprint; as well as with potentially non-polluting materials from the Infrastructure/processing/stockpiling areas. Establish a freely draining positive final landscape without ridges/hollows, in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. Re-grade (re-slope) the opencast footprint to < 6.4 degrees/ 11.2 % percentage grade (erosion slope calculated for vertic 'topsoil' material based on the soil erodibility nomograph) where possible. Match surface level of undisturbed surrounds. Slope cannot practically be reduced to this extent for limited sections of the Opencast area, and these sections will thus not be able to be effectively 'topsoiled'/re-vegetated either (given soil erosion on steep slopes). Such areas must be re-sloped to approximately 16.0 degrees if possible, and thereafter re-vegetated using ecological restoration principles and phytoremediation. Surface rocks may be laid out along the contours in such areas, the aforementioned functioning to slow run-off, trap sediments, and thereby create suitable conditions/habitat for the germination of seeds. The recommended maximum gradient (Chamber of Mines) for material dumped on level to gently sloping terrain (therefore also TSF's, and sections of the Opencast area) is at least 1v: 3h (18.4 degrees or 33.0 % percentage grade), the least erosion occurring if the slope angle reduces in the direction of the toe of the pediment (i.e. concave). One of the key findings of extensive surveys and experimental work carried out by the University of the Witwatersrand between 1996 and 2009 was as follows: grass persistence and erosion control were increased, and irrigation decreased, by TSF slope reduction to < 16.0 degrees.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
OB Plant Fines in Open Pit (Slurry)	Open Pit Area 53.11 *ha*	Soil Fertility	**Measure 1:** Utilize tracked vehicles for 'topsoil' handling during the dry season in order to minimise compaction. Do not spray water during the 'topsoiling' process as the raised moisture content will in this case lead to soil compaction. Rip final re-sloped surface to reduce compaction. Remove loose rocks and stony material. Utilise live topsoil to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Sewerage sludge derived from the sludge drying beds of the two sewage plants may be spread out in the Opencast area as 'compost'/mulch.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1: Dust:** Spray water for dust suppression. Tarpaulin cover over haul truck bins. Re-vegetate the entire 'rehabilitated' Opencast area in order to limit run-off and dust. **Run-off:** Maintain/establish the low vegetated 'topsoil' berm that exists around the outer boundary of the opencast footprint area, to intercept 'dirty' water rainfall run-off derived from the opencast area. In areas where a 'soft's presently exists instead of a 'topsoil' berm, the former must be removed and replaced with the latter. **Leaching:** Establish a freely draining final landscape without ridges/hollows, in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. **Order of Horizons:** Vertic A-horizon 'topsoil'; 'Soft's material; - Hard overburden rock and lime rich materials ('breaker' layer to the upward capillary movement of polluted/acid water; lime will neutralize Acid Rock/Mine Drainage to certain extent); and Potentially polluting residual historical 'wastes' (smelter related) / spoil material (mining related). The latter materials must never directly underlie the 'topsoil', since this may lead to pollution / ARD contaminating the overlying 'topsoil' layers by capillary action. **'Waste':** Do not dispose of potentially polluting 'waste' materials from the 'Infrastructure' area in the Opencast void, because such materials will impact the groundwater-table. Such materials must be disposed of in an appropriate facility. Only materials determined to be relatively potentially non-polluting (low pollution potential) may currently be disposed of in the void of the Opencast pit. Do not utilise 'dirty' 'topsoil' that was historically mixed with potentially polluting 'waste' materials. Rock dumps/stockpiles (Opencast area, Morula Mining), Mixed Materials stockpiles (Alloys Smelting Plant Facilities), and Waste (HMS and CRP waste, OB Plant fines waste, OB Plant coarse waste):	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
OB Plant Fines in Open Pit (Slurry)	Open Pit Area 53.11 *ha*		Remove rock/mixed materials dumps/stockpiles; and Scrape up and remove the thick (> 40cm - > 100 cm) historical underlying layer that is spread throughout these processing and stockpiling areas, exposing the underlying in-situ soils. Transport (haul truck) and dispose of the remaining aforementioned materials in the void of the Opencast pit provided that they are potentially non-polluting. The same applies to the HMS and CRP waste, OB Plant fines waste, and OB Plant coarse waste materials/areas. Re-grade, 'topsoil', sample, fertilise, and re-vegetate the footprints of the aforementioned areas in the various Infrastructure areas. Wash residual 'wastes' from elsewhere off the machinery before utilising the machinery for transportation of 'topsoil' or rehabilitation 'topsoiling' purposes. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/drains/berms, that may remain in perpetuity downslope of the Opencast area. The aforementioned will limit 'clean' and 'dirty' water run-off and seepage derived from elsewhere from entering the filled (buried) Opencast pit voids. Monitor leached contamination on an ongoing basis via interpolation of the data from the downslope boreholes. Excavate additional boreholes where deemed necessary, purify the pumped water accordingly, and release back to the environment.		
		Land Use	**Measure 1:** The stated End Land Use for the rehabilitated HERNIC areas in general is Extensive Grazing. The End Land Use of the rehabilitated Opencast area will largely be Extensive Grazing. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. No grazing or burning allowed until vegetation is well established in the post-closure phase. However, certain sections will remain Mining due to steep to very steep slopes that will consequently not be able to be effectively 'topsoiled'/re-vegetated either. Such areas must be re-sloped to approximately 16.0 degrees if possible, and thereafter re-vegetated using ecological restoration principles and phytoremediation. **Measure 2:** No grazing or burning allowed in such areas, either currently or in the future.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
OB Plant Fines in Open Pit (Slurry)	Open Pit Area 53.11 *ha*	Land Capability	**Measure 1:** The stated End Land Capability for the rehabilitated HERNIC areas in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm preferably more (>= 60 cm – Arable Capability Class depth standard). The End Land Capability of the Grazing Capability class depth standard will easily be achieved by 'topsoiling' in the majority of the Opencast area. The End Land Capability of the limited steep to very steep sections of the Opencast area will remain Mining (i.e. Non-Grazing capability class), given that these slopes will consequently be non- or poorly- 'topsoiled'/vegetated. The End Land Capability in the three rehabilitated areas (last three Aspects in the list) currently meets the 'topsoiling' depth standard (50-60cm, 30-50cm, and 20-30cm respectively) required for the post-disturbance Grazing Capability class.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Drill and construct groundwater monitoring boreholes within the rehabilitated opencast pits once backfilled with OB Plant Fines, to monitor the quality of the water in the rehabilitated pit. **Measure 2:** Monitor groundwater resource quality at dedicated weathered zone monitoring boreholes adjacent to the rehabilitated opencast pits. **Measure 3:** Any adverse trends in the groundwater quality recorded from the dedicated monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Remnants of fines to be worked into back fill layers in Open Cast. No pockets or small voids to exist during backfilling that would cause eventual surface depressions. **Measure 2:** Open cast to be backfilled; surface profiled, topsoiled and vegetated as indicated.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Remnants of fines to be worked into back fill layers in Open Cast. No pockets or small voids to exist during backfilling that would cause eventual surface depressions. **Measure 2:** Open cast to be backfilled; surface profiled, topsoiled and vegetated as indicated.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
OB Plant Fines in Open Pit (Slurry)	Open Pit Area 53.11 *ha*	Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
OB Plant Coarse Waste in Open Pit (Trucks)	Open Pit Area 53.11 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
OB Plant Coarse Waste in Open Pit (Trucks)	Open Pit Area 53.11 *ha*	Soil Horizon	**Measure 1:** Topsoil' the entire re-graded opencast footprint. Vegetated 'topsoil' stockpile berms should already exist adjacent of the 'soft's berms. Alternatively source soil 'topsoil' from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for 'topsoiling' purposes given that this broad soil group occurs extensively; and furthermore in order to maintain soil/vegetative continuity with the surrounding areas. **Measure 2:** Fill the Opencast voids with the discarded rock/soft's that have remained on site in the Opencast footprint; as well as with potentially non-polluting materials from the Infrastructure/ processing/ stockpiling areas. Establish a freely draining final landscape, in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. Re-grade (re-slope) the opencast footprint to < 6.4 degrees/ 11.2 % percentage grade where possible. Match surface level of undisturbed surrounds. Slope cannot practically be reduced to this extent for limited sections of the Opencast area, and these sections will thus not be able to be effectively 'topsoiled'/re-vegetated either (given soil erosion on steep slopes). Such areas must be re-sloped to approximately 16.0 degrees if possible, and thereafter re-vegetated using ecological restoration principles and phytoremediation. Surface rocks may be laid out along the contours in such areas, the aforementioned functioning to slow run-off, trap sediments, and thereby create suitable conditions/habitat for the germination of seeds. The recommended maximum gradient for material dumped on level to gently sloping terrain (therefore also TSF's, and sections of the Opencast area) is at least 1v: 3h (18.4 degrees or 33.0 % percentage grade), the least erosion occurring if the slope angle reduces in the direction of the toe of the pediment (i.e. concave).	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles for 'topsoil' handling during the dry season in order to minimise compaction. Do not spray water during the 'topsoiling' process as the raised moisture content will in this case lead to soil compaction. Rip final re-sloped surface to reduce compaction. Remove loose rocks and stony material. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Sewerage sludge derived from the sludge drying beds of the two sewage plants may be spread out in the Opencast area as 'compost'/mulch.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
OB Plant Coarse Waste in Open Pit (Trucks)	Open Pit Area 53.11 *ha*	Soil Contamination	**Measure 1: Dust:** Spray water for dust suppression. Tarpaulin cover over haul truck bins. Re-vegetate the entire 'rehabilitated' Opencast area in order to limit run-off and dust. **Run-off:** Maintain/establish the low vegetated 'topsoil' berm that exists around the outer boundary of the opencast (rock dumps/open void) footprint area, to intercept 'dirty' water rainfall run-off derived from the opencast area. In areas where a 'soft's (weathering rock and fines) berm presently exists instead of a 'topsoil' berm, the former must be removed and replaced with the latter. **Leaching:** Establish a freely draining final landscape without ridges/hollows, in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. **Order of Horizons:** Vertic A-horizon 'topsoil'; 'Soft's material; - Hard overburden rock and lime rich materials ('breaker' layer to the upward capillary movement of polluted/acid water; lime will neutralize Acid Rock/Mine Drainage to certain extent); and Potentially polluting residual historical 'wastes' (smelter related) / spoil material (mining related). The latter materials must never directly underlie the 'topsoil', since this may lead to pollution / ARD contaminating the overlying 'topsoil' layers by capillary action. **'Waste':** Do not dispose of potentially polluting 'waste' materials from the 'Infrastructure' area in the Opencast void. Such materials must be disposed of in an appropriate facility (e.g. TSF or Slimes Dumps). Only materials determined to be relatively potentially non-polluting may currently be disposed of in the void of the Opencast pit. Do not utilise 'dirty' 'topsoil' that was historically mixed with potentially polluting 'waste' materials. Rock dumps/stockpiles (Opencast area, Morula Mining), Mixed Materials stockpiles (Alloys Smelting Plant Facilities), and Waste (HMS and CRP waste, OB Plant fines waste, OB Plant coarse waste): Remove rock/mixed materials dumps/stockpiles; and Scrape up and remove the generally thick (> 40cm - > 100 cm) historical underlying layer that is spread extensively throughout these processing and stockpiling areas, exposing the underlying in-situ soil. Transport and dispose of the remaining materials in the void of the Opencast pit provided that they are potentially non-polluting. The same applies to the HMS and CRP waste, OB Plant fines waste, and OB Plant coarse waste materials/areas. Re-grade, 'topsoil', sample, fertilise, and re-vegetate the footprints of the aforementioned areas in the various Infrastructure areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
OB Plant Coarse Waste in Open Pit (Trucks)	Open Pit Area 53.11 *ha*		Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/drains/berms, that may remain in perpetuity downslope of the Opencast area. The aforementioned will limit 'clean' and 'dirty' water run-off and seepage derived from elsewhere from entering the filled (buried) Opencast pit voids. Monitor leached contamination on an ongoing basis via interpolation of the data from the downslope boreholes. Excavate additional boreholes where deemed necessary, purify the pumped water accordingly, and release back to the environment.		
		Land Use	**Measure 1:** The stated End Land Use for the rehabilitated HERNIC areas in general is Extensive Grazing. The End Land Use of the rehabilitated Opencast area will largely be Extensive Grazing. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or burning allowed until vegetation is well established in the post-closure phase. However, certain sections will remain Mining due to steep to very steep slopes that will consequently not be able to be effectively 'topsoiled'/re-vegetated either. Such areas must be re-sloped to approximately 16.0 degrees if possible, and thereafter re-vegetated using ecological restoration principles and phytoremediation.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated End Land Capability for the rehabilitated HERNIC areas in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm, but preferably more (>= 60 cm – Arable Capability Class depth standard). The End Land Capability of the Grazing Capability class depth standard will easily be achieved by 'topsoiling' in the majority of the Opencast area. The End Land Capability of the limited steep to very steep sections of the Opencast area will remain Mining (i.e. Non-Grazing capability class), given that these slopes will consequently be non- or poorly- 'topsoiled'/vegetated. The End Land Capability in the three rehabilitated areas (last three Aspects in the list) currently meets the 'topsoiling' depth standard (50-60cm, 30-50cm, and 20-30cm respectively) required for the post-disturbance Grazing Capability class.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
OB Plant Coarse Waste in Open Pit (Trucks)	Open Pit Area 53.11 *ha*	Groundwater Quality	**Measure 1:** Drill and construct groundwater monitoring boreholes within the rehabilitated opencast pits once backfilled with OB Plant Fines, to monitor the quality of the water in the rehabilitated pit. **Measure 2:** Maintain the water level in the pit at depths below the groundwater level depths within the adjacent aquifers. **Measure 3:** Monitor groundwater resource quality at dedicated weathered zone monitoring boreholes adjacent to the rehabilitated opencast pits. **Measure 4:** Any adverse trends in the groundwater quality recorded from the dedicated monitoring boreholes are to be reported and assessed, followed by the development of a site specific groundwater remediation plan.	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Coarse waste to be worked into bottom zone during backfilling of Open Cast. No pockets or small voids to exist during backfilling that would cause eventual surface depressions. **Measure 2:** Open cast to be backfilled; surface profiled, topsoiled and vegetated as indicated.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Coarse waste to be worked into bottom zone during backfilling of Open Cast. No pockets or small voids to exist during backfilling that would cause eventual surface depressions. **Measure 2:** Open cast to be backfilled; surface profiled, topsoiled and vegetated as indicated.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
OB Plant Coarse Waste in Open Pit (Trucks)	Open Pit Area 53.11 *ha*	Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Plant Drinking Water Dam	1.05 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Removed 'Dam Features': Avoid unnecessary disturbance of any underlying/surrounding in-situ soils that may already be present at the site. Restore Soil Distribution by the process of 'topsoiling' the footprints of removed features. **Measure 2:** Removed 'Dam Features': Re-grade (re-slope) Removed 'Dam Features' footprints to undisturbed surrounding slopes of 1-4 degrees, but < 5.7 degrees / 10.0 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Permanent 'Dam Features': Soil Erosion may be reduced by reducing side-slopes to < 5.7 degrees / 10.0 % percentage grade where necessary.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Plant Drinking Water Dam	1.05 *ha*	Soil Fertility	**Measure 1:** Removed 'Dam Features': Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded (re-sloped) Removed 'Dam Features' with 'topsoil' sourced from the adjacent 'topsoil' berms or alternatively source soil from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for the topsoiling' exercise; given firstly that the material has natural sealing properties (important given the potentially polluting nature of the Removed 'Dam Features'), and secondly that this broad soil group occurs extensively. Removed and Permanent 'Dam Features': Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing locally indigenous 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Removed 'Dam Features': The majority of the 'Dam Features' will be removed/'rehabilitated as follows: De-water the 'Dam Features' by means of evaporation, and if necessary pumping and purification. Scrape up the sediments on the base/walls of the 'Dam Features', and dispose of in the TSF. Remove imported concrete/stone/rock walls and dispose of in the opencast pit if potentially non-polluting, or in the TSF if potentially polluting. Push the walls of the 'Dam Features' into the void of the dam, thereby achieving a relatively level surface that approximates the surrounding landscape. Spray water for dust suppression where necessary when working with machinery. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust. The decision regarding the necessity for the placement of a compacted-'remoulded' vertic soil seal; overlying an impermeable membrane; and underlying the vertic 'topsoil' material on top of the removed/ 'rehabilitated' 'Dam Features' will be determined by the pollution potential of the re-graded features. Construct a seal layer (compacted-'re-moulded' soil layer) directly overlying potentially highly-polluting rehabilitated features only. Furthermore, the base of the 'Dam Features' should also have been well sealed with an impermeable membrane and a compacted-'re-moulded' soil layer, during construction. Thus the infiltration of rainwater is not likely to be an issue. Finally 'topsoil' the Removed 'Dam Features'. Permanent 'Dam Features': A number of the 'Dam Features' (Pollution Control Dams) may remain in use in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Plant Drinking Water Dam	1.05 *ha*	Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. Removed 'Dam Features': The End Land Use of the Removed 'Dam Features' may be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass'. However, should all of the contaminated soils/'wastes' have been effectively removed from the various sites, then the End Land Use of Extensive Grazing may be attained. Functional surface cover to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas (e.g. areas with high metal or sulphate loads, or other). Permanent Dam Features': The End Land Use of the Permanent 'Dam Features' that will remain in perpetuity will be Industrial due to potential Soil Contamination. Furthermore, probable side-slopes of > 5.7 degrees/ 10.0 % percentage grade will consequently be poorly- 'topsoiled'/re-vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Removed 'Dam Features': The End Land Capability of the Removed 'Dam Features' will be Grazing or Arable in terms of topsoiling depth; but may be downgraded to Industrial due to potential Soil Contamination, the quantification of the quantification of the aforementioned pending the completion of a Contaminated Land Assessment (refer to Soil Contamination). Permanent 'Dam Features': The End Land Capability of the Permanent 'Dam Features' side-slopes that remain in perpetuity will be Industrial (non-grazing capability class), due to potential Soil Contamination and probably side-slopes of > 5.7 degrees/ 10.0 % percentage grade that will consequently be poorly- or non-'topsoiled'/vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Plant Drinking Water Dam	1.05 *ha*	Surface Water Quantity	**Measure 1:** Water should be isolated and left to evaporate. **Measure 2:** Dam liners should be removed and basins backfilled with wall soils. **Measure 3:** Water to be used for dust suppression and irrigation of the upslope verges. Excess water left to evaporate or pumped to TSF for evaporation. **Measure 4:** Demolish silt traps and bury in dam basin prior to backfill.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Water should be isolated and left to evaporate. **Measure 2:** Dam liners should be removed and basins backfilled with wall soils. **Measure 3:** Water to be used for dust suppression and irrigation of the upslope verges. Excess water left to evaporate or pumped to TSF for evaporation. **Measure 4:** Demolish silt traps and bury in dam basin prior to backfill.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Plant Drinking Water Dam	1.05 *ha*	Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Plant Drinking Water Treatment Plant	0.06 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Removed 'Dam Features': Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. Removed 'Dam Features'). **Measure 2:** Removed 'Dam Features': Re-grade (re-slope) Removed 'Dam Features' footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 5.7 degrees / 10.0 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Permanent 'Dam Features': Soil Erosion may be reduced by reducing side-slopes to < 5.7 degrees / 10.0 % percentage grade where necessary. was displaying healthy existing locally indigenous 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Removed 'Dam Features': Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded (re-sloped) Removed 'Dam Features' with 'topsoil' sourced from the adjacent 'topsoil' berms or alternatively source soil from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for the topsoiling' exercise; given firstly that the material has natural sealing properties (important given the potentially polluting nature of the Removed 'Dam Features'), and secondly that this broad soil group occurs extensively. Removed and Permanent 'Dam Features': Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) locally indigenous 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Plant Drinking Water Treatment Plant	0.06 *ha*	Soil Contamination	**Measure 1:** Removed 'Dam Features': The majority of the 'Dam Features' will be removed/'rehabilitated as follows: De-water the 'Dam Features' by means of evaporation, and if necessary pumping and purification. Scrape up the sediments on the base/walls of the 'Dam Features', and dispose of in the TSF. Remove imported concrete/stone/rock walls and dispose of in the opencast pit if potentially non-polluting, or in the TSF if potentially polluting. Push the walls of the 'Dam Features' into the void of the dam, thereby achieving a relatively level surface that approximates the surrounding landscape. Spray water for dust suppression. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust. The decision regarding the necessity for the placement of a compacted-'remoulded' vertic soil seal; overlying an impermeable membrane; and underlying the vertic 'topsoil' material on top of the removed/ 'rehabilitated' 'Dam Features' will be determined by the pollution potential of the re-graded features. Construct a seal layer (compacted-'re-moulded' soil layer) directly overlying potentially highly-polluting rehabilitated features only. Furthermore, the base of the 'Dam Features' should also have been well sealed with an impermeable membrane and a compacted-'re-moulded' soil layer, during construction. Thus the infiltration of rainwater is not likely to be an issue. Finally 'topsoil' the Removed 'Dam Features'. Permanent 'Dam Features': A number of the 'Dam Features' (Pollution Control Dams) may remain in use in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. Removed 'Dam Features': The End Land Use of the Removed 'Dam Features' may be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). However, should all of the contaminated soils/'wastes' have been effectively removed from the various sites, then the End Land Use of Extensive Grazing may be attained. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Plant Drinking Water Treatment Plant	0.06 *ha*		**Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas. Permanent Dam Features': The End Land Use of the Permanent 'Dam Features' that will remain in perpetuity will be Industrial due to potential Soil Contamination. Furthermore, probable side-slopes of > 5.7 degrees/ 10.0 % percentage grade will consequently be poorly- 'topsoiled'/re-vegetated.		
		Land Capability	**Measure 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Removed 'Dam Features': The End Land Capability of the Removed 'Dam Features' will be Grazing or Arable in terms of topsoiling depth; but may be downgraded to Industrial due to potential Soil Contamination, the quantification of the quantification of the aforementioned pending the completion of a Contaminated Land Assessment (refer to Soil Contamination). Permanent 'Dam Features': The End Land Capability of the Permanent 'Dam Features' side-slopes that remain in perpetuity will be Industrial (non-grazing capability class), due to potential Soil Contamination and probably side-slopes of > 5.7 degrees/ 10.0 % percentage grade that will consequently be poorly- or non-'topsoiled'/vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Demolish treatment dam 1m below surface and backfill with soil from existing topsoil stockpiles. **Measure 2:** Reinstate surface to be free draining and vegetate.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Demolish treatment dam 1m below surface and backfill with soil from existing topsoil stockpiles. **Measure 2:** Reinstate surface to be free draining and vegetate.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Plant Drinking Water Treatment Plant	0.06 *ha*	Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Plant Process Water Dam and Silt Traps	3.63 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Removed 'Dam Features': Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. Removed 'Dam Features'). Removed 'Dam Features': Re-grade (re-slope) Removed 'Dam Features' footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 5.7 degrees / 10.0 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Permanent 'Dam Features': Soil Erosion may be reduced by reducing side-slopes to < 5.7 degrees / 10.0 % percentage grade where necessary.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Plant Process Water Dam and Silt Traps	3.63 *ha*	Soil Fertility	**Measure 1:** Removed 'Dam Features': Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded (re-sloped) Removed 'Dam Features' with 'topsoil' sourced from the adjacent 'topsoil' berms or alternatively source soil from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for the topsoiling' exercise; given firstly that the material has natural sealing properties (important given the potentially polluting nature of the Removed 'Dam Features'), and secondly that this broad soil group occurs extensively. Removed and Permanent 'Dam Features': Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) locally indigenous 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Removed 'Dam Features': The majority of the 'Dam Features' will be removed/'rehabilitated as follows: De-water the 'Dam Features' by means of evaporation, and if necessary pumping and purification. Scrape up the sediments on the base/walls of the 'Dam Features', and dispose of in the TSF. Remove imported concrete/stone/rock walls and dispose of in the opencast pit if potentially non-polluting, or in the TSF if potentially polluting. Push the walls of the 'Dam Features' into the void of the dam, thereby achieving a relatively level surface that approximates the surrounding landscape. Spray water for dust suppression. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust. The decision regarding the necessity for the placement of a compacted-'remoulded' vertic soil seal; overlying an impermeable membrane; and underlying the vertic 'topsoil' material on top of the removed/ 'rehabilitated' 'Dam Features' will be determined by the pollution potential of the re-graded features. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Furthermore, the base of the 'Dam Features' should also have been well sealed with an impermeable membrane and a compacted-'re-moulded' soil layer, during construction. Thus the infiltration of rainwater is not likely to be an issue. Finally 'topsoil' the Removed 'Dam Features'. Permanent 'Dam Features': A number of the 'Dam Features' (Pollution Control Dams) may remain in use in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Plant Process Water Dam and Silt Traps	3.63 *ha*	Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. Removed 'Dam Features': The End Land Use of the Removed 'Dam Features' may be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). However, should all of the contaminated soils/'wastes' have been effectively removed from the various sites, then the End Land Use of Extensive Grazing may be attained. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas. Permanent Dam Features': The End Land Use of the Permanent 'Dam Features' that will remain in perpetuity will be Industrial due to potential Soil Contamination. Furthermore, probable side-slopes of > 5.7 degrees/ 10.0 % percentage grade will consequently be poorly- 'topsoiled'/re-vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measures 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Removed 'Dam Features': The End Land Capability of the Removed 'Dam Features' will be Grazing or Arable in terms of topsoiling depth; but may be downgraded to Industrial due to potential Soil Contamination, the quantification of the quantification of the aforementioned pending the completion of a Contaminated Land Assessment (refer to Soil Contamination). Permanent 'Dam Features': The End Land Capability of the Permanent 'Dam Features' side-slopes that remain in perpetuity will be Industrial (non-grazing capability class), due to potential Soil Contamination and probably side-slopes of > 5.7 degrees/ 10.0 % percentage grade that will consequently be poorly- or non-'topsoiled'/vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Plant Process Water Dam and Silt Traps	3.63 *ha*	Surface Water Quantity	**Measure 1:** Water in PWDs and OB Dam should be isolated and left to evaporate. **Measure 2:** PWD and OB Dam liners should be removed and basins backfilled with wall soils. **Measure 3:** Plant SW PCD 1A & 1B and feeding SW drains to be left until upslope Area A4 has been cleared, rehabilitated and stabilized. **Measure 4:** SW PCD 1A & 1B water to be used for dust suppression and irrigation of the upslope verges. Excess water left to evaporate or pumped to TSF for evaporation. **Measure 5:** Demolish silt traps and bury in dam basin prior to backfill. **Measure 6:** Remove SW PCD 1A & 1B once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and available clean material stockpiles. Level & grade surface and vegetate. **Measure 7:** Isolate PWD and OB Dams from any runoff. **Measure 8:** Water in PWDs and OB Dam should be isolated and left to evaporate.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Water in PWDs and OB Dam should be isolated and left to evaporate. **Measure 2:** PWD and OB Dam liners should be removed and basins backfilled with wall soils. **Measure 3:** Plant SW PCD 1A & 1B and feeding SW drains to be left until upslope Area A4 has been cleared, rehabilitated and stabilized. **Measure 4:** SW PCD 1A & 1B water to be used for dust suppression and irrigation of the upslope verges. Excess water left to evaporate or pumped to TSF for evaporation. **Measure 5:** Demolish silt traps and bury in dam basin prior to backfill. **Measure 6:** Remove SW PCD 1A & 1B once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and available clean material stockpiles. Level & grade surface and vegetate. **Measure 7:** Isolate PWD and OB Dams from any runoff. **Measure 8:** Water in PWDs and OB Dam should be isolated and left to evaporate.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation.	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Plant Process Water Dam and Silt Traps	3.63 *ha*		**Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan		
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
OB Plant Return Water Dam	1.73 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
OB Plant Return Water Dam	1.73 *ha*	Soil Horizon	**Measure 1:** Removed 'Dam Features': Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. Removed 'Dam Features'). **Measure 2:** Removed 'Dam Features': Re-grade (re-slope) Removed 'Dam Features' footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 5.7 degrees / 10.0 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Permanent 'Dam Features': Soil Erosion may be reduced by reducing side-slopes to < 5.7 degrees / 10.0 % percentage grade where necessary.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Removed 'Dam Features': Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded (re-sloped) Removed 'Dam Features' with 'topsoil' sourced from the adjacent 'topsoil' berms or alternatively source soil from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for the topsoiling' exercise; given firstly that the material has natural sealing properties (important given the potentially polluting nature of the Removed 'Dam Features', and secondly that this broad soil group occurs extensively. Removed and Permanent 'Dam Features': Utilise live topsoil to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize the 'topsoil' immediately after 'topsoiling' and once every 3/ 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing locally indigenous 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Removed 'Dam Features': The majority of the 'Dam Features' will be removed/'rehabilitated as follows: De-water the 'Dam Features' by means of evaporation, and if necessary pumping and purification. Scrape up the sediments on the base/walls of the 'Dam Features', and dispose of in the TSF. Remove imported concrete/stone/rock walls and dispose of in the opencast pit if potentially non-polluting, or in the TSF if potentially polluting. Push the walls of the 'Dam Features' into the void of the dam, thereby achieving a relatively level surface that approximates the surrounding landscape. Spray water for dust suppression. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
OB Plant Return Water Dam	1.73 *ha*		The decision regarding the necessity for the placement of a compacted-'remoulded' vertic soil seal; overlying an impermeable membrane; and underlying the vertic 'topsoil' material on top of the removed/ 'rehabilitated' 'Dam Features' will be determined by the pollution potential of the re-graded features. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Furthermore, the base of the 'Dam Features' should also have been well sealed with an impermeable membrane and a compacted-'re-moulded' soil layer, during construction. Thus the infiltration of rainwater is not likely to be an issue. Finally 'topsoil' the Removed 'Dam Features'. Permanent 'Dam Features': A number of the 'Dam Features' (Pollution Control Dams) may remain in use in perpetuity.		
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. Removed 'Dam Features': The End Land Use of the Removed 'Dam Features' may be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass'. However, should all of the contaminated soils/'wastes' have been effectively removed from the various sites, then the End Land Use of Extensive Grazing may be attained. Functional surface cover to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas. Permanent Dam Features': The End Land Use of the Permanent 'Dam Features' that will remain in perpetuity will be Industrial due to potential Soil Contamination. Furthermore, probable side-slopes of > 5.7 degrees/ 10.0 % percentage grade will consequently be poorly- 'topsoiled'/re-vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measures 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm, but preferably more (>= 60 cm – Arable Capability Class depth standard). Removed 'Dam Features': The End Land Capability of the Removed 'Dam Features' will be Grazing or Arable in terms of topsoiling depth; but may be downgraded to Industrial due to potential Soil Contamination.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
OB Plant Return Water Dam	1.73 *ha*		Permanent 'Dam Features': The End Land Capability of the Permanent 'Dam Features' side-slopes that remain in perpetuity will be Industrial (non-grazing capability class), due to potential Soil Contamination and probably side-slopes of > 5.7 degrees/ 10.0 % percentage grade that will consequently be poorly- or non-'topsoiled'/vegetated.		
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Water in PWDs and OB Dam should be isolated and left to evaporate. **Measure 2:** PWD and OB Dam liners should be removed and basins backfilled with wall soils. **Measure 3:** Plant SW PCD 1A & 1B and feeding SW drains to be left until upslope Area A4 has been cleared, rehabilitated and stabilized. **Measure 4:** SW PCD 1A & 1B water to be used for dust suppression and irrigation of the upslope verges. Excess water left to evaporate or pumped to TSF for evaporation. **Measure 5:** Demolish silt traps and bury in dam basin prior to backfill. **Measure 6:** Remove SW PCD 1A & 1B once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and available clean material stockpiles. Level & grade surface and vegetate. **Measure 7:** Isolate PWD and OB Dams from any runoff. **Measure 8:** Water in PWDs and OB Dam should be isolated and left to evaporate.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Water in PWDs and OB Dam should be isolated and left to evaporate. **Measure 2:** PWD and OB Dam liners should be removed and basins backfilled with wall soils. **Measure 3:** Plant SW PCD 1A & 1B and feeding SW drains to be left until upslope Area A4 has been cleared, rehabilitated and stabilized. **Measure 4:** SW PCD 1A & 1B water to be used for dust suppression and irrigation of the upslope verges. Excess water left to evaporate or pumped to TSF for evaporation. **Measure 5:** Demolish silt traps and bury in dam basin prior to backfill. **Measure 6:** Remove SW PCD 1A & 1B once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and available clean material stockpiles. Level & grade surface and vegetate. **Measure 7:** Isolate PWD and OB Dams from any runoff. **Measure 8:** Isolate Water in PWDs and OB Dam and evaporate.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
OB Plant Return Water Dam	1.73 *ha*	Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Chrome Recovery Plant Process Water Dam	0.57 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Chrome Recovery Plant Process Water Dam	0.57 *ha*	Soil Horizon	**Measure 1:** Removed 'Dam Features': Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. Removed 'Dam Features'). **Measure 2:** Removed 'Dam Features': Re-grade (re-slope) Removed 'Dam Features' footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 5.7 degrees / 10.0 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Permanent 'Dam Features': Soil Erosion may be reduced by reducing side-slopes to < 5.7 degrees / 10.0 % percentage grade where necessary.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Removed 'Dam Features': Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded (re-sloped) Removed 'Dam Features' with 'topsoil' sourced from the adjacent 'topsoil' berms or alternatively source soil from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for the topsoiling' exercise; given firstly that the material has natural sealing properties (important given the potentially polluting nature of the Removed 'Dam Features'), and secondly that this broad soil group occurs extensively. Removed and Permanent 'Dam Features': Utilise live topsoil to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing locally indigenous 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Removed 'Dam Features': The majority of the 'Dam Features' will be removed/'rehabilitated as follows: De-water the 'Dam Features' by means of evaporation, and if necessary pumping and purification. Scrape up the sediments on the base/walls of the 'Dam Features', and dispose of in the TSF. Remove imported concrete/stone/rock walls and dispose of in the opencast pit if potentially non-polluting, or in the TSF if potentially polluting. Push the walls of the 'Dam Features' into the void of the dam. Spray water for dust suppression. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust. The decision regarding the necessity for the placement of a compacted-'remoulded' vertic soil seal; overlying an impermeable membrane; and underlying the vertic 'topsoil' material on top of the removed/ 'rehabilitated' 'Dam Features' will be determined by the pollution potential of the re-graded features.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Chrome Recovery Plant Process Water Dam	0.57 *ha*		Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Furthermore, the base of the 'Dam Features' should also have been well sealed with an impermeable membrane and a compacted-'re-moulded' soil layer, during construction. Thus the infiltration of rainwater is not likely to be an issue. Finally 'topsoil' the Removed 'Dam Features'. Permanent 'Dam Features': A number of the 'Dam Features' (Pollution Control Dams) may remain in use in perpetuity.		
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. Removed 'Dam Features': The End Land Use of the Removed 'Dam Features' may be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass'. However, should all of the contaminated soils/'wastes' have been effectively removed from the various sites, then the End Land Use of Extensive Grazing may be attained. Functional surface cover to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas. Permanent Dam Features': The End Land Use of the Permanent 'Dam Features' that will remain in perpetuity will be Industrial due to potential Soil Contamination. Furthermore, probable side-slopes of > 5.7 degrees/ 10.0 % percentage grade will consequently be poorly- 'topsoiled'/re-vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measures 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm, but preferably more (>= 60 cm – Arable Capability Class depth standard). Removed 'Dam Features': The End Land Capability of the Removed 'Dam Features' will be Grazing or Arable in terms of topsoiling depth; but may be downgraded to Industrial due to potential Soil Contamination. Permanent 'Dam Features': The End Land Capability of the Permanent 'Dam Features' side-slopes that remain in perpetuity will be Industrial (non-grazing capability class), due to potential Soil Contamination and probably side-slopes of > 5.7 degrees/ 10.0 % percentage grade that will consequently be poorly- or non-'topsoiled'/vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Chrome Recovery Plant Process Water Dam	0.57 *ha*	Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Recycle process water to TSF or allow to evaporate. **Measure 2:** Remove all sediments and silts from the CRP RWD when dry and dispose at TSF. **Measure 3:** Demolish concrete dam 1m below n.g.l. and dispose at open cast. Backfill to n.g.l.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Recycle process water to TSF or allow to evaporate. **Measure 2:** Remove all sediments and silts from the CRP RWD when dry and dispose at TSF. **Measure 3:** Demolish concrete dam 1m below n.g.l. and dispose at open cast. Backfill to n.g.l.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Chrome Recovery Plant Process Water Dam	0.57 *ha*	Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Alloys Plant Storm Water Management Berms and Canals	Refer to New Proposed Activities in the Section below (Table 9.1(b))				
Plant Storm Water Pollution Control Dam (PCD)	1.92 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Removed 'Dam Features': Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. Restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. Removed 'Dam Features'). **Measure 2:** Removed 'Dam Features': Re-grade Removed 'Dam Features' footprints to undisturbed surrounding slopes of 1-4 degrees, but < 5.7 degrees / 10.0 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Permanent 'Dam Features': Soil Erosion may be reduced by reducing side-slopes to < 5.7 degrees / 10.0 % percentage grade where necessary.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Removed 'Dam Features': Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded Removed 'Dam Features' with 'topsoil' sourced from the 'topsoil' berms, or source soil from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for the topsoiling' exercise; given that the material has natural sealing properties, and that this broad soil group occurs extensively. Removed and Permanent 'Dam Features': Utilise live topsoil to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Plant Storm Water Pollution Control Dam (PCD)	1.92 *ha*	Soil Contamination	**Measure 1:** Removed 'Dam Features': The majority of the 'Dam Features' will be removed/'rehabilitated as follows: De-water the 'Dam Features' by means of evaporation, and if necessary pumping and purification. Scrape up the sediments on the base/walls of the 'Dam Features', and dispose of in the TSF. Remove imported concrete/stone/rock walls and dispose of in the opencast pit if potentially non-polluting, or in the TSF if potentially polluting. Push the walls of the 'Dam Features' into the void of the dam, thereby achieving a relatively level surface that approximates the surrounding landscape. Spray water for dust suppression The decision regarding the necessity for the placement of a compacted-'remoulded' vertic soil seal; overlying an impermeable membrane; and underlying the vertic 'topsoil' material on top of the removed/ 'rehabilitated' 'Dam Features' will be determined by the pollution potential of the re-graded features. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Furthermore, the base of the 'Dam Features' should also have been well sealed with an impermeable membrane and a compacted-'re-moulded' soil layer, during construction. Thus the infiltration of rainwater is not likely to be an issue. Finally 'topsoil' the Removed 'Dam Features'. Permanent 'Dam Features': A number of the 'Dam Features' (Pollution Control Dams) may remain in use in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. Removed 'Dam Features': The End Land Use of the Removed 'Dam Features' may be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). Should all of the contaminated soils/'wastes' have been effectively removed from the various sites, then the End Land Use of Extensive Grazing may be attained. Functional surface cover to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas. Permanent Dam Features': The End Land Use of the Permanent 'Dam Features' that will remain in perpetuity will be Industrial due to potential Soil Contamination. Furthermore, probable side-slopes of > 5.7 degrees/ 10.0 % percentage grade will consequently be poorly- 'topsoiled'/re-vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Plant Storm Water Pollution Control Dam (PCD)	1.92 *ha*	Land Capability	**Measures 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Removed 'Dam Features': The End Land Capability of the Removed 'Dam Features' will be Grazing or Arable in terms of topsoiling depth; but may be downgraded to Industrial due to potential Soil Contamination, the quantification of the quantification of the aforementioned pending the completion of a Contaminated Land Assessment (refer to Soil Contamination). Permanent 'Dam Features': The End Land Capability of the Permanent 'Dam Features' side-slopes that remain in perpetuity will be Industrial (non-grazing capability class), due to potential Soil Contamination and probably side-slopes of > 5.7 degrees/ 10.0 % percentage grade that will consequently be poorly- or non-'topsoiled'/vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Water in PWDs and OB Dam should be isolated and left to evaporate. **Measure 2:** PWD and OB Dam liners should be removed and basins backfilled with wall soils. **Measure 3:** Plant SW PCD 1A & 1B and feeding SW drains to be left until upslope Area A4 has been cleared, rehabilitated and stabilized. **Measure 4:** SW PCD 1A & 1B water to be used for dust suppression and irrigation of the upslope verges. Excess water left to evaporate or pumped to TSF for evaporation. **Measure 5:** Demolish silt traps and bury in dam basin prior to backfill. **Measure 6:** Remove SW PCD 1A & 1B once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and available clean material stockpiles. Level & grade surface and vegetate. **Measure 7:** Isolate PWD and OB Dams from any runoff. **Measure 8:** Water in PWDs and OB Dam should be isolated and left to evaporate.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Water in PWDs and OB Dam should be isolated and left to evaporate. **Measure 2:** PWD and OB Dam liners should be removed and basins backfilled with wall soils. **Measure 3:** Plant SW PCD 1A & 1B and feeding SW drains to be left until upslope Area A4 has been cleared, rehabilitated and stabilized.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Plant Storm Water Pollution Control Dam (PCD)	1.92 *ha*		**Measure 4:** SW PCD 1A & 1B water to be used for dust suppression and irrigation of the upslope verges. Excess water left to evaporate or pumped to TSF for evaporation. **Measure 5:** Demolish silt traps and bury in dam basin prior to backfill. **Measure 6:** Remove SW PCD 1A & 1B once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and available clean material stockpiles. Level & grade surface and vegetate. **Measure 7:** Isolate PWD and OB Dams from any runoff. **Measure 8:** Water in PWDs and OB Dam should be isolated and left to evaporate.		
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises.	Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Plant Storm Water Pollution Control Dam (PCD)	1.92 *ha*		**Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.		
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Abstraction Boreholes	Three Abstraction Boreholes	Soil Horizon	**Measure 1:** Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
Groundwater Treatment Plant	0.17 *ha*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Removed 'Dam Features': Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. Removed 'Dam Features'). **Measure 2:** Removed 'Dam Features': Re-grade (re-slope) Removed 'Dam Features' footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 5.7 degrees / 10.0 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Permanent 'Dam Features': Soil Erosion may be reduced by reducing side-slopes to < 5.7 degrees / 10.0 % percentage grade where necessary.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Groundwater Treatment Plant	0.17 *ha*	Soil Fertility	**Measure 1:** Removed 'Dam Features': Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded (re-sloped) Removed 'Dam Features' with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for the topsoiling' exercise; given firstly that the material has natural sealing properties (important given the potentially polluting nature of the Removed 'Dam Features'), and secondly that this broad soil group occurs extensively. Removed and Permanent 'Dam Features': Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) locally indigenous 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Removed 'Dam Features': The majority of the 'Dam Features' will be removed/'rehabilitated as follows: De-water the 'Dam Features' by means of evaporation, and if necessary pumping and purification. Scrape up the sediments on the base/walls of the 'Dam Features', and dispose of in the TSF. Remove imported concrete/stone/rock walls and dispose of in the opencast pit if potentially non-polluting, or in the TSF if potentially polluting. Push the walls of the 'Dam Features' into the void of the dam, thereby achieving a relatively level surface that approximates the surrounding landscape. Spray water for dust suppression. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust. The decision regarding the necessity for the placement of a compacted-'remoulded' vertic soil seal; overlying an impermeable membrane; and underlying the vertic 'topsoil' material on top of the removed/ 'rehabilitated' 'Dam Features' will be determined by the pollution potential of the re-graded features. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Furthermore, the base of the 'Dam Features' should also have been well sealed with an impermeable membrane and a compacted-'re-moulded' soil layer, during construction. Thus the infiltration of rainwater is not likely to be an issue. Finally 'topsoil' the Removed 'Dam Features'. Permanent 'Dam Features': A number of the 'Dam Features' (Pollution Control Dams) may remain in use in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Groundwater Treatment Plant	0.17 *ha*	Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. Removed 'Dam Features': The End Land Use of the Removed 'Dam Features' may be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). However, should all of the contaminated soils/'wastes' have been effectively removed from the various sites, then the End Land Use of Extensive Grazing may be attained. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas. Permanent Dam Features': The End Land Use of the Permanent 'Dam Features' that will remain in perpetuity will be Industrial due to potential Soil Contamination. Furthermore, probable side-slopes of > 5.7 degrees/ 10.0 % percentage grade will consequently be poorly- 'topsoiled'/re-vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measures 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Removed 'Dam Features': The End Land Capability of the Removed 'Dam Features' will be Grazing or Arable in terms of topsoiling depth; but may be downgraded to Industrial due to potential Soil Contamination, the quantification of the quantification of the aforementioned pending the completion of a Contaminated Land Assessment (refer to Soil Contamination). Permanent 'Dam Features': The End Land Capability of the Permanent 'Dam Features' side-slopes that remain in perpetuity will be Industrial (non-grazing capability class), due to potential Soil Contamination and probably side-slopes of > 5.7 degrees/ 10.0 % percentage grade that will consequently be poorly- or non-'topsoiled'/vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Groundwater Treatment Plant	0.17 *ha*	Surface Water Quantity	**Measure 1:** Old Slimes Dams removal and clearing to be completed first. **Measure 2:** Monitor groundwater quality to confirm water quality complying. **Measure 3:** Demolish treatment dams 1m below surface and backfill with soil from existing topsoil stockpiles. **Measure 4:** Reinstate surface to be free draining and vegetate.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Old Slimes Dams removal and clearing to be completed first. **Measure 2:** Monitor groundwater quality to confirm water quality complying. **Measure 3:** Demolish treatment dams 1m below surface and backfill with soil from existing topsoil stockpiles. **Measure 4:** Reinstate surface to be free draining and vegetate.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3.	Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Groundwater Treatment Plant	0.17 *ha*		**Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.		
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Alloys Smelting Plant Air Quality Control Systems		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
NEW PROPOSED ACTIVITIES					
New Process Water and Storm Water Canal System including Silt Traps	Total length of canal system exceeds 1000 *m* in length and exceeds the peak throughput of 120 *l/s*	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Process Water and Storm Water Canal System including Silt Traps	Total length of canal system exceeds 1000 *m* in length and exceeds the peak throughput of 120 *l/s*	Soil Horizon	**Measure 1:** Removed 'Drain Features': Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. Removed 'Drain Features'). **Measure 2:** Removed 'Drain Features': Re-grade (re-slope) Removed 'Drain Features' footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds where possible. Establish a freely draining final landscape. Permanent 'Drain Features': Soil Erosion may be reduced by reducing soil berm side-slopes to < 6.4 degrees / 11.2 % percentage grade where necessary.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Removed 'Drain Features': Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded (re-sloped) Removed 'Drain Features' with 'topsoil' sourced from the adjacent 'topsoil' berms or alternatively source soil from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for the topsoiling' exercise; given firstly that the material has natural sealing properties (important given the potentially polluting nature of the Removed 'Drain Features'), and secondly that this broad soil group occurs extensively. Removed and Permanent 'Drain Features': Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) locally indigenous 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Removed 'Drain Features': The vast majority of the 'Drain Features' will be removed/'rehabilitated as follows: Scrape up the sediments on the base/walls of the 'Drain Features' (including those dredged and incorrectly deposited on the berms), and dispose of in the TSF. Remove imported concrete/stone/rock walls in some canals and dispose of in the opencast pit if potentially non-polluting, or in the TSF if potentially polluting. Push the adjacent 'topsoil' berms (if any) into the void of the drains/canals, or alternatively source soil from the 'topsoil' stockpiles, thereby achieving a relatively level surface that approximates the surrounding landscape. Spray water for dust suppression. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Process Water and Storm Water Canal System including Silt Traps	Total length of canal system exceeds 1000 *m* in length and exceeds the peak throughput of 120 *l/s*		Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/drains/berms, that will remain in perpetuity upslope/downslope (respectively) of potentially polluting Permanent features (e.g. permanent Pollution Control Dams) or Removed features (e.g. previous 'Dam Features' footprints). The aforementioned will limit 'clean' water run-off from entering potentially polluting Removed or Permanent features areas, as well as intercept potential 'dirty' water seepage and run-off derived from all of the potentially polluting Removed and Permanent feature areas respectively. Monitor leached contamination on an ongoing basis via interpolation of the data from the downslope boreholes. Excavate additional boreholes where deemed necessary, purify the pumped water accordingly, and release back to the environment.		
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. Removed 'Drain Features': The End Land Use of the Removed 'dirty' 'Drain Features' may be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). However, should all of the contaminated soils/sediments/'wastes' have been effectively removed from the various sites, then the End Land Use of Extensive Grazing may be attained. The End Land Use of the Removed 'clean' 'Drain Features' will naturally be Extensive Grazing. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas. Permanent 'Drain Features': The End Land Use of the Permanent 'dirty' and 'clean' drains/canals that will remain in perpetuity will be Industrial. The End Land Use of the Permanent 'topsoil' berms (adjacent to the drains/canals) that will remain in perpetuity will be Extensive Grazing, provided that the berm side-slopes are < 6.4 degrees / 11.2 % percentage grade, in order to be adequately 'topsoiled'/re-vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Process Water and Storm Water Canal System including Silt Traps	Total length of canal system exceeds 1000 *m* in length and exceeds the peak throughput of 120 *l/s*	Land Capability	**Measures 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Removed 'Drain Features': The End Land Capability of the Removed 'Drain Features' will be Grazing or Arable in terms of topsoiling depth; but may be downgraded to Industrial due to potential Soil Contamination in the case of the 'dirty' Removed 'Drain Features', the quantification of the aforementioned pending the completion of a Contaminated Land Assessment (refer to Soil Contamination). Permanent 'Drain Features': The End Land Capability of the Permanent 'clean' and 'dirty' drains/canals that will remain in perpetuity will be Industrial. The End Land Capability of the Permanent 'topsoil' berms (adjacent to the drains/canals) that will remain in perpetuity will be Extensive Grazing, provided that the berm side-slopes are < 6.4 degrees / 11.2 % percentage grade, in order to be adequately 'topsoiled'/re-vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** SW drains to be maintained until all upslope areas have been cleared, rehabilitated and are stabilize in terms of erosion vulnerability. **Measure 2:** Demolish concrete SW drains and silt traps 1m below surface and backfill with soil from berms or borrow stockpiles. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** SW drains to be maintained until all upslope areas have been cleared, rehabilitated and are stabilize in terms of erosion vulnerability. **Measure 2:** Demolish concrete SW drains and silt traps 1m below surface and backfill with soil from berms or borrow stockpiles. **Measure 3:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Process Water and Storm Water Canal System including Silt Traps	Total length of canal system exceeds 1000 *m* in length and exceeds the peak throughput of 120 *l/s*	Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
New Morula Pollution Control Dam (PCD)	0.60 *ha* (25 000 m^3)	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Morula Pollution Control Dam (PCD)	0.60 *ha* (25 000 m^3)	Soil Horizon	**Measure 1:** Removed 'Dam Features': Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. Removed 'Dam Features'). **Measure 2:** Removed 'Dam Features': Re-grade (re-slope) Removed 'Dam Features' footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 5.7 degrees / 10.0 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Permanent 'Dam Features': Soil Erosion may be reduced by reducing side-slopes to < 5.7 degrees / 10.0 % percentage grade where necessary.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Removed 'Dam Features': Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded (re-sloped) Removed 'Dam Features' with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for the topsoiling' exercise; given firstly that the material has natural sealing properties (important given the potentially polluting nature of the Removed 'Dam Features'), and secondly that this broad soil group occurs extensively. Removed and Permanent 'Dam Features': Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) locally indigenous 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Morula Pollution Control Dam (PCD)	0.60 *ha* (25 000 m^3)	Soil Contamination	**Measure 1:** Removed 'Dam Features': The majority of the 'Dam Features' will be removed/'rehabilitated as follows: De-water the 'Dam Features' by means of evaporation, and if necessary pumping and purification. Scrape up the sediments on the base/walls of the 'Dam Features', and dispose of in the TSF. Remove imported concrete/stone/rock walls and dispose of in the opencast pit if potentially non-polluting, or in the TSF if potentially polluting. Push the walls of the 'Dam Features' into the void of the dam, thereby achieving a relatively level surface that approximates the surrounding landscape. Spray water for dust suppression. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust. The decision regarding the necessity for the placement of a compacted-'remoulded' vertic soil seal; overlying an impermeable membrane; and underlying the vertic 'topsoil' material on top of the removed/ 'rehabilitated' 'Dam Features' will be determined by the pollution potential of the re-graded features. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Furthermore, the base of the 'Dam Features' should also have been well sealed with an impermeable membrane and a compacted-'re-moulded' soil layer, during construction. Thus the infiltration of rainwater is not likely to be an issue. Finally 'topsoil' the Removed 'Dam Features'. Permanent 'Dam Features': A number of the 'Dam Features' (Pollution Control Dams) may remain in use in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. Removed 'Dam Features': The End Land Use of the Removed 'Dam Features' may be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). However, should all of the contaminated soils/'wastes' have been effectively removed from the various sites, then the End Land Use of Extensive Grazing may be attained. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Morula Pollution Control Dam (PCD)	0.60 *ha* (25 000 m^3)		**Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas. Permanent Dam Features': The End Land Use of the Permanent 'Dam Features' that will remain in perpetuity will be Industrial due to potential Soil Contamination. Furthermore, probable side-slopes of > 5.7 degrees/ 10.0 % percentage grade will consequently be poorly- 'topsoiled'/re-vegetated.		
		Land Capability	**Measures 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Removed 'Dam Features': The End Land Capability of the Removed 'Dam Features' will be Grazing or Arable in terms of topsoiling depth; but may be downgraded to Industrial due to potential Soil Contamination, the quantification of the quantification of the aforementioned pending the completion of a Contaminated Land Assessment (refer to Soil Contamination). Permanent 'Dam Features': The End Land Capability of the Permanent 'Dam Features' side-slopes that remain in perpetuity will be Industrial (non-grazing capability class), due to potential Soil Contamination and probably side-slopes of > 5.7 degrees/ 10.0 % percentage grade that will consequently be poorly- or non-'topsoiled'/vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** First Water Storage Dams to be decommissioned as indicated. Upslope catchment and SW drains to be rehabilitated as indicated. **Measure 2:** Allow intercepted water to evaporate. Use water for dust suppression and vegetation to establish. Excess water to be pumped to TSF for evaporation. **Measure 3:** Remove membrane liner and backfill basin depression with soil from walls and adjacent basin excavation stockpiles. Level & grade surface and vegetate. **Measure 4:** Allow intercepted water to evaporate. Use water for dust suppression and vegetation to establish. Excess water to be pumped to TSF for evaporation. **Measure 5:** Remove membrane liner and backfill basin depression with soil from walls and adjacent basin excavation stockpiles. Level & grade surface to be free draining and vegetate.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Morula Pollution Control Dam (PCD)	0.60 *ha* (25 000 m^3)	Surface Water Quality	**Measure 1:** First Water Storage Dams to be decommissioned as indicated. Upslope catchment and SW drains to be rehabilitated as indicated. **Measure 2:** Allow intercepted water to evaporate. Use water for dust suppression and vegetation to establish. Excess water to be pumped to TSF for evaporation. **Measure 3:** Remove membrane liner and backfill basin depression with soil from walls and adjacent basin excavation stockpiles. Level & grade surface and vegetate. **Measure 4:** Allow intercepted water to evaporate. Use water for dust suppression and vegetation to establish. Excess water to be pumped to TSF for evaporation. **Measure 5:** Remove membrane liner and backfill basin depression with soil from walls and adjacent basin excavation stockpiles. Level & grade surface to be free draining and vegetate.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Morula Pollution Control Dam (PCD)	0.60 *ha* (25 000 m^3)	Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
New Storm Water Pollution Control Dam (PCD) No. 1	2.30 *ha* (73 400 m^3)	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Removed 'Dam Features': Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. Removed 'Dam Features'). **Measure 2:** Removed 'Dam Features': Re-grade (re-slope) Removed 'Dam Features' footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 5.7 degrees / 10.0 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Permanent 'Dam Features': Soil Erosion may be reduced by reducing side-slopes to < 5.7 degrees / 10.0 % percentage grade where necessary.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Removed 'Dam Features': Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded (re-sloped) Removed 'Dam Features' with 'topsoil' sourced from the adjacent 'topsoil' berms or alternatively source soil from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for the topsoiling' exercise; given firstly that the material has natural sealing properties (important given the potentially polluting nature of the Removed 'Dam Features'), and secondly that this broad soil group occurs extensively. Removed and Permanent 'Dam Features': Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) locally indigenous 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Storm Water Pollution Control Dam (PCD) No. 1	2.30 *ha* (73 400 m^3)	Soil Contamination	**Measure 1:** Removed 'Dam Features': The majority of the 'Dam Features' will be removed/'rehabilitated as follows: De-water the 'Dam Features' by means of evaporation, and if necessary pumping and purification. Scrape up the sediments on the base/walls of the 'Dam Features', and dispose of in the TSF. Remove imported concrete/stone/rock walls and dispose of in the opencast pit if potentially non-polluting, or in the TSF if potentially polluting. Push the walls of the 'Dam Features' into the void of the dam, thereby achieving a relatively level surface that approximates the surrounding landscape. Spray water for dust suppression where necessary when working with machinery. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust. The decision regarding the necessity for the placement of a compacted-'remoulded' vertic soil seal; overlying an impermeable membrane; and underlying the vertic 'topsoil' material on top of the removed/ 'rehabilitated' 'Dam Features' will be determined by the pollution potential of the re-graded features. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Furthermore, the base of the 'Dam Features' should also have been well sealed with an impermeable membrane and a compacted-'re-moulded' soil layer, during construction. Thus the infiltration of rainwater is not likely to be an issue. Finally 'topsoil' the Removed 'Dam Features'. Permanent 'Dam Features': A number of the 'Dam Features' (Pollution Control Dams) may remain in use in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. Removed 'Dam Features': The End Land Use of the Removed 'Dam Features' may be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). However, should all of the contaminated soils/'wastes' have been effectively removed from the various sites, then the End Land Use of Extensive Grazing may be attained. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Thus, Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas. Permanent Dam	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Storm Water Pollution Control Dam (PCD) No. 1	2.30 *ha* (73 400 m^3)		Features': The End Land Use of the Permanent 'Dam Features' that will remain in perpetuity will be Industrial due to potential Soil Contamination. Furthermore, probable side-slopes of > 5.7 degrees/ 10.0 % percentage grade will consequently be poorly- 'topsoiled'/re-vegetated.		
		Land Capability	**Measures 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Removed 'Dam Features': The End Land Capability of the Removed 'Dam Features' will be Grazing or Arable in terms of topsoiling depth; but may be downgraded to Industrial due to potential Soil Contamination, the quantification of the quantification of the aforementioned pending the completion of a Contaminated Land Assessment (refer to Soil Contamination). Permanent 'Dam Features': The End Land Capability of the Permanent 'Dam Features' side-slopes that remain in perpetuity will be Industrial (non-grazing capability class), due to potential Soil Contamination and probably side-slopes of > 5.7 degrees/ 10.0 % percentage grade that will consequently be poorly- or non-'topsoiled'/vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Plant SW drains to be maintained until upslope Area A4 has been cleared, rehabilitated and stabilized. **Measure 2:** Plant SW PCD 1A & 1B and feeding SW drains to be left until upslope Area A4 has been cleared, rehabilitated and stabilized. **Measure 3:** SW PCD 1A & 1B water to be used for dust suppression and irrigation of the upslope verges. Excess water left to evaporate or pumped to TSF for evaporation. **Measure 4:** Remove SW PCD 1B once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and available clean material stockpiles. Level & grade surface and vegetate.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Plant SW drains to be maintained until upslope Area A4 has been cleared, rehabilitated and stabilized. **Measure 2:** Plant SW PCD 1A & 1B and feeding SW drains to be left until upslope Area A4 has been cleared, rehabilitated and stabilized. **Measure 3:** SW PCD 1A & 1B water to be used for dust suppression and irrigation of the upslope verges. Excess water left to evaporate or pumped to TSF for evaporation.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Storm Water Pollution Control Dam (PCD) No. 1	2.30 *ha* (73 400 m^3)		**Measure 4:** Remove SW PCD 1B once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and available clean material stockpiles. Level & grade surface and vegetate.		
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Storm Water Pollution Control Dam (PCD) No. 2	2.20 *ha* (65 600 m^3)	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Removed 'Dam Features': Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. Removed 'Dam Features'). **Measure 2:** Removed 'Dam Features': Re-grade (re-slope) Removed 'Dam Features' footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 5.7 degrees / 10.0 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Permanent 'Dam Features': Soil Erosion may be reduced by reducing side-slopes to < 5.7 degrees / 10.0 % percentage grade where necessary.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Removed 'Dam Features': Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded (re-sloped) Removed 'Dam Features' with 'topsoil' sourced from the adjacent 'topsoil' berms or alternatively source soil from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for the topsoiling' exercise; given firstly that the material has natural sealing properties (important given the potentially polluting nature of the Removed 'Dam Features'), and secondly that this broad soil group occurs extensively. Removed and Permanent 'Dam Features': Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) locally indigenous 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Removed 'Dam Features': The majority of the 'Dam Features' will be removed/'rehabilitated as follows: De-water the 'Dam Features' by means of evaporation, and if necessary pumping and purification. Scrape up the sediments on the base/walls of the 'Dam Features', and dispose of in the TSF. Remove imported concrete/stone/rock walls and dispose of in the opencast pit if potentially non-polluting, or in the TSF if potentially polluting. Push the walls of the 'Dam Features' into the void of the dam, thereby achieving a relatively level surface that approximates the surrounding landscape. Spray water for dust suppression where necessary when working with machinery. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust;	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Storm Water Pollution Control Dam (PCD) No. 2	2.20 *ha* (65 600 m^3)		Tarpaulin cover over haul truck bins to limit dust. The decision regarding the necessity for the placement of a compacted-'remoulded' vertic soil seal; overlying an impermeable membrane; and underlying the vertic 'topsoil' material on top of the removed/ 'rehabilitated' 'Dam Features' will be determined by the pollution potential of the re-graded features. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Furthermore, the base of the 'Dam Features' should also have been well sealed with an impermeable membrane and a compacted-'re-moulded' soil layer, during construction. Thus the infiltration of rainwater is not likely to be an issue. Finally 'topsoil' the Removed 'Dam Features'. Permanent 'Dam Features': A number of the 'Dam Features' (Pollution Control Dams) may remain in use in perpetuity.		
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. Removed 'Dam Features': The End Land Use of the Removed 'Dam Features' may be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). However, should all of the contaminated soils/'wastes' have been effectively removed from the various sites, then the End Land Use of Extensive Grazing may be attained. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Thus, Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas. Permanent Dam Features': The End Land Use of the Permanent 'Dam Features' that will remain in perpetuity will be Industrial due to potential Soil Contamination. Furthermore, probable side-slopes of > 5.7 degrees/ 10.0 % percentage grade will consequently be poorly- 'topsoiled'/re-vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Storm Water Pollution Control Dam (PCD) No. 2	2.20 *ha* (65 600 m^3)	Land Capability	**Measures 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Removed 'Dam Features': The End Land Capability of the Removed 'Dam Features' will be Grazing or Arable in terms of topsoiling depth; but may be downgraded to Industrial due to potential Soil Contamination, the quantification of the quantification of the aforementioned pending the completion of a Contaminated Land Assessment (refer to Soil Contamination). Permanent 'Dam Features': The End Land Capability of the Permanent 'Dam Features' side-slopes that remain in perpetuity will be Industrial (non-grazing capability class), due to potential Soil Contamination and probably side-slopes of > 5.7 degrees/ 10.0 % percentage grade that will consequently be poorly- or non-'topsoiled'/vegetated.	Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Allow intercepted water to evaporate. . Use water for dust suppression and vegetation to establish. Excess water to be pumped to TSF for evaporation. **Measure 2:** Remove SW PCD 2 once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and adjacent basin excavation stockpiles. Level & grade surface and vegetate	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Allow intercepted water to evaporate. . Use water for dust suppression and vegetation to establish. Excess water to be pumped to TSF for evaporation. **Measure 2:** Remove SW PCD 2 once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and adjacent basin excavation stockpiles. Level & grade surface and vegetate	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Storm Water Pollution Control Dam (PCD) No. 2	2.20 *ha* (65 600 m^3)	Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
New Storm Water Pollution Control Dam (PCD) No. 3	0.60 *ha* (23 020 m^3)	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Removed 'Dam Features': Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. Removed 'Dam Features'). **Measure 2:** Removed 'Dam Features': Re-grade (re-slope) Removed 'Dam Features' footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 5.7 degrees / 10.0 % percentage grade for vertic 'topsoil' material.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
			Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Permanent 'Dam Features': Soil Erosion may be reduced by reducing side-slopes to < 5.7 degrees / 10.0 % percentage grade where necessary.		
		Soil Fertility	**Measure 1:** Removed 'Dam Features': Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded (re-sloped) Removed 'Dam Features' with 'topsoil' sourced from the adjacent 'topsoil' berms or alternatively source soil from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for the topsoiling' exercise; given firstly that the material has natural sealing properties (important given the potentially polluting nature of the Removed 'Dam Features', and secondly that this broad soil group occurs extensively. Removed and Permanent 'Dam Features': Utilise live topsoil to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing locally indigenous 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
New Storm Water Pollution Control Dam (PCD) No. 3	0.60 *ha* (23 020 m^3)	Soil Contamination	**Measure 1:** Removed 'Dam Features': The majority of the 'Dam Features' will be removed/'rehabilitated as follows: De-water the 'Dam Features' by means of evaporation, and if necessary pumping and purification. Scrape up the sediments on the base/walls of the 'Dam Features', and dispose of in the TSF. Remove imported concrete/stone/rock walls and dispose of in the opencast pit if potentially non-polluting, or in the TSF if potentially polluting. Push the walls of the 'Dam Features' into the void of the dam, thereby achieving a relatively level surface that approximates the surrounding landscape. Spray water for dust suppression where necessary when working with machinery. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust. The decision regarding the necessity for the placement of a compacted-'remoulded' vertic soil seal; overlying an impermeable membrane; and underlying the vertic 'topsoil' material on top of the removed/ 'rehabilitated' 'Dam Features' will be determined by the pollution potential of the re-graded features. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Furthermore, the base of the 'Dam Features' should also have been well sealed with an impermeable membrane and a compacted-'re-moulded' soil layer, during construction. Thus the infiltration of rainwater is not likely to be an issue. Finally 'topsoil' the Removed 'Dam Features'. Permanent 'Dam Features': A number of the 'Dam Features' (Pollution Control Dams) may remain in use in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Storm Water Pollution Control Dam (PCD) No. 3	0.60 *ha* (23 020 m^3)	Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. Removed 'Dam Features': The End Land Use of the Removed 'Dam Features' may be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). However, should all of the contaminated soils/'wastes' have been effectively removed from the various sites, then the End Land Use of Extensive Grazing may be attained. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Thus, Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas. Permanent Dam Features': The End Land Use of the Permanent 'Dam Features' that will remain in perpetuity will be Industrial due to potential Soil Contamination. Furthermore, probable side-slopes of > 5.7 degrees/ 10.0 % percentage grade will consequently be poorly- 'topsoiled'/re-vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measures 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Removed 'Dam Features': The End Land Capability of the Removed 'Dam Features' will be Grazing or Arable in terms of topsoiling depth; but may be downgraded to Industrial due to potential Soil Contamination, the quantification of the quantification of the aforementioned pending the completion of a Contaminated Land Assessment (refer to Soil Contamination). Permanent 'Dam Features': The End Land Capability of the Permanent 'Dam Features' side-slopes that remain in perpetuity will be Industrial (non-grazing capability class), due to potential Soil Contamination and probably side-slopes of > 5.7 degrees/ 10.0 % percentage grade that will consequently be poorly- or non-'topsoiled'/vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Storm Water Pollution Control Dam (PCD) No. 3	0.60 *ha* (23 020 m^3)	Surface Water Quantity	**Measure 1:** Allow intercepted water to evaporate. Extract water for dust suppression and vegetation to establish. Excess water to be pumped to TSF for evaporation. **Measure 2:** Remove SW PCD 3 once upslope catchment area has been rehabilitated and intercepted runoff demonstrates to meet quality standards. Remove membrane liner and backfill basin depression with soil from walls and adjacent basin excavation stockpiles. Level & grade surface and vegetate	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Allow intercepted water to evaporate. Extract water for dust suppression and vegetation to establish. Excess water to be pumped to TSF for evaporation. **Measure 2:** Remove SW PCD 3 once upslope catchment area has been rehabilitated and intercepted runoff demonstrates to meet quality standards. Remove membrane liner and backfill basin depression with soil from walls and adjacent basin excavation stockpiles. Level & grade surface and vegetate	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Storm Water Pollution Control Dam (PCD) No. 3	0.60 *ha* (23 020 m^3)	Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
New Storm Water Pollution Control Dam (PCD) No. 4	0.05 *ha* (275 m^3)	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Removed 'Dam Features': Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. Removed 'Dam Features'). **Measure 2:** Removed 'Dam Features': Re-grade (re-slope) Removed 'Dam Features' footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 5.7 degrees / 10.0 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Permanent 'Dam Features': Soil Erosion may be reduced by reducing side-slopes to < 5.7 degrees / 10.0 % percentage grade where necessary.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Removed 'Dam Features': Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded (re-sloped) Removed 'Dam Features' with 'topsoil' sourced from the adjacent 'topsoil' berms or alternatively source soil from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for the topsoiling' exercise; given firstly that the material has natural sealing properties (important given the potentially polluting nature of the Removed 'Dam Features'), and secondly that this broad soil group occurs extensively. Removed and Permanent 'Dam Features': Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) locally indigenous 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Storm Water Pollution Control Dam (PCD) No. 4	0.05 *ha* (275 m^3)	Soil Contamination	**Measure 1:** Removed 'Dam Features': The majority of the 'Dam Features' will be removed/'rehabilitated as follows: De-water the 'Dam Features' by means of evaporation, and if necessary pumping and purification. Scrape up the sediments on the base/walls of the 'Dam Features', and dispose of in the TSF. Remove imported concrete/stone/rock walls and dispose of in the opencast pit if potentially non-polluting, or in the TSF if potentially polluting. Push the walls of the 'Dam Features' into the void of the dam, thereby achieving a relatively level surface that approximates the surrounding landscape. Spray water for dust suppression where necessary when working with machinery. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust. The decision regarding the necessity for the placement of a compacted-'remoulded' vertic soil seal; overlying an impermeable membrane; and underlying the vertic 'topsoil' material on top of the removed/ 'rehabilitated' 'Dam Features' will be determined by the pollution potential of the re-graded features. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Furthermore, the base of the 'Dam Features' should also have been well sealed with an impermeable membrane and a compacted-'re-moulded' soil layer, during construction. Thus the infiltration of rainwater is not likely to be an issue. Finally 'topsoil' the Removed 'Dam Features'. Permanent 'Dam Features': A number of the 'Dam Features' (Pollution Control Dams) may remain in use in perpetuity.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. Removed 'Dam Features': The End Land Use of the Removed 'Dam Features' may be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). However, should all of the contaminated soils/'wastes' have been effectively removed from the various sites, then the End Land Use of Extensive Grazing may be attained. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Thus, Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Storm Water Pollution Control Dam (PCD) No. 4	0.05 *ha* (275 m^3)		**Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas. Permanent Dam Features': The End Land Use of the Permanent 'Dam Features' that will remain in perpetuity will be Industrial due to potential Soil Contamination. Furthermore, probable side-slopes of > 5.7 degrees/ 10.0 % percentage grade will consequently be poorly- 'topsoiled'/re-vegetated.		
		Land Capability	**Measures 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Removed 'Dam Features': The End Land Capability of the Removed 'Dam Features' will be Grazing or Arable in terms of topsoiling depth; but may be downgraded to Industrial due to potential Soil Contamination, the quantification of the quantification of the aforementioned pending the completion of a Contaminated Land Assessment (refer to Soil Contamination). Permanent 'Dam Features': The End Land Capability of the Permanent 'Dam Features' side-slopes that remain in perpetuity will be Industrial (non-grazing capability class), due to potential Soil Contamination and probably side-slopes of > 5.7 degrees/ 10.0 % percentage grade that will consequently be poorly- or non-'topsoiled'/vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Allow intercepted water to evaporate. Extract water for dust suppression and vegetation to establish. Excess water to be pumped to TSF for evaporation. **Measure 2:** Remove SW PCD 4 once upslope catchment area has been rehabilitated and intercepted runoff demonstrates to meet quality standards. Remove membrane liner and backfill basin depression with soil from walls and adjacent basin excavation stockpiles. Level & grade surface and vegetate	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Allow intercepted water to evaporate. Extract water for dust suppression and vegetation to establish. Excess water to be pumped to TSF for evaporation. **Measure 2:** Remove SW PCD 4 once upslope catchment area has been rehabilitated and intercepted runoff demonstrates to meet quality standards. Remove membrane liner and backfill basin depression with soil from walls and adjacent basin excavation stockpiles. Level & grade surface and vegetate	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Storm Water Pollution Control Dam (PCD) No. 4	0.05 *ha* (275 m^3)	Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Ore Beneficiation (OB) Plant Process Water Dam	1.82 *ha* (45 300 m^3)	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Removed 'Dam Features': Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. Removed 'Dam Features'). **Measure 2:** Removed 'Dam Features': Re-grade (re-slope) Removed 'Dam Features' footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 5.7 degrees / 10.0 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Permanent 'Dam Features': Soil Erosion may be reduced by reducing side-slopes to < 5.7 degrees / 10.0 % percentage grade where necessary.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Removed 'Dam Features': Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded (re-sloped) Removed 'Dam Features' with 'topsoil' sourced from the adjacent 'topsoil' berms or alternatively source soil from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for the topsoiling' exercise; given firstly that the material has natural sealing properties (important given the potentially polluting nature of the Removed 'Dam Features'), and secondly that this broad soil group occurs extensively. Removed and Permanent 'Dam Features': Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) locally indigenous 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Removed 'Dam Features': The majority of the 'Dam Features' will be removed/'rehabilitated as follows: De-water the 'Dam Features' by means of evaporation, and if necessary pumping and purification. Scrape up the sediments on the base/walls of the 'Dam Features', and dispose of in the TSF. Remove imported concrete/stone/rock walls and dispose of in the opencast pit if potentially non-polluting, or in the TSF if potentially polluting. Push the walls of the 'Dam Features' into the void of the dam, thereby achieving a relatively level surface that approximates the surrounding landscape. Spray water for dust suppression where necessary when working with machinery. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust;	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Ore Beneficiation (OB) Plant Process Water Dam	1.82 *ha* (45 300 m^3)		Tarpaulin cover over haul truck bins to limit dust. The decision regarding the necessity for the placement of a compacted-'remoulded' vertic soil seal; overlying an impermeable membrane; and underlying the vertic 'topsoil' material on top of the removed/ 'rehabilitated' 'Dam Features' will be determined by the pollution potential of the re-graded features. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Furthermore, the base of the 'Dam Features' should also have been well sealed with an impermeable membrane and a compacted-'re-moulded' soil layer, during construction. Thus the infiltration of rainwater is not likely to be an issue. Finally 'topsoil' the Removed 'Dam Features'. Permanent 'Dam Features': A number of the 'Dam Features' (Pollution Control Dams) may remain in use in perpetuity.		
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. Removed 'Dam Features': The End Land Use of the Removed 'Dam Features' may be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). However, should all of the contaminated soils/'wastes' have been effectively removed from the various sites, then the End Land Use of Extensive Grazing may be attained. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Thus, Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas. Permanent Dam Features': The End Land Use of the Permanent 'Dam Features' that will remain in perpetuity will be Industrial due to potential Soil Contamination. Furthermore, probable side-slopes of > 5.7 degrees/ 10.0 % percentage grade will consequently be poorly- 'topsoiled'/re-vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measures 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Removed 'Dam Features':	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Ore Beneficiation (OB) Plant Process Water Dam	1.82 *ha* (45 300 m^3)		The End Land Capability of the Removed 'Dam Features' will be Grazing or Arable in terms of topsoiling depth; but may be downgraded to Industrial due to potential Soil Contamination, the quantification of the quantification of the aforementioned pending the completion of a Contaminated Land Assessment (refer to Soil Contamination). Permanent 'Dam Features': The End Land Capability of the Permanent 'Dam Features' side-slopes that remain in perpetuity will be Industrial (non-grazing capability class), due to potential Soil Contamination and probably side-slopes of > 5.7 degrees/ 10.0 % percentage grade that will consequently be poorly- or non-'topsoiled'/vegetated.		
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Water in PWDs and OB Dam should be isolated and left to evaporate. **Measure 2:** PWD and OB Dam liners should be removed and basins backfilled with wall soils. **Measure 3:** Plant SW PCD 1A & 1B and feeding SW drains to be left until upslope Area A4 has been cleared, rehabilitated and stabilized. **Measure 4:** SW PCD 1A & 1B water to be used for dust suppression and irrigation of the upslope verges. Excess water left to evaporate or pumped to TSF for evaporation. **Measure 5:** Demolish silt traps and bury in dam basin prior to backfill. **Measure 6:** Remove SW PCD 1A & 1B once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and available clean material stockpiles. Level & grade surface and vegetate. **Measure 7:** Isolate PWD and OB Dams from any runoff. **Measure 8:** Water in PWDs and OB Dam should be isolated and left to evaporate.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Water in PWDs and OB Dam should be isolated and left to evaporate. **Measure 2:** PWD and OB Dam liners should be removed and basins backfilled with wall soils. **Measure 3:** Plant SW PCD 1A & 1B and feeding SW drains to be left until upslope Area A4 has been cleared, rehabilitated and stabilized. **Measure 4:** SW PCD 1A & 1B water to be used for dust suppression and irrigation of the upslope verges. Excess water left to evaporate or pumped to TSF for evaporation. **Measure 5:** Demolish silt traps and bury in dam basin prior to backfill.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Ore Beneficiation (OB) Plant Process Water Dam	1.82 *ha* (45 300 m^3)		**Measure 6:** Remove SW PCD 1A & 1B once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and available clean material stockpiles. Level & grade surface and vegetate. **Measure 7:** Isolate PWD and OB Dams from any runoff. **Measure 8:** Water in PWDs and OB Dam should be isolated and left to evaporate.		
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
New Plant Process Water Dam	3.35 *ha* (76 000 m^3)	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Removed 'Dam Features': Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. Removed 'Dam Features'). **Measure 2:** Removed 'Dam Features': Re-grade (re-slope) Removed 'Dam Features' footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 5.7 degrees / 10.0 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Permanent 'Dam Features': Soil Erosion may be reduced by reducing side-slopes to < 5.7 degrees / 10.0 % percentage grade where necessary.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Removed 'Dam Features': Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded (re-sloped) Removed 'Dam Features' with 'topsoil' sourced from the adjacent 'topsoil' berms or alternatively source soil from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for the topsoiling' exercise; given firstly that the material has natural sealing properties (important given the potentially polluting nature of the Removed 'Dam Features'), and secondly that this broad soil group occurs extensively. Removed and Permanent 'Dam Features': Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) locally indigenous 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Removed 'Dam Features': The majority of the 'Dam Features' will be removed/'rehabilitated as follows: De-water the 'Dam Features' by means of evaporation, and if necessary pumping and purification. Scrape up the sediments on the base/walls of the 'Dam Features', and dispose of in the TSF. Remove imported concrete/stone/rock walls and dispose of in the opencast pit if potentially non-polluting, or in the TSF if potentially polluting.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Plant Process Water Dam	3.35 *ha* (76 000 m^3)		Push the walls of the 'Dam Features' into the void of the dam, thereby achieving a relatively level surface that approximates the surrounding landscape. Spray water for dust suppression where necessary when working with machinery. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust. The decision regarding the necessity for the placement of a compacted-'remoulded' vertic soil seal; overlying an impermeable membrane; and underlying the vertic 'topsoil' material on top of the removed/ 'rehabilitated' 'Dam Features' will be determined by the pollution potential of the re-graded features. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Furthermore, the base of the 'Dam Features' should also have been well sealed with an impermeable membrane and a compacted-'re-moulded' soil layer, during construction. Thus the infiltration of rainwater is not likely to be an issue. Finally 'topsoil' the Removed 'Dam Features'. Permanent 'Dam Features': A number of the 'Dam Features' (Pollution Control Dams) may remain in use in perpetuity.		
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. Removed 'Dam Features': The End Land Use of the Removed 'Dam Features' may be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). However, should all of the contaminated soils/'wastes' have been effectively removed from the various sites, then the End Land Use of Extensive Grazing may be attained. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Thus, Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas. Permanent Dam Features': The End Land Use of the Permanent 'Dam Features' that will remain in perpetuity will be Industrial due to potential Soil Contamination. Furthermore, probable side-slopes of > 5.7 degrees/ 10.0 % percentage grade will consequently be poorly- 'topsoiled'/re-vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Plant Process Water Dam	3.35 *ha* (76 000 m^3)	Land Capability	**Measures 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Removed 'Dam Features': The End Land Capability of the Removed 'Dam Features' will be Grazing or Arable in terms of topsoiling depth; but may be downgraded to Industrial due to potential Soil Contamination, the quantification of the quantification of the aforementioned pending the completion of a Contaminated Land Assessment (refer to Soil Contamination). Permanent 'Dam Features': The End Land Capability of the Permanent 'Dam Features' side-slopes that remain in perpetuity will be Industrial (non-grazing capability class), due to potential Soil Contamination and probably side-slopes of > 5.7 degrees/ 10.0 % percentage grade that will consequently be poorly- or non-'topsoiled'/vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Water in PWDs and OB Dam should be isolated and left to evaporate. **Measure 2:** PWD and OB Dam liners should be removed and basins backfilled with wall soils. **Measure 3:** Plant SW PCD 1A & 1B and feeding SW drains to be left until upslope Area A4 has been cleared, rehabilitated and stabilized. **Measure 4:** SW PCD 1A & 1B water to be used for dust suppression and irrigation of the upslope verges. Excess water left to evaporate or pumped to TSF for evaporation. **Measure 5:** Demolish silt traps and bury in dam basin prior to backfill. **Measure 6:** Remove SW PCD 1A & 1B once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and available clean material stockpiles. Level & grade surface and vegetate. **Measure 7:** Isolate PWD and OB Dams from any runoff. **Measure 8:** Water in PWDs and OB Dam should be isolated and left to evaporate.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Water in PWDs and OB Dam should be isolated and left to evaporate. **Measure 2:** PWD and OB Dam liners should be removed and basins backfilled with wall soils. **Measure 3:** Plant SW PCD 1A & 1B and feeding SW drains to be left until upslope Area A4 has been cleared, rehabilitated and stabilized.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Plant Process Water Dam	3.35 *ha* (76 000 m^3)		**Measure 4:** SW PCD 1A & 1B water to be used for dust suppression and irrigation of the upslope verges. Excess water left to evaporate or pumped to TSF for evaporation. **Measure 5:** Demolish silt traps and bury in dam basin prior to backfill. **Measure 6:** Remove SW PCD 1A & 1B once upslope catchment area has been rehabilitated. Remove membrane liner and backfill basin depression with soil from walls and available clean material stockpiles. Level & grade surface and vegetate. **Measure 7:** Isolate PWD and OB Dams from any runoff. **Measure 8:** Water in PWDs and OB Dam should be isolated and left to evaporate.		
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises.	Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Plant Process Water Dam	3.35 *ha* (76 000 m^3)		**Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.		
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
New Chrome Recovery Plant (CRP) Process Water Dam	0.27 *ha* (9000 m^3)	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Removed 'Dam Features': Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. Removed 'Dam Features'). **Measure 2:** Removed 'Dam Features': Re-grade (re-slope) Removed 'Dam Features' footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 5.7 degrees / 10.0 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Permanent 'Dam Features': Soil Erosion may be reduced by reducing side-slopes to < 5.7 degrees / 10.0 % percentage grade where necessary.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Removed 'Dam Features': Utilize tracked vehicles during the dry season in order to minimise compaction. 'Topsoil' the re-graded (re-sloped) Removed 'Dam Features' with 'topsoil' sourced from the adjacent 'topsoil' berms or alternatively source soil from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for the topsoiling' exercise; given firstly that the material has natural sealing properties (important given the potentially polluting nature of the Removed 'Dam Features'), and secondly that this broad soil group occurs extensively. Removed and Permanent 'Dam Features': Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) locally indigenous 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:** Removed 'Dam Features': The majority of the 'Dam Features' will be removed/'rehabilitated as follows: De-water the 'Dam Features' by means of evaporation, and if necessary pumping and purification. Scrape up the sediments on the base/walls of the 'Dam Features', and dispose of in the TSF.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Chrome Recovery Plant (CRP) Process Water Dam	0.27 *ha* (9000 m^3)		Remove imported concrete/stone/rock walls and dispose of in the opencast pit if potentially non-polluting, or in the TSF if potentially polluting. Push the walls of the 'Dam Features' into the void of the dam, thereby achieving a relatively level surface that approximates the surrounding landscape. Spray water for dust suppression where necessary when working with machinery. Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust. The decision regarding the necessity for the placement of a compacted-'remoulded' vertic soil seal; overlying an impermeable membrane; and underlying the vertic 'topsoil' material on top of the removed/ 'rehabilitated' 'Dam Features' will be determined by the pollution potential of the re-graded features. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Furthermore, the base of the 'Dam Features' should also have been well sealed with an impermeable membrane and a compacted-'re-moulded' soil layer, during construction. Thus the infiltration of rainwater is not likely to be an issue. Finally 'topsoil' the Removed 'Dam Features'. Permanent 'Dam Features': A number of the 'Dam Features' (Pollution Control Dams) may remain in use in perpetuity.		
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. Removed 'Dam Features': The End Land Use of the Removed 'Dam Features' may be Industrial due to potential Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' However, should all of the contaminated soils/'wastes' have been effectively removed from the various sites, then the End Land Use of Extensive Grazing may be attained. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Thus, Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas. Permanent Dam Features': The End Land Use of the Permanent 'Dam Features' that will remain in perpetuity will be Industrial due to potential Soil Contamination. Furthermore, probable side-slopes of > 5.7 degrees/ 10.0 % percentage grade will consequently be poorly- 'topsoiled'/re-vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Chrome Recovery Plant (CRP) Process Water Dam	0.27 *ha* (9000 m^3)	Land Capability	**Measures 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Removed 'Dam Features': The End Land Capability of the Removed 'Dam Features' will be Grazing or Arable in terms of topsoiling depth; but may be downgraded to Industrial due to potential Soil Contamination, the quantification of the quantification of the aforementioned pending the completion of a Contaminated Land Assessment (refer to Soil Contamination). Permanent 'Dam Features': The End Land Capability of the Permanent 'Dam Features' side-slopes that remain in perpetuity will be Industrial (non-grazing capability class), due to potential Soil Contamination and probably side-slopes of > 5.7 degrees/ 10.0 % percentage grade that will consequently be poorly- or non-'topsoiled'/vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Recycle process water to TSF or allow to evaporate. **Measure 2:** Remove all sediments and silts from the CRP RWD when dry and dispose at TSF. **Measure 3:** Demolish concrete dam 1m below n.g.l. and dispose at open cast. Backfill to n.g.l.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Recycle process water to TSF or allow to evaporate. **Measure 2:** Remove all sediments and silts from the CRP RWD when dry and dispose at TSF. **Measure 3:** Demolish concrete dam 1m below n.g.l. and dispose at open cast. Backfill to n.g.l.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Chrome Recovery Plant (CRP) Process Water Dam	0.27 *ha* (9000 m^3)	Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
New Salvage Yard	0.5 *ha* (12 000 m^3)	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Re-grade (re-slope) to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Remove loose rocks and stony material. **Measures 2:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling'.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction (before 'topsoiling'). '	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Salvage Yard	0.5 *ha* (12 000 m^3)		Topsoil' the removed facilities/ features/ dumps/ stockpiles footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) 'grass' cover.		
		Soil Contamination	**Measure 1:** Scrape up and remove the thick (> 40cm - > 100 cm) historical 'waste' or 'non-waste' layer that is spread throughout some areas (surrounding buildings, and on dirt roads), exposing the underlying in-situ soils. Demolish and remove facilities/ features/ dumps/ stockpiles from the site. Remove imported concrete/stone/rock foundations/platforms/surfaces from the site. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/ drains/ berms, that may remain in perpetuity. The End Land Use of these areas may remain Industrial due to residual Soil Contamination (pollution).	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The End Land Use of these areas may remain Industrial due to residual Soil Contamination. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') problematic areas, as well as those areas where the spread seeded 'grass' did not germinate/create cover. No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measure 1:** The stated planned End Land Capability is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Salvage Yard	0.5 *ha* (12 000 m^3)	Surface Water Quantity	**Measure 1:** Demolish concrete silt trap manholes, RC bays and RC floors and dispose at Open Cast or landfill site. **Measure 2:** Reclaim SW pipe system and remove from site. **Measure 3:** Backfill PCD 4 and level surface. **Measure 4:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Demolish concrete silt trap manholes, RC bays and RC floors and dispose at Open Cast or landfill site. **Measure 2:** Reclaim SW pipe system and remove from site. **Measure 3:** Backfill PCD 4 and level surface. **Measure 4:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon or affect any freshwater features. **Measure 2:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
New Salvage Yard	0.5 *ha* (12 000 m^3)	Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Expansion of the Taphole Fume Extraction System	-	Soil Horizon	**Measure 1:** Re-grade (re-slope) to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material [based on soil erodibility nomograph]. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Remove loose rocks and stony material. **Measure 2:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling'.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction. 'Topsoil' the removed facilities/ features/ dumps/ stockpiles footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1:**Scrape up and remove the thick (> 40cm - > 100 cm) historical 'waste' or 'non-waste' layer that is spread throughout some areas (surrounding buildings, and on dirt roads), exposing the underlying in-situ soils. Demolish and remove facilities/ features/ dumps/ stockpiles from the site. Remove imported concrete/stone/rock foundations/platforms/surfaces from the site.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Expansion of the Taphole Fume Extraction System	-		Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/ drains/ berms, that may remain in perpetuity. The End Land Use of these areas may remain Industrial due to residual Soil Contamination (pollution).		
		Land Use	**Measure 1:** The End Land Use of these areas may remain Industrial due to residual Soil Contamination. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') problematic areas, as well as those areas where the spread seeded 'grass' did not germinate/create cover. No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measures 1:** The stated planned End Land Capability is the Chamber of Mines Grazing Capability Class. Thus 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas.	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Expansion of the Taphole Fume Extraction System	-		**Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.		
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
Expansion of the Finished Product Plant Dust Abatement System	-	Soil Horizon	**Measure 1:** Re-grade (re-slope) to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material [based on soil erodibility nomograph]. Match surface level of undisturbed surrounds. Establish a freely draining final landscape. Remove loose rocks and stony material. **Measure 2:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives is to restore Soil Distribution to some measure by the process of 'topsoiling'.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction. 'Topsoil' the removed facilities/ features/ dumps/ stockpiles footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) 'grass' cover.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Expansion of the Finished Product Plant Dust Abatement System	-	Soil Contamination	**Measure 1:**Scrape up and remove the thick (> 40cm - > 100 cm) historical 'waste' or 'non-waste' layer that is spread throughout some areas (surrounding buildings, and on dirt roads), exposing the underlying in-situ soils. Demolish and remove facilities/ features/ dumps/ stockpiles from the site. Remove imported concrete/stone/rock foundations/platforms/surfaces from the site. Construct a seal layer directly overlying potentially highly-polluting rehabilitated features only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/ drains/ berms, that may remain in perpetuity. The End Land Use of these areas may remain Industrial due to residual Soil Contamination (pollution).	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Use	**Measure 1:** The End Land Use of these areas may remain Industrial due to residual Soil Contamination. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') problematic areas, as well as those areas where the spread seeded 'grass' did not germinate/create cover. No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Land Capability	**Measures 1:** The stated planned End Land Capability is the Chamber of Mines Grazing Capability Class. Thus 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Expansion of the Finished Product Plant Dust Abatement System	-	Aquatic Ecosystems Bio-Diversity	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Slag Sand at the Fine Slag Processing Plant	3.24 ha	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives are to restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. removed slag dumps). **Measure 2:** Re-grade (re-slope) removed facility/feature footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds. Establish a freely draining final landscape (without ridges/hollows). Slope cannot easily be reduced to this extent for a permanent Slag Dump, and will thus not be able to be 'topsoiled'/re-vegetated either (given soil erosion on steep slopes). Thus, slag dumps must be re-vegetated using ecological restoration principles and phytoremediation.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 1:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction. Remove loose rocks and stony material. 'Topsoil' the removed slag dump footprints with 'topsoil' sourced from the adjacent 'topsoil' berms, or alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) locally indigenous 'grass' cover. Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measures 1:** Scrape up and remove the thick (> 40cm - > 100 cm) historical slag layer that is spread throughout the temporary slag processing and stockpiling areas, exposing the underlying in-situ soils. Demolish and remove facilities/ features/ dumps/ stockpiles from the sites. Remove imported concrete/stone/rock foundations/platforms/pads/surfaces from the sites, and dispose of in the opencast pit. Consolidate all unwanted slags at one permanent slag stockpile, or alternatively dispose of in the opencast pit only if potentially non-polluting; the aforementioned after selling-off that portion of the slags that are potentially 'non-polluting/feasible/required. Spray water for dust suppression.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Slag Sand at the Fine Slag Processing Plant	3.24 ha		Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust. Construct a seal layer directly overlying potentially highly-polluting slag dumps that will remain in perpetuity only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/drains/berms, that may remain in perpetuity upslope/downslope (respectively) of potentially polluting rehabilitated areas (e.g. previous slag dump footprints) or permanent features (e.g. slag dump). Monitor leached contamination on an ongoing basis via interpolation of the data from the downslope boreholes. Excavate additional boreholes where deemed necessary, purify the pumped water accordingly, and release back to the environment.		
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. The End Land Use of the footprints of the removed slag dumps may remain Industrial due to residual Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). The End Land Use of the slag dumps that remain in perpetuity will be Industrial, due to potential contamination and probably steep (unlikely to be less than 18.4 degrees after re-grading) side-slopes that are consequently non- or poorly-'topsoiled'/vegetated. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Slag Sand at the Fine Slag Processing Plant	3.24 ha	Land Capability	**Measure 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). The aforementioned applies to the removed slag footprints. The End Land Capability of the slag dumps that remain in perpetuity will be Industrial (non-grazing capability class), due to potential contamination and probably steep (unlikely to be less than 18.4 degrees after re-grading) side-slopes that are consequently non- or poorly-'topsoiled'/vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Remove plant; demolish concrete sumps and plinths 1m below n.g.l. **Measure 2:** Clean-up yard by removal of fine slag sand stockpiles. **Measure 3:** Re-instate natural surfaces by dismantling & demolishing plant infrastructure. **Measure 4:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Measure 5: SW PCD 2 and canal system to be maintained until area has been rehabilitated.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Remove plant; demolish concrete sumps and plinths 1m below n.g.l. **Measure 2:** Clean-up yard by removal of fine slag sand stockpiles. **Measure 3:** Re-instate natural surfaces by dismantling & demolishing plant infrastructure. **Measure 4:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Measure 5: SW PCD 2 and canal system to be maintained until area has been rehabilitated.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Slag Sand at the Fine Slag Processing Plant	3.24 ha	Aquatic Ecosystems Habitat	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Coarse Slag at the Chrome Recovery Plant (CRP)	11.47 ha	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Avoid unnecessary disturbance of any underlying/surrounding in-situ soils. One of the rehabilitation objectives are to restore Soil Distribution to some measure by the process of 'topsoiling' the footprints of removed features (e.g. removed slag dumps). **Measure 2:** Re-grade (re-slope) removed facility/feature footprints to approximate undisturbed surrounding slopes of 1-4 degrees, but importantly < 6.4 degrees/ 11.2 % percentage grade for vertic 'topsoil' material. Match surface level of undisturbed surrounds where possible. Establish a freely draining final landscape. Slope cannot easily be reduced to this extent for a permanent Slag Dump, and will thus not be able to be 'topsoiled'/re-vegetated either (given soil erosion on steep slopes). Thus, slag dumps must be re-vegetated using ecological restoration principles and phytoremediation.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Fertility	**Measure 2:** Utilize tracked vehicles during the dry season in order to minimise compaction. Rip final re-sloped surface to reduce compaction. Remove loose rocks and stony material. 'Topsoil' the removed slag dump footprints with 'topsoil' sourced from the adjacent 'topsoil' berms alternatively source soil from the 'topsoil' stockpiles. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Do not fertilise the soils in areas displaying healthy existing (before rehabilitation) locally indigenous 'grass' cover. Utilise vertic 'topsoil' material in the majority of areas given that this broad soil group occurs extensively.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measures 1:** Scrape up and remove the thick (> 40cm - > 100 cm) historical slag layer that is spread throughout the temporary slag processing and stockpiling areas, exposing the underlying in-situ soils. Demolish and remove facilities/ features/ dumps/ stockpiles from the sites. Remove imported concrete/stone/rock foundations/platforms/pads/surfaces from the sites, and dispose of in the opencast pit. Consolidate all unwanted slags at one permanent slag stockpile, or alternatively dispose of in the opencast pit only if potentially non-polluting; the aforementioned after selling-off that portion of the slags that are potentially 'non-polluting/feasible/required. Spray water for dust suppression.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Coarse Slag at the Chrome Recovery Plant (CRP)	11.47 ha		Haul trucks and vehicle traffic must obey speed limits in order to reduce the amount of blown dust; Tarpaulin cover over haul truck bins to limit dust. Construct a seal layer directly overlying potentially highly-polluting slag dumps that will remain in perpetuity only. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/drains/berms, that may remain in perpetuity upslope/downslope (respectively) of potentially polluting rehabilitated areas (e.g. previous slag dump footprints) or permanent features (e.g. slag dump). Monitor leached contamination on an ongoing basis via interpolation of the data from the downslope boreholes. Excavate additional boreholes where deemed necessary, purify the pumped water accordingly, and release back to the environment.		
		Land Use	**Measure 1:** The stated End Land Use for the area in general is Extensive Grazing. The End Land Use of the footprints of the removed slag dumps may remain Industrial due to residual Soil Contamination. The grazing of 'grasses' from contaminated areas may be detrimental to livestock due to both the possible uptake of contaminants by the grass roots, as well as settled dust on the 'grass' (both of which need to be determined by an independent party). The End Land Use of the slag dumps that remain in perpetuity will be Industrial, due to potential contamination and probably steep (unlikely to be less than 18.4 degrees after re-grading) side-slopes that are consequently non- or poorly-'topsoiled'/vegetated. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or fire allowed. It may be determined necessary to implement Phytoremediation in contaminated areas.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Coarse Slag at the Chrome Recovery Plant (CRP)	11.47 ha	Land Capability	**Measure 1:** The stated End Land Capability for the area in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). The aforementioned applies to the removed slag footprints. The End Land Capability of the slag dumps that remain in perpetuity will be Industrial (non-grazing capability class), due to potential contamination and probably steep (unlikely to be less than 18.4 degrees after re-grading) side-slopes that are consequently non- or poorly-'topsoiled'/vegetated.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Abandon all screening activities. Clean-up yard by removal of coarse and fine slag and waste slag materials and stockpiles. Measure 2: Re-instate natural surfaces by dismantling & demolishing plant infrastructure. Measure 3: Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Abandon all screening activities. Clean-up yard by removal of coarse and fine slag and waste slag materials and stockpiles. Measure 2: Re-instate natural surfaces by dismantling & demolishing plant infrastructure. Measure 3: Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas. Local surface gradients >5% install contour berms 1m high and 1-2% flow gradient.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Habitat	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Coarse Slag at the Chrome Recovery Plant (CRP)	11.47 ha	Aquatic Ecosystems Bio-Diversity	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Re-Use of Mine Waste Rock at the Mine Waste Rock Stockpile	6.08 ha	Topography Morphology	**Measure 1:** Shape rehabilitated facilities to stable topographic profile	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Horizon	**Measure 1:** Topsoil' the entire re-graded (re-sloped) opencast footprint, as per the depths. Vegetated 'topsoil' stockpile berms should already exist adjacent of the 'soft's berms. Alternatively source soil 'topsoil' from the 'topsoil' stockpiles. Utilise vertic 'topsoil' material for 'topsoiling' purposes given that this broad soil group occurs extensively; and furthermore in order to maintain soil/vegetative continuity with the surrounding areas. **Measure 2:** Fill the Opencast voids with the discarded rock/soft's that have remained on site in the Opencast footprint; as well as with potentially non-polluting materials from the Infrastructure/processing/stockpiling areas. Establish a freely draining positive final landscape without ridges/hollows, in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. Re-grade (re-slope) the opencast footprint to < 6.4 degrees/ 11.2 % percentage grade where possible. Match surface level of undisturbed surrounds. Slope cannot practically be reduced to this extent for limited sections of the Opencast area, and these sections will thus not be able to be effectively 'topsoiled'/re-vegetated either (given soil erosion on steep slopes). Such areas must be re-sloped to approximately 16.0 degrees if possible, and thereafter re-vegetated using ecological restoration principles and phytoremediation. Surface rocks may be laid out along the contours in such areas, the aforementioned functioning to slow run-off, trap sediments, and thereby create suitable conditions/habitat for the germination of seeds. The recommended maximum gradient (Chamber of Mines) for material dumped on level to gently sloping terrain (therefore also TSF's, and sections of the Opencast area) is at least 1v: 3h (18.4 degrees or 33.0 % percentage grade), the least erosion occurring if the slope angle reduces in the direction of the toe of the pediment (i.e. concave). One of the key findings of extensive surveys and experimental work carried out by the University of the Witwatersrand between 1996 and 2009 was as follows: grass persistence and erosion control were increased, and irrigation decreased, by TSF slope reduction to < 16.0 degrees.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Re-Use of Mine Waste Rock at the Mine Waste Rock Stockpile	6.08 ha	Soil Fertility	**Measure 1:** Utilize tracked vehicles for 'topsoil' handling during the dry season in order to minimise compaction. Do not spray water during the 'topsoiling' process as the raised moisture content will in this case lead to soil compaction. Rip final re-sloped surface to reduce compaction. Remove loose rocks and stony material. Utilise live topsoil (and compost if available) to replenish soil micro-flora before re-vegetation. Sample and analyse the 'topsoil'. Fertilize (slow release ameliorants) the 'topsoil' immediately after 'topsoiling' and once every 3 - 4 years thereafter. Sewerage sludge derived from the sludge drying beds of the two sewage plants may be spread out in the Opencast area as 'compost'/mulch.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase
		Soil Contamination	**Measure 1: Dust**: Spray water for dust suppression. Haul trucks and vehicle traffic must obey speed limits. Tarpaulin cover over haul truck bins.t. Re-vegetate the entire 'rehabilitated' Opencast area in order to limit run-off and dust. **Run-off:** Maintain/establish the low vegetated 'topsoil' berm that exists around the outer boundary of the opencast (rock dumps/open void) footprint area, to intercept 'dirty' water rainfall run-off derived from the opencast area. In areas where a 'soft's (weathering rock and fines) berm presently exists instead of a 'topsoil' berm, the former must be removed and replaced with the latter. Re-vegetate the entire 'rehabilitated' Opencast area in order to limit run-off and dust. **Leaching:** Establish a freely draining positive final landscape without ridges/hollows in order to prevent soil erosion and the ponding of rainfall run-off, and the subsequent contamination of underlying layers/water-table due to the infiltration/leaching of water through historical potentially polluting contaminated 'waste' layers. **Order of Horizons:** Vertic A-horizon 'topsoil'; 'Soft's material (may be accessed by plant roots); - Hard overburden rock and lime rich materials ('breaker' layer to the upward capillary movement of polluted/acid water; lime will neutralize Acid Rock/Mine Drainage to certain extent); and Potentially polluting residual historical 'wastes' (smelter related) / spoil material (mining related). The latter materials must never directly underlie the 'topsoil', since this may lead to pollution / ARD contaminating the overlying 'topsoil' layers by capillary action. **'Waste':** Do not dispose of potentially polluting 'waste' materials from the 'Infrastructure' area in the Opencast void, because such materials will impact the groundwater-table. Such materials must be disposed of in an appropriate facility (e.g. TSF or Slimes Dumps). Only materials determined to be relatively potentially non-polluting (low pollution potential) may currently be disposed of in the void of the Opencast pit. Do not utilise 'dirty' 'topsoil' that was historically mixed with potentially polluting 'waste' materials.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Re-Use of Mine Waste Rock at the Mine Waste Rock Stockpile	6.08 ha		Rock dumps/stockpiles (Opencast area, Morula Mining), Mixed Materials stockpiles (Alloys Smelting Plant Facilities), and Waste (HMS and CRP waste, OB Plant fines waste, OB Plant coarse waste): Remove rock/mixed materials dumps/stockpiles; and Scrape up and remove the generally thick (> 40cm - > 100 cm) historical underlying layer that is spread extensively throughout these processing and stockpiling areas, exposing the underlying in-situ soils. Transport and dispose of the remaining aforementioned materials in the void of the Opencast pit provided that they are potentially non-polluting. The same applies to the HMS and CRP waste, OB Plant fines waste, and OB Plant coarse waste materials/areas. Re-grade, 'topsoil', sample, fertilise, and re-vegetate the footprints of the aforementioned areas in the various Infrastructure areas. Wash residual 'wastes' from elsewhere off the machinery before utilising the machinery for transportation of 'topsoil' or rehabilitation 'topsoiling' purposes. Maintain optimum functioning of those of the 'clean' (re-directs 'clean' water around potential pollution sources) and 'dirty' (intercepts 'dirty' water from polluted areas) storm water intercept canals/drains/berms, that may remain in perpetuity downslope of the Opencast area. The aforementioned will limit 'clean' and 'dirty' water run-off and seepage derived from elsewhere from entering the filled (buried) Opencast pit voids. Monitor leached contamination on an ongoing basis via interpolation of the data from the downslope boreholes. Excavate additional boreholes where deemed necessary, purify the pumped water accordingly, and release back to the environment.		
		Land Use	**Measure 1:** The stated End Land Use for the rehabilitated HERNIC areas in general is Extensive Grazing. The End Land Use of the rehabilitated Opencast area will largely be Extensive Grazing. Functional surface cover (basal, canopy) to be achieved by both natural means as well as by intervention. Mature Seeded 'Grass' must first be mown from elsewhere on the property and then spread out on the 'topsoiled' areas during the rainy season. Thereafter manually/ mechanically re-vegetate (with self-sustaining locally indigenous 'grasses') in problematic areas, as well as in those areas where the spread seeded 'grass' did not germinate/create cover. **Measure 2:** No grazing or burning allowed until vegetation is well established in the post-closure phase. However, certain sections will remain Mining due to steep to very steep slopes that will consequently not be able to be effectively 'topsoiled'/re-vegetated either. Such areas must be re-sloped to approximately 16.0 degrees if possible, and thereafter re-vegetated using ecological restoration principles and phytoremediation.	Chamber of Mines and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Re-Use of Mine Waste Rock at the Mine Waste Rock Stockpile	6.08 ha	Land Capability	**Measure 1:** The stated End Land Capability for the rehabilitated HERNIC areas in general is the Chamber of Mines Grazing Capability Class. 'Topsoiling' depth >= 25 cm (Chamber of Mines Grazing Capability Class depth standard), but preferably more (>= 60 cm – Arable Capability Class depth standard). The End Land Capability of the Grazing Capability class depth standard will easily be achieved by 'topsoiling' in the majority of the Opencast area. The End Land Capability of the limited steep to very steep sections of the Opencast area will remain Mining (i.e. Non-Grazing capability class), given that these slopes will consequently be non- or poorly- 'topsoiled'/vegetated. The End Land Capability in the three rehabilitated areas (last three Aspects in the list) currently meets the 'topsoiling' depth standard (50-60cm, 30-50cm, and 20-30cm respectively) required for the post-disturbance Grazing Capability class.	Closure Objective as per FRDCP	Decommissioning Phase
		Groundwater Quality	**Measure 1:** Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quantity	**Measure 1:** Complete crushing and selling of waste rock. M**easure 2:** Clear remainder of waste rock and dispose at Open Cast. **Measure 3:** Remove all crushing plant from site. Demolish all concrete plinths and basis. **Measure 4:** Level stockpile isolation berms. **Measure 5:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas.	Surface Water Quantity Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Surface Water Quality	**Measure 1:** Complete crushing and selling of waste rock. M**easure 2:** Clear remainder of waste rock and dispose at Open Cast. **Measure 3:** Remove all crushing plant from site. Demolish all concrete plinths and basis. **Measure 4:** Level stockpile isolation berms. **Measure 5:** Re-instate free draining surfaces by ripping to minimum 150mm depth of all hard surfaces and discing. Follow natural contours. Vegetate areas.	Surface Water Quality and Closure Objective as per FRDCP	Decommissioning Phase
		Plant Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Animal Life Habitat and Bio-Diversity	**Measure 1:** Ensure that demolition and removal of infrastructure does not encroach upon remaining natural vegetation. **Measure 2:** Re-vegetate rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase

Decommissioning Activity	Size and Scale	Mitigation Measures		Compliance with Standards	Time Period for Implementation
		Environmental Aspects Affected	Mitigation Measures		
Re-Use of Mine Waste Rock at the Mine Waste Rock Stockpile	6.08 ha	Aquatic Ecosystems Habitat	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Aquatic Ecosystems Bio-Diversity	**Measure 1:** Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Ecological Reserve and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Gaseous Emissions	**Measure 1:** Manage Vehicle fleet and movement of vehicles on site. **Measure 2:** Limit the use of vehicles in poorly ventilated areas. **Measure 3:** Plan routes in such a manner as to allow for exhaust fumes to disperse sufficiently and not to affect air quality to the extent whereby exceedences of standards could occur. **Measure 4:** Service vehicles regularly.	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Air Quality Dust Fallout	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Noise Ambient Sound Level	**Measure 1:** The implementation of a quarterly noise monitoring programme for 2 years, if noise levels are a concern at receptors implement Measure 2 and 3. **Measure 2:** A noise emission audit to determine the source of significant noises. **Measure 3:** Study to define potential mitigation measures that could reduce noise levels as well as the potential effectiveness of the measures.	Closure Objective as per FRDCP	Decommissioning Phase
		Traffic Demand	**Measure 1:** Implement road safety awareness campaigns	Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Dust suppression as per air quality management plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase
		Visual Aspects Visual Intrusion	**Measure 1:** Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	AEL and Closure Objective as per FRDCP	Decommissioning Phase

Table 5.1(d): Post Closure Phase Impact Management Measures

Post Closure Environmental Component	Size and Scale	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Socio-Cultural/ Socio-Economic Environment	Hernic Operations (386.45 ha)	**Measure 1:** Develop post closure land use as per the Final Rehabilitation, Decommissioning and Mine Closure Plan. **Measure 2:** Residual environmental impact management as per the Final Rehabilitation, Decommissioning and Mine Closure Plan. **Measure 3:** Develop post closure land use as per the Final Rehabilitation, Decommissioning and Mine Closure Plan.	Relinquishment Criteria as per FRDCP	2-5 years after Rehabilitation/ Decommissioning
Archaeological and Heritage Environment	Hernic Operations (386.45 ha)	**Measure 1:** Graveyard monitoring, aftercare and maintenance as per the Final Rehabilitation, Decommissioning and Mine Closure Plan.	Relinquishment Criteria as per FRDCP	2-5 years after Rehabilitation/ Decommissioning
Palaeontological Environment	Hernic Operations (386.45 ha)	No Significant Palaeontological Related Impacts identified/expected during the Post Closure Phase.		
Blasting and Vibration Environment	Hernic Operations (386.45 ha)	No Significant Blasting Related Impacts identified/expected during Post Closure Phase.		
Traffic Aspects	Hernic Operations (386.45 ha)	No Significant Traffic Related Impacts identified/expected during Post Closure Phase.		
Topography	Hernic Operations (386.45 ha)	**Measure 1:** Surface monitoring, aftercare and maintenance as per the Final Rehabilitation, Decommissioning and Mine Closure Plan.	Relinquishment Criteria as per FRDCP	2-5 years after Rehabilitation/ Decommissioning
Soils, Land Use and Land Capability	Hernic Operations (386.45 ha)	**Soil Horizon:** Soil and vegetation monitoring, aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan.	Relinquishment Criteria as per FRDCP	2-5 years after Rehabilitation/ Decommissioning
		Soil Fertility: Soil monitoring, aftercare and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan.	Relinquishment Criteria as per FRDCP	2-5 years after Rehabilitation/ Decommissioning
		Soil Contamination: Soil and vegetation monitoring, aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan.	Relinquishment Criteria as per FRDCP	2-5 years after Rehabilitation/ Decommissioning
		Land Use: Soil and vegetation monitoring, aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan.	Relinquishment Criteria as per FRDCP	2-5 years after Rehabilitation/ Decommissioning
		Land Capability: Soil and vegetation aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan.	Relinquishment Criteria as per FRDCP	2-5 years after Rehabilitation/ Decommissioning
Geology and Geochemistry	Hernic Operations (386.45 ha)	No Significant Geological Related Impacts identified/expected during the Post Closure Phase.		

Post Closure Environmental Component	Size and Scale	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Groundwater Environment	Hernic Operations (386.45 ha)	**Measure 1:** Monitor groundwater quality in rehabilitated pit. Monitor groundwater quality adjacent to opencast pit. Maintain pit water level at an elevation below that of the natural groundwater levels if the pit water quality does not meet the resource quality objectives - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan. **Measure 2:** Identify areas in which groundwater remediation is required. Abstract authorised volume of groundwater only. Optimise the abstraction of groundwater - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	Relinquishment Criteria as per FRDCP	2-5 years after Rehabilitation/ Decommissioning
Surface Water Environment	Hernic Operations (386.45 ha)	**Measure 1:** Monitor restored surface run-off patterns and erosion gulleys. **Measure 2:** Repair and maintain. **Measure 3:** Soil surfaces to be stable, no depressions - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan.	Relinquishment Criteria as per FRDCP	2-5 years after Rehabilitation/ Decommissioning
Plant Life Environment	Hernic Operations (386.45 ha)	**Measure 1:** Monitoring, aftercare and maintenance of rehabilitation/ vegetation cover - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan.	Relinquishment Criteria as per FRDCP	2-5 years after Rehabilitation/ Decommissioning
Animal Life Environment	Hernic Operations (386.45 ha)	**Measure 1:** Monitoring, aftercare and maintenance of rehabilitation/ vegetation cover - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan.	Relinquishment Criteria as per FRDCP	2-5 years after Rehabilitation/ Decommissioning
Wetland Environment	Hernic Operations (386.45 ha)	**Measure 1:** Monitoring, aftercare and maintenance of rehabilitation - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan. **Measure 2:** Soil and vegetation monitoring, aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan.	Relinquishment Criteria as per FRDCP	2-5 years after Rehabilitation/ Decommissioning
Aquatic Ecosystems Environment	Hernic Operations (386.45 ha)	**Measure 1:** Monitoring, aftercare and maintenance of rehabilitation and groundwater remediation - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan.	Relinquishment Criteria as per FRDCP	2-5 years after Rehabilitation/ Decommissioning
Air Quality Environment	Hernic Operations (386.45 ha)	**Measure 1:** Soil and vegetation monitoring, aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan.	Relinquishment Criteria as per FRDCP	2-5 years after Rehabilitation/ Decommissioning
Noise Environment	Hernic Operations (386.45 ha)	No Noise Related Impacts will persist Post Closure.		
Visual Aspects	Hernic Operations (386.45 ha)	None Required		

5.2. IMPACT MANAGEMENT OUTCOMES

The second Table requested in the DMR template, relates to the desired management outcomes and therefore identifies the standard of impact management required for the aspects and impacts identified throughout the life cycle of the HERNIC Ferrochrome operations.

Four Tables (5.2(a), 5.2(b), 5.2(c) and 5.2(d)) were compiled, one for each life cycle phase of the activities, aspects and impacts discussed in the Impact Management Measure Tables in section 5.1.

Each Table comprises five columns:

1.	Activity:	As carried forward from EIA Tables 9.1(a) – 9.1(d), and EMP Tables 5.1(a) – 5.1(d)
2.	Potential Impact:	As carried forward from EIA Tables 9.1(a) – 9.1(d)
3.	Aspects Affected:	As carried forward from EIA Tables 9.1(a) – 9.1(d), and EMP Tables 5.1(a) – 5.1(d)
4.	Mitigation Type:	As carried forward from EIA Tables 9.1(a) – 9.1(d)
5.	Standard to be Achieved:	As identified and recommended by Specialists

As was the case for the Impact Management Measure Tables in section 5.1, these Impact Management Outcomes Tables also follow logically on from the Impact Significance Rating Tables in Chapter 9 of Part A - the EIAR.

Table 5.2(a): Construction Phase Impact Management Outcomes

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Development and Expansion of the Process Water and Storm Water Canal System including Silt Traps	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Loss of soil horizon due to excavation during construction	Soil Horizon	Minimize impact through effective soil stockpiling as per soil utilization plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	Minimize interception volumes trough effective design as per water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on plant life habitat and diversity due to reduction in storm water run-off into the receiving environment	Plant Life Habitat and Diversity	Minimize interception volumes trough effective design as per water management plan	Restrict Impact to Development Footprint and appropriate Buffer Zone. Absence of Invasive Alien Species.
	Impact on animal life habitat and diversity due to reduction in storm water run-off into the receiving environment	Animal Life Habitat and Diversity	Minimize interception volumes trough effective design as per water management plan	Restrict Impact to Development Footprint and appropriate Buffer Zone.
	Impact on wetlands habitat, service provision capability and hydrological function through the reduction in storm water run-off and catchment yield	Wetlands Habitat, FSP and PES	Minimize interception volumes trough effective design as per water management plan	No development within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives.
	Impact on aquatic ecosystem biodiversity and habitat through the reduction in storm water run-off and catchment yield	Aquatic Ecosystem Habitat and Biodiversity	Minimize interception volumes trough effective design as per water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Development of the Morula Pollution Control Dam (PCD)	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Loss of soil horizon due to excavation during construction	Soil Horizon	Minimize impact through effective soil stockpiling as per soil utilization plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Development of the Morula Pollution Control Dam (PCD)	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	Minimize interception volumes trough effective design as per water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone. Absence of Invasive Alien Species.
	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone.
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	Avoid sensitive areas through site selection and minimize development footprint through optimal design	No development within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives.
	Impact on wetlands habitat, service provision capability and hydrological function due to increased sediment loads in run-off water over construction areas	Wetlands Habitat, FSP and PES	Contain run-off water in dirty water system as per water management plan	No development within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives.
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	Vehicle gas emission control as per the vehicle fleet management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Expansion of Storm Water Pollution Control Dam (PCD) No. 1	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Loss of soil horizon due to excavation during construction	Soil Horizon	Minimize impact through effective soil stockpiling as per soil utilization plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	Minimize interception volumes trough effective design as per water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone. Absence of Invasive Alien Species.
	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone.
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	Avoid sensitive areas through site selection and minimize development footprint through optimal design	No development within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives.
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	Vehicle gas emission control as per the vehicle fleet management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Development of Storm Water Pollution Control Dam (PCD) No. 2	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Loss of soil horizon due to excavation during construction	Soil Horizon	Minimize impact through effective soil stockpiling as per soil utilization plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	Minimize interception volumes trough effective design as per water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone. Absence of Invasive Alien Species.
	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone.
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	Avoid sensitive areas through site selection and minimize development footprint through optimal design	No development within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives.
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	Vehicle gas emission control as per the vehicle fleet management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Development of Storm Water Pollution Control Dam (PCD) No. 2	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Development of Storm Water Pollution Control Dam (PCD) No. 3	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Loss of soil horizon due to excavation during construction	Soil Horizon	Minimize impact through effective soil stockpiling as per soil utilization plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	Minimize interception volumes trough effective design as per water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone. Absence of Invasive Alien Species.
	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone.
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	Avoid sensitive areas through site selection and minimize development footprint through optimal design	No development within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives.
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	Vehicle gas emission control as per the vehicle fleet management plan	Air Quality to be Compliant with the Conditions set out in the AEL.

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Development of Storm Water Pollution Control Dam (PCD) No. 3	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Development of Storm Water Pollution Control Dam (PCD) No. 4	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Loss of soil horizon due to excavation during construction	Soil Horizon	Minimize impact through effective soil stockpiling as per soil utilization plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	Minimize interception volumes trough effective design as per water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone. Absence of Invasive Alien Species.
	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone.
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	Avoid sensitive areas through site selection and minimize development footprint through optimal design	No development within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives.
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Development of Storm Water Pollution Control Dam (PCD) No. 4	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	Vehicle gas emission control as per the vehicle fleet management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Expansion of the Ore Beneficiation (OB) Plant Process Water Dam	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Loss of soil horizon due to excavation during construction	Soil Horizon	Minimize impact through effective soil stockpiling as per soil utilization plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	Minimize interception volumes trough effective design as per water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone. Absence of Invasive Alien Species.
	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone.
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	Avoid sensitive areas through site selection and minimize development footprint through optimal design	No development within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives.
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Expansion of the Ore Beneficiation (OB) Plant Process Water Dam	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	Vehicle gas emission control as per the vehicle fleet management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Expansion of the Plant Process Water Dam	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Loss of soil horizon due to excavation during construction	Soil Horizon	Minimize impact through effective soil stockpiling as per soil utilization plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	Minimize interception volumes trough effective design as per water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone. Absence of Invasive Alien Species.
	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone.
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	Avoid sensitive areas through site selection and minimize development footprint through optimal design	No development within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives.

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Expansion of the Plant Process Water Dam	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	Vehicle gas emission control as per the vehicle fleet management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Expansion of the Chrome Recovery Plant (CRP) Process Water Dam	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Loss of soil horizon due to excavation during construction	Soil Horizon	Minimize impact through effective soil stockpiling as per soil utilization plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	Minimize interception volumes trough effective design as per water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone. Absence of Invasive Alien Species.
	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone.

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Expansion of the Chrome Recovery Plant (CRP) Process Water Dam	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	Avoid sensitive areas through site selection and minimize development footprint through optimal design	No development within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives.
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	Vehicle gas emission control as per the vehicle fleet management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Development of a New Salvage Yard	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Loss of soil horizon due to clearance of vegetation during construction	Soil Horizon	Minimize impact through effective soil stockpiling as per soil utilization plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	Minimize interception volumes trough effective design as per water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone. Absence of Invasive Alien Species.

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Development of a New Salvage Yard	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone.
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	Avoid sensitive areas through site selection and minimize development footprint through optimal design	No development within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives.
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	Vehicle gas emission control as per the vehicle fleet management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Expansion of the Tap Hole Fume Extraction System	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
Expansion of the Finished Product Plant Dust Abatement System	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Southern Expansion of the Tailings Storage Facility (TSF)	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	Minimize interception volumes trough effective design as per water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on topographical landform due to construction of the new TSF footprint	Topography Morphology	Limit expansion in footprint area as per detailed design	Topographical Impact to be restricted to Development Footprint and appropriate Buffer Zone.
	Loss of soil horizon due to clearance of vegetation as well as excavations during construction	Soil Horizon	Minimize impact through effective soil stockpiling as per soil utilization plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone. Absence of Invasive Alien Species.
	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Restrict Impact to Development Footprint and appropriate Buffer Zone.
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	Avoid sensitive areas through site selection and minimize development footprint through optimal design	No development within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives.
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	Vehicle gas emission control as per the vehicle fleet management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	Replace reverse hooters with non-tonal noise alarms	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Re-Use (Screening, Stockpiling, Internal Use and/or Selling) of Fine Slag at the Fine Slag Processing Plant	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
Re-Use (Screening, Stockpiling, Internal Use and/or Selling) of Course Slag at the Chrome Recovery Plant	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
Re-Use (Screening, Stockpiling, Internal Use and/or Selling) of Mine Waste Rock at the Mine Waste Rock Stockpile	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	Preferential procurement	Positive Community Liaisons. Local labour/ local suppliers involved in Construction Activities.

Table 5.2(b): Operational Phase Impact Management Outcomes

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
CURRENT ACTIVITIES AND INFRASTRUCTURE AND PROCESSES				
Hernic Operations as a whole	Local grievances due to historic project-induced in-migration	Socio-Cultural Cultural Processes	Improve communication and attend to local grievances as per the Social and Labour Plan	Positive Community Liaisons. Local labour/ local suppliers involved in the Operations of the Site.
	Increase in impacts classified nuisance factors	Socio-Cultural Geographic Processes	Improve communication on environmental matters as per Environmental Awareness Plan and attend to air quality aspects as per Air Quality Management Plan	Positive Community Liaisons. Local labour/ local suppliers involved in the Operations of the Site.
	Increased perception of environmental harm to local people	Socio-Cultural Institutional Processes	Improve communication on environmental matters as per Environmental Awareness Plan and attend to reporting of environmental monitoring as per Environmental Monitoring Plan	Positive Community Liaisons. Local labour/ local suppliers involved in the Operations of the Site.
	Increase in local employment and procurement	Socio-Economic Economic Efficiency	Preferential procurement and effective socio-economic upliftment programmes as per the Social and Labour Plan	Positive Community Liaisons. Local labour/ local suppliers involved in the Operations of the Site.
	Increased impact on poverty alleviation through employment	Socio-Economic Economic Equity	Preferential procurement as per Social and Labour Plan	Positive Community Liaisons. Local labour/ local suppliers involved in the Operations of the Site.
	Increase in Tax Revenues	Socio-Economic Economic Equity	Enhance business sustainability and growth through effective environmental management as per the EMPr	Positive Community Liaisons. Local labour/ local suppliers involved in the Operations of the Site.
	Increase in social funds	Socio-Economic Economic Equity	Implement effective socio-economic upliftment programmes as per the Social and Labour Plan	Positive Community Liaisons. Local labour/ local suppliers involved in the Operations of the Site.
	Loss of income from alternative land use	Socio-Economic Economic Efficiency	Minimize residual impact after closure through effective rehabilitation as per Decommissioning and Closure Plan	Positive Community Liaisons. Local labour/ local suppliers involved in the Operations of the Site.
	Decrease in adjacent property values	Socio-Economic Economic Equity	Minimize residual impact after closure through effective rehabilitation as per Decommissioning and Closure Plan	Positive Community Liaisons. Local labour/ local suppliers involved in the Operations of the Site.
	Impact on local economic diversity	Socio-Economic Economic Stability	Implement non-mining business development programmes as per the Social and Labour Plan.	Positive Community Liaisons. Local labour/ local suppliers involved in the Operations of the Site.
	Increase in local resource intensity	Socio-Economic Economic Stability	Develop and implement Optimal Resource Use Plan (water/electricity, etc.)	Positive Community Liaisons. Local labour/ local suppliers involved in the Operations of the Site.
	Noise level exceeding the acceptable day time noise level of 55 dBA at external receptor closer than 550 m from HERNIC operations	Noise Ambient Sound Levels and Noise Incidents	No mitigation required	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Noise level exceeding the acceptable night time noise level of 45 dBA at external receptor closer than 550 m from HERNIC operations	Noise Ambient Sound Levels and Noise Incidents	Monitor and audit as per the noise monitoring plan	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Access Roads	Increase in tipping trucks trips due to transportation of ferrochrome from HERNIC	Traffic Demand	Manage traffic demand to coincide with daytime and off-peak hours	No congestion of Traffic at and around HERNIC Operations.
	Increase in supplier vehicles trips due to transportation of goods and products to and from HERNIC	Traffic Demand	Manage through road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Increase in bus trips due to transportation of employees to and from HERNIC	Traffic Demand	Manage through road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Increase in pedestrian movement due to transportation of employees to and from HERNIC	Traffic Demand	Manage through road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Increase in light vehicle trips due to transportation of employees to and from HERNIC	Traffic Demand	Manage through encouragement to use large capacity vehicles	No congestion of Traffic at and around HERNIC Operations.
	Soil erosion of road verge due to poor basal cover	Soil Horizon	Maintain road verge as per the road maintenance plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Soil contamination due to spillages from road	Soil Contamination	Clear spills as per the ongoing emergency response plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Impact on surface water quality due to spillages on the road surface	Surface Water Quality	Clear spills as per the ongoing emergency response plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Proliferation of alien plant species on the road verge	Plant Life Bio-Diversity	Eradicate invasive species as per the invader species management plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Animal deaths due to collisions with animals	Animal Life Bio-Diversity	Manage through traffic control programme (speed limit and signboards)	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on surface water quality and hence the aquatic habitat due to spillages on the road surface	Aquatic Ecosystems Habitat	Clear spills as per the ongoing emergency response plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in fugitive dust due to the transport of materials and product	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Increase in gaseous emissions originating from vehicle exhaust fumes	Air Quality Gaseous Emissions	Vehicle gas emission control as per the vehicle fleet management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual impact due to increase in fugitive dust	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Railway Lines	Soil erosion of rail line verge due to poor basal cover	Soil Horizon	Maintain rail line verge as per the road maintenance plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Railway Lines	Soil contamination due to spillages from rail cars	Soil Contamination	Clear spills as per the ongoing emergency response plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Impact on surface water quality due to spillages from rail cars	Surface Water Quality	Clear spills as per the ongoing emergency response plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Animal deaths due to collisions with animals	Animal Life Bio-Diversity	Manage through traffic control programme (speed limit and signboards)	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on surface water quality and hence the aquatic habitat due to spillages from rail cars	Aquatic Ecosystems Habitat	Clear spills as per the ongoing emergency response plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in fugitive dust due to the transport of materials and product	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
Security Fence and Access Gates	Impact on animal life due to a loss in faunal migratory connectivity as a result of fences	Animal Life Habitat	Provide faunal species migratory support for smaller species	Restrict Impact within the HERNIC Operations Perimeter.
Water Supply	Soil erosion along pipe lines in case of pipe bursts	Soil Horizon	Repair pipe bursts as per the emergency action plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
Power Supply	Collisions of avifaunal species (birds) with overhead power lines	Animal Life Bio-Diversity	Install bird flappers in sensitive areas	Restrict Impact within the HERNIC Operations Perimeter.
Gas Supply	No significant Environmental Impacts anticipated during the Operational Phase			
Fuel Supply	Soil contamination due to hydrocarbon spillages/leakages from diesel fuel tanks	Soil Contamination	Clear spills as per the ongoing emergency response plan. Regular Inspections of the Tanks and Collection Sumps as per maintenance plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Groundwater contamination due to hydrocarbon spillages/leakages from diesel fuel tanks	Groundwater Quality	Clear spills as per the ongoing emergency response plan. Regular Inspections of the Tanks and Collection Sumps as per maintenance plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Surface water contamination due to hydrocarbon spillages/leakages from diesel fuel tanks	Surface Water Quality	Clear spills as per the ongoing emergency response plan. Regular Inspections of the Tanks and Collection Sumps as per maintenance plan. Capture surface water spillages in dirty areas as per water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on plant life due to hydrocarbon spillages/leakages from diesel fuel tanks	Plant Life Bio-Diversity	Clear spills as per the ongoing emergency response plan. Regular Inspections of the Tanks and Collection Sumps as per maintenance plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Fuel Supply	Impact on animal life due to hydrocarbon spillages/leakages from diesel fuel tanks	Animal Life Bio-Diversity	Clear spills as per the ongoing emergency response plan. Regular Inspections of the Tanks and Collection Sumps as per maintenance plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on surface water quality and hence the aquatic habitat due to hydrocarbon spillages/leakages from diesel fuel tanks	Aquatic Ecosystems Habitat	Clear spills as per the ongoing emergency response plan. Regular Inspections of the Tanks and Collection Sumps as per maintenance plan. Capture surface water spillages in dirty areas as per water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
Internal Roads	Soil erosion of road verge due to poor basal cover	Soil Horizon	Maintain road verge as per the road maintenance plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Soil contamination due to spillages from road	Soil Contamination	Clear spills as per the ongoing emergency response plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality if dust suppression of road surfaces is not done with clean water	Groundwater Quality	Use clean water for dust suppression as per air quality management plan – no process water should be used for dust suppression	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Impact on surface water quality due to spillages on the road surface	Surface Water Quality	Clear spills as per the ongoing emergency response plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Proliferation of alien plant species on the road verge	Plant Life Bio-Diversity	Eradicate invasive species as per the invader species management plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Animal deaths due to collisions with animals	Animal Life Bio-Diversity	Manage through traffic control programme (speed limit and signboards)	Restrict Impact within the HERNIC Operations Perimeter.
	Increase in fugitive dust due to the transport of materials and product	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Increase in gaseous emissions originating from vehicle exhaust fumes	Air Quality Gaseous Emissions	Vehicle gas emission control as per the vehicle fleet management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual impact due to increase in fugitive dust	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Administration Office Complexes	No significant Environmental Impacts anticipated during the Operational Phase			
Morula Mining Shaft Complex	The Emergency ROM Stockpile as well as the topsoil stockpile could present potentially dangerous/ unstable topographical landform features	Topography Morphology	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per soil utilization plan	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Morula Mining Shaft Complex	Soil erosion due to possible poor vegetative (grass) basal cover at offices, workshops, change house complex, people's walkway, redundant explosive's magazine, emergency ROM stockpile and soil stockpile	Soil Horizon	Maintain vegetative basal cover as per soil utilization plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Soil contamination due to accidental spillages and infiltration of dirty water at the ore/waste rock stockpiles, transfer house , water storage dams and grout plant	Soil Contamination	Clear spillages as per emergency response plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Soil contamination due to accidental spillages and infiltration of dirty water from conveyors	Soil Contamination	Clear spillages as per emergency response plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Soil quality as a result of the long term stockpiling of soil	Soil Fertility	Fertilize topsoil on stockpile as per the soil utilization plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Depletion in the quantity of groundwater as a dewatering consequence around the decline shafts	Groundwater Quantity	Minimize groundwater influx into mine through grouting of decline shaft walls. Monitor groundwater levels as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Deterioration of the groundwater resource quality resulting from spillages /seepages from the water storage dams	Groundwater Quality	Manage dam levels as per the water management plan. Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Proliferation of alien plant species at the ROM stockpile as well as at the topsoil stockpile	Plant Life Habitat	Eradicate invasive species as per the invader species management plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Impact on animal life due to a loss in faunal migratory connectivity as a result of conveyors	Animal Life Habitat	Provide faunal species migratory support for smaller species	Restrict Impact within the HERNIC Operations Perimeter.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Morula Mining Shaft Complex	Possible dewatering of wetlands as a result of the dewatering effect of the decline shafts	Wetlands Habitat, FSP and PES	Minimize groundwater influx into mine through grouting of decline shaft walls. Monitor groundwater levels as per groundwater monitoring plan	No activities within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in dust fallout resulting from windblown dust from the emergency ROM stockpile and the topsoil stockpile	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Increase of dust fallout resulting from the handling and movement of ore along the conveyors	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual impact due to increase in fugitive dust from stockpiles and conveyors	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Visual impact due to ROM stockpile and soil stockpiles shapes and heights changing the landscape morphology	Visual Aspects Visual Intrusion Landscape Morphology	Restrict footprints to delineated areas and manage size, shape and height of stockpiles as per operational plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Morula Mining Opencast Operation Including Hydro-Mining of Fines	Partially rehabilitated open pit with ongoing hydro-mining of fines, as well as final voids represent an impacted landform	Topography Morphology	Reshape and flatten steep slopes. Perform backfill and rehabilitate as per annual rehabilitation plan	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Ongoing hydro-mining and inefficient ongoing backfilling and final rehabilitation could result in unstable backfilled areas in the open pit	Topography Stability	Conduct efficient ongoing rehabilitation as per the decommissioning and closure plan	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Inefficient re-soiling during the ongoing rehabilitation cold result in erosion	Soil Horizon	Place and compact soils as per soil utilization plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Inefficient re-soiling during the ongoing rehabilitation cold result in soil infertility	Soil Fertility	Fertilize soils as per soil utilization plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Morula Mining Opencast Operation Including Hydro-Mining of Fines	Leaking pipes carrying contaminated storm water and hydro-mining slurry could cause soil contamination	Soil Contamination	Monitor and repair leaks as per the emergency response plan.	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Prior to final backfilling and rehabilitation the open pit represents a groundwater sink which causes a groundwater cone of depression around the mine	Groundwater Quantity	Monitor groundwater levels around the mine as per groundwater monitoring programme	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Water entering the open pit will deteriorate in quality due to presence of water soluble constituents in the backfilled material	Groundwater Quality	Monitor groundwater quality within and adjacent to open pit as per the groundwater monitoring programme	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to the interception of affected storm water in the pit	Surface Water Quantity	Minimize interception of storm water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	A section of the partially rehabilitated open pit cuts through what used to be a wetland prior to mining effectively destroying part of the wetland habitat. The immediate down-stream section of this wetland has been destroyed by the TSF	Wetlands Habitat, FSP and PES	Include this area in the annual rehabilitation plan as well as in the decommissioning and closure plan	No activities within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives
	A section of the partially rehabilitated open pit cuts through what used to be a wetland prior to mining effectively destroying part of the aquatic ecosystems habitat and bio-diversity. The immediate down-stream section of this wetland has been destroyed by the TSF	Aquatic Ecosystems Habitat and Bio-Diversity	Include this area in the annual rehabilitation plan as well as in the decommissioning and closure plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Mine machinery used for the mining, material transport and ongoing rehabilitation operation, generates dust	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Morula Mining Opencast Operation Including Hydro-Mining of Fines	Visual impact due to increase in fugitive dust	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Morula Mining Underground Operation	Blasting in the underground mine could cause damage to surface located mining infrastructure	Ground Vibration	Blast according to the blasting plan. Conduct vibration monitoring as per the blasting monitoring plan	No Damage to Surface Infrastructure
	Blasting in the underground mine could cause damage to surface located houses of adjacent property owners	Ground Vibration	Blast according to the blasting plan. Conduct vibration monitoring as per the blasting monitoring plan	No Damage to Surface Infrastructure
	Depletion in the quantity of groundwater as a dewatering consequence above the underground mine workings	Groundwater Quantity	Minimize groundwater influx into mine through minimization of structural disturbance during and after mining as per the mining work programme. Monitor groundwater levels as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Possible dewatering of wetlands as a result of the dewatering effect of the underground mine	Wetlands Habitat, FSP and PES	Minimize groundwater influx into mine through minimization of structural disturbance during and after mining as per the mining work programme. Monitor groundwater levels as per groundwater monitoring plan	No activities within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives
Morula Mining Accommodation	No significant Environmental Impacts anticipated during the Operational Phase			
Morula Mine Waste Rock Dump	The Mine Waste Rock Dump could present a potentially dangerous/ unstable topographical landform feature	Topography Morphology	Conduct dumping in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the mine waste rock dump	Groundwater Quality	Minimize the footprint as well as the residence time of material through re-use of the mine waste rock as per the proposed re-use programme	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Morula Mine Waste Rock Dump	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in dust fallout resulting from windblown dust from the mine waste rock dump	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual impact due to increase in fugitive dust from stockpiles and conveyors	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Visual impact due to mine waste rock stockpile shape and height changing the landscape morphology	Visual Aspects Visual Intrusion Landscape Morphology	Restrict footprint to delineated area and manage size, shape and height of mine waste rock dump as per operational plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Mine Sewage Plant	Spillage/leakage/seepage from the sludge drying beds could cause soil contamination	Soil Contamination	Maintain and operate sludge drying beds according to sewerage plant maintenance and operational plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Spillage/leakage/seepage from the sludge drying beds could cause groundwater contamination	Groundwater Quality	Maintain and operate sludge drying beds according to sewerage plant maintenance and operational plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Impact on the quality of surface water in the event that the maturation effluent discharge do not comply with the set water quality standard	Surface Water Quality	Monitor discharge water quality as per surface water monitoring plan. Maintain sewerage plant as per operational plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water in the event that the maturation effluent discharge do not comply with the set water quality standard	Aquatic Ecosystems Bio-Diversity	Monitor discharge water quality as per surface water monitoring plan. Maintain sewerage plant as per operational plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Morula Mine Storm Water Berms and Canals	Soil contamination in the event of spillages/leakages from canals	Soil Contamination	Clear spills as per the emergency response plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	Minimize interception volumes trough effective design as per water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on plant life habitat and diversity due to reduction in storm water run-off into the receiving environment	Plant Life Habitat and Diversity	Minimize interception volumes trough effective design as per water management plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Impact on animal life habitat and diversity due to reduction in storm water run-off into the receiving environment	Animal Life Habitat and Diversity	Minimize interception volumes trough effective design as per water management plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on wetlands habitat, service provision capability and hydrological function through the reduction in storm water run-off and catchment yield	Wetlands Habitat, FSP and PES	Minimize interception volumes trough effective design as per water management plan	No activities within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives
	Impact on aquatic ecosystem biodiversity and habitat through the reduction in storm water run-off and catchment yield	Aquatic Ecosystem Habitat and Biodiversity	Minimize interception volumes trough effective design as per water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
Morula Dewatering Dam	Soil Contamination due to seepage/spillages from the dam	Soil Contamination	Prevent seepage/spillages through effective storage control as per the water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Groundwater Quality	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to the	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Morula Dewatering Dam	interception and storage of affected storm water from this area			to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
Alloys Smelting Plant General Infrastructure	Soil erosion due to possible poor vegetative (grass) basal cover	Soil Horizon	Maintain Vegetative Basal Cover	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Soil contamination due to accidental spillages	Soil Contamination	Clean up Spills Immediately as per emergency response plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Depletion in the quantity of surface water due to interception and containment of dirty water	Surface Water Quantity	Minimise the interception of surface water as per water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in gaseous emissions originating from vehicle exhaust fumes	Air Quality Gaseous Emissions	Vehicle gas emission control as per the vehicle fleet management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
Raw Materials Stockpile Area 1	The raw materials stockpiles could present potentially dangerous/ unstable topographical landform features	Topography Morphology	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through raw materials	Soil Contamination	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off diversion, interception and containment as per water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to	Groundwater Quality	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Raw Materials Stockpile Area 1	infiltration/leaching of soluble contaminants due to rainwater infiltrating through raw materials		diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in dust fallout resulting from windblown dust from the raw materials stockpiles as well as from the handling of materials	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
Raw Materials Stockpile Area 2	The raw materials stockpiles could present potentially dangerous/ unstable topographical landform features	Topography Morphology	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through raw materials	Soil Contamination	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off diversion, interception and containment as per water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through raw materials	Groundwater Quality	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface	Surface Water Quality	Intercept and contain dirty water as per the water	Dirty Water to be Contained in Dirty Water Areas.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
	water resulting from dirty water run-off from this area		management plan	Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
Raw Materials Stockpile Area 2	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in dust fallout resulting from windblown dust from the materials stockpiles as well as from the handling of materials	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual impact due to increase in fugitive dust from the stockpile area	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Ore Beneficiation Plant – Crushing and Screening	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through OB plant materials	Soil Contamination	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off diversion, interception and containment as per water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through OB plant materials	Groundwater Quality	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
	affected storm water from this dirty water area			
Ore Beneficiation Plant – Crushing and Screening	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in dust fallout resulting from windblown dust from the materials stockpiles as well as from the handling of materials	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual impact due to increase in fugitive dust from the stockpile area	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Ore Beneficiation (OB) Plant – Lumpy and Fines Section (HMS and Spiral Plants)	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through OB plant materials	Soil Contamination	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off diversion, interception and containment as per water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through OB plant materials	Groundwater Quality	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Ore Beneficiation (OB) Plant – Lumpy and Fines Section (HMS and Spiral Plants)	Increase in dust fallout resulting from windblown dust from the materials stockpiles as well as from the handling of materials	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual impact due to increase in fugitive dust from the stockpile area	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Mixed Material Stockpiling and Screening	The mixed materials stockpiles could present potentially dangerous/ unstable topographical landform features	Topography Morphology	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the mixed materials	Soil Contamination	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the mixed materials	Groundwater Quality	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Mixed Material Stockpiling and Screening	Increase in dust fallout resulting from windblown dust from the materials stockpiles as well as from the handling of materials	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual impact due to increase in fugitive dust from the stockpile area	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Returns Materials Stockpiles	The returns materials stockpiles could present potentially dangerous/ unstable topographical landform features	Topography Morphology	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the returns materials	Soil Contamination	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the returns materials	Groundwater Quality	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Returns Materials Stockpiles	Increase in dust fallout resulting from windblown dust from the returns materials stockpiles as well as from the handling of materials	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
Pelletizing and Sintering Plants 1 & 2	Soil contamination due to infiltration of dirty water	Soil Contamination	Isolate, intercept an contain dirty water as per the water management pan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Soil contamination due to settling of dust on the downwind soil surface	Soil Contamination	Control dust fallout as per the air quality management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to the infiltration of dirty water	Groundwater Quality	Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on air quality as a result of the generation of fugitive dust due to the movement of material	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Impact on air quality due to the uncontrolled emissions of particulate matter	Air Quality Particulate Matter	Control particulate matter emissions as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Impact on air quality due to the uncontrolled emissions of gaseous emissions	Air Quality Gaseous Emissions	Control gaseous emissions as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Pelletizing and Sintering Plants 1 & 2	Visual impact due to fugitive dust and particulate matter emissions from the pelletizing and sintering plants	Visual Aspects Visual Intrusion	Dust suppression and particulate matter emissions control as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Visual impact due to the presence of the large buildings housing the pelletizing plants	Visual Aspects Visual Intrusion	No mitigation possible	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Furnaces 1, 2, 3 and 4	Soil contamination due to infiltration of dirty water	Soi l Contamination	Isolate, intercept an contain dirty water as per the water management pan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Soil contamination due to settling of dust on the downwind soil surface	Soil Contamination	Control dust fallout as per the air quality management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to the infiltration of dirty water	Groundwater Quality	Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on air quality as a result of the generation of fugitive dust due to the movement of material	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Impact on air quality due to the uncontrolled emissions of particulate matter	Air Quality Particulate Matter	Control particulate matter emissions as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Furnaces 1, 2, 3 and 4	Impact on air quality due to the uncontrolled emissions of gaseous emissions	Air Quality Gaseous Emissions	Control gaseous emissions as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual impact due to fugitive dust and particulate matter emissions from the pelletizing and sintering plants	Visual Aspects Visual Intrusion	Dust suppression and particulate matter emissions control as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Visual impact due to the presence of the large buildings housing the furnaces	Visual Aspects Visual Intrusion	No mitigation possible	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Ferrochrome Break Floor Area	Soil contamination due to infiltration of dirty water	Soil Contamination	Isolate, intercept an contain dirty water as per the water management pan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to the infiltration of dirty water	Groundwater Quality	Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on air quality as a result of the generation of fugitive dust due to the movement of material	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual impact due to fugitive dust emissions from the break floor area	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Finished Product Plant	High traffic volume due to the number of trucks used for the transportation of ferrochrome from HERNIC	Traffic Demand	Manage traffic demand to coincide with daytime and off-peak hours	No congestion of Traffic at and around HERNIC Operations.
	The final product stockpiles could present potentially dangerous/ unstable topographical landform features	Topography Morphology	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Soil contamination due to infiltration of dirty water	Soil Contamination	Isolate, intercept an contain dirty water as per the water management pan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to the infiltration of dirty water	Groundwater Quality	Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in dust fallout resulting from windblown dust from the final product stockpiles as well as from the handling of materials	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Increase in dust fallout resulting from windblown dust from the transport of materials	Air Quality Dust Fallout	Cover trucks as per the transport contract	Air Quality to be Compliant with the Conditions set out in the AEL.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Finished Product Plant	Visual impact due to increase in fugitive dust from the final product stockpile area	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Slag Stockpiling Areas	The slag stockpiles could present potentially dangerous/ unstable topographical landform features	Topography Morphology	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag stockpiles	Soil Contamination	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag stockpiles	Groundwater Quality	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in dust fallout resulting from windblown dust from the slag stockpiles as well as from the handling of materials	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Slag Stockpiling Areas	Visual impact due to increase in fugitive dust from the slag stockpile area	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Primary Chrome Recovery Plant (CRP)	The slag and product stockpiles at the CRP could present potentially dangerous/ unstable topographical landform features	Topography Morphology	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Soil contamination due to infiltration of dirty water	Soil Contamination	Isolate, intercept an contain dirty water as per the water management pan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag stockpiles	Soil Contamination	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag stockpiles	Groundwater Quality	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in dust fallout resulting from windblown dust from the slag stockpiles as well as from the handling of materials	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Primary Chrome Recovery Plant (CRP)	Visual impact due to increase in fugitive dust from the slag stockpile area	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Fine Slag Processing Plant (Secondary CRP)	The slag and product stockpiles at the Fine Slag Processing Plant could present potentially dangerous/ unstable topographical landform features	Topography Morphology	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Soil contamination due to infiltration of dirty water	Soil Contamination	Isolate, intercept an contain dirty water as per the water management pan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag sand stockpiles	Soil Contamination	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag sand stockpiles	Groundwater Quality	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in dust fallout resulting from windblown dust from the slag sand stockpiles as well as from the handling of materials	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Fine Slag Processing Plant (Secondary CRP)	Visual impact due to increase in fugitive dust from the slag sand stockpile area	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Product Rail Dispatch Area	The stockpiles at the product rail dispatch area could present potentially dangerous/ unstable topographical landform features	Topography Morphology	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Soil contamination due to infiltration of dirty water	Soil Contamination	Isolate, intercept an contain dirty water as per the water management pan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to infiltration of dirty water	Groundwater Quality	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in dust fallout resulting from windblown dust from the stockpiles as well as from the handling of materials	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual impact due to increase in fugitive dust from the product rail dispatch area	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Platinum Group Minerals (PGM) Plant	Soil contamination due to spillages of slurry during the beneficiation/recovery processes	Soil Contamination	Clear up spillages as per the emergency response plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Soil contamination due to infiltration of dirty water in the area	Soil Contamination	Isolate, intercept an contain dirty water as per the water management pan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Soil contamination due to settling of dust on the downwind soil surface resulting from material handling and transport	Soil Contamination	Control dust fallout as per the air quality management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to infiltration of dirty water	Groundwater Quality	Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in dust fallout resulting from windblown dust from the PGM plant as well as from the handling of materials	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual impact due to increase in fugitive dust from the PGM plant	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Internal Transport and Contractors Yard and Wash Bay	Soil contamination due to spillages of fuel, oil and wash water	Soil Contamination	Clear up spillages as per the emergency response plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Internal Transport and Contractors Yard and Wash Bay	Deterioration of the groundwater resource quality due to spillages of fuel, oil and wash water	Groundwater Quality	Clear up spillages as per the emergency response plan. Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water resulting from spillages of fuel, oil and wash water	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from spillages of fuel, oil and wash water	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
Redundant Historic Bag Plant	Not Operational - No Environmental Impacts anticipated during the HERNIC Operational Phase			
Redundant Old Civil Workshop	Not Operational - No Environmental Impacts anticipated during the HERNIC Operational Phase			
Rehabilitated Quarry Area	Not Operational - No Environmental Impacts anticipated during the HERNIC Operational Phase			
Two Historic Slimes Dams	Not Operational – Scheduled for Decommissioning and Closure – See Table 9.1(c)			
H:H Slimes Dam and Return Water Dam (RWD) – The RWD is still operational as Process Water Dam	Soil contamination in the unlikely event that water stored in the dam could seep through the H:H liner system into the sub-surface	Soil Contamination	Maintain H:H liner integrity. Conduct groundwater monitoring as per the groundwater monitoring plan.	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Soil contamination resulting from potential spillages of water from the RWD	Soil Contamination	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality in the unlikely event that water stored in the dam could seep through the H:H liner system into the sub-surface	Groundwater Quality	Maintain H:H liner integrity. Conduct groundwater monitoring as per the groundwater monitoring plan.	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
H:H Slimes Dam and Return Water Dam (RWD) – The RWD is still operational as Process Water Dam	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water resulting from potential spillages of water from the RWD	Surface Water Quality	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on plant life resulting from potential spillages of water from the RWD	Plant Life Habitat Bio-Diversity	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Impact on animal life resulting from potential spillages of water from the RWD	Animal Life Habitat, Bio-Diversity	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on wetlands resulting from potential spillages of water from the RWD	Wetlands Habitat, FSP and PES	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	No activities within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from potential spillages of water from the RWD	Aquatic Ecosystems Bio-Diversity	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Visual Intrusion as a result of the alteration to the landscape morphology of the capped H:H Facility	Visual Aspects Visual Intrusion	No mitigation possible	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
HERNIC Tailings Storage Facility (TSF) including the Southern Expansion of the TSF and Return Water Dam (RWD)	The TSF could present a potentially dangerous/ unstable topographical landform feature	Topography Morphology	Conduct disposal on the TSF in strict accordance with standard civil engineering stability design criteria as well as subject to conditions as per the TSF operational plan	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Soil contamination in the unlikely event that water stored on the TSF as well as in the RWD could seep through the liner system into the sub-surface	Soil Contamination	Maintain liner integrity. Conduct groundwater monitoring as per the groundwater monitoring plan.	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
HERNIC Tailings Storage Facility (TSF) including the Southern Expansion of the TSF and Return Water Dam (RWD)	Soil contamination resulting from potential spillages of water from the TSF and the RWD	Soil Contamination	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Potential loss in soil horizon due to erosion along the TSF side walls	Soil Horizon (Erosion)	Maintain TSF side walls in strict accordance with standard civil engineering stability design criteria as well as subject to conditions as per the TSF operational plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality in the event that water contained in the TSF and stored in the RWD could seep through the liner system into the sub-surface	Groundwater Quality	Maintain liner integrity. Conduct groundwater monitoring as per the groundwater monitoring plan.	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from the TSF and RWD area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water resulting from potential spillages of water from the TSF and RWD	Surface Water Quality	Operate the dam operational and storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on plant life resulting from potential spillages of water from the TSF and the RWD	Plant Life Habitat, Bio-Diversity	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Impact on animal life resulting from potential spillages of water from the TSF and the RWD	Animal Life Habitat Bio-Diversity	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on wetlands resulting from potential spillages of water from the TSF and the RWD	Wetlands Habitat, FSP and PES	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	No activities within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from potential spillages of water from the RWD	Aquatic Ecosystems Bio-Diversity	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Increase in fugitive dust from the TSF operation	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
HERNIC Tailings Storage Facility (TSF) including the Southern Expansion of the TSF and Return Water Dam (RWD)	Visual impact due to increase in fugitive dust from the TSF operation	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Visual Intrusion as a result of the alteration to the landscape morphology of the capped H:H Facility	Visual Aspects Visual Intrusion	No mitigation possible	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Existing Salvage Yard	Soil Contamination due to Infiltration of Dirty Water	Soil Contamination	Daily removal of Spillages. Dust Suppression. Maintain Roofed Area and Concrete Pads. Maintain Optimum Functioning of Clean and Dirty Water Control and Management.	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to spillages of liquids and materials resulting from the salvage operations	Groundwater Quality	Clear up spillages as per the emergency response plan. Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from the salvage yard area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water resulting from potential spillages of dirty storm water from the salvage yard area	Surface Water Quality	Operate the dam operational and storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from the salvage yard area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from potential spillages of dirty storm water from the salvage yard area	Aquatic Ecosystems Bio-Diversity	Operate the dam operational and storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
Alloys Plant Sewage Plant	Spillage/leakage/seepage from the sludge drying beds could cause soil contamination	Soil Contamination	Maintain and operate sludge drying beds according to sewerage plant maintenance and operational plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Spillage/leakage/seepage from the sludge drying beds could cause groundwater contamination	Groundwater Quality	Maintain and operate sludge drying beds according to sewerage plant maintenance and operational plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Alloys Plant Sewage Plant	Impact on the quality of surface water in the event that the maturation effluent discharge do not comply with the set water quality standard	Surface Water Quality	Monitor discharge water quality as per surface water monitoring plan. Maintain sewerage plant as per operational plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on the quality of surface water in the event that the maturation effluent discharge do not comply with the set water quality standard	Aquatic Ecosystems Bio-Diversity	Monitor discharge water quality as per surface water monitoring plan. Maintain sewerage plant as per operational plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
OB Plant Fines in Open Pit (Slurry)	Deterioration of the groundwater resource quality due to the disposal of OB plant fines waste in the open pit	Groundwater Quality	Characterize and classify fine waste. Monitor groundwater within the rehabilitated opencast pit, as well as beyond pit perimeter as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Deterioration of the groundwater resource quality due to the disposal of OB plant coarse waste in the open pit	Groundwater Quality	Characterize and classify coarse waste. Monitor groundwater within the rehabilitated opencast pit, as well as beyond pit perimeter as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
OB Plant Coarse Waste in Open Pit (Trucks)	Increase in fugitive dust from the transport and placing of the OB plant coarse waste in the open pit	Air Quality Dust Fallout	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual impact due to increase in fugitive dust from the coarse waste backfill operation	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Plant Drinking Water Dam	No Impact during the Operational Phase			
Plant Drinking Water Treatment Plant	No Impact during the Operational Phase			
Plant Process Water Dam and Silt Traps	Refer to New Proposed Activities in the Section below (Table 9.1(b))			
Ore Beneficiation (OB) Plant Return Water Dam (RWD)	Refer to New Proposed Activities in the Section below (Table 9.1(b))			
Chrome Recovery Plant (CRP) Process Water Dam	Refer to New Proposed Activities in the Section below (Table 9.1(b))			
Alloys Plant Storm Water Management Berms and Canals	Refer to New Proposed Activities in the Section below (Table 9.1(b))			

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Plant Storm Water Pollution Control Dam (PCD)	Refer to New Proposed Activities in the Section below (Table 9.1(b))			
Emergency Dam	Refer to the Expansion of the Storm Water Process Water Dam in the New Proposes Activities in the Section below (Table 9.1(b))			
Abstraction Boreholes	Depletion in the quantity of groundwater and the formation of a groundwater cone of depression	Groundwater Quantity	Implement effective groundwater abstraction plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
				Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Positive impact on the groundwater resource quality due to the removal of contaminants from the weathered zone aquifers	Groundwater Quality	Implement effective groundwater abstraction plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
Groundwater Treatment Plant	Soil Contamination due to leakage/spills and infiltration of contaminated groundwater	Soil Contamination	Clear up spillages as per the emergency response plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Depletion of surface water quantity due to the capture of direct rainfall in the ponds	Surface Water Quantity	Minimize interception volumes through effective design as per water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Contamination of surface water due to spillages of contaminated water	Surface Water Quality	Provision of sufficient capacity for storage of untreated groundwater	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from the plant area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from potential spillages of dirty storm water from the plant area	Aquatic Ecosystems Bio-Diversity	Operate the pond operational and storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Alloys Smelting Plant Air Quality Control Systems	The interception of particulate matter emissions from the pelletizing and sintering plant, furnaces as well as the finished product plant	Air Quality Particulate Matter	Maintain air quality abatement systems as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
NEW PROPOSED ACTIVITIES				
New Process Water and Storm Water Canal System including Silt Traps	Soil Contamination due to seepage/spillages from the dam	Soil Contamination	Prevent seepage/spillages through effective storage control as per the water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Groundwater Quality	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
New Morula Pollution Control Dam (PCD)	Soil Contamination due to seepage/spillages from the dam	Soil Contamination	Prevent seepage/spillages through effective storage control as per the water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Groundwater Quality	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Morula Pollution Control Dam (PCD)	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
New Storm Water Pollution Control Dam (PCD) No. 1	Soil Contamination due to seepage/spillages from the dam	Soil Contamination	Prevent seepage/spillages through effective storage control as per the water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Groundwater Quality	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Storm Water Pollution Control Dam (PCD) No. 2	Soil Contamination due to seepage/spillages from the dam	Soil Contamination	Prevent seepage/spillages through effective storage control as per the water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Groundwater Quality	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
New Storm Water Pollution Control Dam (PCD) No. 3	Soil Contamination due to seepage/spillages from the dam	Soil Contamination	Prevent seepage/spillages through effective storage control as per the water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Groundwater Quality	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Storm Water Pollution Control Dam (PCD) No. 3	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
New Storm Water Pollution Control Dam (PCD) No. 4	Soil Contamination due to seepage/spillages from the dam	Soil Contamination	Prevent seepage/spillages through effective storage control as per the water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Groundwater Quality	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
New Ore Beneficiation (OB) Plant Process Water Dam	Soil Contamination due to seepage/spillages from the dam	Soil Contamination	Prevent seepage/spillages through effective storage control as per the water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Groundwater Quality	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Ore Beneficiation (OB) Plant Process Water Dam	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
New Plant Process Water Dam	Soil Contamination due to seepage/spillages from the dam	Soil Contamination	Prevent seepage/spillages through effective storage control as per the water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Groundwater Quality	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Plant Process Water Dam	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
New Chrome Recovery Plant (CRP) Process Water Dam	Soil Contamination due to seepage/spillages from the dam	Soil Contamination	Prevent seepage/spillages through effective storage control as per the water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Groundwater Quality	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	Intercept and contain dirty water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	Intercept and contain dirty water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
New Salvage Yard	Soil Contamination due to Infiltration of Dirty Water	Soil Contamination	Daily removal of Spillages. Dust Suppression. Maintain Roofed Area and Concrete Pads. Maintain Optimum Functioning of Clean and Dirty Water Control and Management.	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to spillages of liquids and materials resulting from the salvage operations	Groundwater Quality	Clear up spillages as per the emergency response plan. Monitor groundwater quality as per groundwater monitoring plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from the salvage yard area	Surface Water Quantity	Optimize the interception of surface water as per the water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Salvage Yard	Impact on the quality of surface water resulting from potential spillages of dirty storm water from the salvage yard area	Surface Water Quality	Operate the dam operational and storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from the salvage yard area	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from potential spillages of dirty storm water from the salvage yard area	Aquatic Ecosystems Bio-Diversity	Operate the dam operational and storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
New Tap Hole Fume Extraction System	The interception of particulate matter emissions from the pelletizing and sintering plant, furnaces as well as the finished product plant	Air Quality Particulate Matter and Gaseous Emissions	Maintain air quality abatement systems as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
New Finished Product Plant Dust Abatement System	The interception of particulate matter emissions from the pelletizing and sintering plant, furnaces as well as the finished product plant	Air Quality Particulate Matter	Maintain air quality abatement systems as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Slag Sand at the Fine Slag Processing Plant	The stockpiles at the Fine Slag Processing Plant area could present potentially dangerous/ unstable topographical landform features	Topography Morphology	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag sand stockpiles	Soil Contamination	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to infiltration of soluble contaminants into the subsurface	Groundwater Quality	Rework current arising slag stockpiles as quickly as possible. Conduct groundwater monitoring as per the groundwater monitoring plan.	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	Minimize interception volumes through effective design as per water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
	Contamination of surface water due to spillages of contaminated water	Surface Water Quality	Provide silt traps to improve water quality in recovery sumps	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from potential spillages of dirty storm water	Aquatic Ecosystems Bio-Diversity	Clear up spillages as per the emergency response plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on air quality due to movement of materials	Air Quality Fugitive Dust	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Impact on air quality due to vehicle movement	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual impact due to increase in fugitive dust from the plant operation	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Coarse Slag at the Chrome Recovery Plant (CRP)	The stockpiles at the CRP area could present potentially dangerous/ unstable topographical landform features	Topography Morphology	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag stockpiles	Soil Contamination	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Loss of soil horizon during excavation activities	Soil Distribution	Avoid unnecessary disturbance of underlying soils	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Deterioration of the groundwater resource quality due to infiltration of soluble contaminants into the subsurface	Groundwater Quality	Rework current arising slag stockpiles as quickly as possible. Conduct groundwater monitoring as per the groundwater monitoring plan.	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	Minimize interception volumes through effective design as per water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Coarse Slag at the Chrome Recovery Plant (CRP)	Contamination of surface water due to spillages of contaminated water	Surface Water Quality	Provide silt traps to improve water quality	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from potential spillages of dirty storm water	Aquatic Ecosystems Bio-Diversity	Clear up spillages as per the emergency response plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on air quality due to movement of materials	Air Quality Fugitive Dust	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Impact on air quality due to vehicle movement	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle movement management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual impact due to increase in fugitive dust from the plant operation	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Re-Use of Mine Waste Rock at the Mine Waste Rock Stockpile	The Mine Waste Rock Dump could present a potentially dangerous/ unstable topographical landform feature	Topography Morphology	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the waste rock stockpiles	Soil Contamination	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	Minimize interception volumes through effective design as per water management plan	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water	Aquatic Ecosystems Habitat	Optimize the interception of surface water as per the water management plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on the quality of surface water resulting from potential spillages of dirty storm water	Aquatic Ecosystems Bio-Diversity	Clear up spillages as per the emergency response plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.

Operational Phase Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Re-Use of Mine Waste Rock at the Mine Waste Rock Stockpile	Impact on air quality due to movement of materials	Air Quality Fugitive Dust	Dust suppression as per the air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Impact on air quality due to vehicle movement	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle movement management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual impact due to increase in fugitive dust from the waste rock stockpile operation	Visual Aspects Visual Intrusion	Dust suppression as per the air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.

Table 5.2(c): Decommissioning and Closure Phase Impact Management Outcomes

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
CURRENT ACTIVITIES AND INFRASTRUCTURE AND PROCESSES				
Hernic Operations	Negative impact on land use patterns as a result of the closure of the site	Socio Cultural Geographic Processes	Improve communication and attend to local grievances as per the Social and Labour Plan. Improve communication on environmental matters as per Environmental Awareness Plan and attend to reporting of environmental monitoring as per Environmental Monitoring Plan.	Positive Community Liaisons. Local labour/ local suppliers involved in Decommissioning and Closure Activities.
	Possible damage to the two graveyards on site	Heritage, Archaeological and Palaeontological	Clearly demarcate and fence graveyards sites. Communicate localities to all decommissioning and closure contractors.	Heritage Resources not to be impacted during the Decommissioning and Closure Activities. Palaeontological Resources not to be impacted during the Decommissioning and Closure Activities.
	Loss of jobs and income due to closure	Socio Economic Economic Efficiency	Implement effective retrenchment packages and support local suppliers in transitioning to other industries	Positive Community Liaisons. Local labour/ local suppliers involved in Decommissioning and Closure Activities.
	Decrease and/or termination of funds available for social projects	Socio Economic Economic Equity	Plan projects with exit strategy in collaboration with beneficiaries	Positive Community Liaisons. Local labour/ local suppliers involved in Decommissioning and Closure Activities.
	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Hernic Operations	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Hernic Operations	Positive impact on visual intrusion due to the demolition and removal of large structures (e.g. pelletizing plant and furnaces etc.)	Visual Aspects Visual Intrusion	Demolish large infrastructure, buildings e.g. pelletizing plant and furnaces etc. as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Access Roads	It is proposed that the access roads remain and not be decommissioned as they will be beneficial in supporting the post closure land use			
Railway Lines	It is proposed that the railway lines remain and not be decommissioned as they will be beneficial in supporting the post closure land use			
Security Fence and Access	It is proposed that the security fence and access remain and not be decommissioned as it will be beneficial in supporting the post closure land use			
Water Supply	It is proposed that the water supply infrastructure remain and not be decommissioned as it will be beneficial in supporting the post closure land use			
Power Supply	It is proposed that the power supply infrastructure remain and not be decommissioned as it will be beneficial in supporting the post closure land use			
Gas Supply	No Impact during the Decommissioning and Closure Phase			
Fuel Supply	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Fuel Supply	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Internal Roads	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Internal Roads				
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Internal Roads	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Administration Office Complexes	It is proposed that the administration office complexes remain and not be decommissioned as they will be beneficial in supporting the post closure land use			
Morula Mining Shaft Complex	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Morula Mining Shaft Complex	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Morula Mining Shaft Complex	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Morula Mining Opencast Operation	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Morula Mining Opencast Operation	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Morula Mining Underground Operation	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Morula Mining Underground Operation	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Morula Mining Underground Operation	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Morula Mining Accommodation	It is proposed that the accommodation complex remain and not be decommissioned as they will be beneficial in supporting the post closure land use.			
	Possible damage to the two graveyards on site	Heritage, Archaeological and Palaeontological	Clearly demarcate and fence graveyards sites. Communicate localities to all decommissioning and closure contractors.	Heritage Resources not to be impacted during the Decommissioning and Closure Activities. Palaeontological Resources not to be impacted during the Decommissioning and Closure Activities.
Mine Waste Rock Dump	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Mine Waste Rock Dump	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Mine Sewage Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Mine Sewage Plant	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Mine Sewage Plant	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Morula Mine Storm Water Berms and Canals	Refer to New Proposed Activities in the Section below (Table 9.1(b))			
Morula Dewatering Dam	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Morula Dewatering Dam	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Alloys Smelting Plant General Infrastructure	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Alloys Smelting Plant General Infrastructure	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Alloys Smelting Plant General Infrastructure	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Raw Materials Stockpile Area 1	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Raw Materials Stockpile Area 1	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Raw Materials Stockpile Area 2	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Raw Materials Stockpile Area 2	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Raw Materials Stockpile Area 2	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Ore Beneficiation Plant – Crushing and Screening	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Ore Beneficiation Plant – Crushing and Screening	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Ore Beneficiation Plant – Crushing and Screening	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Ore Beneficiation Plant – Lumpy and Fines Section (HMS and Spiral Plants)	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Ore Beneficiation Plant – Lumpy and Fines Section (HMS and Spiral Plants)	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Mixed Material Stockpiling and Screening	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Mixed Material Stockpiling and Screening	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Mixed Material Stockpiling and Screening	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Returns Materials Stockpiles	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Returns Materials Stockpiles	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Pelletizing and Sintering Plants 1 & 2	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Pelletizing and Sintering Plants 1 & 2	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Furnaces 1, 2, 3 and 4	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Furnaces 1, 2, 3 and 4	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Furnaces 1, 2, 3 and 4	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Ferrochrome Break Floor Area	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Ferrochrome Break Floor Area	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Finished Product Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Finished Product Plant	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Slag Stockpiling Areas	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Slag Stockpiling Areas	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Slag Stockpiling Areas	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Primary Chrome Recovery Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Primary Chrome Recovery Plant	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Fine Slag Processing Plant (Secondary CRP)	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Fine Slag Processing Plant (Secondary CRP)	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Product Rail Dispatch Area	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the	Land Use	Implement final rehabilitation, decommissioning and	Impact to be Restricted to within the HERNIC

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Product Rail Dispatch Area	transformation of the mining and smelting land use to agricultural land use		closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Product Rail Dispatch Area	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Platinum Group Minerals (PGM) Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Platinum Group Minerals (PGM) Plant	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Internal Transport and Contractors Yard and Wash Bay	Possible damage to the two graveyards on site	Heritage, Archaeological and Palaeontological	Clearly demarcate and fence graveyards sites. Communicate localities to all decommissioning and closure contractors.	Heritage Resources not to be impacted during the Decommissioning and Closure Activities. Palaeontological Resources not to be impacted during the Decommissioning and Closure Activities.
	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Internal Transport and Contractors Yard and Wash Bay	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Redundant Historic Bag Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Redundant Historic Bag Plant	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Redundant Historic Bag Plant	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Redundant Old Civil Workshop	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Redundant Old Civil Workshop	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Rehabilitated Quarry Area	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Rehabilitated Quarry Area	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Two Historic Slimes Dams	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Two Historic Slimes Dams	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Two Historic Slimes Dams	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the shaping and landscaping of the facility	Visual Aspects Visual Intrusion	Demolish large infrastructure and shape as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Decommissioning of Phase 1 of the H:H Slimes Dam	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Decommissioning of Phase 1 of the H:H Slimes Dam	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the shaping and landscaping of the facility	Visual Aspects Visual Intrusion	Demolish large infrastructure and shape as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
HERNIC Tailings Storage Facility (TSF) including Southern Expansion of TSF and Return Water Dam (RWD)	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
HERNIC Tailings Storage Facility (TSF) including Southern Expansion of TSF and Return Water Dam (RWD)	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
HERNIC Tailings Storage Facility (TSF) including Southern Expansion of TSF and Return Water Dam (RWD)	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the shaping and landscaping of the facility	Visual Aspects Visual Intrusion	Demolish large infrastructure and shape as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Existing Salvage Yard	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Existing Salvage Yard	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Alloys Plant Sewage Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Alloys Plant Sewage Plant	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
OB Plant Fines in Open Pit (Slurry)	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
OB Plant Fines in Open Pit (Slurry)	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
OB Plant Coarse Waste in Open Pit (Trucks)	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
OB Plant Coarse Waste in Open Pit (Trucks)	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Plant Drinking Water Dam	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Plant Drinking Water Dam	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Plant Drinking Water Treatment Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Plant Drinking Water Treatment Plant	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Plant Process Water Dam and Silt Traps	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Plant Process Water Dam and Silt Traps	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Plant Process Water Dam and Silt Traps	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
OB Plant Return Water Dam	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
OB Plant Return Water Dam	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Chrome Recovery Plant Process Water Dam	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Chrome Recovery Plant Process Water Dam	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Chrome Recovery Plant Process Water Dam	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Alloys Plant Storm Water Management Berms and Canals	Refer to New Proposed Activities in the Section below (Table 9.1(b))			
Plant Storm Water Pollution Control Dam (PCD)	Decrease and/or termination of funds available for social projects	Socio Economic Economic Equity	Plan projects with exit strategy in collaboration with beneficiaries	Positive Community Liaisons. Local labour/ local suppliers involved in Decommissioning and Closure Activities.
	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Plant Storm Water Pollution Control Dam (PCD)	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Abstraction Boreholes	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Abstraction Boreholes	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
Groundwater Treatment Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Groundwater Treatment Plant	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Alloys Smelting Plant Air Quality Control Systems	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
NEW PROPOSED ACTIVITIES				
New Process Water and Storm Water Canal System including Silt Traps	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Process Water and Storm Water Canal System including Silt Traps	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
New Morula Pollution Control Dam (PCD)	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Morula Pollution Control Dam (PCD)	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Morula Pollution Control Dam (PCD)	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
New Storm Water Pollution Control Dam (PCD) No. 1	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Storm Water Pollution Control Dam (PCD) No. 1	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
New Storm Water Pollution Control Dam (PCD) No. 2	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Storm Water Pollution Control Dam (PCD) No. 2	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Storm Water Pollution Control Dam (PCD) No. 2	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
New Storm Water Pollution Control Dam (PCD) No. 3	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Storm Water Pollution Control Dam (PCD) No. 3	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Storm Water Pollution Control Dam (PCD) No. 3	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
New Storm Water Pollution Control Dam (PCD) No. 4	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Storm Water Pollution Control Dam (PCD) No. 4	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
New Ore Beneficiation (OB) Plant Process Water Dam	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Ore Beneficiation (OB) Plant Process Water Dam	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Ore Beneficiation (OB) Plant Process Water Dam	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
New Plant Process Water Dam	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Plant Process Water Dam	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
New Chrome Recovery Plant (CRP) Process Water Dam	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Chrome Recovery Plant (CRP) Process Water Dam	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Chrome Recovery Plant (CRP) Process Water Dam	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
New Salvage Yard	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
New Salvage Yard	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Expansion of the Tap Hole Fume Extraction System	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Expansion of the Tap Hole Fume Extraction System	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Expansion of the Tap Hole Fume Extraction System	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Expansion of the Finished Product Plant Dust Abatement System	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Expansion of the Finished Product Plant Dust Abatement System	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Slag Sand at the Fine Slag Processing Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Slag Sand at the Fine Slag Processing Plant	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Slag Sand at the Fine Slag Processing Plant	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the demolition and removal of large structures and the shaping and landscaping of the facility	Visual Aspects Visual Intrusion	Demolish large infrastructure and shape as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Coarse Slag at the Chrome Recovery Plant (CRP)	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Coarse Slag at the Chrome Recovery Plant (CRP)	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Coarse Slag at the Chrome Recovery Plant (CRP)	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the demolition and removal of large structures and the shaping and landscaping of the facility	Visual Aspects Visual Intrusion	Demolish large infrastructure and shape as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
Re-Use of Mine Waste Rock at the Mine Waste Rock Stockpile	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Impact to be Restricted to within the HERNIC Operations Perimeter.
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Surface Water Quantity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.

Decommissioning Activity	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Re-Use of Mine Waste Rock at the Mine Waste Rock Stockpile	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Dirty Water to be Contained in Dirty Water Areas. Clean Water beyond the Dirty Water Area to be Free-Draining into the Environment. Water Contained and Discharged must Comply with WUL and Waste Licence Conditions.
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Restrict Impact within the HERNIC Operations Perimeter.
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Aquatic Ecosystems Habitat	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Aquatic Ecosystems Bio-Diversity	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Minimize gaseous emissions through vehicle maintenance plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	Dust suppression as per air quality management plan	Air Quality to be Compliant with the Conditions set out in the AEL.
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	Implement road safety awareness campaigns	No congestion of Traffic at and around HERNIC Operations.
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Dust suppression as per air quality management plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.
	Positive impact on visual intrusion due to the demolition and removal of large structures and the shaping and landscaping of the facility	Visual Aspects Visual Intrusion	Demolish large infrastructure and shape as per final rehabilitation, decommissioning and closure plan	Particulate matter emissions and dust fallout to be Compliant with the Conditions set out in the AEL. No Visual Intrusion within the Surrounding Natural Landscape.

Table 5.2(d): Post Closure Phase Impact Management Outcomes

Post Closure Environmental Component	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Socio-Cultural/ Socio-Economic Environment	Permanent loss of Agricultural Land.	Socio-Economic Economic Efficiency	Develop post closure land use as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	Sustainable Socio-Cultural/ Economic Legacy to be Visible.
	Residual Environmental Impacts could result in on-going external costs for the local community	Socio-Economic Economic Efficiency	Residual environmental impact management as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	Sustainable Socio-Cultural/ Economic Legacy to be Visible.
	Potential impact on community health and safety	Socio-Cultural Institutional Processes	Develop post closure land use as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	Sustainable Socio-Cultural/ Economic Legacy to be Visible.
Heritage, Archaeological and Palaeontological Environment	Potential Impact on Graveyards	Heritage Resources Cultural Aspects	Graveyard monitoring, aftercare and maintenance as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	No Residual Impact on the Heritage Resources to be present. No Residual Impact on the Palaeontological Resources to be present.
Blasting and Vibration	No Blasting Related Impacts will persist Post Closure			
Traffic Aspects	No Traffic Related Impacts will persist Post Closure			
Topography	Presence of unstable surfaces at the demolished and rehabilitated plant infrastructure, rehabilitated open pit and at the rehabilitated TSF	Topography Stability	Surface monitoring, aftercare and maintenance as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	Existence of Stable Landforms and Free-Draining Surfaces.
Soils, Land Capability and Land Use	Loss of soil due to erosion	Soil Horizon	Soil and vegetation monitoring, aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Loss in soil fertility	Soil Fertility	Soil monitoring, aftercare and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	Possible patches of contaminated soil may manifest as denuded vegetation	Soil Contamination	Soil and vegetation monitoring, aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
	The stated post closure Land Use for the rehabilitated HERNIC areas in general is Extensive Grazing. Possible denudation of re-vegetated areas	Land Use	Soil and vegetation monitoring, aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	Post Closure Land Use of Extensive Grazing to be supported.
	The stated post closure Land Capability for the rehabilitated HERNIC areas in general is the Chamber of Mines Grazing Capability Class.	Land Capability	Soil and vegetation aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.

Post Closure Environmental Component	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Geology and Geochemistry	Due to the mining of the ore body, the Geological Environment will remain altered Post Closure			
Groundwater Environment	Deterioration of the Groundwater resource quality due to the infiltration of leachable contamination from the OB Plant Fines which is backfilled in the open voids into the adjacent aquifers	Groundwater Quality	Monitor groundwater quality in rehabilitated pit. Monitor groundwater quality adjacent to opencast pit. Maintain pit water level at an elevation below that of the natural groundwater levels if the pit water quality does not meet the resource quality objectives - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Deterioration of the Groundwater resource quality due to the infiltration of leachable contamination from the OB Plant Coarse Waste which is backfilled in the open voids into the adjacent aquifers	Groundwater Quality	Monitor groundwater quality in rehabilitated pit. Monitor groundwater quality adjacent to opencast pit. Maintain pit water level at an elevation below that of the natural groundwater levels if the pit water quality does not meet the resource quality objectives - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Depletion in the quantity of groundwater and the formation of a groundwater cone of depression in the aquifers adjacent to the abstraction boreholes.	Groundwater Quantity	Identify areas in which groundwater remediation is required. Abstract authorised volume of groundwater only. Optimise the abstraction of groundwater - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Improvement to the groundwater resource quality due to the removal of contaminants from the weathered zone aquifers by pumping groundwater from selected groundwater remediation abstraction boreholes.	Groundwater Quality	Identify areas in which groundwater remediation is required. Optimise the abstraction of groundwater - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
	Residual impact on the Groundwater Resource Quality due to the previous infiltration of soluble contaminants into the subsurface through the footprints of the material and waste stockpiles/ disposal facilities and dirty water containment facilities	Groundwater Quality	Identify areas in which groundwater remediation is required. Monitor the groundwater quality to assess the efficiency of the proposed post closure groundwater remediation plan - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
Surface Water Environment	Depletion in the quantity of Surface Water due to the capture of direct rainfall.	Surface Water Quantity	Monitor restored surface run-off patterns and erosion gulleys. Repair and maintain. Soil surfaces to be stable, no depressions - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	Surface Water Quality to be Complaint with Resource Quality Objectives. No Visible Signs of Surface Water Ponding.

Post Closure Environmental Component	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Surface Water Environment	Contamination of the surface water resource due to contaminated run-off from ineffectively rehabilitated areas	Surface Water Quality	Monitor restored surface run-off patterns and erosion gulleys. Repair and maintain. Soil surfaces to be stable, no depressions - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	Surface Water Quality to be Complaint with Resource Quality Objectives. No Visible Signs of Surface Water Ponding.
Plant Life Environment	Possible discharge and seepage degrading floral habitat.	Plant Life Habitat	Monitoring, aftercare and maintenance of rehabilitation - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	Stable, Self-Sustaining Locally Indigenous Vegetative Cover that Supports the Post Closure Land Use. Absence of Invasive Alien Species.
	Proliferation of alien and invasive species.	Plant Life Bio-Diversity	Monitoring, aftercare and maintenance of vegetation cover - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	Stable, Self-Sustaining Locally Indigenous Vegetative Cover that Supports the Post Closure Land Use. Absence of Invasive Alien Species.
Animal Life Environment	Possible discharge and seepage degrading faunal habitat.	Animal Life Habitat	Monitoring, aftercare and maintenance of rehabilitation - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	Increase in Faunal Species Abundance and Diversity.
	Proliferation of alien and invasive species.	Animal Life Bio-Diversity	Monitoring, aftercare and maintenance of vegetation cover - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	Increase in Faunal Species Abundance and Diversity.
Wetland Environment	Possible discharge and seepage degrading freshwater habitat.	Wetland Habitat	Monitoring, aftercare and maintenance of rehabilitation - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	No Visible Signs of Surface Water Ponding. Surface Water Quality to be Complaint with Resource Quality Objectives. Increase in monitored Parameters defining Wetland Integrity such as PES, EIS and Ecological Service Provision.
	Continued erosion leading to sedimentation of freshwater resources.	Wetland FSP and PES	Soil and vegetation monitoring, aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	No Visible Signs of Surface Water Ponding. Surface Water Quality to be Complaint with Resource Quality Objectives. Increase in monitored Parameters defining Wetland Integrity such as PES, EIS and Ecological Service Provision.
Aquatic Ecosystems Environment	Possible discharge and seepage degrading surface and groundwater resources.	Aquatic Ecosystems Biodiversity	Monitoring, aftercare and maintenance of rehabilitation and groundwater remediation - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
Air Quality Environment	Fine Fugitive Dust emanating from Rehabilitated Areas where Stable Vegetative Cover has not yet established.	Air Quality Dust Fallout	Soil and vegetation monitoring, aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	Air Quality to be Compliant with the Conditions set out in the AEL.

Post Closure Environmental Component	Potential Impact	Environmental Aspects Affected	Mitigation Type	Standard to be Achieved
Noise Environment	No Noise Related Impacts will persist Post Closure			
Visual Aspects	Infrastructure which has not been demolished will be used for alternative purposes. The facilities do not contrast with the larger local and regional setting as there are similar structures within a considerable distance. The presence of the HERNIC Operations therefore fits into the visual character of the greater area and mining character of the region.	Visual Aspects Visual Intrusion	None Required	No residual visible air quality impact. Final landforms to present no visual intrusion within the Surrounding Natural Landscape.

5.3. IMPACT MANAGEMENT ACTIONS

The third Table requested in the DMR template, relates to the description of impact management actions, identifying the manner in which the impact management objectives and outcomes will be achieved, throughout the life cycle of the HERNIC Ferrochrome operations.

Four Tables (5.3(a), 5.3(b), 5.3(c) and 5.3(d)) were compiled, one for each life cycle phase of the activities, aspects and impacts discussed in the Impact Management Measure Tables in section 5.1.

Each Table comprises five columns:

1.	Activity:	As carried forward from EIA Tables 9.1(a) – 9.1(d), and EMP Tables 5.1(a) – 5.1(d)
2.	Potential Impact:	As carried forward from EIA Tables 9.1(a) – 9.1(d)
3.	Mitigation Type:	As carried forward from EIA Tables 9.1(a) – 9.1(d)
4.	Time Period for Implementation:	As per life cycle Phase
5.	Compliance with Standards:	As identified and recommended by Specialists and CA

As was the case for the Impact Management Measure Tables in section 5.1, and the Impact Management Outcomes Tables in section 5.2, also follow logically on from the Impact Significance Rating Tables in Chapter 9 of Part A - the EIAR.

Table 5.3(a): Construction Phase Impact Management Actions

Construction Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Development and Expansion of the Process Water and Storm Water Canal System including Silt Traps	Positive impact on local economic efficiency through local job creation	Preferential procurement	Construction Phase	Social and Labour Plan
	Positive impact on local socio-cultural demographics through the employment of local people	Preferential procurement	Construction Phase	Social and Labour Plan
	Loss of soil horizon due to excavation during construction	Minimize impact through effective soil stockpiling as per soil utilization plan	Construction Phase	Chamber of Mines Guidelines
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Minimize interception volumes trough effective design as per water management plan	Construction Phase	Surface Water Quantity Reserve and WUL
	Impact on plant life habitat and diversity due to reduction in storm water run-off into the receiving environment	Minimize interception volumes trough effective design as per water management plan	Construction Phase	Ecological Reserve and Water Use License
	Impact on animal life habitat and diversity due to reduction in storm water run-off into the receiving environment	Minimize interception volumes trough effective design as per water management plan	Construction Phase	Ecological Reserve and Water Use License
	Impact on wetlands habitat, service provision capability and hydrological function through the reduction in storm water run-off and catchment yield	Minimize interception volumes trough effective design as per water management plan	Construction Phase	Ecological Reserve and Water Use License
	Impact on aquatic ecosystem biodiversity and habitat through the reduction in storm water run-off and catchment yield	Minimize interception volumes trough effective design as per water management plan	Construction Phase	Ecological Reserve and Water Use License
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
Development of the Morula Pollution Control Dam (PCD)	Positive impact on local economic efficiency through local job creation	Preferential procurement	Construction Phase	Social and Labour Plan
	Positive impact on local socio-cultural demographics through the employment of local people	Preferential procurement	Construction Phase	Social and Labour Plan
	Loss of soil horizon due to excavation during construction	Minimize impact through effective soil stockpiling as per soil utilization plan	Construction Phase	Chamber of Mines Guidelines
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Minimize interception volumes trough effective design as per water management plan	Construction Phase	Surface Water Quantity Reserve and WUL
	Impact on plant life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on animal life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on wetlands habitat, service provision capability and hydrological function due to increased sediment loads in run-off water over construction areas	Contain run-off water in dirty water system as per water management plan	Construction Phase	Ecological Reserve and Water Use License

Construction Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Development of the Morula Pollution Control Dam (PCD)	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Construction Phase	Ecological Reserve and Water Use License
	Increase in fugitive dust from the construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Vehicle gas emission control as per the vehicle fleet management plan	Construction Phase	AEL
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
Expansion of Storm Water Pollution Control Dam (PCD) No. 1	Positive impact on local economic efficiency through local job creation	Preferential procurement	Construction Phase	Social and Labour Plan
	Positive impact on local socio-cultural demographics through the employment of local people	Preferential procurement	Construction Phase	Social and Labour Plan
	Loss of soil horizon due to excavation during construction	Minimize impact through effective soil stockpiling as per soil utilization plan	Construction Phase	Chamber of Mines Guidelines
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Minimize interception volumes trough effective design as per water management plan	Construction Phase	Surface Water Quantity Reserve and WUL
	Impact on plant life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on animal life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Construction Phase	Ecological Reserve and Water Use License
	Increase in fugitive dust from the construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Vehicle gas emission control as per the vehicle fleet management plan	Construction Phase	AEL
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)

Construction Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Expansion of Storm Water Pollution Control Dam (PCD) No. 1	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
Development of Storm Water Pollution Control Dam (PCD) No. 2	Positive impact on local economic efficiency through local job creation	Preferential procurement	Construction Phase	Social and Labour Plan
	Positive impact on local socio-cultural demographics through the employment of local people	Preferential procurement	Construction Phase	Social and Labour Plan
	Loss of soil horizon due to excavation during construction	Minimize impact through effective soil stockpiling as per soil utilization plan	Construction Phase	Chamber of Mines Guidelines
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Minimize interception volumes trough effective design as per water management plan	Construction Phase	Surface Water Quantity Reserve and WUL
	Impact on plant life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on animal life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Construction Phase	Ecological Reserve and Water Use License
	Increase in fugitive dust from the construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Vehicle gas emission control as per the vehicle fleet management plan	Construction Phase	AEL
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
Development of Storm Water Pollution Control Dam (PCD) No. 3	Positive impact on local economic efficiency through local job creation	Preferential procurement	Construction Phase	Social and Labour Plan
	Positive impact on local socio-cultural demographics through the employment of local people	Preferential procurement	Construction Phase	Social and Labour Plan
	Loss of soil horizon due to excavation during construction	Minimize impact through effective soil stockpiling as per soil utilization plan	Construction Phase	Chamber of Mines Guidelines

Construction Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Development of Storm Water Pollution Control Dam (PCD) No. 3	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Minimize interception volumes trough effective design as per water management plan	Construction Phase	Surface Water Quantity Reserve and WUL
	Impact on plant life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on animal life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Construction Phase	Ecological Reserve and Water Use License
	Increase in fugitive dust from the construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Vehicle gas emission control as per the vehicle fleet management plan	Construction Phase	AEL
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
Development of Storm Water Pollution Control Dam (PCD) No. 4	Positive impact on local economic efficiency through local job creation	Preferential procurement	Construction Phase	Social and Labour Plan
	Positive impact on local socio-cultural demographics through the employment of local people	Preferential procurement	Construction Phase	Social and Labour Plan
	Loss of soil horizon due to excavation during construction	Minimize impact through effective soil stockpiling as per soil utilization plan	Construction Phase	Chamber of Mines Guidelines
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Minimize interception volumes trough effective design as per water management plan	Construction Phase	Surface Water Quantity Reserve and WUL
	Impact on plant life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on animal life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License

Construction Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Development of Storm Water Pollution Control Dam (PCD) No. 4	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Construction Phase	Ecological Reserve and Water Use License
	Increase in fugitive dust from the construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Vehicle gas emission control as per the vehicle fleet management plan	Construction Phase	AEL
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
Expansion of the Ore Beneficiation (OB) Plant Process Water Dam	Positive impact on local economic efficiency through local job creation	Preferential procurement	Construction Phase	Social and Labour Plan
	Positive impact on local socio-cultural demographics through the employment of local people	Preferential procurement	Construction Phase	Social and Labour Plan
	Loss of soil horizon due to excavation during construction	Minimize impact through effective soil stockpiling as per soil utilization plan	Construction Phase	Chamber of Mines Guidelines
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Minimize interception volumes trough effective design as per water management plan	Construction Phase	Surface Water Quantity Reserve and WUL
	Impact on plant life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on animal life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Construction Phase	Ecological Reserve and Water Use License
	Increase in fugitive dust from the construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Vehicle gas emission control as per the vehicle fleet management plan	Construction Phase	AEL
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)

Construction Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Expansion of the Ore Beneficiation (OB) Plant Process Water Dam	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
Expansion of the Plant Process Water Dam	Positive impact on local economic efficiency through local job creation	Preferential procurement	Construction Phase	Social and Labour Plan
	Positive impact on local socio-cultural demographics through the employment of local people	Preferential procurement	Construction Phase	Social and Labour Plan
	Loss of soil horizon due to excavation during construction	Minimize impact through effective soil stockpiling as per soil utilization plan	Construction Phase	Chamber of Mines Guidelines
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Minimize interception volumes trough effective design as per water management plan	Construction Phase	Surface Water Quantity Reserve and WUL
	Impact on plant life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on animal life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Construction Phase	Ecological Reserve and Water Use License
	Increase in fugitive dust from the construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Vehicle gas emission control as per the vehicle fleet management plan	Construction Phase	AEL
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
Expansion of the Chrome Recovery Plant (CRP) Process Water Dam	Positive impact on local economic efficiency through local job creation	Preferential procurement	Construction Phase	Social and Labour Plan
	Positive impact on local socio-cultural demographics through the employment of local people	Preferential procurement	Construction Phase	Social and Labour Plan
	Loss of soil horizon due to excavation during construction	Minimize impact through effective soil stockpiling as per soil utilization plan	Construction Phase	Chamber of Mines Guidelines

Construction Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Expansion of the Chrome Recovery Plant (CRP) Process Water Dam	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Minimize interception volumes trough effective design as per water management plan	Construction Phase	Surface Water Quantity Reserve and WUL
	Impact on plant life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on animal life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Construction Phase	Ecological Reserve and Water Use License
	Increase in fugitive dust from the construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Vehicle gas emission control as per the vehicle fleet management plan	Construction Phase	AEL
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
Development of a New Salvage Yard	Positive impact on local economic efficiency through local job creation	Preferential procurement	Construction Phase	Social and Labour Plan
	Positive impact on local socio-cultural demographics through the employment of local people	Preferential procurement	Construction Phase	Social and Labour Plan
	Loss of soil horizon due to clearance of vegetation during construction	Minimize impact through effective soil stockpiling as per soil utilization plan	Construction Phase	Chamber of Mines Guidelines
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Minimize interception volumes trough effective design as per water management plan	Construction Phase	Surface Water Quantity Reserve and WUL
	Impact on plant life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on animal life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License

Construction Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Development of a New Salvage Yard	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Construction Phase	Ecological Reserve and Water Use License
	Increase in fugitive dust from the construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Vehicle gas emission control as per the vehicle fleet management plan	Construction Phase	AEL
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
Expansion of the Tap Hole Fume Extraction System	Positive impact on local economic efficiency through local job creation	Preferential procurement	Construction Phase	Social and Labour Plan
	Positive impact on local socio-cultural demographics through the employment of local people	Preferential procurement	Construction Phase	Social and Labour Plan
Expansion of the Finished Product Plant Dust Abatement System	Positive impact on local economic efficiency through local job creation	Preferential procurement	Construction Phase	Social and Labour Plan
	Positive impact on local socio-cultural demographics through the employment of local people	Preferential procurement	Construction Phase	Social and Labour Plan
Southern Expansion of the Ore Beneficiation (OB) Plant Tailings Storage Facility (TSF) and RWD	Positive impact on local economic efficiency through local job creation	Preferential procurement	Construction Phase	Social and Labour Plan
	Positive impact on local socio-cultural demographics through the employment of local people	Preferential procurement	Construction Phase	Social and Labour Plan
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Minimize interception volumes trough effective design as per water management plan	Construction Phase	Surface Water Quantity Reserve and WUL
	Impact on topographical landform due to construction of the new TSF footprint	Limit expansion in footprint area as per detailed design	Construction Phase	Chamber of Mines Guidelines
	Loss of soil horizon due to clearance of vegetation as well as excavations during construction	Minimize impact through effective soil stockpiling as per soil utilization plan	Construction Phase	Chamber of Mines Guidelines
	Impact on plant life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on animal life habitat and diversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License

Construction Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Southern Expansion of the Ore Beneficiation (OB) Plant Tailings Storage Facility (TSF) and RWD	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design	Construction Phase	Ecological Reserve and Water Use License
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	Construction Phase	Ecological Reserve and Water Use License
	Increase in fugitive dust from the construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Vehicle gas emission control as per the vehicle fleet management plan	Construction Phase	AEL
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Replace reverse hooters with non-tonal noise alarms	Construction Phase	SANS 10103:2008 (Urban)
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Dust suppression as per the air quality management plan	Construction Phase	AEL
Re-Use (Screening, Stockpiling, Internal Use and/or Selling) of Fine Slag at the Fine Slag Processing Plant	Positive impact on local economic efficiency through local job creation	Preferential procurement	Construction Phase	Social and Labour Plan
	Positive impact on local socio-cultural demographics through the employment of local people	Preferential procurement	Construction Phase	Social and Labour Plan
Re-Use (Screening, Stockpiling, Internal Use and/or Selling) of Course Slag at the Chrome Recovery Plant	Positive impact on local economic efficiency through local job creation	Preferential procurement	Construction Phase	Social and Labour Plan
	Positive impact on local socio-cultural demographics through the employment of local people	Preferential procurement	Construction Phase	Social and Labour Plan
Re-Use (Screening, Stockpiling, Internal Use and/or Selling) of Mine Waste Rock at the Mine Waste Rock Stockpile	Positive impact on local economic efficiency through local job creation	Preferential procurement	Construction Phase	Social and Labour Plan
	Positive impact on local socio-cultural demographics through the employment of local people	Preferential procurement	Construction Phase	Social and Labour Plan

Table 5.3(b): Operational Phase Impact Management Actions

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
CURRENT ACTIVITIES AND INFRASTRUCTURE AND PROCESSES				
Hernic Operations as a whole	Local grievances due to historic project-induced in-migration	Improve communication and attend to local grievances as per the Social and Labour Plan	Operational Phase	Social and Labour Plan
	Increase in impacts classified nuisance factors	Improve communication on environmental matters as per Environmental Awareness Plan and attend to air quality aspects as per Air Quality Management Plan	Operational Phase	Air Quality Specialist Report
	Increased perception of environmental harm to local people	Improve communication on environmental matters as per Environmental Awareness Plan and attend to reporting of environmental monitoring as per Environmental Monitoring Plan	Operational Phase	Environmental Awareness Plan
	Increase in local employment and procurement	Preferential procurement and effective socio-economic upliftment programmes as per the Social and Labour Plan	Operational Phase	Social and Labour Plan
	Increased impact on poverty alleviation through employment	Preferential procurement as per Social and Labour Plan	Operational Phase	Social and Labour Plan
	Increase in Tax Revenues	Enhance business sustainability and growth through effective environmental management as per the EMPr	Operational Phase	EMPr
	Increase in social funds	Implement effective socio-economic upliftment programmes as per the Social and Labour Plan	Operational Phase	Social and Labour Plan
	Loss of income from alternative land use	Minimize residual impact after closure through effective rehabilitation as per Decommissioning and Closure Plan	Operational Phase	Social and Labour Plan
	Decrease in adjacent property values	Minimize residual impact after closure through effective rehabilitation as per Decommissioning and Closure Plan	Operational Phase	Social and Labour Plan
	Impact on local economic diversity	Implement non-mining business development programmes as per the Social and Labour Plan.	Operational Phase	Social and Labour Plan
	Increase in local resource intensity	Develop and implement Optimal Resource Use Plan (water/electricity, etc.)	Operational Phase	Optimal Resource Use Plan
	Noise level exceeding the acceptable day time noise level of 55 dBA at external receptor closer than 550 m from HERNIC operations	No mitigation required	Operational Phase	SANS 10103:2008 (Urban)
	Noise level exceeding the acceptable night time noise level of 45 dBA at external receptor closer than 550 m from HERNIC operations	Monitor and audit as per the noise monitoring plan	Operational Phase	SANS 10103:2008 (Urban)
Access Roads	Increase in tipping trucks trips due to transportation of ferrochrome from HERNIC	Manage traffic demand to coincide with daytime and off-peak hours	Operational Phase	Roads Authority

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Access Roads	Increase in supplier vehicles trips due to transportation of goods and products to and from HERNIC	Manage through road safety awareness campaigns	Operational Phase	Roads Authority
	Increase in bus trips due to transportation of employees to and from HERNIC	Manage through road safety awareness campaigns	Operational Phase	Roads Authority
	Increase in pedestrian movement due to transportation of employees to and from HERNIC	Manage through road safety awareness campaigns	Operational Phase	Roads Authority
	Increase in light vehicle trips due to transportation of employees to and from HERNIC	Manage through encouragement to use large capacity vehicles	Operational Phase	Roads Authority
	Soil erosion of road verge due to poor basal cover	Maintain road verge as per the road maintenance plan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to spillages from road	Clear spills as per the ongoing emergency response plan	Operational Phase	Chamber of Mines Guidelines
	Impact on surface water quality due to spillages on the road surface	Clear spills as per the ongoing emergency response plan	Operational Phase	Surface Water Quality Reserve and WUL
	Proliferation of alien plant species on the road verge	Eradicate invasive species as per the invader species management plan	Operational Phase	Ecological Reserve and NEMBA (Act 10 of 2004): Alien and Invasive Species Regulations (GNR 598 of 2014)
	Animal deaths due to collisions with animals	Manage through traffic control programme (speed limit and signboards)	Operational Phase	Speed Limit on Mine
	Impact on surface water quality and hence the aquatic habitat due to spillages on the road surface	Clear spills as per the ongoing emergency response plan	Operational Phase	Ecological Reserve and WUL
	Increase in fugitive dust due to the transport of materials and product	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Increase in gaseous emissions originating from vehicle exhaust fumes	Vehicle gas emission control as per the vehicle fleet management plan	Operational Phase	AEL
	Visual impact due to increase in fugitive dust	Dust suppression as per the air quality management plan	Operational Phase	AEL
Railway Lines	Soil erosion of rail line verge due to poor basal cover	Maintain rail line verge as per the road maintenance plan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to spillages from rail cars	Clear spills as per the ongoing emergency response plan	Operational Phase	Chamber of Mines Guidelines
	Impact on surface water quality due to spillages from rail cars	Clear spills as per the ongoing emergency response plan	Operational Phase	Surface Water Quality Reserve and WUL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Railway Lines	Animal deaths due to collisions with animals	Manage through traffic control programme (speed limit and signboards)	Operational Phase	Speed Limit on Mine
	Impact on surface water quality and hence the aquatic habitat due to spillages from rail cars	Clear spills as per the ongoing emergency response plan	Operational Phase	Ecological Reserve and WUL
	Increase in fugitive dust due to the transport of materials and product	Dust suppression as per the air quality management plan	Operational Phase	AEL
Security Fence and Access Gates	Impact on animal life due to a loss in faunal migratory connectivity as a result of fences	Provide faunal species migratory support for smaller species	Operational Phase	Ecological Reserve
Water Supply	Soil erosion along pipe lines in case of pipe bursts	Repair pipe bursts as per the emergency action plan	Operational Phase	Chamber of Mines Guidelines
Power Supply	Collisions of avifaunal species (birds) with overhead power lines	Install bird flappers in sensitive areas	Operational Phase	Ecological Reserve
Gas Supply	No significant Environmental Impacts anticipated during the Operational Phase			
Fuel Supply	Soil contamination due to hydrocarbon spillages/leakages from diesel fuel tanks	Clear spills as per the ongoing emergency response plan. Regular Inspections of the Tanks and Collection Sumps as per maintenance plan	Operational Phase	Chamber of Mines Guidelines
	Groundwater contamination due to hydrocarbon spillages/leakages from diesel fuel tanks	Clear spills as per the ongoing emergency response plan. Regular Inspections of the Tanks and Collection Sumps as per maintenance plan	Operational Phase	Groundwater Quality Reserve and WUL
	Surface water contamination due to hydrocarbon spillages/leakages from diesel fuel tanks	Clear spills as per the ongoing emergency response plan. Regular Inspections of the Tanks and Collection Sumps as per maintenance plan. Capture surface water spillages in dirty areas as per water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Impact on plant life due to hydrocarbon spillages/leakages from diesel fuel tanks	Clear spills as per the ongoing emergency response plan. Regular Inspections of the Tanks and Collection Sumps as per maintenance plan	Operational Phase	Ecological Reserve and SABS Standards for Storage of Fuel
	Impact on animal life due to hydrocarbon spillages/leakages from diesel fuel tanks	Clear spills as per the ongoing emergency response plan. Regular Inspections of the Tanks and Collection Sumps as per maintenance plan	Operational Phase	Ecological Reserve and SABS Standards for Storage of Fuel
	Impact on surface water quality and hence the aquatic habitat due to hydrocarbon spillages/leakages from diesel fuel tanks	Clear spills as per the ongoing emergency response plan. Regular Inspections of the Tanks and Collection Sumps as per maintenance plan. Capture surface water spillages in dirty areas as per water management plan	Operational Phase	Ecological Reserve and SABS Standards for Storage of Fuel
Internal Roads	Soil erosion of road verge due to poor basal cover	Maintain road verge as per the road maintenance plan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to spillages from road	Clear spills as per the ongoing emergency response plan	Operational Phase	Chamber of Mines Guidelines

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Internal Roads	Deterioration of the groundwater resource quality if dust suppression of road surfaces is not done with clean water	Use clean water for dust suppression as per air quality management plan – no process water should be used for dust suppression	Operational Phase	Groundwater Quality Reserve and WUL
	Impact on surface water quality due to spillages on the road surface	Clear spills as per the ongoing emergency response plan	Operational Phase	Surface Water Quality Reserve and WUL
	Proliferation of alien plant species on the road verge	Eradicate invasive species as per the invader species management plan	Operational Phase	Ecological Reserve and NEMBA (Act 10 of 2004): Alien and Invasive Species Regulations (GNR 598 of 2014)
	Animal deaths due to collisions with animals	Manage through traffic control programme (speed limit and signboards)	Operational Phase	Speed Limit on Mine
	Increase in fugitive dust due to the transport of materials and product	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Increase in gaseous emissions originating from vehicle exhaust fumes	Vehicle gas emission control as per the vehicle fleet management plan	Operational Phase	AEL
	Visual impact due to increase in fugitive dust	Dust suppression as per the air quality management plan	Operational Phase	AEL
Administration Office Complexes	No significant Environmental Impacts anticipated during the Operational Phase			
Morula Mining Shaft Complex	The Emergency ROM Stockpile as well as the topsoil stockpile could present potentially dangerous/ unstable topographical landform features	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per soil utilization plan	Operational Phase	Chamber of Mines Guidelines
	Soil erosion due to possible poor vegetative (grass) basal cover at offices, workshops, change house complex, people's walkway, redundant explosive's magazine, emergency ROM stockpile and soil stockpile	Maintain vegetative basal cover as per soil utilization plan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to accidental spillages and infiltration of dirty water at the ore/waste rock stockpiles, transfer house , water storage dams and grout plant	Clear spillages as per emergency response plan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to accidental spillages and infiltration of dirty water from conveyors	Clear spillages as per emergency response plan	Operational Phase	Chamber of Mines Guidelines
	Soil quality as a result of the long term stockpiling of soil	Fertilize topsoil on stockpile as per the soil utilization plan	Operational Phase	Chamber of Mines Guidelines

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Morula Mining Shaft Complex	Depletion in the quantity of groundwater as a dewatering consequence around the decline shafts	Minimize groundwater influx into mine through grouting of decline shaft walls. Monitor groundwater levels as per groundwater monitoring plan	Operational Phase	Groundwater Quantity Reserve and WUL
	Deterioration of the groundwater resource quality resulting from spillages /seepages from the water storage dams	Manage dam levels as per the water management plan. Monitor groundwater quality as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Proliferation of alien plant species at the ROM stockpile as well as at the topsoil stockpile	Eradicate invasive species as per the invader species management plan	Operational Phase	Ecological Reserve and NEMBA (Act 10 of 2004): Alien and Invasive Species Regulations (GNR 598 of 2014)
	Impact on animal life due to a loss in faunal migratory connectivity as a result of conveyors	Provide faunal species migratory support for smaller species	Operational Phase	Ecological Reserve
	Possible dewatering of wetlands as a result of the dewatering effect of the decline shafts	Minimize groundwater influx into mine through grouting of decline shaft walls. Monitor groundwater levels as per groundwater monitoring plan	Operational Phase	Ecological Reserve and WUL
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Increase in dust fallout resulting from windblown dust from the emergency ROM stockpile and the topsoil stockpile	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Increase of dust fallout resulting from the handling and movement of ore along the conveyors	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Visual impact due to increase in fugitive dust from stockpiles and conveyors	Dust suppression as per the air quality management plan	Operational Phase	AEL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Morula Mining Shaft Complex	Visual impact due to ROM stockpile and soil stockpiles shapes and heights changing the landscape morphology	Restrict footprints to delineated areas and manage size, shape and height of stockpiles as per operational plan	Operational Phase	AEL
Morula Mining Opencast Operation Including Hydro-Mining of Fines	Partially rehabilitated open pit with ongoing hydro-mining of fines, as well as final voids represent an impacted landform	Reshape and flatten steep slopes. Perform backfill and rehabilitate as per annual rehabilitation plan	Operational Phase	Chamber of Mines Guidelines
	Ongoing hydro-mining and inefficient ongoing backfilling and final rehabilitation could result in unstable backfilled areas in the open pit	Conduct efficient ongoing rehabilitation as per the decommissioning and closure plan	Operational Phase	Chamber of Mines Guidelines
	Inefficient re-soiling during the ongoing rehabilitation cold result in erosion	Place and compact soils as per soil utilization plan	Operational Phase	Chamber of Mines Guidelines
	Inefficient re-soiling during the ongoing rehabilitation cold result in soil infertility	Fertilize soils as per soil utilization plan	Operational Phase	Chamber of Mines Guidelines
	Leaking pipes carrying contaminated storm water and hydro-mining slurry could cause soil contamination	Monitor and repair leaks as per the emergency response plan.	Operational Phase	Chamber of Mines Guidelines
	Prior to final backfilling and rehabilitation the open pit represents a groundwater sink which causes a groundwater cone of depression around the mine	Monitor groundwater levels around the mine as per groundwater monitoring programme	Operational Phase	Groundwater Quantity Reserve and WUL
	Water entering the open pit will deteriorate in quality due to presence of water soluble constituents in the backfilled material	Monitor groundwater quality within and adjacent to open pit as per the groundwater monitoring programme	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to the interception of affected storm water in the pit	Minimize interception of storm water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	A section of the partially rehabilitated open pit cuts through what used to be a wetland prior to mining effectively destroying part of the wetland habitat. The immediate down-stream section of this wetland has been destroyed by the TSF	Include this area in the annual rehabilitation plan as well as in the decommissioning and closure plan	Operational Phase	FRDCP

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Morula Mining Opencast Operation Including Hydro-Mining of Fines	A section of the partially rehabilitated open pit cuts through what used to be a wetland prior to mining effectively destroying part of the aquatic ecosystems habitat and bio-diversity. The immediate down-stream section of this wetland has been destroyed by the TSF	Include this area in the annual rehabilitation plan as well as in the decommissioning and closure plan	Operational Phase	FRDCP
	Mine machinery used for the mining, material transport and ongoing rehabilitation operation, generates dust	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Visual impact due to increase in fugitive dust	Dust suppression as per the air quality management plan	Operational Phase	AEL
Morula Mining Underground Operation	Blasting in the underground mine could cause damage to surface located mining infrastructure	Blast according to the blasting plan. Conduct vibration monitoring as per the blasting monitoring plan	Operational Phase	United States Bureau of Mine criteria for Safe Blasting and Blasting Specialist
	Blasting in the underground mine could cause damage to surface located houses of adjacent property owners	Blast according to the blasting plan. Conduct vibration monitoring as per the blasting monitoring plan	Operational Phase	United States Bureau of Mine criteria for Safe Blasting and Blasting Specialist
	Depletion in the quantity of groundwater as a dewatering consequence above the underground mine workings	Minimize groundwater influx into mine through minimization of structural disturbance during and after mining as per the mining work programme. Monitor groundwater levels as per groundwater monitoring plan	Operational Phase	Groundwater Quantity Reserve and WUL
	Possible dewatering of wetlands as a result of the dewatering effect of the underground mine	Minimize groundwater influx into mine through minimization of structural disturbance during and after mining as per the mining work programme. Monitor groundwater levels as per groundwater monitoring plan	Operational Phase	Ecological Reserve and WUL
Morula Mining Accommodation	No significant Environmental Impacts anticipated during the Operational Phase			
Morula Mine Waste Rock Dump	The Mine Waste Rock Dump could present a potentially dangerous/ unstable topographical landform feature	Conduct dumping in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the mine waste rock dump	Minimize the footprint as well as the residence time of material through re-use of the mine waste rock as per the proposed re-use programme	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Morula Mine Waste Rock Dump	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Increase in dust fallout resulting from windblown dust from the mine waste rock dump	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Visual impact due to increase in fugitive dust from stockpiles and conveyors	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Visual impact due to mine waste rock stockpile shape and height changing the landscape morphology	Restrict footprint to delineated area and manage size, shape and height of mine waste rock dump as per operational plan	Operational Phase	AEL
Mine Sewage Plant	Spillage/leakage/seepage from the sludge drying beds could cause soil contamination	Maintain and operate sludge drying beds according to sewerage plant maintenance and operational plan	Operational Phase	Chamber of Mines Guidelines
	Spillage/leakage/seepage from the sludge drying beds could cause groundwater contamination	Maintain and operate sludge drying beds according to sewerage plant maintenance and operational plan	Operational Phase	Groundwater Quality Reserve and WUL
	Impact on the quality of surface water in the event that the maturation effluent discharge do not comply with the set water quality standard	Monitor discharge water quality as per surface water monitoring plan. Maintain sewerage plant as per operational plan	Operational Phase	Surface Water Quality Reserve and WUL
	Impact on the quality of surface water in the event that the maturation effluent discharge do not comply with the set water quality standard	Monitor discharge water quality as per surface water monitoring plan. Maintain sewerage plant as per operational plan	Operational Phase	Ecological Reserve and WUL
Morula Mine Storm Water Berms and Canals	Soil contamination in the event of spillages/leakages from canals	Clear spills as per the emergency response plan	Operational Phase	Chamber of Mines Guidelines
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Minimize interception volumes trough effective design as per water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on plant life habitat and diversity due to reduction in storm water run-off into the receiving environment	Minimize interception volumes trough effective design as per water management plan	Operational Phase	Ecological Reserve and WUL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Morula Mine Storm Water Berms and Canals	Impact on animal life habitat and diversity due to reduction in storm water run-off into the receiving environment	Minimize interception volumes trough effective design as per water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on wetlands habitat, service provision capability and hydrological function through the reduction in storm water run-off and catchment yield	Minimize interception volumes trough effective design as per water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on aquatic ecosystem biodiversity and habitat through the reduction in storm water run-off and catchment yield	Minimize interception volumes trough effective design as per water management plan	Operational Phase	Ecological Reserve and WUL
Morula Dewatering Dam	Soil Contamination due to seepage/spillages from the dam	Prevent seepage/spillages through effective storage control as per the water management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
Alloys Smelting Plant General Infrastructure	Soil erosion due to possible poor vegetative (grass) basal cover	Maintain Vegetative Basal Cover	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to accidental spillages	Clean up Spills Immediately as per emergency response plan	Operational Phase	Chamber of Mines Guidelines
	Depletion in the quantity of surface water due to interception and containment of dirty water	Minimise the interception of surface water as per water management plan	Operational Phase	Surface Water Quantity Reserve and WUL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Alloys Smelting Plant General Infrastructure	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Increase in gaseous emissions originating from vehicle exhaust fumes	Vehicle gas emission control as per the vehicle fleet management plan	Operational Phase	AEL
Raw Materials Stockpile Area 1	The raw materials stockpiles could present potentially dangerous/ unstable topographical landform features	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through raw materials	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off diversion, interception and containment as per water management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through raw materials	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Increase in dust fallout resulting from windblown dust from the raw materials stockpiles as well as from the handling of materials	Dust suppression as per the air quality management plan	Operational Phase	AEL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Raw Materials Stockpile Area 1	Visual impact due to increase in fugitive dust from the stockpile area	Dust suppression as per the air quality management plan	Operational Phase	AEL
Raw Materials Stockpile Area 2	The raw materials stockpiles could present potentially dangerous/ unstable topographical landform features	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through raw materials	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off diversion, interception and containment as per water management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through raw materials	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Increase in dust fallout resulting from windblown dust from the materials stockpiles as well as from the handling of materials	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Visual impact due to increase in fugitive dust from the stockpile area	Dust suppression as per the air quality management plan	Operational Phase	AEL
Ore Beneficiation Plant – Crushing and Screening	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through OB plant materials	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off diversion, interception and containment as per water management plan	Operational Phase	Chamber of Mines Guidelines

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Ore Beneficiation Plant – Crushing and Screening	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through OB plant materials	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Increase in dust fallout resulting from windblown dust from the materials stockpiles as well as from the handling of materials	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Visual impact due to increase in fugitive dust from the stockpile area	Dust suppression as per the air quality management plan	Operational Phase	AEL
Ore Beneficiation (OB) Plant – Lumpy and Fines Section (HMS and Spiral Plants)	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through OB plant materials	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off diversion, interception and containment as per water management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through OB plant materials	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Ore Beneficiation (OB) Plant – Lumpy and Fines Section (HMS and Spiral Plants)	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Increase in dust fallout resulting from windblown dust from the materials stockpiles as well as from the handling of materials	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Visual impact due to increase in fugitive dust from the stockpile area	Dust suppression as per the air quality management plan	Operational Phase	AEL
Mixed Material Stockpiling and Screening	The mixed materials stockpiles could present potentially dangerous/ unstable topographical landform features	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the mixed materials	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the mixed materials	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Mixed Material Stockpiling and Screening	Increase in dust fallout resulting from windblown dust from the materials stockpiles as well as from the handling of materials	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Visual impact due to increase in fugitive dust from the stockpile area	Dust suppression as per the air quality management plan	Operational Phase	AEL
Returns Materials Stockpiles	The returns materials stockpiles could present potentially dangerous/ unstable topographical landform features	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the returns materials	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the returns materials	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Increase in dust fallout resulting from windblown dust from the returns materials stockpiles as well as from the handling of materials	Dust suppression as per the air quality management plan	Operational Phase	AEL
Pelletizing and Sintering Plants 1 & 2	Soil contamination due to infiltration of dirty water	Isolate, intercept an contain dirty water as per the water management pan	Operational Phase	Chamber of Mines Guidelines

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Pelletizing and Sintering Plants 1 & 2	Soil contamination due to settling of dust on the downwind soil surface	Control dust fallout as per the air quality management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to the infiltration of dirty water	Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on air quality as a result of the generation of fugitive dust due to the movement of material	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Impact on air quality due to the uncontrolled emissions of particulate matter	Control particulate matter emissions as per the air quality management plan	Operational Phase	AEL
	Impact on air quality due to the uncontrolled emissions of gaseous emissions	Control gaseous emissions as per the air quality management plan	Operational Phase	AEL
	Visual impact due to fugitive dust and particulate matter emissions from the pelletizing and sintering plants	Dust suppression and particulate matter emissions control as per the air quality management plan	Operational Phase	AEL
	Visual impact due to the presence of the large buildings housing the pelletizing plants	No mitigation possible	Operational Phase	AEL
Furnaces 1, 2, 3 and 4	Soil contamination due to infiltration of dirty water	Isolate, intercept an contain dirty water as per the water management pan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to settling of dust on the downwind soil surface	Control dust fallout as per the air quality management plan	Operational Phase	Chamber of Mines Guidelines

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Furnaces 1, 2, 3 and 4	Deterioration of the groundwater resource quality due to the infiltration of dirty water	Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on air quality as a result of the generation of fugitive dust due to the movement of material	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Impact on air quality due to the uncontrolled emissions of particulate matter	Control particulate matter emissions as per the air quality management plan	Operational Phase	AEL
	Impact on air quality due to the uncontrolled emissions of gaseous emissions	Control gaseous emissions as per the air quality management plan	Operational Phase	AEL
	Visual impact due to fugitive dust and particulate matter emissions from the pelletizing and sintering plants	Dust suppression and particulate matter emissions control as per the air quality management plan	Operational Phase	AEL
	Visual impact due to the presence of the large buildings housing the furnaces	No mitigation possible	Operational Phase	AEL
Ferrochrome Break Floor Area	Soil contamination due to infiltration of dirty water	Isolate, intercept an contain dirty water as per the water management pan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to the infiltration of dirty water	Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Ferrochrome Break Floor Area	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on air quality as a result of the generation of fugitive dust due to the movement of material	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Visual impact due to fugitive dust emissions from the break floor area	Dust suppression as per the air quality management plan	Operational Phase	AEL
Finished Product Plant	High traffic volume due to the number of trucks used for the transportation of ferrochrome from HERNIC	Manage traffic demand to coincide with daytime and off-peak hours	Operational Phase	Roads Authority
	The final product stockpiles could present potentially dangerous/ unstable topographical landform features	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to infiltration of dirty water	Isolate, intercept an contain dirty water as per the water management pan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to the infiltration of dirty water	Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Finished Product Plant	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Increase in dust fallout resulting from windblown dust from the final product stockpiles as well as from the handling of materials	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Increase in dust fallout resulting from windblown dust from the transport of materials	Cover trucks as per the transport contract	Operational Phase	AEL
	Visual impact due to increase in fugitive dust from the final product stockpile area	Dust suppression as per the air quality management plan	Operational Phase	AEL
Slag Stockpiling Areas	The slag stockpiles could present potentially dangerous/ unstable topographical landform features	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag stockpiles	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag stockpiles	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Slag Stockpiling Areas	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Increase in dust fallout resulting from windblown dust from the slag stockpiles as well as from the handling of materials	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Visual impact due to increase in fugitive dust from the slag stockpile area	Dust suppression as per the air quality management plan	Operational Phase	AEL
Primary Chrome Recovery Plant (CRP)	The slag and product stockpiles at the CRP could present potentially dangerous/ unstable topographical landform features	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to infiltration of dirty water	Isolate, intercept an contain dirty water as per the water management pan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag stockpiles	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag stockpiles	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Increase in dust fallout resulting from windblown dust from the slag stockpiles as well as from the handling of materials	Dust suppression as per the air quality management plan	Operational Phase	AEL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Primary Chrome Recovery Plant (CRP)	Visual impact due to increase in fugitive dust from the slag stockpile area	Dust suppression as per the air quality management plan	Operational Phase	AEL
Fine Slag Processing Plant (Secondary CRP)	The slag and product stockpiles at the Fine Slag Processing Plant could present potentially dangerous/ unstable topographical landform features	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to infiltration of dirty water	Isolate, intercept an contain dirty water as per the water management pan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag sand stockpiles	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag sand stockpiles	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Increase in dust fallout resulting from windblown dust from the slag sand stockpiles as well as from the handling of materials	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Visual impact due to increase in fugitive dust from the slag sand stockpile area	Dust suppression as per the air quality management plan	Operational Phase	AEL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Product Rail Dispatch Area	The stockpiles at the product rail dispatch area could present potentially dangerous/ unstable topographical landform features	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to infiltration of dirty water	Isolate, intercept an contain dirty water as per the water management pan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to infiltration of dirty water	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Increase in dust fallout resulting from windblown dust from the stockpiles as well as from the handling of materials	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Visual impact due to increase in fugitive dust from the product rail dispatch area	Dust suppression as per the air quality management plan	Operational Phase	AEL
Platinum Group Minerals (PGM) Plant	Soil contamination due to spillages of slurry during the beneficiation/recovery processes	Clear up spillages as per the emergency response plan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to infiltration of dirty water in the area	Isolate, intercept an contain dirty water as per the water management pan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to settling of dust on the downwind soil surface resulting from material handling and transport	Control dust fallout as per the air quality management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to infiltration of dirty water	Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Platinum Group Minerals (PGM) Plant	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Increase in dust fallout resulting from windblown dust from the PGM plant as well as from the handling of materials	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Visual impact due to increase in fugitive dust from the PGM plant	Dust suppression as per the air quality management plan	Operational Phase	AEL
Internal Transport and Contractors Yard and Wash Bay	Soil contamination due to spillages of fuel, oil and wash water	Clear up spillages as per the emergency response plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to spillages of fuel, oil and wash water	Clear up spillages as per the emergency response plan. Monitor groundwater quality as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from spillages of fuel, oil and wash water	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this dirty water area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from spillages of fuel, oil and wash water	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
Redundant Historic Bag Plant	Not Operational - No Environmental Impacts anticipated during the HERNIC Operational Phase			
Redundant Old Civil Workshop	Not Operational - No Environmental Impacts anticipated during the HERNIC Operational Phase			
Rehabilitated Quarry Area	Not Operational - No Environmental Impacts anticipated during the HERNIC Operational Phase			

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Two Historic Slimes Dams	Not Operational – Scheduled for Decommissioning and Closure – See Table 9.1(c)			
H:H Slimes Dam and Return Water Dam (RWD) – The RWD is still operational as Process Water Dam	Soil contamination in the unlikely event that water stored in the dam could seep through the H:H liner system into the sub-surface	Maintain H:H liner integrity. Conduct groundwater monitoring as per the groundwater monitoring plan.	Operational Phase	Chamber of Mines Guidelines
	Soil contamination resulting from potential spillages of water from the RWD	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality in the unlikely event that water stored in the dam could seep through the H:H liner system into the sub-surface	Maintain H:H liner integrity. Conduct groundwater monitoring as per the groundwater monitoring plan.	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from potential spillages of water from the RWD	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Operational Phase	Surface Water Quality Reserve and WUL
	Impact on plant life resulting from potential spillages of water from the RWD	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Operational Phase	Ecological Reserve and WUL
	Impact on animal life resulting from potential spillages of water from the RWD	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Operational Phase	Ecological Reserve and WUL
	Impact on wetlands resulting from potential spillages of water from the RWD	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Operational Phase	Ecological Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from potential spillages of water from the RWD	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Operational Phase	Ecological Reserve and WUL
	Visual Intrusion as a result of the alteration to the landscape morphology of the capped H:H Facility	No mitigation possible	Operational Phase	AEL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
HERNIC Tailings Storage Facility (TSF) including the Southern Expansion of the TSF and Return Water Dam (RWD)	The TSF could present a potentially dangerous/ unstable topographical landform feature	Conduct disposal on the TSF in strict accordance with standard civil engineering stability design criteria as well as subject to conditions as per the TSF operational plan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination in the unlikely event that water stored on the TSF as well as in the RWD could seep through the liner system into the sub-surface	Maintain liner integrity. Conduct groundwater monitoring as per the groundwater monitoring plan.	Operational Phase	Chamber of Mines Guidelines
	Soil contamination resulting from potential spillages of water from the TSF and the RWD	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Operational Phase	Chamber of Mines Guidelines
	Potential loss in soil horizon due to erosion along the TSF side walls	Maintain TSF side walls in strict accordance with standard civil engineering stability design criteria as well as subject to conditions as per the TSF operational plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality in the event that water contained in the TSF and stored in the RWD could seep through the liner system into the sub-surface	Maintain liner integrity. Conduct groundwater monitoring as per the groundwater monitoring plan.	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from the TSF and RWD area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from potential spillages of water from the TSF and RWD	Operate the dam operational and storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Operational Phase	Surface Water Quality Reserve and WUL
	Impact on plant life resulting from potential spillages of water from the TSF and the RWD	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Operational Phase	Ecological Reserve and WUL
	Impact on animal life resulting from potential spillages of water from the TSF and the RWD	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Operational Phase	Ecological Reserve and WUL
	Impact on wetlands resulting from potential spillages of water from the TSF and the RWD	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Operational Phase	Ecological Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
HERNIC Tailings Storage Facility (TSF) including the Southern Expansion of the TSF and Return Water Dam (RWD)	Impact on the quality of surface water resulting from potential spillages of water from the RWD	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Operational Phase	Ecological Reserve and WUL
	Increase in fugitive dust from the TSF operation	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Visual impact due to increase in fugitive dust from the TSF operation	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Visual Intrusion as a result of the alteration to the landscape morphology of the capped H:H Facility	No mitigation possible	Operational Phase	AEL
Existing Salvage Yard	Soil Contamination due to Infiltration of Dirty Water	Daily removal of Spillages. Dust Suppression. Maintain Roofed Area and Concrete Pads. Maintain Optimum Functioning of Clean and Dirty Water Control and Management.	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to spillages of liquids and materials resulting from the salvage operations	Clear up spillages as per the emergency response plan. Monitor groundwater quality as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from the salvage yard area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from potential spillages of dirty storm water from the salvage yard area	Operate the dam operational and storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from the salvage yard area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from potential spillages of dirty storm water from the salvage yard area	Operate the dam operational and storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Operational Phase	Ecological Reserve and WUL
Alloys Plant Sewage Plant	Spillage/leakage/seepage from the sludge drying beds could cause soil contamination	Maintain and operate sludge drying beds according to sewerage plant maintenance and operational plan	Operational Phase	Chamber of Mines Guidelines
	Spillage/leakage/seepage from the sludge drying beds could cause groundwater contamination	Maintain and operate sludge drying beds according to sewerage plant maintenance and operational plan	Operational Phase	Groundwater Quality Reserve and WUL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Alloys Plant Sewage Plant	Impact on the quality of surface water in the event that the maturation effluent discharge do not comply with the set water quality standard	Monitor discharge water quality as per surface water monitoring plan. Maintain sewerage plant as per operational plan	Operational Phase	Surface Water Quality Reserve and WUL
	Impact on the quality of surface water in the event that the maturation effluent discharge do not comply with the set water quality standard	Monitor discharge water quality as per surface water monitoring plan. Maintain sewerage plant as per operational plan	Operational Phase	Ecological Reserve and WUL
OB Plant Fines in Open Pit (Slurry)	Deterioration of the groundwater resource quality due to the disposal of OB plant fines waste in the open pit	Characterize and classify fine waste. Monitor groundwater within the rehabilitated opencast pit, as well as beyond pit perimeter as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL
	Deterioration of the groundwater resource quality due to the disposal of OB plant coarse waste in the open pit	Characterize and classify coarse waste. Monitor groundwater within the rehabilitated opencast pit, as well as beyond pit perimeter as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL
OB Plant Coarse Waste in Open Pit (Trucks)	Increase in fugitive dust from the transport and placing of the OB plant coarse waste in the open pit	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Visual impact due to increase in fugitive dust from the coarse waste backfill operation	Dust suppression as per the air quality management plan	Operational Phase	AEL
Plant Drinking Water Dam	No Impact during the Operational Phase			
Plant Drinking Water Treatment Plant	No Impact during the Operational Phase			
Plant Process Water Dam and Silt Traps	Refer to New Proposed Activities in the Section below (Table 9.1(b))			
Ore Beneficiation (OB) Plant Return Water Dam (RWD)	Refer to New Proposed Activities in the Section below (Table 9.1(b))			
Chrome Recovery Plant (CRP) Process Water Dam	Refer to New Proposed Activities in the Section below (Table 9.1(b))			
Alloys Plant Storm Water Management Berms and Canals	Refer to New Proposed Activities in the Section below (Table 9.1(b))			
Plant Storm Water Pollution Control Dam (PCD)	Refer to New Proposed Activities in the Section below (Table 9.1(b))			
Emergency Dam	Refer to the Expansion of the Storm Water Process Water Dam in the New Proposes Activities in the Section below (Table 9.1(b))			
Abstraction Boreholes	Depletion in the quantity of groundwater and the formation of a groundwater cone of depression	Implement effective groundwater abstraction plan	Operational Phase	Groundwater Quantity Reserve and WUL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Abstraction Boreholes	Positive impact on the groundwater resource quality due to the removal of contaminants from the weathered zone aquifers	Implement effective groundwater abstraction plan	Operational Phase	Groundwater Quality Reserve and WUL
Groundwater Treatment Plant	Soil Contamination due to leakage/spills and infiltration of contaminated groundwater	Clear up spillages as per the emergency response plan	Operational Phase	Chamber of Mines Guidelines
	Depletion of surface water quantity due to the capture of direct rainfall in the ponds	Minimize interception volumes through effective design as per water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Contamination of surface water due to spillages of contaminated water	Provision of sufficient capacity for storage of untreated groundwater	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from the plant area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from potential spillages of dirty storm water from the plant area	Operate the pond operational and storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Operational Phase	Ecological Reserve and WUL
Alloys Smelting Plant Air Quality Control Systems	The interception of particulate matter emissions from the pelletizing and sintering plant, furnaces as well as the finished product plant	Maintain air quality abatement systems as per air quality management plan	Operational Phase	AEL
NEW PROPOSED ACTIVITIES				
New Process Water and Storm Water Canal System including Silt Traps	Soil Contamination due to seepage/spillages from the dam	Prevent seepage/spillages through effective storage control as per the water management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
New Process Water and Storm Water Canal System including Silt Traps	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
New Morula Pollution Control Dam (PCD)	Soil Contamination due to seepage/spillages from the dam	Prevent seepage/spillages through effective storage control as per the water management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
New Storm Water Pollution Control Dam (PCD) No. 1	Soil Contamination due to seepage/spillages from the dam	Prevent seepage/spillages through effective storage control as per the water management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
New Storm Water Pollution Control Dam (PCD) No. 1	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
New Storm Water Pollution Control Dam (PCD) No. 2	Soil Contamination due to seepage/spillages from the dam	Prevent seepage/spillages through effective storage control as per the water management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
New Storm Water Pollution Control Dam (PCD) No. 3	Soil Contamination due to seepage/spillages from the dam	Prevent seepage/spillages through effective storage control as per the water management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
New Storm Water Pollution Control Dam (PCD) No. 3	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
New Storm Water Pollution Control Dam (PCD) No. 4	Soil Contamination due to seepage/spillages from the dam	Prevent seepage/spillages through effective storage control as per the water management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
New Ore Beneficiation (OB) Plant Process Water Dam	Soil Contamination due to seepage/spillages from the dam	Prevent seepage/spillages through effective storage control as per the water management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
New Ore Beneficiation (OB) Plant Process Water Dam	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
New Plant Process Water Dam	Soil Contamination due to seepage/spillages from the dam	Prevent seepage/spillages through effective storage control as per the water management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
New Chrome Recovery Plant (CRP) Process Water Dam	Soil Contamination due to seepage/spillages from the dam	Prevent seepage/spillages through effective storage control as per the water management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to the infiltration of water soluble contaminants into the subsurface through the footprint of the dam	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Intercept and contain dirty water as per the water management plan	Operational Phase	Surface Water Quality Reserve and WUL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
New Chrome Recovery Plant (CRP) Process Water Dam	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from dirty water run-off from this area	Intercept and contain dirty water as per the water management plan	Operational Phase	Ecological Reserve and WUL
New Salvage Yard	Soil Contamination due to Infiltration of Dirty Water	Daily removal of Spillages. Dust Suppression. Maintain Roofed Area and Concrete Pads. Maintain Optimum Functioning of Clean and Dirty Water Control and Management.	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to spillages of liquids and materials resulting from the salvage operations	Clear up spillages as per the emergency response plan. Monitor groundwater quality as per groundwater monitoring plan	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from the salvage yard area	Optimize the interception of surface water as per the water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Impact on the quality of surface water resulting from potential spillages of dirty storm water from the salvage yard area	Operate the dam operational and storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from the salvage yard area	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from potential spillages of dirty storm water from the salvage yard area	Operate the dam operational and storage levels as per the water management plan. Clear up spillages as per the emergency response plan	Operational Phase	Ecological Reserve and WUL
New Tap Hole Fume Extraction System	The interception of particulate matter emissions from the pelletizing and sintering plant, furnaces as well as the finished product plant	Maintain air quality abatement systems as per air quality management plan	Operational Phase	AEL
New Finished Product Plant Dust Abatement System	The interception of particulate matter emissions from the pelletizing and sintering plant, furnaces as well as the finished product plant	Maintain air quality abatement systems as per air quality management plan	Operational Phase	AEL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Slag Sand at the Fine Slag Processing Plant	The stockpiles at the Fine Slag Processing Plant area could present potentially dangerous/ unstable topographical landform features	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag sand stockpiles	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to infiltration of soluble contaminants into the subsurface	Rework current arising slag stockpiles as quickly as possible. Conduct groundwater monitoring as per the groundwater monitoring plan.	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Minimize interception volumes through effective design as per water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Contamination of surface water due to spillages of contaminated water	Provide silt traps to improve water quality in recovery sumps	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from potential spillages of dirty storm water	Clear up spillages as per the emergency response plan	Operational Phase	Ecological Reserve and WUL
	Impact on air quality due to movement of materials	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Impact on air quality due to vehicle movement	Minimize gaseous emissions through vehicle maintenance plan	Operational Phase	AEL
	Visual impact due to increase in fugitive dust from the plant operation	Dust suppression as per the air quality management plan	Operational Phase	AEL
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Coarse Slag at the Chrome Recovery Plant (CRP)	The stockpiles at the CRP area could present potentially dangerous/ unstable topographical landform features	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag stockpiles	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	Operational Phase	Chamber of Mines Guidelines

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Coarse Slag at the Chrome Recovery Plant (CRP)	Loss of soil horizon during excavation activities	Avoid unnecessary disturbance of underlying soils	Operational Phase	Chamber of Mines Guidelines
	Deterioration of the groundwater resource quality due to infiltration of soluble contaminants into the subsurface	Rework current arising slag stockpiles as quickly as possible. Conduct groundwater monitoring as per the groundwater monitoring plan.	Operational Phase	Groundwater Quality Reserve and WUL
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Minimize interception volumes through effective design as per water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Contamination of surface water due to spillages of contaminated water	Provide silt traps to improve water quality	Operational Phase	Surface Water Quality Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL
	Impact on the quality of surface water resulting from potential spillages of dirty storm water	Clear up spillages as per the emergency response plan	Operational Phase	Ecological Reserve and WUL
	Impact on air quality due to movement of materials	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Impact on air quality due to vehicle movement	Minimize gaseous emissions through vehicle movement management plan	Operational Phase	AEL
	Visual impact due to increase in fugitive dust from the plant operation	Dust suppression as per the air quality management plan	Operational Phase	AEL
Re-Use of Mine Waste Rock at the Mine Waste Rock Stockpile	The Mine Waste Rock Dump could present a potentially dangerous/ unstable topographical landform feature	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	Operational Phase	Chamber of Mines Guidelines
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the waste rock stockpiles	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	Operational Phase	Chamber of Mines Guidelines
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Minimize interception volumes through effective design as per water management plan	Operational Phase	Surface Water Quantity Reserve and WUL
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water	Optimize the interception of surface water as per the water management plan	Operational Phase	Ecological Reserve and WUL

Operational Phase Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Re-Use of Mine Waste Rock at the Mine Waste Rock Stockpile	Impact on the quality of surface water resulting from potential spillages of dirty storm water	Clear up spillages as per the emergency response plan	Operational Phase	Ecological Reserve and WUL
	Impact on air quality due to movement of materials	Dust suppression as per the air quality management plan	Operational Phase	AEL
	Impact on air quality due to vehicle movement	Minimize gaseous emissions through vehicle movement management plan	Operational Phase	AEL
	Visual impact due to increase in fugitive dust from the waste rock stockpile operation	Dust suppression as per the air quality management plan	Operational Phase	AEL

Table 5.3(c): Decommissioning and Closure Phase Impact Management Actions

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
CURRENT ACTIVITIES AND INFRASTRUCTURE AND PROCESSES				
Hernic Operations	Negative impact on land use patterns as a result of the closure of the site	Improve communication and attend to local grievances as per the Social and Labour Plan. Improve communication on environmental matters as per Environmental Awareness Plan and attend to reporting of environmental monitoring as per Environmental Monitoring Plan.	Decommissioning Phase	Social and Labour Plan and Environmental Awareness Plan
	Possible damage to the two graveyards on site	Clearly demarcate and fence graveyards sites. Communicate localities to all decommissioning and closure contractors.	Decommissioning Phase	SAHRA
	Loss of jobs and income due to closure	Implement effective retrenchment packages and support local suppliers in transitioning to other industries	Decommissioning Phase	Social and Labour Plan
	Decrease and/or termination of funds available for social projects	Plan projects with exit strategy in collaboration with beneficiaries	Decommissioning Phase	Social and Labour Plan
	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Hernic Operations	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the demolition and removal of large structures (e.g. pelletizing plant and furnaces etc.)	Demolish large infrastructure, buildings e.g. pelletizing plant and furnaces etc. as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Access Roads	It is proposed that the access roads remain and not be decommissioned as they will be beneficial in supporting the post closure land use			
Railway Lines	It is proposed that the railway lines remain and not be decommissioned as they will be beneficial in supporting the post closure land use			
Security Fence and Access	It is proposed that the security fence and access remain and not be decommissioned as it will be beneficial in supporting the post closure land use			
Water Supply	It is proposed that the water supply infrastructure remain and not be decommissioned as it will be beneficial in supporting the post closure land use			
Power Supply	It is proposed that the power supply infrastructure remain and not be decommissioned as it will be beneficial in supporting the post closure land use			
Gas Supply	No Impact during the Decommissioning and Closure Phase			
Fuel Supply	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Fuel Supply	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Fuel Supply	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Internal Roads	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Internal Roads	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Administration Office Complexes	It is proposed that the administration office complexes remain and not be decommissioned as they will be beneficial in supporting the post closure land use			
Morula Mining Shaft Complex	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Morula Mining Shaft Complex	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Morula Mining Shaft Complex	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Morula Mining Opencast Operation	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Morula Mining Opencast Operation	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Morula Mining Underground Operation	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Morula Mining Underground Operation	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Morula Mining Accommodation	It is proposed that the accommodation complex remain and not be decommissioned as they will be beneficial in supporting the post closure land use.			
	Possible damage to the two graveyards on site	Clearly demarcate and fence graveyards sites. Communicate localities to all decommissioning and closure contractors.	Decommissioning Phase	Closure Objective as per FRDCP
Mine Waste Rock Dump	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Mine Waste Rock Dump	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Mine Waste Rock Dump	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Mine Sewage Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Mine Sewage Plant	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Morula Mine Storm Water Berms and Canals	Refer to New Proposed Activities in the Section below (Table 9.1(b))			
Morula Dewatering Dam	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Morula Dewatering Dam	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Alloys Smelting Plant General Infrastructure	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Alloys Smelting Plant General Infrastructure	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Alloys Smelting Plant General Infrastructure	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the demolition and removal of large structures	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Raw Materials Stockpile Area 1	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Raw Materials Stockpile Area 1	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Raw Materials Stockpile Area 2	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Raw Materials Stockpile Area 2	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Ore Beneficiation Plant – Crushing and Screening	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Ore Beneficiation Plant – Crushing and Screening	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Ore Beneficiation Plant – Crushing and Screening	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the demolition and removal of large structures	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Ore Beneficiation Plant – Lumpy and Fines Section (HMS and Spiral Plants)	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Ore Beneficiation Plant – Lumpy and Fines Section (HMS and Spiral Plants)	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the demolition and removal of large structures	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Mixed Material Stockpiling and Screening	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Mixed Material Stockpiling and Screening	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Returns Materials Stockpiles	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Returns Materials Stockpiles	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Pelletizing and Sintering Plants 1 & 2	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Pelletizing and Sintering Plants 1 & 2	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the demolition and removal of large structures	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Furnaces 1, 2, 3 and 4	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Furnaces 1, 2, 3 and 4	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the demolition and removal of large structures	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Ferrochrome Break Floor Area	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Ferrochrome Break Floor Area	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Finished Product Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Finished Product Plant	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the demolition and removal of large structures	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Slag Stockpiling Areas	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Slag Stockpiling Areas	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the demolition and removal of large structures	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Primary Chrome Recovery Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Primary Chrome Recovery Plant	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Primary Chrome Recovery Plant	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the demolition and removal of large structures	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Fine Slag Processing Plant (Secondary CRP)	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Fine Slag Processing Plant (Secondary CRP)	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the demolition and removal of large structures	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Product Rail Dispatch Area	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Product Rail Dispatch Area	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the demolition and removal of large structures	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Platinum Group Minerals (PGM) Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Platinum Group Minerals (PGM) Plant	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Internal Transport and Contractors Yard and Wash Bay	Possible damage to the two graveyards on site	Clearly demarcate and fence graveyards sites. Communicate localities to all decommissioning and closure contractors.	Decommissioning Phase	Closure Objective as per FRDCP
	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Internal Transport and Contractors Yard and Wash Bay	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Redundant Historic Bag Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Internal Transport and Contractors Yard and Wash Bay	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Internal Transport and Contractors Yard and Wash Bay	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the demolition and removal of large structures	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Redundant Old Civil Workshop	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Redundant Old Civil Workshop	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the demolition and removal of large structures	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Rehabilitated Quarry Area	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Rehabilitated Quarry Area	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Two Historic Slimes Dams	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Two Historic Slimes Dams	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Two Historic Slimes Dams	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the shaping and landscaping of the facility	Demolish large infrastructure and shape as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Decommissioning of Phase 1 of the H:H Slimes Dam	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Two Historic Slimes Dams	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the shaping and landscaping of the facility	Demolish large infrastructure and shape as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
HERNIC Tailings Storage Facility (TSF) including Southern Expansion of TSF and Return Water Dam (RWD)	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
HERNIC Tailings Storage Facility (TSF) including Southern Expansion of TSF and Return Water Dam (RWD)	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the shaping and landscaping of the facility	Demolish large infrastructure and shape as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Existing Salvage Yard	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Existing Salvage Yard	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Existing Salvage Yard	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Alloys Plant Sewage Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Alloys Plant Sewage Plant	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
OB Plant Fines in Open Pit (Slurry)	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
OB Plant Fines in Open Pit (Slurry)	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
OB Plant Coarse Waste in Open Pit (Trucks)	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
OB Plant Coarse Waste in Open Pit (Trucks)	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Plant Drinking Water Dam	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Plant Drinking Water Dam	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Plant Drinking Water Dam	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Plant Drinking Water Treatment Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Plant Drinking Water Treatment Plant	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Plant Process Water Dam and Silt Traps	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Plant Process Water Dam and Silt Traps	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
OB Plant Return Water Dam	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Plant Process Water Dam and Silt Traps	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Plant Process Water Dam and Silt Traps	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Chrome Recovery Plant Process Water Dam	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Chrome Recovery Plant Process Water Dam	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Alloys Plant Storm Water Management Berms and Canals	Refer to New Proposed Activities in the Section below (Table 9.1(b))			
Plant Storm Water Pollution Control Dam (PCD)	Decrease and/or termination of funds available for social projects	Plan projects with exit strategy in collaboration with beneficiaries	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Plant Storm Water Pollution Control Dam (PCD)	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Abstraction Boreholes	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Abstraction Boreholes	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
Groundwater Treatment Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Groundwater Treatment Plant	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Alloys Smelting Plant Air Quality Control Systems	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
NEW PROPOSED ACTIVITIES				
New Process Water and Storm Water Canal System including Silt Traps	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
New Process Water and Storm Water Canal System including Silt Traps	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
New Process Water and Storm Water Canal System including Silt Traps	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
New Morula Pollution Control Dam (PCD)	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
New Morula Pollution Control Dam (PCD)	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
New Storm Water Pollution Control Dam (PCD) No. 1	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
New Storm Water Pollution Control Dam (PCD) No. 1	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
New Storm Water Pollution Control Dam (PCD) No. 2	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
New Storm Water Pollution Control Dam (PCD) No. 2	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
New Storm Water Pollution Control Dam (PCD) No. 3	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
New Storm Water Pollution Control Dam (PCD) No. 3	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
New Storm Water Pollution Control Dam (PCD) No. 4	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
New Storm Water Pollution Control Dam (PCD) No. 4	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
New Storm Water Pollution Control Dam (PCD) No. 4	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
New Ore Beneficiation (OB) Plant Process Water Dam	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
New Ore Beneficiation (OB) Plant Process Water Dam	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
New Plant Process Water Dam	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
New Plant Process Water Dam	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
New Chrome Recovery Plant (CRP) Process Water Dam	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
New Chrome Recovery Plant (CRP) Process Water Dam	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
New Salvage Yard	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
New Salvage Yard	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Expansion of the Tap Hole Fume Extraction System	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Expansion of the Tap Hole Fume Extraction System	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the demolition and removal of large structures	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Expansion of the Finished Product Plant Dust Abatement System	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Expansion of the Finished Product Plant Dust Abatement System	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the demolition and removal of large structures	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Slag Sand at the Fine Slag Processing Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Slag Sand at the Fine Slag Processing Plant	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the demolition and removal of large structures and the shaping and landscaping of the facility	Demolish large infrastructure and shape as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Coarse Slag at the Chrome Recovery Plant (CRP)	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Coarse Slag at the Chrome Recovery Plant (CRP)	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the demolition and removal of large structures and the shaping and landscaping of the facility	Demolish large infrastructure and shape as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Re-Use of Mine Waste Rock at the Mine Waste Rock Stockpile	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Chamber of Mines and Closure Objective as per FRDCP
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Decommissioning Phase	Groundwater Quality Reserve and Closure Objective as per FRDCP
	Decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quantity Reserve and Closure Objective as per FRDCP
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Surface Water Quality and Closure Objective as per FRDCP
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Impact on aquatic ecosystems habitat resulting from a decrease in surface water quantity due to the interception of storm water runoff from decommissioning areas to prevent the release of suspended solids into the receiving environment	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP

Decommissioning Activity	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Re-Use of Mine Waste Rock at the Mine Waste Rock Stockpile	Impact on aquatic ecosystems bio-diversity as a result of the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Decommissioning Phase	Ecological Reserve and Closure Objective as per FRDCP
	Gaseous emissions from vehicles used for decommissioning and transport	Minimize gaseous emissions through vehicle maintenance plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Decommissioning Phase	Closure Objective as per FRDCP
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Implement road safety awareness campaigns	Decommissioning Phase	Closure Objective as per FRDCP
	Visual intrusion due to the generation of dust during decommissioning activities	Dust suppression as per air quality management plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP
	Positive impact on visual intrusion due to the demolition and removal of large structures and the shaping and landscaping of the facility	Demolish large infrastructure and shape as per final rehabilitation, decommissioning and closure plan	Decommissioning Phase	AEL and Closure Objective as per FRDCP

Table 5.3(d): Post Closure Phase Impact Management Actions

Post Closure Environmental Component	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Socio-Cultural/ Socio-Economic Environment	Permanent loss of Agricultural Land.	Develop post closure land use as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
	Residual Environmental Impacts could result in on-going external costs for the local community	Residual environmental impact management as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
	Potential impact on community health and safety	Develop post closure land use as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
Heritage, Archaeological and Palaeontological Environment	Potential Impact on Graveyards	Graveyard monitoring, aftercare and maintenance as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
Blasting and Vibration	No Blasting Related Impacts will persist Post Closure			
Traffic Aspects	No Traffic Related Impacts will persist Post Closure			
Topography	Presence of unstable surfaces at the demolished and rehabilitated plant infrastructure, rehabilitated open pit and at the rehabilitated TSF	Surface monitoring, aftercare and maintenance as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
Soils, Land Capability and Land Use	Loss of soil due to erosion	Soil and vegetation monitoring, aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
	Loss in soil fertility	Soil monitoring, aftercare and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
	Possible patches of contaminated soil may manifest as denuded vegetation	Soil and vegetation monitoring, aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
	The stated post closure Land Use for the rehabilitated HERNIC areas in general is Extensive Grazing. Possible denudation of re-vegetated areas	Soil and vegetation monitoring, aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
	The stated post closure Land Capability for the rehabilitated HERNIC areas in general is the Chamber of Mines Grazing Capability Class.	Soil and vegetation aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
Geology and Geochemistry	Due to the mining of the ore body, the Geological Environment will remain altered Post Closure			

Post Closure Environmental Component	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Groundwater Environment	Deterioration of the Groundwater resource quality due to the infiltration of leachable contamination from the OB Plant Fines which is backfilled in the open voids into the adjacent aquifers	Monitor groundwater quality in rehabilitated pit. Monitor groundwater quality adjacent to opencast pit. Maintain pit water level at an elevation below that of the natural groundwater levels if the pit water quality does not meet the resource quality objectives - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
	Deterioration of the Groundwater resource quality due to the infiltration of leachable contamination from the OB Plant Coarse Waste which is backfilled in the open voids into the adjacent aquifers	Monitor groundwater quality in rehabilitated pit. Monitor groundwater quality adjacent to opencast pit. Maintain pit water level at an elevation below that of the natural groundwater levels if the pit water quality does not meet the resource quality objectives - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
	Depletion in the quantity of groundwater and the formation of a groundwater cone of depression in the aquifers adjacent to the abstraction boreholes.	Identify areas in which groundwater remediation is required. Abstract authorised volume of groundwater only. Optimise the abstraction of groundwater - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
	Improvement to the groundwater resource quality due to the removal of contaminants from the weathered zone aquifers by pumping groundwater from selected groundwater remediation abstraction boreholes.	Identify areas in which groundwater remediation is required. Optimise the abstraction of groundwater - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
	Residual impact on the Groundwater Resource Quality due to the previous infiltration of soluble contaminants into the subsurface through the footprints of the material and waste stockpiles/ disposal facilities and dirty water containment facilities	Identify areas in which groundwater remediation is required. Monitor the groundwater quality to assess the efficiency of the proposed post closure groundwater remediation plan - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
Surface Water Environment	Depletion in the quantity of Surface Water due to the capture of direct rainfall.	Monitor restored surface run-off patterns and erosion gulleys. Repair and maintain. Soil surfaces to be stable, no depressions - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
	Contamination of the surface water resource due to contaminated run-off from ineffectively rehabilitated areas	Monitor restored surface run-off patterns and erosion gulleys. Repair and maintain. Soil surfaces to be stable, no depressions - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
Plant Life Environment	Possible discharge and seepage degrading floral habitat.	Monitoring, aftercare and maintenance of rehabilitation - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
	Proliferation of alien and invasive species.	Monitoring, aftercare and maintenance of vegetation cover - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP

Post Closure Environmental Component	Potential Impact	Mitigation Type	Time Period for Implementation	Compliance with Standards
Animal Life Environment	Possible discharge and seepage degrading faunal habitat.	Monitoring, aftercare and maintenance of rehabilitation - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
	Proliferation of alien and invasive species.	Monitoring, aftercare and maintenance of vegetation cover - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
Wetland Environment	Possible discharge and seepage degrading freshwater habitat.	Monitoring, aftercare and maintenance of rehabilitation - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
	Continued erosion leading to sedimentation of freshwater resources.	Soil and vegetation monitoring, aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
Aquatic Ecosystems Environment	Possible discharge and seepage degrading surface and groundwater resources.	Monitoring, aftercare and maintenance of rehabilitation and groundwater remediation - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
Air Quality Environment	Fine Fugitive Dust emanating from Rehabilitated Areas where Stable Vegetative Cover has not yet established.	Soil and vegetation monitoring, aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP
Noise Environment	No Noise Related Impacts will persist Post Closure			
Visual Aspects	Infrastructure which has not been demolished will be used for alternative purposes. The facilities do not contrast with the larger local and regional setting as there are similar structures within a considerable distance. The presence of the HERNIC Operations therefore fits into the visual character of the greater area and mining character of the region.	None Required	2-5 years after Rehabilitation/ Decommissioning	Relinquishment Criteria as per FRDCP

6. FINANCIAL PROVISION

6.1. CLOSURE OBJECTIVES AS ALIGNED WITH BASELINE ENVIRONMENT

The Closure Objectives for the site are informed by the Environmental Setting and Conditions as present on and around the HERNIC Site. The Environmental Baseline Descriptions compiled by the Environmental Specialists and which is described in section 7.4 of the EIAR (Part A), informs the Desired Post Closure Environmental Condition.

Whereas the overall objectives are to prevent impacts and to restore the environment to its pre-mining status, this, for mining sites, is seldom realistically achievable.

The Closure Objectives listed for twenty relevant Environmental Components in Table 6.1(a) were therefore derived using the pre-mining environmental condition as point of departure, but was formulated subject to recognizing, considering and taking cognizance of site specific conditions, the nature of activities, residual impacts post closure and finally the feasibility for the implementation of effective remediation measures.

The objectives listed in column 2 of Table 6.1(a) form the basis from which to determine measurable/auditable relinquishment criteria in the event that an Application for a Closure Certificate is lodged with the DMR upon formal decommission and closure of the site.

The following Environmental Components were considered:

- Socio-Cultural/ Socio-Economic Environment
- Archaeological and Heritage Environment
- Palaeontological Environment
- Land Use
- Current Status of Infrastructure (Roads)
- Blasting and Vibration Environment
- Traffic Aspects
- Climate/Meteorology
- Topography
- Soils and Land Capability
- Geology and Geochemistry
- Groundwater Environment
- Surface Water Environment
- Plant Life Environment
- Animal Life Environment
- Wetland Environment
- Aquatic Ecosystems Environment
- Air Quality Environment
- Noise Environment
- Visual Aspects

Table 6.1(a): Closure Objectives as per Environmental Component

Environmental Component	Post Closure Phase Management Outcomes (Relinquishment Criteria)
Socio-Cultural/ Socio-Economic Environment	Sustainable Socio-Cultural/ Economic Legacy to be Visible.
Archaeological and Heritage Environment	No Residual Impact on the Heritage Resources to be present.
Palaeontological Environment	No Residual Impact on the Palaeontological Resources to be present.
Land Use	Post Closure Land Use of Extensive Grazing to be supported.
Infrastructure (Roads)	Road Conditions that Pose No Safety Risk.
Blasting and Vibration Environment	No Damage to Surface Infrastructure
Traffic Aspects	No congestion of Traffic at and around HERNIC Operations.
Topography	Existence of Stable Landforms and Free-Draining Surfaces.
Soils and Land Capability	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
Geology and Geochemistry	No Management Outcomes proposed.
Groundwater Environment	Groundwater Quality to be Compliant with the Background Groundwater Quality Profile. Groundwater Abstraction to be Compliant with WUL Conditions.
Surface Water Environment	Surface Water Quality to be Complaint with Resource Quality Objectives. No Visible Signs of Surface Water Ponding.
Plant Life Environment	Stable, Self-Sustaining Locally Indigenous Vegetative Cover that Supports the Post Closure Land Use. Absence of Invasive Alien Species.
Animal Life Environment	Increase in Faunal Species Abundance and Diversity.
Wetland Environment	No Visible Signs of Surface Water Ponding. Surface Water Quality to be Complaint with Resource Quality Objectives. Increase in monitored Parameters defining Wetland Integrity such as PES, EIS and Ecological Service Provision.
Aquatic Ecosystems Environment	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.
Air Quality Environment	Air Quality to be Compliant with the Conditions set out in the AEL.
Noise Environment	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
Visual Aspects	No residual visible air quality impact. Final landforms to present no visual intrusion within the Surrounding Natural Landscape.

6.2. CONFIRM CLOSURE OBJECTIVES AS CONSULTED WITH I&AP'S

The closure objectives listed in Table 6.1(a) were consulted with I&AP's during the EIA Phase Public Meeting held on 30 June 2017. The I&AP's were provided with access to the full Draft EIAR and Draft EMP and were given 30 days for review and comments.

Comments received throughout the Public Participation Process were continually attended to and responses to issues and comments are documented in the formal Issues, Comments and Response Register, and which is attached as part of the Public Participation Programme Report – **APPENDIX 7(A)** of the EIAR.

Any Issues and Comments related to Closure Objectives received during the EIA Phase Public Review period will be dealt with here in this section after the 30 day review period has lapsed.

6.3. REHABILITATION PLAN

6.3.1. Legal Framework

The South African legal system is dynamic. Significant changes relating to mined land rehabilitation have occurred in the recent past.

The abbreviated summary of key legal aspects affecting rehabilitation activities given below is not in any way comprehensive, but is intended to provide a basic outline for mine management of the rehabilitation-related issues they may have to face during the life of the operation.

South African legislation imposes a clear obligation on companies to prevent environmental damage and defines clear obligations/responsibilities associated with mine rehabilitation and closure. Rehabilitation activities should be guided/controlled by legal requirements contained in many South African Acts and Regulations. However, the essence of these requirements is summarized below.

Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA)

Section 37 of the MPRDA provides that the principles set out in section 2 of National Environmental Management Act (NEMA) apply to all prospecting and mining operations. Section 89 provides that no exploration or production operations may commence unless financial provision has been made that is "acceptable to the designated agency guaranteeing the availability of sufficient funds for the due fulfilment of all exploration and production work programmes by the holder".

National Water Act 36 of 1998 (NWA)

This act finds application to the present context in that section 40 et seq. provides for certain categories of water users to apply for a water use license, section 19 imposes obligations on certain categories of persons (owners of land or person occupying land) to undertake reasonable measures to prevent pollution of a water resource from occurring, recurring or continuing. In addition, section 30 of the act allows the responsible authority; Department of Water and Sanitation (DWS) to require an applicant or holder of a water use license to furnish security in respect of any obligation or potential obligations arising from a license to be issued under the act if deemed necessary for the protection of the water resource or property. This obligation to provide security is insufficiently cross referenced to the financial rehabilitation provisions in section 41 of the MPRDA.

The purpose of the NWA is to ensure that the country's water resources are protected, used, developed, conserved, managed and controlled, in a way, which takes into account, *inter alia* the reduction and prevention or degradation, of water resources.

Pollution Prevention in terms of the NWA: Pollution prevention of water resources and remediation of the effects thereof are to be performed in terms of the provisions of Section 19 of the NWA. Section 19 states that:

"(1) An owner of land, a person in control of land or a person who occupies or uses land on which;

(a) any activity or process is or was performed or undertaken; or
(b) any other situation exists, which causes, has caused or is likely to cause pollution of a water resource, must take all reasonable measures to prevent any pollution from occurring, continuing or recurring."

Should a person fail to take the reasonable measures required under subsection 1, a Catchment Management Agency may direct any person who fails to take the measures required under subsection (1) to commence taking specific measures before a given date, diligently continue with those measures and to complete them before a given date.

National Environmental Management Act 107 of 1998 (NEMA)

The Minister of Environmental Affairs published the 'Regulations pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations' in GN R1147 in Government Gazette 39425 (the "Regulations"), another key set of laws to finalise the transition to the Single Environmental System. These Regulations govern the transition from the MPRDA section 41 regime to the new NEMA section 24(P) regime.

Financial provision is defined in NEMA as "the insurance, bank guarantee, trust fund or cash that applicants for an environmental authorisation must provide in terms of this Act, guaranteeing the availability of sufficient funds to undertake the (a) the rehabilitation of the adverse environmental impacts of the listed or specified activities; (b) rehabilitation of the impacts of the prospecting, exploration, mining or production activities, including the pumping and treatment of polluted or extraneous water, (c) decommissioning and closure of the operations, (d) remediation of latent or residual environmental impacts which become known in the future; (e) removal of building structures and other objects; or (f) remediation of any other negative environmental impacts".

Section 24(P) of the NEMA details the requirements of financial provision for remediation of environmental damage.

1. An applicant for an environmental authorization relating to prospecting, exploration, mining or production must, before the Minister responsible for mineral resources issues the environmental authorization, comply with the prescribed financial provision for the rehabilitation, closure and ongoing post decommissioning management of negative environmental impacts.

2. If any holder or any holder of an old order right fails to rehabilitate or to manage any impact on the environment, or is unable to undertake such rehabilitation or to manage such impact, the Minister responsible for mineral resources may, upon written notice to such holder, use all or part of the financial provision contemplated in subsection (1) to rehabilitate or manage the environmental impact in question.

3. Every holder must annually-

    a) assess his or her environmental liability in a prescribed manner and must increase his or her financial provision to the satisfaction of the Minister responsible for mineral resources; and
    b) submit an audit report to the Minister responsible for mineral resources on the adequacy of the financial provision from an independent auditor.

4. If
    a) the Minister responsible for mineral resources is not satisfied with the assessment and financial provision contemplated in this section, the Minister responsible for mineral resources may appoint an independent assessor to conduct the assessment and determine the financial provision.
    b) Any cost in respect of such assessment must be borne by the holder in question.

5. The requirement to maintain and retain the financial provision contemplated in this section remains in force notwithstanding the issuing of a closure certificate by the Minister responsible for mineral resources in terms of the MPRDA, 2002 to the holder or owner concerned and the Minister responsible for mineral resources may retain such portion of the financial provision as may be required to rehabilitate the closed mining or prospecting operation in respect of latent, residual or any other environmental impacts, including the pumping of polluted or extraneous water, for a prescribed period.

6. The Insolvency Act, 1936 (Act No. 24 of 1936), does not apply to any form of financial provision contemplated in subsection (1) and all amounts arising from that provision.

7. The Minister, or an MEC in concurrence with the Minister, may in writing make subsections (1) to (6) with the changes required by the context applicable to any other application in terms of this Act.

On **26 October 2016** the Minister published a notice (GN 40371 - National Environmental Management Act (107/1998): Amendments to Financial Provisioning Regulations, 2015) that extended the transition for any person who held a right or permit when the Regulations came into force on 20 November 2015, or who had applied for the right or permit before the Regulations came into force but only obtained same after 20 November 2015.

These categories of persons must now comply with the Regulations by **20 February 2019**. In this transitional phase, it is seen that mines must continue to comply with the DMR / MPRDA system to complete their annual financial provisioning assessments.

National Environmental Management Waste Act 59 of 2008 (NEMWA)

Waste generated by mining is specifically included in the definition of waste. This is now active and defines "residue stockpiles" and "residue deposits" as waste management activities. The contaminated land provisions of the act, also active and applicable in the mining context, needs consideration during the operational and closure planning phases.

6.3.2. Site History

HERNIC Ferrochrome (Pty) Ltd has been in operation since May 1996. The operations, which expanded over the years, comprise both mining of Chromite Ore (initially opencast and then later from underground), ore beneficiation to yield feedstock chromite concentrate and lumpy ore, followed by pelletizing and sintering of the fine ore and finally Ferrochrome Smelting in four closed Furnaces, with an annual production capacity of 420 000 *tonnes* of ferrochrome. Several chrome recovery operations from chromite containing slag are also active on the site.

6.3.3. Description of Operations

Chromite seams from the Middle Group Chromite Seams (MG-0 to MG-4) are mined by means of opencast and currently underground mining. Ore is also sourced from neighbouring mines which consist of chromite from the LG-6, MG-0, MG-1, MG-2 and UG-2 Chromite seams. Other materials such as dolomite, limestone, quartzite, anthracite, coke are procured for the process.

The beneficiation and concentration of the ore is done by crushing, screening, spiralling and dense medium separation (DMS) in an Ore Beneficiation (OB) Plant. Pelletizing and sintering of the ore takes place at two pelletizing plants. Further smelting of the ore takes place in four Closed Submerged Arc Furnaces where the separation of Ferrochrome and Slag takes place. The chrome product is broken up after the smelting process.

Ferrochrome is further recovered at the Fine Slag Recovery Plant, whereas PGM minerals are recovered from the OB Plant Slimes at the PGM Plant. Final preparation is made at the final product area before the product is dispatched to the markets.

Further manufacturing of sand from the slag and waste rocks are done at the Fine Slag Recovery Plant. Manufacturing of aggregate from slag and waste rocks are done at the Aggregate Plants.

The surface operations at HERNIC Ferrochrome (Pty) Ltd are located on and restricted to the Farm De Kroon 444 JQ and cover a surface area of approximately 386 *ha*. The HERNIC Ferrochrome (Pty) Ltd Mining Right Boundary (Mining Rights; NW 30/5/1/2/2/396 MR and NW 30/5/1/2/2/308 MR) includes the neighbouring Farm Elandsfontein 440 JQ as well. Historically both opencast as well as underground mining occurred on / below the Farm Elandsfontein 440 JQ. Whereas the opencast mining has been completed and is currently in a state of partial rehabilitation, underground mining of the MG-1 and MG-2 seams will continue below both properties.

Mining at HERNIC Ferrochrome (Pty) Ltd's Morula (Maroelabult) section commenced in 1996. Initially only opencast mining was conducted with the underground operations only commencing in 2002/2003. The opencast mining operations were completed in 2014 and the underground mining was temporarily stopped as well. Future mining (from 2016 onwards) will take place by underground mining methods only.

6.3.4. Site Layout

The HERNIC Ferrochrome (Pty) Ltd site is located 7*km* to the south-east of the town of Brits in the Madibeng Local and Bojanala District Municipalities within the North West Province of South Africa.

The HERNIC Ferrochrome (Pty) Ltd site is flanked along the western perimeter by the R511 regional road and along the southern perimeter by the N4 national road. Access to the HERNIC Ferrochrome (Pty) Ltd operations is obtained via the private entrance / access road from the R511 regional road.

A railway siding also provides access to the HERNIC Ferrochrome (Pty) Ltd operations, although this is specifically used to load and offload final product and raw materials.

A high resolution aerial photograph was commissioned during 2015 and was used to support a full site description and activity inventory for the HERNIC Ferrochrome (Pty) Ltd operations. The site was divided into five separate operational areas based on the different activities occurring on the site, namely the Alloys Smelting Plant, the TSF Facility, the Office Complex and CRP Plant, the Morula Mining Opencast Operation and the Morula Mining Shaft Complex. Refer to Figure 6.3.4(a) for the five operational areas and to Figure 6.3.4(b) for the location of the different activities occurring on site, i.e. site inventory.

The maps depicted in Figure 6.3.4(a) and Figure 6.3.4(b) focus on the HERNIC Ferrochrome (Pty) Ltd surface located activities which are restricted to the Farm De Kroon 444 JQ, and which covers a total surface area of approximately 386.45 ha.

The HERNIC Ferrochrome (Pty) Ltd mining right extends onto the neighbouring Farm Elandsfontein 440 JQ as well, but at present no surface activities occur on this property. Historically both open-cast mining as well as underground mining occurred on Elandsfontein. Whereas the open-cast mining has been completed and is currently in a state of partial rehabilitation, underground mining of the MG-1 and MG-2 seams will continue on this property.

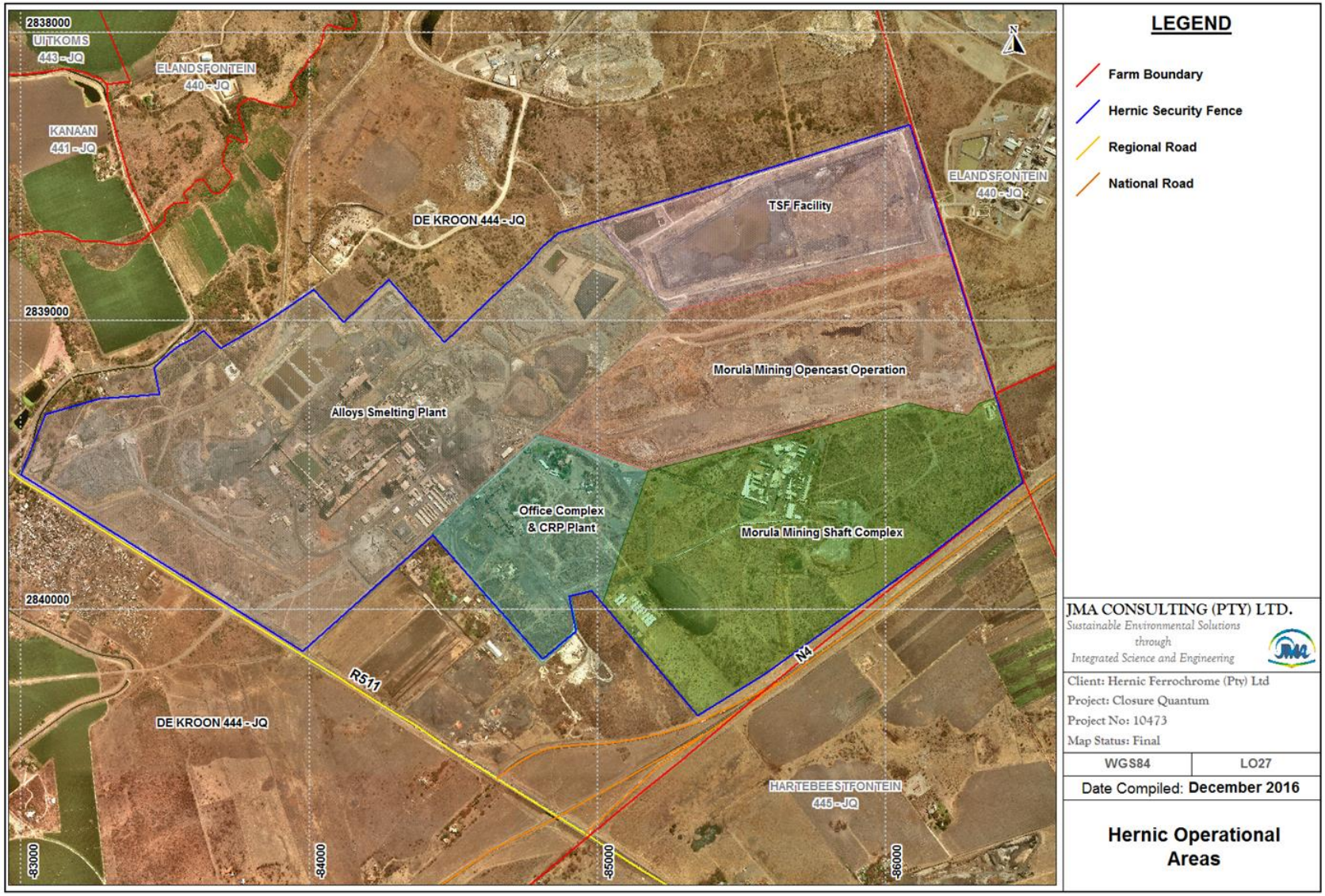

Figure 6.3.4(a): Five Operational Areas at HERNIC

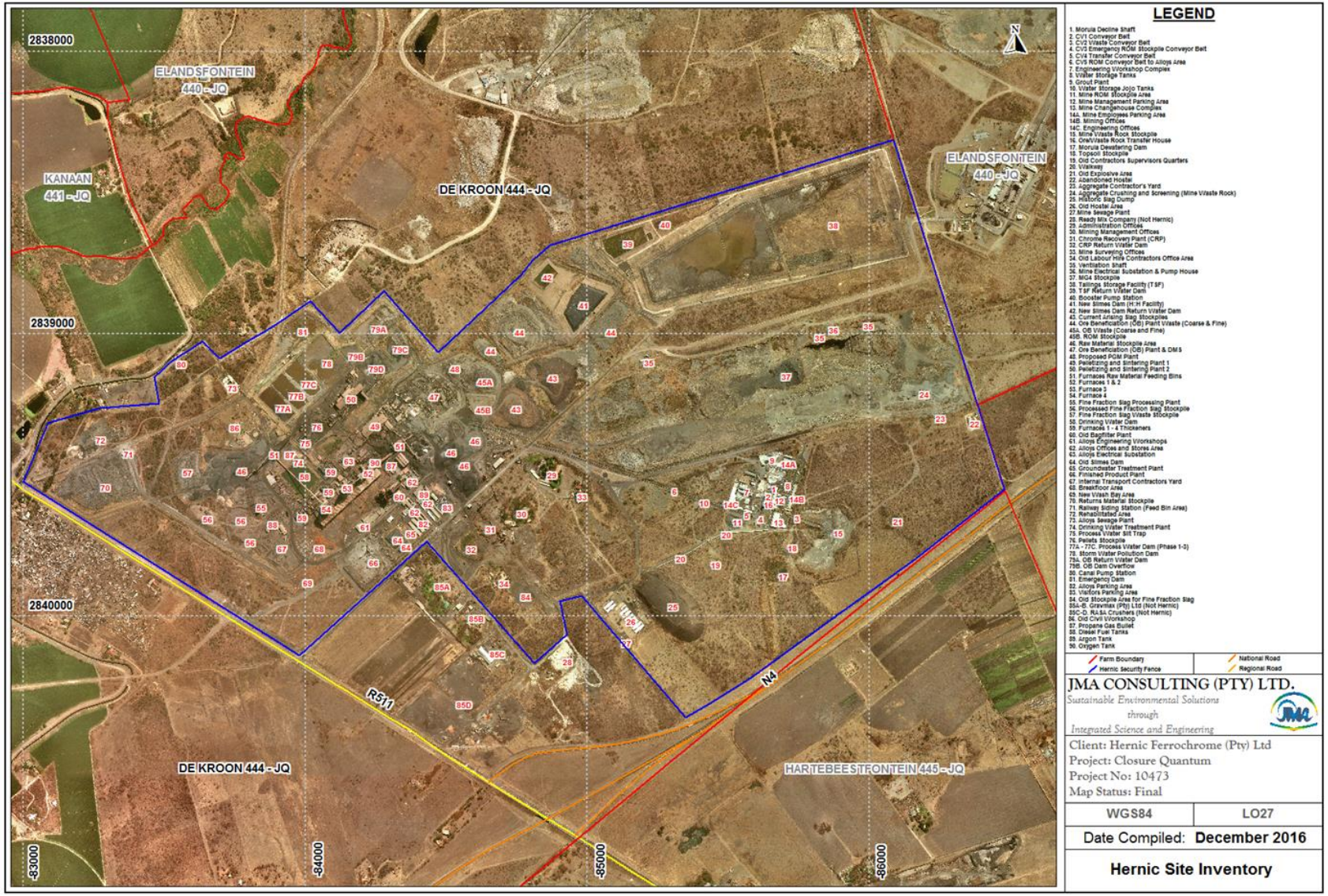

Figure 6.3.4(b): HERNIC Ferrochrome Mining and Smelting Operation - Site Process and Infrastructure Inventory

6.3.5. Site Processes and Infrastructure

A detailed discussion of the Site Processes and Infrastructure is given in Chapter 4 of the EIA Report – Part A. In order to support the Closure Planning and Cost Assessment, a listing of the processes and infrastructure for the entire HERNIC Mining and Smelting Operation is given below:

Morula Mining Shaft Complex

- Decline Materials Shaft
- Decline People Shaft
- Access Roads
- Water Storage Dams (No. 1, 2 and 3)
- Mining Offices
- Engineering Offices
- Engineering Workshops
- Parking Areas
- Ore/Waste Rock Transfer House
- Change House Complex
- CV1 Conveyor
- CV2 Conveyor
- CV3 Conveyer
- CV4 Conveyor
- CV5 Conveyor
- Grout Plant
- Peoples Walkway (from parking and hostel area to shaft)
- Emergency ROM Stockpile
- Topsoil Stockpile
- Redundant Explosives Magazine
- Abandoned Hostel
- Old Contractors Supervisors Quarters (Demolished)
- Historic Slag Dump
- Old Hostel Area

Morula Mining Underground Operation

- Two Incline Shafts
- Underground Mining
- Underground Crushing and Screening

Morula Mining Opencast Operation

- Partially Backfilled Open Cast Pit
- OB Plant Coarse Tailings for Final Backfill and Disposal on Open Pit Area
- OB Plant Fine Tailings in Western Section to be re-mined for PGM Plant
- OB Plant Mixed Tailings to reworked into Process
- MG-4 Stockpile
- Final Void to be backfilled with OB Plant Coarse Waste
- Re-Mining of Historical OB Fine Tailings to supply PGM Plant
- Water Abstraction
- Water Pipe Lines

HERNIC General Plant Infrastructure

- Access Roads
- Railway Lines and Siding
- Security Fence and Access
- Water Supply
- Power Supply
- Fuel Supply
- Gas Supply
- Visitors Parking
- Security Offices
- Alloys Offices
- Clinic
- Laboratory
- Canteen
- Stores
- Change House & Laundry
- Workshops
- Employee Parking
- Capital Yard 1 and 2
- Oil Stores and Fuel Storage Areas

Smelting Plant Infrastructure

- Raw Materials Stockpile Area 1 & 2
- Ore Beneficiation Plant (Spiral and DMS)
- Mixed Materials Stockpiling and Screening Area
- Returns Materials Stockpiles
- Pelletizing and Sintering Plant 1 & 2
- Furnaces 1, 2, 3 & 4
- Product Break Floor Areas
- Finished Product Plant
- Slag Stockpiling Areas (current and historic)
- Chrome Recovery Plant
- Platinum Group Minerals Plant
- Product Rail Dispatch Area
- Fine Slag Processing Plant
- Internal Transport & Contractors Yard and Wash Bay
- Historic Bag Plant (Not in Use)
- Old Civil Workshop (Not in Use)
- Rehabilitated Quarry

HERNIC Waste Management Infrastructure

- Morula Mine Waste Rock Stockpile Area
- Morula Mine Sewage Plant
- Historic Slimes Dams 1 & 2
- H:H Slimes Dam and RWD
- TSF and RWD
- Existing Salvage Yard
- New Salvage Yard
- Smelter Sewage Plant

HERNIC Process Water Management Infrastructure

- Morula Dewatering Dam
- Hartbeespoort Canal Pump Station
- Plant Drinking Water Dam
- Plant Drinking Water Treatment Plant
- Plant Process Water Dam & Silt Traps
- OB Plant Return Water Dam
- Chrome Recovery Plant Process Water Dam

HERNIC Surface Water Management Infrastructure

- Morula Storm Water Management Berms, Canals & Silt Traps
- Morula Opencast Final Void
- Morula Mine new PCD
- Plant Storm Water Management Berms, Canals & Silt Traps
- Plant Storm Water PCD No.1 (A & B)
- Plant Storm Water PCD No.2
- Plant Storm Water PCD No.3
- Plant Storm Water PCD No.4

HERNIC Groundwater Management Infrastructure

- Abstraction Boreholes
- Groundwater Treatment Plant

HERNIC Air Emissions Control Systems

- Scrubbing and Baghouse Systems at Pelletizing Plants, Furnaces and Finished Product Plant

6.3.6. Approach to Rehabilitation and Closure

Rehabilitation and Closure has as its ultimate goal to achieve a state where mining lease ownership can be relinquished and responsibility accepted by the **next land user**. To achieve this in an environment of increasing regulatory and stakeholder expectations requires that superior outcomes are developed and implemented in consultation with relevant stakeholders, including local communities.

Mine completion ultimately determines what is left behind as a benefit or legacy for future generations. If mine closure and completion are not undertaken in a planned and effective manner, a site may continue to be a source of pollution for many years to come. The overall objective of mine completion is to prevent or minimize adverse long-term environmental, physical, social and economic impacts, and to create a stable landform suitable for the agreed future land use.

Mining operations are finite economic activities, which are usually relatively short term. For a mining project to contribute positively to an area's development in any lasting way, closure objectives and impacts must be considered from project inception. Mine closure policy and planning defines a vision of the end result and sets out concrete objectives to implement that vision. To achieve this mine closure planning should be an integral part of a project life cycle to ensure that:

- Future public health and safety are not compromised;
- Environmental resources are not subject to physical and chemical deterioration;
- The end land use of the site is beneficial and sustainable in the long term;
- Any adverse socio-economic impacts are minimized and;
- All socio-economic benefits are maximized.

These objectives can best be achieved by the preparation of a mine closure plan early in the process of mine development, in consultation with the regulating authority and local communities. Closure planning includes a commitment to progressive rehabilitation and detailed plan development and implementation. The plan must provide a framework against which short term actions can be measured during mine life and adjustments made to ensure a successful final closure. It also provides a view of the potential future for the community's economic and social life.

The activities during the final closure stage include:

- the removal of infrastructure,
- the implementation of public safety measures (relates to the waste facilities, infrastructure remaining, water containment facilities, shafts and rehabilitated areas),
- re-contouring and re-vegetation of disturbed footprints (rehabilitation),
- on-going maintenance of site structures and monitoring of environmental issues,
- the operation of site facilities required to mitigate or prevent long term environmental degradation; and
- the completion of company involvement in sustainable community economic and social programmes.

Closure planning should be developed at the feasibility stage and have adequate technical validity and financial resources on which to base future updates and reviews. It should be consistent with the regulatory requirements of the particular jurisdiction and should include the following environmental considerations:

- A defined post-closure use for the site, with respect to safety and environmental standards;
- A good understanding of a site's background and baseline conditions and clear definitions of the zone of influence and key receptors;
- On-going and effective input from key stakeholders in plan development and modification;
- Explicit consideration of potential social impacts and benefits associated with environmental quality and potential future land use alternatives for the site (including consideration of possible uses for site infrastructure);
- The use of risk analysis methods in the closure plan development and to establish the design criteria, for example to address the possibility of major events (e.g. flooding, drought);
- A clearly identified sequence and schedule of closure activities;
- The application of, where possible, progressive (i.e. concurrent) rehabilitation of areas during the operating life of the mine to reduce the environmental footprint of the site;
- The review and adjustment of closure plans on a regular basis and after changes in operations or conditions;
- Periodic monitoring and audits that provide a measure of actual versus planned rehabilitation and;
- Closure costs calculations which are consistent and transparent, and based on reasonable estimates of actual costs taking into account local conditions and cost structures.

The following diagram (Figure 6.3.6(a)) summarizes the closure methodology taking the various life cycles of the operational activities into consideration.

Rehabilitation planning and legal authorization is a complex, iterative process that involves interaction with a wide range of people to ensure that it progresses smoothly. The recent developments in the mining and environmental legislative framework for the authorization process for mining (which relates directly to land rehabilitation) have also increased the complexity of the situation.

Rehabilitation is an expensive business, which can account large capital costs in certain circumstances. As the majority of these costs are usually incurred after mine closure, or at least after a significant portion of mining has been completed, some form of guarantee is required by authorities to ensure that these costs are met. In addition, there is now a requirement to provide financial assurance that the costs of rehabilitation will be met in the case of early or unplanned closure. The question is how will the costs of rehabilitation be funded if the mine closes prematurely, either due to mining issues or to decreased value of the product? This emphasizes the importance for an accurate estimate of the cost of rehabilitation and when rehabilitation is going to be done.

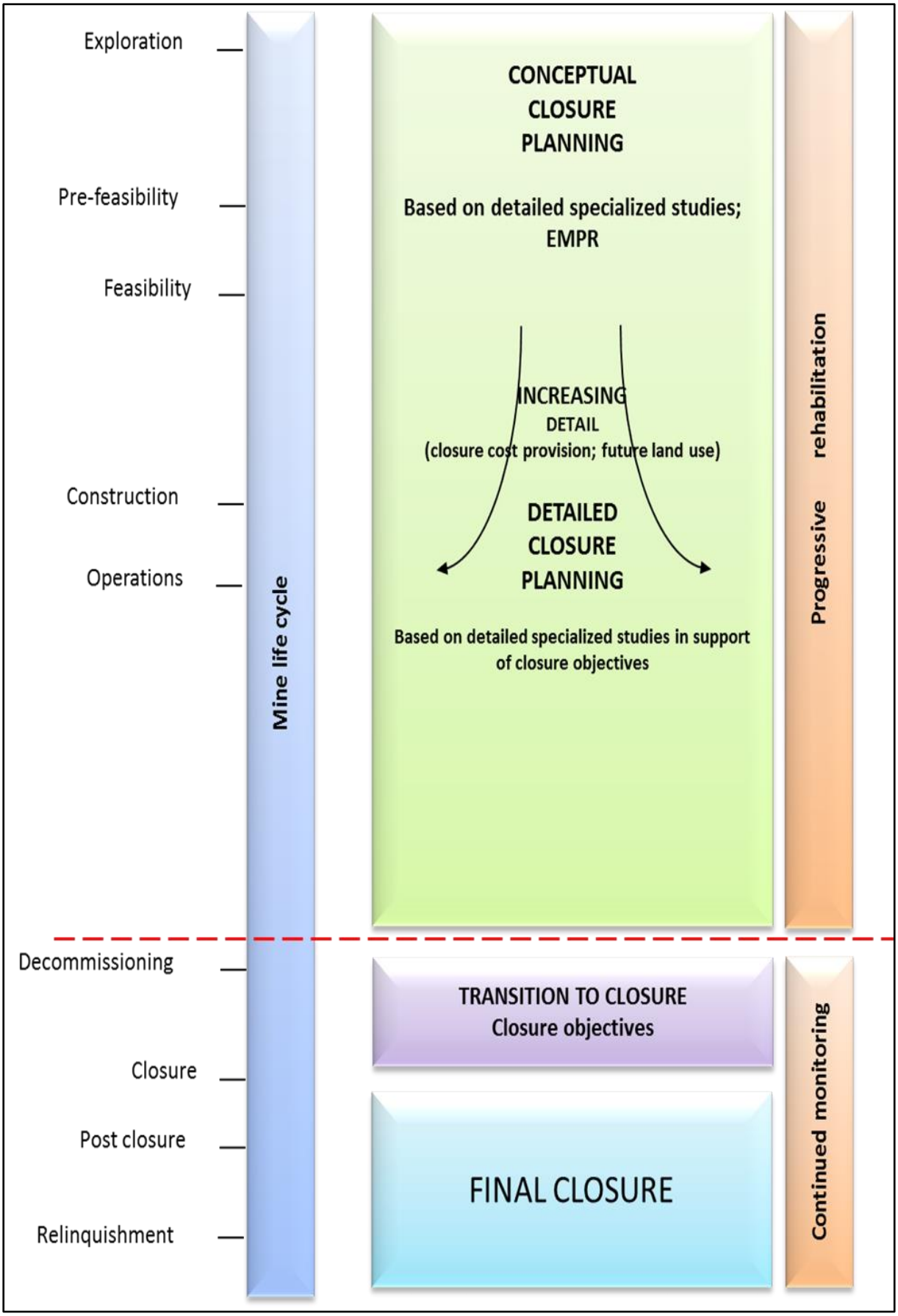

Figure 6.3.6(a): Closure Methodology considering the Various Life Cycles of the Mine Operation

6.3.7. HERNIC Decommissioning, Rehabilitation and Closure Actions

The decommissioning, rehabilitation and closure actions listed for HERNIC Ferrochrome are based on generally accepted closure methods and current best practice and will form the basis for determining the Master Rates for the various closure components in the DMR "rules-based" approach. Any decommissioning, rehabilitation and closure details contained in more detailed documentation such as preliminary or detailed civil engineering designs associated with the decommissioning of activities at HERNIC, will however take precedence over these generally accepted closure methods.

Component 1: Processing Plant

Decommissioning, Rehabilitation and Closure actions for general Processing Plant Elements will comprise:

- All infrastructure and concrete buildings to be broken down to natural ground level and buried/disposed at an appropriate location;
- Foundations, structures and conveyors to be broken down to natural ground level;
- The areas are to be covered with 1.0 m subsoil, top soiled with 300 mm of topsoil and vegetation established, or as noted in the relevant EMP;
- Ongoing monitoring and maintenance of these areas;
- Concrete hardstand is defined as the area between plant buildings;
- Top soiling and vegetation for the areas are to be included under general surface rehabilitation;
- In the costing model no credits are allowed for scrap steel and equipment that can be re-used or sold.

Components 2(A) & 2(B): Steel and Reinforced Concrete Structures and Buildings

Decommissioning, Rehabilitation and Closure actions for steel and reinforced concrete buildings and structures will comprise:

- All structures to be demolished to 1.0 m below ground level;
- The rubble is to be buried adjacent to the sites, provided this adheres to the National Waste Management Strategy;
- Silos should be imploded and buried;
- The areas should be shaped, top soiled with 300 mm of topsoil and vegetated or as stated in the relevant EMP document;
- Monitoring and maintenance is to be costed in the relevant areas;
- The concrete hardstand is defined as the area between buildings such as workshops, offices, etc.

Component 3: Access Roads and Internal Roads

Decommissioning, Rehabilitation and Closure actions for internal gravel roads will comprise:

- The tar access roads will remain in support of the Post Closure Land Use;
- Rip and scarify road surfaces;
- The areas should be shaped, top soiled with 300 mm of topsoil and vegetated or as stated in the relevant EMP document.

Component 4(A) & 4(B): Railways

Decommissioning, Rehabilitation and Closure actions for railways will comprise:

- The removal of the ballast, sleepers and rail,
- All culverts, bridges and structures are to remain,
- No rehabilitation to the general earthworks, neither cut nor fill,
- Removal of the electrification of the railway lines, including sub-stations and signalling,
- General clean up and making certain of adequate drainage,
- No credit is allowed for second-hand rail and ballast.

Component 5: Housing and Administration Facilities

Decommissioning, Rehabilitation and Closure actions for housing and administration facilities will comprise:

- All structures to be demolished to 1.0 m below ground level;
- The rubble is to be buried adjacent to the sites, provided this adheres to the National Waste Management Strategy;
- The areas should be shaped, top soiled with 300 mm of topsoil and vegetated or as stated in the relevant EMP document;
- Monitoring and maintenance is to be costed in the relevant areas;
- The concrete hardstand is defined as the area between buildings.

Component 6: Opencast Rehabilitation

Decommissioning, Rehabilitation and Closure actions for the Morula open pit will comprise:

- The OB Plant fines currently present in the western section of the open pit will be re-mined through hydro-mining to serve as feedstock to the PGM plant;
- Concurrent in-filling with OB Plant coarse waste will continue from the east at a pace commensurate with the availability of space generated by the hydro-mining;
- Due to the fact that the coarse waste now originates from the underground mining, sufficient coarse waste will be available to backfill the entire open pit;
- Once the open pit is fully backfilled, coarse waste will be disposed of on the backfilled pit area in a controlled fashion;
- Once the stage for final decommissioning and rehabilitation is reached, the coarse waste dump on the open pit will be shaped, top soiled with 300 mm of topsoil and vegetated or as stated in the relevant EMP document;
- Monitoring and maintenance is to be costed in the relevant areas.

Component 7: Sealing of Shafts, Adits and Inclines

The sealing of vertical and incline shafts are primarily a safety consideration and this should be conducted in such a manner that potential safety risks are largely obviated.

Decommissioning, Rehabilitation and Closure actions for the Morula shafts/inclines will comprise:

- Inert building rubble arising from the demolition of surface infrastructure should be deposited into the shafts;
- A mass concrete cap of 1 000 mm thickness is placed onto the building rubble deposited into the shaft;
- It should be noted that dedicated engineering design and specification of these caps are required.

Component 8(A): Overburden and Spoils

Decommissioning, Rehabilitation and Closure actions for overburden and spoils will comprise:

- Overburden and spoils normally have a low pollution potential and hence only need to be shaped to create a stable landform;
- The shaped areas should be top soiled with 300 mm of topsoil and vegetated or as stated in the relevant EMP document;
- Monitoring and maintenance is to be costed in the relevant areas.

Component 8(B): Process Plant Waste: Basic and Salt-Producing

Decommissioning, Rehabilitation and Closure actions for basic, salt-producing residue deposits will comprise:

- Shape to create a stable landform;
- Provide with cover capping as per the requirements of the Waste License or EMP;
- Top soil with 300 mm of topsoil and vegetate or as stated in the relevant EMP document;
- Monitoring and maintenance is to be costed in the relevant areas.

Component 8(C): Process Plant Waste: Acidic, Metal-Rich

- Shape to create a stable landform;
- Provide with cover capping as per the requirements of the Waste License or EMP;
- Top soil with 300 mm of topsoil and vegetate or as stated in the relevant EMP document;
- Monitoring and maintenance is to be costed in the relevant areas;

Closure Elements Specific to 8(A), 8(B) or 8(C)

Generally, average modified outer slopes of 1:3 (18°) are required. Although not specifically stated, benches at regular intervals are also required. This should ensure that the modified outer slopes between benches do not exceed 35 to 40 m in order to curb storm water flow velocities on the outer slopes. Benches should be at least 5 m wide, sloping inwards at a slope of about 1:10.

Moreover, the lateral slopes of the benches should be selected with the following in mind:

- 1:2 year flow events should not result in bench flow velocities of less than 0,3m/s. Flow velocities less than 0,3 m/s could cause sediment build-up on the benches and eventual bench overtopping and resultant outer slope damage.
- 1:50 year flow events should not result in bench flow velocities exceeding 1m/s. Flow velocities in excess of 1m/s could cause bench scouring and hence, damage to storm water chutes, resulting in failure of the storm water handling system.

Current generally accepted closure methods allows for a dedicated cover to be provided on the modified outer slopes of the residue deposit. The cover has to fulfil the following primary functions:

- Protection of the integrity/stability of the modified outer slope.
- Limiting the ingress of air and water into residue material that has the potential to contaminate local groundwater by means of contaminated seepage arising from the footprint area of the deposit.
- Separation of the deposited residue from uncontaminated surface runoff arising from the outer slopes of the residue deposit.
- Contribution to the aesthetic appeal of the rehabilitated residue deposit.

Covers fulfilling the above functions could be of varying nature, comprising of natural and/or synthetic material. If natural materials are to be used, current practice allows for an evaporative cover, varying in thickness between 750 and 1 000 mm, with an outer cover layer of 300 m thickness of armouring or topsoil with vegetation. The armouring also requires vegetation, but this is not essential for the long-term integrity of the outer cover layer.

Depending on the nature of the deposited material covered, capillary breaker layers between the evaporative cover and the deposited material could also be required.

Current generally accepted closure methods indicates that operational pollution control dams are properly lined to prevent the migration of the contaminated water impounded in the dam to the shallow groundwater or the nearby receiving surface water environment. Mostly, synthetic (HDPE) liners are provided for this purpose. However, these liners have a finite life and eventual failure of these liners would result in the salts and other contaminants that accumulated in the pollution control dam(s) over the years to be dissipated into the receiving water environment.

Hence, from a holistic view the provision of a pollution control dam served a limited function, only postponing the release of contaminants into the receiving water environment. However, contaminant release has been spread-out over a period of about 50 years, starting from mine residue deposit rehabilitation to final disintegration of the liner in the pollution control dam(s). This situation would most likely allow for an acceptable residual impact, with salt/contaminant release into the receiving water environment at a rate that does not exceed the “natural” assimilative capacity of the receiving water resource. The only exception could be extremely sensitive water resources.

Storm water runoff arising from the upper and outer slopes of the rehabilitated residue deposit should be managed for the following primary reasons:

- Prevention of uncontrolled runoff from the residue deposit, thereby creating surface erosion and resultant damage to the cover and under extreme cases exposing the deposited material.
- Routing of the runoff arising from the rehabilitated residue deposit into the surrounding surface water drainage regime in a manner that would limit the creation of secondary erosion in the receiving surface water environment and/or possible damage to downstream surface infrastructure.
- Allowing for the control routing of the runoff collected on the rehabilitated residue deposit across cut-off, seepage or solution trenches provided to handle excess contaminated seepage from the residue deposit.

In addition to the above, upslope storm water diversion measures could also be required to route upslope runoff past the residue deposit to prevent possible cover damage and other specific local drainage requirements. Toe paddocks could also be required along the outer perimeter toe of the rehabilitated residue deposit to capture sediment arising from the cover material whilst vegetation on the cover is still in the process of establishment.

Current practice allows for two broad approaches to handle runoff arising from the rehabilitated residue deposit. These are as follows:

- Collection of the runoff arising from the benches in chutes to route this water to the toe of the residue deposit. Chutes must be constructed from concrete or other suitable material to cater for the high flow velocities that could be encountered.
- Collection of runoff arising from the modified outer slopes on the benches itself and allowing this water to evaporate on the benches. Under these circumstances bench width could be wider than the normal 5 m width, with parapet walls provided on the outer edges of the benches. These walls must be designed for at least the 1:200 year rainfall events. The residue deposit material must also be suitable for this type of storm water contaminant and must not be susceptible to slumping under saturated conditions.

In very sensitive environmental situations and/or where the seepage from the residue deposit could be highly contaminated, a cut-off drain around the perimeter of the residue deposit may be required. Abstraction of the seepage collected in the cut-of drain by means of pumps at predetermined spacing would be required. The collected seepage has to be routed to a pollution control dam for disposal.

Component 9: Subsided Areas

None expected to be present at HERNIC

Component 10: General Surface Rehabilitation

Final surface rehabilitation of areas disturbed by mining and related activities should be aligned to the selected final land use. Irrespective of the final land use, general surface rehabilitation normally should ensure the following:

- Surface topography that emulates the surrounding areas and aligned to the general landscape character;
- Steep slopes in excess of 6 percent should be avoided if possible;
- Landscaping that would facilitate surface runoff and result in free draining areas;
- If possible, the drainage lines should be reinstated;
- An area without unnecessary remnants of structures and surface infrastructure to give the rehabilitated area a "neat" appearance;
- Special attention must be given to shape and/or removal of heaps of excess material being the legacy of prolonged mining and related activity;
- An area suitable for re-vegetation.

Component 11: River Diversions

None expected to be present at HERNIC

Component 12: Fencing

The security fencing will remain in support of the Post Closure Land Use.

Component 13: Water Management

Water management foreseen for the decommissioning phase and post closure relates to the ongoing operation of the groundwater remediation scheme.

Component 14: Maintenance and Aftercare

Maintenance and aftercare is planned for 2 to 3 years after mine production ceases, and covers:

- Annually fertilising of rehabilitated areas;,
- Monitoring of surface and subsurface water quality;
- Control of alien plants;
- General maintenance, including rehabilitation of cracks.

Component 15: Specialist Studies

Final decommissioning, rehabilitation and closure may require some specialist studies to detail the closure specifications and/or to conduct detailed feasibility studies in support of certain closure components.

6.4. CONFIRM REHABILITATION PLAN TO BE COMPATIBLE WITH CLOSURE OBJECTIVES

The rehabilitation actions proposed for the HERNIC operations in the previous section are aimed at achieving a Post Closure Agricultural Land Use of Grazing. The relinquishment criteria, which formed the basis from which to detail the rehabilitation and closure actions, are listed below:

- Sustainable Socio-Cultural/ Economic legacy to be visible.
- No Residual Impact on the Heritage Resources to be present.
- No Residual Impact on the Palaeontological Resources to be present.
- Post Closure Land Use of Extensive Grazing to be supported.
- Road Conditions that pose no Safety Risk.
- No Damage to Surface Infrastructure.
- No congestion of Traffic at and around HERNIC Operations.
- Existence of Stable Landforms and Free-Draining Surfaces.
- No Visible Signs of Erosion.
- Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.
- Groundwater Quality to be compliant with the Background Groundwater Quality Profile.
- Groundwater Abstraction to be compliant with WUL Conditions.
- Surface Water Quality to be complaint with Resource Quality Objectives.
- No Visible Signs of Surface Water Ponding.
- Stable, Self-Sustaining locally indigenous Vegetative Cover that supports the Post Closure Land Use.
- Absence of Invasive Alien Species.
- Increase in Faunal Species Abundance and Diversity.
- Increase in monitored parameters defining Wetland Integrity such as PES, EIS and Ecological Service Provision.
- Surface Water Quality to be compliant with the Background Biomonitoring Profile and according to the Ecological Reserve.
- Air Quality to be compliant with the conditions set out in the AEL.
- Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).
- No residual visible air quality impact.
- Final landforms to present no visual intrusion within the surrounding Natural Landscape.

These criteria are recognised and referenced throughout the rehabilitation programme proposed.

6.5. CALCULATION OF QUANTUM REQUIRED TO MANAGE AND REHABILITATE

Financial Provisioning for Environmental Management at HERNIC is required in terms of three distinctly separate periods:

- Construction and Operational Phase – Operating Budget (OPEX)
- Decommissioning and Closure Phase – Closure Cost Provisioning (Quantum)
- Post Closure Phase – Maintenance and Aftercare Closure Cost Provisioning (Quantum)

Construction and Operational Phase

The budget for this phase is seen as the annual OPEX Budget and is revised on an annual basis. This budget provides for ongoing environmental management and concurrent rehabilitation, maintenance of environmental management and monitoring infrastructure, environmental monitoring and environmental auditing.

Budget Item	Activity Description	OPEX Budget 2017
Water Control	Water monitoring and Water Use License Requirements, Operation of water treatment plant etc.	R 2 040 000.00
Environmental Control	Any environmental related project not budgeted on the list	R 360 000.00
Road Maintenance	Maintenance of haul roads for dust suppression	R 7 560 000.00
Dust Fall Out Monitoring	Dust fall monitoring	R 540 000.00
Legal Compliance Audits	Legal compliance audits	R 840 000.00
Alien Plants Eradication	Alien plants eradication and grass cutting	R 720 000.00
Stack Monitoring	Isokinetic stack sampling as part of AEL requirement	R 720 000.00
Waste Management	Waste Management Services- Salvage Yard Operation	R 3 600 000.00
Promotion of OHS/Environment	Awareness Campaign	R 960 000.00
Total Environmental Management OPEX Budget for 2017		**R 17 340 000.00**

The Environmental Management OPEX Budget for 2016/2017 is: **R 17 340 000.00**

Decommissioning and Closure Phase

The budget for this phase is seen as part of the Closure Cost Budget and is also revised on an annual basis. This budget provides for aspects related to the final decommissioning, rehabilitation and closure of all the activities and infrastructure associated with the HERNIC mining and smelting operations.

The Closure Cost Provisioning (including both Existing Activities and the new Proposed Activities) was updated from the most recent Closure Cost Report (February 2017).

Closure Cost Provisioning 2017 (Existing Activities):	**R**	**101 963 944.76**
Closure Cost Provisioning 2017 (Proposed New Activities):	**R**	**33 129 097.12**
TOTAL Closure Cost Provisioning as for 2017 is:	**R**	**135 093 041.88**

Post Closure Phase

The budget for this phase is seen as part of the Closure Cost Budget and is also revised on an annual basis. This budget provides for aspects related to maintenance and aftercare for a period of 2 to 3 years after the final decommissioning, rehabilitation and closure of all the activities and infrastructure associated with the HERNIC mining and smelting operations.

This part of the Closure Cost Provisioning (including both Existing Activities and the new Proposed Activities) was updated from the most recent Closure Cost Report (February 2017).

This Maintenance and Aftercare Budget as for 2017 is: **R 7 188 742.00**

The annual OPEX budget as reflected above is compiled by the HERNIC SHEQ Manager.

The Closure Cost Provisioning, as well as the Maintenance and Aftercare Budget, was calculated using the official DMR Guideline: Guideline Document for the Evaluation of the Quantum of Closure-related Financial Provision provided by a Mine, January 2005, together with the relevant Regulation of the Mineral and Petroleum Resources Development Act (MPRDA), 2002, Act 28 of 2002. An updated Closure Cost Report (dated June 2017) was compiled for HERNIC Ferrochrome, a copy of which is attached as **APPENDIX 19(B)** of the EIAR – Part A.

For the purposes of this report, three Tables are shown:

Table 6.5(a): Closure Cost Provisioning 2017 – Existing Activities

Table 6.5(b): Closure Cost Provisioning 2017 – Proposed New Activities

Table 6.5(c): Aftercare and Maintenance 2017 – Existing + Proposed New Activities

Table 6.5(a): Closure Cost Provisioning 2017 – Existing Activities

Mine:	HERNIC FERROCHROME PTY LTD			Location:			North West
Evaluators:	JMA Consulting (Pty) Ltd			Date:			Feb-17
No	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	Master rate 2016	Multiplication factor	Weighting factor 1	Amount (Rand)
1	Dismantling of processing plant and related structures (Including overland conveyors and power lines)	m^2	733 910.00	R 13.63	1	1	R 10 001 038.79
2(A)	Demolition of steel buildings and structures	m^2	36467.00	R 189.82	1	1	R 6 922 159.05
2(B)1	Demolition of reinforced concrete buildings and structures	m^2	19973.00	R 279.73	1	1	R 5 587 136.34
2(B)2	Demolition of light concrete slabs	m^2	14220.00	R 179.32	1	1	R 2 549 930.40
3	Rehabilitation of access roads Including all haul roads	m^2	55000.00	R 33.97	1	1	R 1 868 226.56
4(A)	Demolition and rehabilitation of electrified railway lines	m	0.00	R 329.69	1	1	R -
4(B)	Demolition and rehabilitation of non-electrified railway lines	m	4670.00	R 179.83	1	1	R 839 802.81
5	Demolition of housing and/or administration facilities	m^2	16660.00	R 379.64	1	1	R 6 324 796.11
6	Opencast rehabilitation including final voids and ramps	ha	5.20	R 193 216.59	1	1	R 1 004 726.25
7	Sealing of shafts, adits and inclines	m^3	3338.00	R 101.90	1	1	R 340 153.11
8(A)	Rehabilitation of overburden and spoils	ha	30.75	R 132 674.06	1	1	R 4 079 727.27
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	79.77	R 165 243.14	1	1	R 13 181 445.35
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	4.36	R 479 944.41	1	1	R 2 092 557.61
9	Rehabilitation of subsided areas	ha	0.00	R 111 094.54	1	1	R -
10	General surface rehabilitation	ha	120.39	R 105 100.23	1	1	R 12 653 016.97
11	River diversions	ha	0.00	R 105 100.23	1	1	R -
12	Fencing	m	15107.00	R 119.89	1	1	R 1 811 120.77
13	Water management	ha	0.00	R 39 962.07	1	1	R -
14	2 to 3 years of maintenance and aftercare	ha	0.00	R 13 986.72	1	1	R -
15	Specialist studies	Sum	1.00	R 1 170 979.00	1	1	R 1 170 979.00
						Sub Total 1	R **70 426 816.38**
						Weighting factor 2	R **3 521 340.82**
1	Preliminary and General					12 % of Sub Total	R **8 451 217.97**
2	Contingency					10 % of Subtotal 1	R **7 042 681.64**
						Sub Total 3	R **89 442 056.81**
						VAT (14%)	R **12 521 887.95**
						Grand Total	R **101 963 944.76**

Table 6.5(b): Closure Cost Provisioning 2017 – Proposed New Activities

Mine:	HERNIC FERROCHROME PTY LTD			Location:			North West
Evaluators:	JMA Consulting (Pty) Ltd			Date:			May-17
No	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	Master rate 2017	Multiplication factor	Weighting factor 1	Amount (Rand)
1	Dismantling of processing plant and related structures (Including overland conveyors and power lines)	m^2		R 14.46	1	1	R -
2(A)	Demolition of steel buildings and structures	m^2		R 201.37	1	1	R -
2(B)1	Demolition of reinforced concrete buildings and structures	m^2	1500.00	R 296.75	1	1	R 445 127.46
2(B)2	Demolition of light concrete slabs	m^2	26230.00	R 179.32	1	1	R 4 703 563.60
3	Rehabilitation of access roads Including all haul roads	m^2		R 36.03	1	1	R -
4(A)	Demolition and rehabilitation of electrified railway lines	m		R 349.74	1	1	R -
4(B)	Demolition and rehabilitation of non-electrified railway lines	m		R 190.77	1	1	R -
5	Demolition of housing and/or administration facilities	m^2		R 402.73	1	1	R -
6	Opencast rehabilitation including final voids and ramps	ha		R 204 970.60	1	1	R -
7	Sealing of shafts, adits and inclines	m^3		R 108.10	1	1	R -
8(A)	Rehabilitation of overburden and spoils	ha		R 140 745.06	1	1	R -
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	13.05	R 175 295.43	1	1	R 2 287 605.39
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)(Based on detailed design/project spesifications)	ha	3.00	sum (detailed design cost)	1	1	R 15 372 488.90
9	Rehabilitation of subsided areas	ha		R 117 852.79	1	1	R -
10	General surface rehabilitation	ha	0.66	R 111 493.83	1	1	R 73 585.93
11	River diversions	ha		R 111 493.83	1	1	R -
12	Fencing	m		R 127.18	1	1	R -
13	Water management	ha		R 42 393.09	1	1	R -
14	2 to 3 years of maintenance and aftercare	ha		R 14 837.58	1	1	R -
15	Specialist studies	Sum			1	1	R -
						Sub Total 1	**R 22 882 371.27**
						Weighting factor 2	**R 1 144 118.56**
1	Preliminary and General					12 % of Sub Total	**R 2 745 884.55**
2	Contingency					10 % of Subtotal 1	**R 2 288 237.13**
						Sub Total 3	**R 29 060 611.51**
						VAT (14%)	**R 4 068 485.61**
						Grand Total	**R 33 129 097.12**

Table 6.5(c): Aftercare and Maintenance 2017 – Existing + Proposed New Activities

Mine:	HERNIC FERROCHROME PTY LTD			Location:			North West
Evaluators:	JMA Consulting (Pty) Ltd			Date:			Feb-17
No	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	Master rate 2016	Multiplication factor	Weighting factor 1	Amount (Rand)
1	Dismantling of processing plant and related structures (Including overland conveyors and power lines)	m^2	0.00	R 13.63	1	1	R -
2(A)	Demolition of steel buildings and structures	m^2	0.00	R 189.82	1	1	R -
2(B)1	Demolition of reinforced concrete buildings and structures	m^2	0.00	R 279.73	1	1	R -
2(B)2	Demolition of light concrete slabs	m^2	0.00	R 179.32	1	1	R -
3	Rehabilitation of access roads Including all haul roads	m^2	0.00	R 33.97	1	1	R -
4(A)	Demolition and rehabilitation of electrified railway lines	m	0.00	R 329.69	1	1	R -
4(B)	Demolition and rehabilitation of non-electrified railway lines	m	0.00	R 179.83	1	1	R -
5	Demolition of housing and/or administration facilities	m^2	0.00	R 379.64	1	1	R -
6	Opencast rehabilitation including final voids and ramps	ha	0.00	R 193 216.59	1	1	R -
7	Sealing of shafts, adits and inclines	m^3	0.00	R 101.90	1	1	R -
8(A)	Rehabilitation of overburden and spoils	ha	0.00	R 132 674.06	1	1	R -
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	0.00	R 165 243.14	1	1	R -
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	0.00	R 479 944.41	1	1	R -
9	Rehabilitation of subsided areas	ha	0.00	R 111 094.54	1	1	R -
10	General surface rehabilitation	ha	0.00	R 105 100.23	1	1	R -
11	River diversions	ha	0.00	R 105 100.23	1	1	R -
12	Fencing	m	0.00	R 119.89	1	1	R -
13	Water management	ha	0.00	R 39 962.07	1	1	R -
14	2 to 3 years of maintenance and aftercare	ha	355.00	R 13 986.72	1	1	R 4 965 286.64
15	Specialist studies	Sum	0.00	R 1 170 979.00	1	1	R -
						Sub Total 1	R 4 965 286.64
						Weighting factor 2	R 248 264.33
1	Preliminary and General					12 % of Sub Total	R 595 834.40
2	Contingency					10 % of Subtotal 1	R 496 528.66
						Sub Total 3	R 6 305 914.03
						VAT (14%)	R 882 827.96
						Grand Total	R 7 188 742.00

6.6. CONFIRMATION OF FINANCIAL PROVISIONING

6.6.1 Confirmation of OPEX Budget Funds

Confirmation of the availability of the OPEX Budget is attached as **APPENDIX 19(A)** of the EIAR – Part A.

6.6.2 Confirmation of Closure Quantum Funds

Confirmation of the current availability of the Closure Cost Financial Provisioning is attached as **APPENDIX 19(C)** of the EIAR – Part A**.**

7. COMPLIANCE MONITORING AND PERFORMANCE ASSESSMENT

The EIA Regulations require that a Formal Compliance Monitoring and Performance Assessment Programme be developed to assess compliance with the Environmental Impact Management Actions prescribed in the EMP.

These requirements are listed in Appendix 4 of the EIA Regulations, GNR 982 of 4 December 2014 (as amended), and are as follows:

- The method of monitoring the implementation of the impact management actions described in Chapter 5 of the EMP;
- The frequency of monitoring the implementation of the impact management actions described in Chapter 5 of the EMP;
- An indication of the persons who will be responsible for the implementation of the impact management actions;
- The time periods within which the impact management actions contemplated in Chapter 5 must be implemented;
- The mechanism for monitoring compliance with the impact management actions contemplated in Chapter 5;
- A programme for reporting on compliance, taking into consideration the requirements as prescribed in the regulations.

The DMR template for the compilation of an EMP requires the information to be supplied in Tabular format. Table 7(a) was compiled in compliance with the above requirements and although it differs slightly from the Table provided in the DMR template, it nevertheless contains all the information required by DMR, but with some additions to fully comply with the EIA regulatory requirements.

It should be noted that Material Compliance Monitoring Programmes have been developed in support of the Water Use License Application and Waste License Application (see IWWMP for the Surface Water, Groundwater and Aquatic Ecosystems Material Compliance Monitoring Programmes) and the Atmospheric Emissions License Variation Application (see Atmospheric Impact Report for Air Pollution Compliance Monitoring Programme).

Table 7(a) consists of the following Columns:

- Environmental Component
- Reference to Environmental Aspects Affected
- Reference to Potential Impact
- Reference to Management Action
- Method of Monitoring the Implementation
- Frequency of Monitoring Implementation
- Responsible Person
- Time period for Implementation
- Mechanism for Monitoring
- Programme for Reporting on Compliance

Table 7(a): Formal Compliance Monitoring and Performance Assessment Programme

Environmental Component	Environmental Aspects Affected	Potential Impact	Management Action	Method of Monitoring the Implementation	Frequency of Monitoring Implementation	Responsible Person	Time Period for Implementation	Mechanism for Monitoring	Program for Reporting on Compliance
Socio-Cultural Environment	Refer to Column 3 of Table 5.2(a)	Refer to Column 2 of Table 5.2(a)	Refer to Column 4 of Table 5.2(a)	Assess Communication with Communities Assess Compliance with Reporting Time Lines Assess Grievance Register Resolvement	Quarterly	Head: Safety and Sustainable Development	At outset of Applicable Life-Cycle Phase	Internal Audit (Annually), External Audit (Annually)	EMP Performance Assessment Report (Once in two Years)
Heritage Environment	Refer to Column 3 of Table 5.2(a)	Refer to Column 2 of Table 5.2(a)	Refer to Column 4 of Table 5.2(a)	Visual Verification of protection of Heritage Sites	Quarterly	Head: Safety and Sustainable Development	At outset of Applicable Life-Cycle Phase	Internal Audit (Annually), External Audit (Annually)	EMP Performance Assessment Report (Once in two Years)
Socio-Economic Environment	Refer to Column 3 of Table 5.2(a)	Refer to Column 2 of Table 5.2(a)	Refer to Column 4 of Table 5.2(a)	Assess Communication with Communities Assess Compliance with Reporting Time Lines Assess Grievance Register Resolvement	Quarterly	Head: Safety and Sustainable Development	At outset of Applicable Life-Cycle Phase	Internal Audit (Annually), External Audit (Annually)	EMP Performance Assessment Report (Once in two Years)
Blasting and Vibration	Refer to Column 3 of Table 5.2(a)	Refer to Column 2 of Table 5.2(a)	Refer to Column 4 of Table 5.2(a)	Record levels of ground vibration on surface due to underground blasting activity	Continuous	Head: Safety and Sustainable Development	At outset of Applicable Life-Cycle Phase	Internal Audit (Annually), External Audit (Annually)	EMP Performance Assessment Report (Once in two Years)
Traffic Aspects	Refer to Column 3 of Table 5.2(a)	Refer to Column 2 of Table 5.2(a)	Refer to Column 4 of Table 5.2(a)	No Monitoring Required	-	Head: Safety and Sustainable Development	At outset of Applicable Life-Cycle Phase	Internal Audit (Annually), External Audit (Annually)	EMP Performance Assessment Report (Once in two Years)
Topography	Refer to Column 3 of Table 5.2(a)	Refer to Column 2 of Table 5.2(a)	Refer to Column 4 of Table 5.2(a)	Assess changes to Excavations, Stockpiles, Dumps and Infrastructure – Aireal Survey	Annually	Head: Safety and Sustainable Development	At outset of Applicable Life-Cycle Phase	Internal Audit (Annually), External Audit (Annually)	EMP Performance Assessment Report (Once in two Years)
Soils Environment	Refer to Column 3 of Table 5.2(a)	Refer to Column 2 of Table 5.2(a)	Refer to Column 4 of Table 5.2(a)	Visual verification of correct Soil Stockpiling	Quarterly	Head: Safety and Sustainable Development	At outset of Applicable Life-Cycle Phase	Internal Audit (Annually), External Audit (Annually)	EMP Performance Assessment Report (Once in two Years)
Land Capability	Refer to Column 3 of Table 5.2(a)	Refer to Column 2 of Table 5.2(a)	Refer to Column 4 of Table 5.2(a)	No Monitoring Indicated	-	Head: Safety and Sustainable Development	At outset of Applicable Life-Cycle Phase	Internal Audit (Annually), External Audit (Annually)	EMP Performance Assessment Report (Once in two Years)

Environmental Component	Environmental Aspects Affected	Potential Impact	Management Action	Method of Monitoring the Implementation	Frequency of Monitoring Implementation	Responsible Person	Time Period for Implementation	Mechanism for Monitoring	Program for Reporting on Compliance
Land Use	Refer to Column 3 of Table 5.2(a)	Refer to Column 2 of Table 5.2(a)	Refer to Column 4 of Table 5.2(a)	Visual verification of protection of Sensitive Land Uses	Quarterly	Head: Safety and Sustainable Development	At outset of Applicable Life-Cycle Phase	Internal Audit (Annually), External Audit (Annually)	EMP Performance Assessment Report (Once in two Years)
Geology Environment	Refer to Column 3 of Table 5.2(a)	Refer to Column 2 of Table 5.2(a)	Refer to Column 4 of Table 5.2(a)	No Monitoring Required	-	Head: Safety and Sustainable Development	At outset of Applicable Life-Cycle Phase	Internal Audit (Annually), External Audit (Annually)	EMP Performance Assessment Report (Once in two Years)
Groundwater Environment	Refer to Column 3 of Table 5.2(a)	Refer to Column 2 of Table 5.2(a)	Refer to Column 4 of Table 5.2(a)	Quantify ground water abstraction from all boreholes and open pit	Continuous	Head: Safety and Sustainable Development	At outset of Applicable Life-Cycle Phase	Internal Audit (Annually), External Audit (Annually)	EMP Performance Assessment Report (Once in two Years)
				Quantify ground water levels at abstraction points, sources, along pathways and at receptors	Monthly				
				Quantify ground water quality at abstraction points, sources, along pathway and at receptors	Six Monthly				
Surface Water Environment	Refer to Column 3 of Table 5.2(a)	Refer to Column 2 of Table 5.2(a)	Refer to Column 4 of Table 5.2(a)	Quantify surface water abstraction from all sources	Monthly	Head: Safety and Sustainable Development	At outset of Applicable Life-Cycle Phase	Internal Audit (Annually), External Audit (Annually)	EMP Performance Assessment Report (Once in two Years)
				Quantify dam water levels to assess compliance with free board	Monthly				
				Quantify process water flow volumes of process water to support water balance	Continuous				
				Quantify discharge volumes to receiving environment	Continuous				
				Quantify surface water quality at abstraction points, dams, processes	Monthly				
				Quantify surface water quality at discharges into environment	Continuous				
				Quantify surface water quality in receiving environment	Monthly				

Environmental Component	Environmental Aspects Affected	Potential Impact	Management Action	Method of Monitoring the Implementation	Frequency of Monitoring Implementation	Responsible Person	Time Period for Implementation	Mechanism for Monitoring	Program for Reporting on Compliance
Plant Life Environment	Refer to Column 3 of Table 5.2(a)	Refer to Column 2 of Table 5.2(a)	Refer to Column 4 of Table 5.2(a)	Visual Inspection to verify Alien Species Control	Monthly	Head: Safety and Sustainable Development	At outset of Applicable Life-Cycle Phase	Internal Audit (Annually), External Audit (Annually)	EMP Performance Assessment Report (Once in two Years)
				General Vegetation Survey	Annually				
Animal Life Environment	Refer to Column 3 of Table 5.2(a)	Refer to Column 2 of Table 5.2(a)	Refer to Column 4 of Table 5.2(a)	Visual Inspection to verify Faunal Habitat Protection	Monthly	Head: Safety and Sustainable Development	At outset of Applicable Life-Cycle Phase	Internal Audit (Annually), External Audit (Annually)	EMP Performance Assessment Report (Once in two Years)
				General Faunal Habitat Survey	Annually				
Wetland Environment	Refer to Column 3 of Table 5.2(a)	Refer to Column 2 of Table 5.2(a)	Refer to Column 4 of Table 5.2(a)	Assess Wetland PES, Habitat & Eco-Services Provision	Annually	Head: Safety and Sustainable Development	At outset of Applicable Life-Cycle Phase	Internal Audit (Annually), External Audit (Annually)	EMP Performance Assessment Report (Once in two Years)
Aquatic Ecosystems Environment	Refer to Column 3 of Table 5.2(a)	Refer to Column 2 of Table 5.2(a)	Refer to Column 4 of Table 5.2(a)	Visual Inspection to verify Aquatic Habitat Protection	Quarterly	Head: Safety and Sustainable Development	At outset of Applicable Life-Cycle Phase	Internal Audit (Annually), External Audit (Annually)	EMP Performance Assessment Report (Once in two Years)
				Bio-monitoring (Water Quality, Toxicity, SASS5, IHAS, ASPT & FAII)	Six-Monthly				
Air Quality Environment	Refer to Column 3 of Table 5.2(a)	Refer to Column 2 of Table 5.2(a)	Refer to Column 4 of Table 5.2(a)	Quantify Gaseous Emissions from Point Sources	Quarterly	Head: Safety and Sustainable Development	At outset of Applicable Life-Cycle Phase	Internal Audit (Annually), External Audit (Annually)	EMP Performance Assessment Report (Once in two Years)
				Quantify Particulate Matter Emissions from Point Sources	Quarterly				
				Quantify Metal Emissions from Point Sources	Quarterly				
				Quantify Dust Fallout Rates at Ambient Monitoring Localities	Monthly				
Noise Environment	Refer to Column 3 of Table 5.2(a)	Refer to Column 2 of Table 5.2(a)	Refer to Column 4 of Table 5.2(a)	Isolate and Quantify Sources of Noise Emissions	Quarterly	Head: Safety and Sustainable Development	At outset of Applicable Life-Cycle Phase	Internal Audit (Annually), External Audit (Annually)	EMP Performance Assessment Report (Once in two Years)
				Quantify Noise Profile at Receptors	Quarterly				
Visual Aspects	Refer to Column 3 of Table 5.2(a)	Refer to Column 2 of Table 5.2(a)	Refer to Column 4 of Table 5.2(a)	Passive Monitoring through keeping of Grievance Register to capture complaints	Quarterly	Head: Safety and Sustainable Development	At outset of Applicable Life-Cycle Phase	Internal Audit (Annually), External Audit (Annually)	EMP Performance Assessment Report (Once in two Years)

8. ENVIRONMENTAL AWARENESS PROGRAMME

HERNIC Ferrochrome recognises the role of the Environmental Awareness Plan in preventing and minimising its impacts from mining and smelting operations on the environment. Therefore the objectives of the Environmental Awareness Plan are:

- To educate employees regarding their role in conserving the environment and the importance of conserving natural resources,
- To identify environmental training needs for employees and contractors at all levels,
- To ensure that employees whose work could cause significant environmental impact as identified by the mine are competent to perform those tasks to which they are assigned,
- To enable employees to identify environmental impacts or non-conformances of their work activities on the environment,
- To familiarise employees with emergency preparedness and response requirements.
- To be aware of the potential consequences of deviation from specified operating procedures, and
- To conduct their work and manage mining activities in an environmentally responsible manner.

This Chapter was compiled to give fulfilment with inter alia the requirements of the DMR Template for the compilation of an EIAR and EMPr, and as such contain the following information:

- Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work.
- Manner in which risks will be dealt with in order to avoid pollution or degradation of the environment.

8.1. ENVIRONMENTAL RISK COMMUNICATION TO EMPLOYEES

Environmental Risks and Issues associated with all actions at HERNIC Ferrochrome are addressed in the SHEQ Toolbox Talk Forum meetings which are held on a monthly basis, where visual media is used (videos and posters) to inform employees of the environmental risks associated with their day to day duties.

In addition, newsletters and e-mails are also distributed on a continual basis to keep employees and contractors informed.

The SHEQ Toolbox Talk Forum Programme for 2017 is attached as **APPENDIX 8(A)** to this EMPr.

8.2. ENVIRONMENTAL RISK AVOIDANCE PROTOCOL

Environmental Risk Management will be conducted through implementation of the Environmental Management Measure Tables contained in Chapter 5 of this report. These Tables represent a Risk Based Environmental Management Programme and contains all the elements required to effectively deal with all environmental risks in order to avoid pollution or degradation of the environment

An Environmental Awareness Presentation is given by the SHEQ Department at HERNIC Ferrochrome on a monthly basis.

Generally, the environment in which the Mine and Smelter operates is discussed during these sessions, specifically with relation to aspects related to waste management, dust management, water conservation, air pollution, reporting of environmental incidents, general caring for the environment, water pollution, noise pollution, alien plants, erosion control and environmental awareness.

The SHEQ Toolbox Talk Forum Programme for 2017 is attached as **APPENDIX 8(A)** to this EMPr.

9. INFORMATION REQUIRED BY COMPETENT AUTHORITY

9.1. MONITORING RESULTS

Monitoring results generated through the Material Compliance Monitoring Programmes (Surface Water, Groundwater, Aquatic Ecosystems and Air Quality) will be provided to the relevant competent authorities according to the schedules as specified in the different licenses, e.g. the Water Use License, The Waste License and the Atmospheric Emissions License.

9.2. PERFORMANCE ASSESSMENTS

An external EMP Performance Assessment Report will be compiled by an external consultant and will be provided to the DMR once every two years.

9.3. INTERNAL AND EXTERNAL AUDITS

Internal and External Water Use License and Waste License Audits will be conducted once a year and the Audit Reports will be provided to the relevant competent authority within 30 days of completion of the Audit Report, unless the relevant license specify otherwise.

9.4. ANNUAL REVIEW OF CLOSURE PLAN AND FINANCIAL PROVISIONING

An annual review of the Closure Plan and its associated Financial Provisioning will be conducted and provided to the DMR on an annual basis.

10. UNDERTAKING BY EAP

10.1. CORRECTNESS OF INFORMATION IN REPORTS

I, Jasper Lodewyk Muller, duly appointed by HERNIC Ferrochrome (Pty) Ltd in terms of the provisions of the National Environmental Management Act, Act No.107 of 1998, and the EIA Regulations, GNR 982 of 4 December 2014, as the EAP managing this application, hereby confirm that as far as my knowledge goes, the information provided in the EIAR, the EMP, as well as the supporting Specialist Reports are correct.

10.2. INCLUSION OF COMMENTS AND INPUTS FROM I&AP'S

I, Jasper Lodewyk Muller, duly appointed by HERNIC Ferrochrome (Pty) Ltd in terms of the provisions of the National Environmental Management Act, Act No.107 of 1998, and the EIA Regulations, GNR 982 of 4 December 2014, as the EAP managing this application, hereby confirm that I&AP's were provided with all the relevant information for review and consideration and that all inputs and comments received from them, were duly considered and where practicable, included in the EIAR and EMP.

10.3. INCLUSION OF INPUTS AND RECOMMENDATIONS FROM SPECIALIST REPORTS

I, Jasper Lodewyk Muller, duly appointed by HERNIC Ferrochrome (Pty) Ltd in terms of the provisions of the National Environmental Management Act, Act No.107 of 1998, and the EIA Regulations, GNR 982 of 4 December 2014, as the EAP managing this application, hereby confirm that all inputs and recommendations from Specialist Reports, including but not restricted to baseline descriptions, impact significance ratings, proposed impact management measures, as well as monitoring proposals, were duly, where practicable, included in the EIAR and EMP.

10.4. ACCEPTABILITY OF THE PROJECT IN TERMS OF EIA AND EMP

I, Jasper Lodewyk Muller, duly appointed by HERNIC Ferrochrome (Pty) Ltd in terms of the provisions of the National Environmental Management Act, Act No.107 of 1998, and the EIA Regulations, GNR 982 of 4 December 2014, as the EAP managing this application, hereby state that in terms of the findings of the EIAR and the recommendations made in the EMP, and accepting that the EMP will be implemented as documented, the project is acceptable from an Environmental Impact perspective.

Respectfully submitted

_____

Jasper L Muller (Pr.Sci.Nat.)
ID: 571116 5104 081

on behalf of

JMA Consulting (Pty) Ltd

END OF EMP