7.5 DESCRIPTION OF THE CURRENT LAND USES

A detailed description of the current land uses at HERNIC, as well as in the surrounding area is given in section 7.4.4 of this report and which will not be duplicated here. As far as the proposed new activities are concerned, it is only the following ones which will be developed or expanded on/onto new footprints:

- Development and Expansion of the Site Storm Water and Process Water Management Facilities:
  - Development and Expansion of the Process Water and Storm Water Canal System including Silt Traps
  - Development of the Morula PCD
  - Development of Storm Water PCD No.2
  - Development of Storm Water PCD No.3
  - Development of Storm Water PCD No.4
- Development of a New Salvage Yard
- Expansion of the HERNIC TSF and RWD

For the purposes of this discussion, it is important to note that all the proposed activities for which new footprints are required will be developed within the existing HERNIC operations perimeter. By virtue of the fact that HERNIC holds mining rights on all the relevant properties, it implies an **overall land use status of mining**.

With reference to the detailed Land Use mapping conducted for this assessment though, the proposed sites for the new footprints are located on sub-categories for land use which can be broadly classified as either transformed or untransformed - described in section 7.4.4 – see Figure 7.4.4(a).

It is quite obvious from the information shown in Table 7.5(a) that the majority of the new developments will be done on transformed land. As far as the untransformed land is concerned, it invariably represents isolated patches of Marikana Thornveld, which is neither endangered nor critically endangered.

With reference to this, it is only the Development of Storm Water PCD No.2 and the Expansion of the HERNIC TSF that would, from a vegetation clearance perspective, actually trigger an EIA Listed Activity in terms of GNR 983, Listing Notice 1 of the EIA Regulations.

However, it should further be noted that as far as the Storm Water Management Measures are concerned, their localities are all dictated by topographical considerations resulting in no alternatives for locality.

The proposed expansion of the TSF can also, due to spatial constraints, only be done in a southerly direction and therefore no alternative footprint is available.

Table 7.5(a): Subcategory Land Use for new Footprints (Overall Land Use is Mining)

Activity with new Footprint	Size of Development Footprint (m^2)	Land Use Sub-Category	
		Transformed	Untransformed
Dirty Water Canal SWD1	1 580	X	
Dirty Water Canal SWD2	1 750	X	
Dirty Water Canal SWD3	3 900	X	
Dirty Water Canal SWD4	870	X	
Dirty Water Canal SWD5	2 200	X	
Dirty Water Canal SWD6	700	X	
Dirty Water Canal SWD7	2 600	X	
Dirty Water Canal SWD8	900	X	
Dirty Water Canal SWD9	1 800	X	
Dirty Water Canal SWD10	1 400		X
Dirty Water Canal SWD11	80		X
Dirty Water Canal SWD12	500	X	
Dirty Water Canal SWD13	1 400	X	
Dirty Water Canal SWD14	400	X	
Clean Water Canal SWC1	1 800	X	
Clean Water Canal SWC2	1 600	X	
Clean Water Canal SWC3	2 100	X	
Clean Water Canal SWC4	650	X	
Earth Berm EB1	2 200	X	
Earth Berm EB2	2 800	X	
Earth Berm EB3	1 300	X	
Earth Berm EB4	650	X	
Isolation Berm IB1	550	X	
Isolation Berm IB2	700	X	
Isolation Berm IB3	960		X
Isolation Berm IB4	900	X	
Isolation Berm IB5	2 100	X	
Silt Trap Junction SWD6/SWD7	1 500	X	
Morula PCD	6 000		X
Storm Water PCD No.2	22 000	X	X
Storm Water PCD No.3	6 000	X	
Storm Water PCD No.4	500	X	
New Salvage Yard	6 600	X	
Expansion of HERNIC TSF RWD	8 500	X	
Expansion of the HERNIC TSF	96 000		X

7.6 ENVIRONMENTAL FEATURES & INFRASTRUCTURE AT NEW SITES/ACTIVITIES

The assessment made in this section was done based on the map which shows the proposed new infrastructure superimposed on the relevant environmental features as mapped by the different specialists and which is reported on in section 7.4 of this report.

The proposed development infrastructure and environmental features map is attached as Figure 7.7(a), the details of which is discussed in section 7.7.

Table 7.6(a) below, lists the proposed infrastructure with new footprints and also classifies the footprints as being located on either disturbed or undisturbed ground from a surface disturbance perspective (topography, soil, land capability, land use, ecology and surface water).

Table 7.6(a): Environmental Features at New Sites

Activity with new Footprint		Relevant Environmental Feature
Disturbed	Undisturbed	
Dirty Water Canal SWD1		None
Dirty Water Canal SWD2		None
Dirty Water Canal SWD3		Geological Dyke and Geological Fault
Dirty Water Canal SWD4		Geological Fault
Dirty Water Canal SWD5		Geological Fault
Dirty Water Canal SWD6		Geological Fault
Dirty Water Canal SWD7		Geological Fault
Dirty Water Canal SWD8		None
Dirty Water Canal SWD9		Geological Fault
Dirty Water Canal SWD10		Marikana Thornveld
Dirty Water Canal SWD11		Marikana Thornveld
Dirty Water Canal SWD12		None
Dirty Water Canal SWD13		Geological Fault
Dirty Water Canal SWD14		Geological Fault
Clean Water Canal SWC1		Geological Fault
Clean Water Canal SWC2		None
Clean Water Canal SWC3		None
Clean Water Canal SWC4		None
Earth Berm EB1		Geological Fault
Earth Berm EB2		Geological Fault
Earth Berm EB3		Marikana Thornveld
Earth Berm EB4		None
Isolation Berm IB1		None
Isolation Berm IB2		None
Isolation Berm IB3		Marikana Thornveld
Isolation Berm IB4		None
Isolation Berm IB5		None
Silt Trap Junction SWD6/SWD7		Geological Fault
Morula PCD		Marikana Thornveld
Storm Water PCD No.2		Marikana Thornveld and Geological Dyke
Storm Water PCD No.3		None
Storm Water PCD No.4		None
New Salvage Yard		None
Expansion of HERNIC TSF RWD		None
Expansion of the HERNIC TSF		Marikana Thornveld and Underground Mining

7.7 ENVIRONMENTAL AND CURRENT LAND USE MAP

All the information generated by the specialists during their detailed base line studies for HERNIC, was collated to result in polygons that could be plotted onto a map which would show the geographical distribution of all the relevant environmental features for the HERNIC site. The existing infrastructure, the current land use, as well as the proposed new activities/developments, were then also superimposed and plotted onto this map. The resulting Environmental Features and Infrastructure Map is depicted in Figure 7.7(a). A large Scale version of this map is attached as **APPENDIX 7(R)** to this report.

The following Environmental Components are represented on this map:

- Archaeological and Heritage Environment
- Palaeontological Environment
- Land Use
- Soils and Land Capability
- Geology
- Groundwater Environment
- Surface Water Environment
- Plant Life Environment
- Animal Life Environment
- Wetland Environment
- Aquatic Ecosystems Environment

The following existing Infrastructure is also shown:

- Existing HERNIC Smelting Activities
- Morula Opencast and Underground Mining Activities

The following proposed Decommissioning, Development and Expansion Activities are shown:

- Decommissioning of two Historic Slimes Dams
- Decommissioning of Phase 1 of the H:H Slimes Dam
- Development and Expansion of the Storm Water Canal System including Silt Traps
- Development of the Morula PCD
- Expansion of Storm Water PCD No.1
- Development of Storm Water PCD No.2
- Development of Storm Water PCD No.3
- Development of Storm Water PCD No.4 (within perimeter of new Salvage Yard)
- Expansion of the OB Plant Process Water Dam
- Expansion of the Plant Process Water Dam
- Expansion of the CRP Process Water Dam
- Decommissioning of the Morula Dewatering Dam
- Development of a New Salvage Yard
- Expansion of the HERNIC Tailings Storage Facility (TSF) and RWD
- Re-Use of Slag Sand at the Fine Slag Processing Plant
- Re-Use of Coarse Slag at the Chrome Recovery Plant
- Re-Use of Mine Waste Rock at the Mine Waste Rock Stockpile

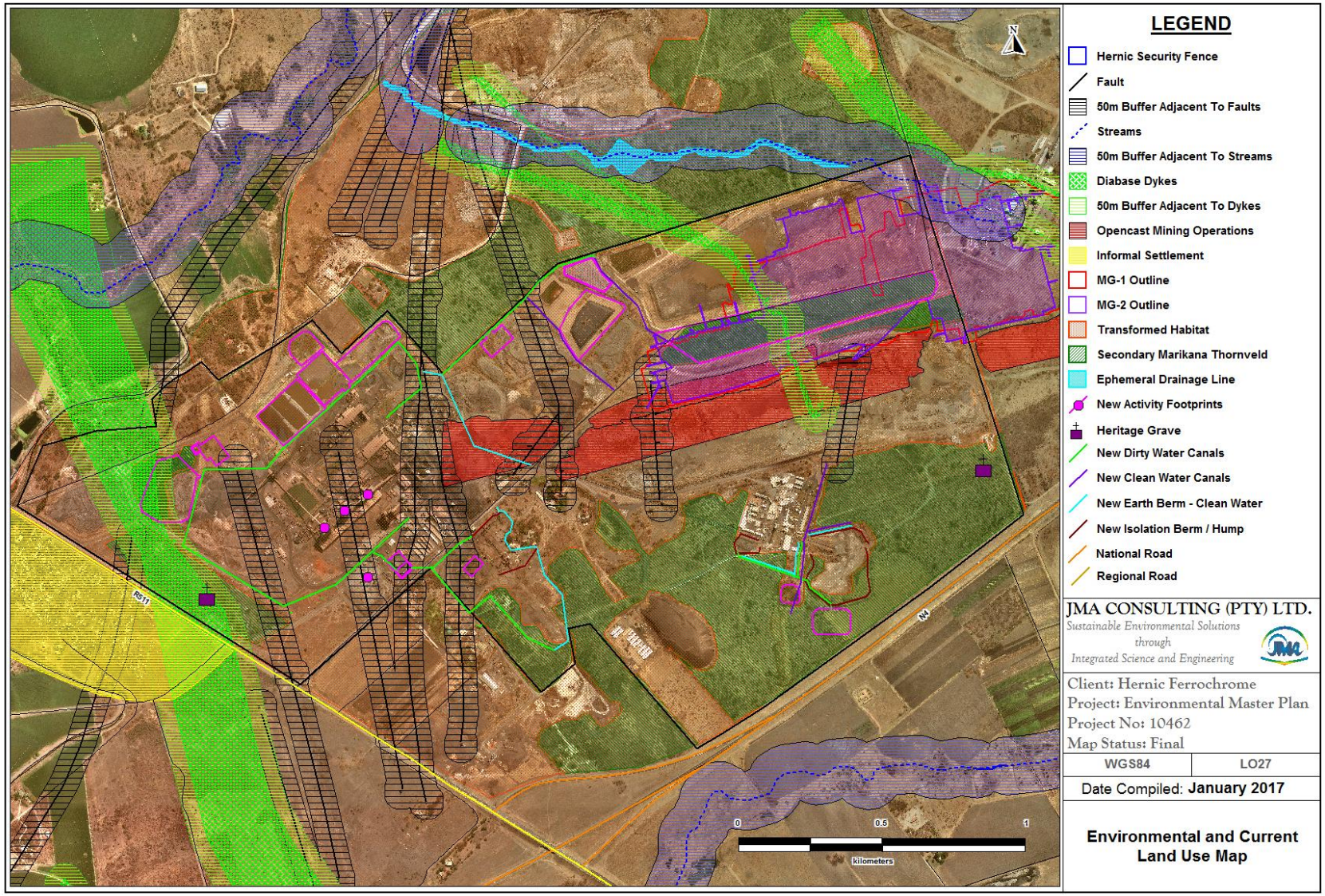

Figure 7.7(a): Environmental Features, Current Land Use and Infrastructure Map

7.8 IMPACTS AND RISKS ASSOCIATED WITH NEW ACTIVITIES

This section is not about the main impact assessment for the project, but relates specifically to the impact assessment conducted during the selection of the preferred sites for the new developments and expansions.

The initial proposed site plan did take environmental features and conditions into consideration in as far as critical environmental features could be avoided. The site layout reflected in Figure 7.7(a) therefore already represents a considered layout in which certain environmental realities have been considered.

The potential impacts listed in Table 7.8(a) therefore relate specifically to impacts, that if not acceptable after mitigation, would require an alteration in the site layout as proposed in Figure 7.7(a). A favourable outcome of the impact assessment would therefore confirm the proposed site layout as acceptable from an environmental perspective.

Please note that only activities requiring new site footprints are listed in the Potential Impact Table.

It should also be noted that the impact assessment was conducted from the premise that all the design features aimed at environmental protection would be implemented during development and expansion. These include the minimization of developmental footprints as well as the appropriate lining of all canals and dams which would convey/contained "dirty water". This includes all dirty water canals, silt traps and PCD's.

Furthermore the expansion of the OB Plant TSF footprint and its subsequent operation, would be done in strict compliance with recommendations from a stability perspective with reference to the presence of the underground mine workings.

With reference to the outcome of the impact assessment as reflected in Table 7.8(a), the following conclusions are now relevant:

- Aspects that could influence site selection varied between **Low** and **Medium** for consequence, but due to the unlikely nature of the **Medium** impacts to manifest, the overall impact significance ratings are all recorded as **Low**.
- This overall significance rating of **Low** confirms that the sites shown on the proposed project layout drawings are all acceptable from an environmental perspective.

Table 7.8(a): Potential Impacts Identified and Assessed (Design Mitigation taken into Consideration)

Activity with new Footprint	Relevant Environmental Feature that could influence Site Selection	Potential Impact	Magnitude	Scale	Duration	Consequence	Probability	Significance
Dirty Water Canals	Marikana Thornveld	Clearance of vegetation could impact on plant life habitat and diversity.	Minor	Local	Medium Term	**Low**	Possible	**Low**
	Geological Faults & Dykes	In the event that the canals should leak and cause groundwater pollution, the faults and dykes could act as preferential groundwater flow zones for groundwater pollution migration.	Moderate	Local	Medium Term	**Medium**	Unlikely	**Low**
Earth Berms	Marikana Thornveld	Clearance of vegetation could impact on plant life habitat and diversity.	Minor	Local	Medium Term	**Low**	Possible	**Low**
Isolation berms	Marikana Thornveld	Clearance of vegetation could impact on plant life habitat and diversity.	Minor	Local	Medium Term	**Low**	Possible	**Low**

Activity with new Footprint	Relevant Environmental Feature that could influence Site Selection	Potential Impact	Magnitude	Scale	Duration	Consequence	Probability	Significance
Silt Trap Junction SWD6/SWD7	Geological Fault	In the event that the silt trap should leak and cause groundwater pollution, the faults and dykes could act as preferential groundwater flow zones for groundwater pollution migration.	Moderate	Local	Medium Term	**Medium**	Unlikely	**Low**
Morula PCD	Marikana Thornveld	Clearance of vegetation could impact on plant life habitat and diversity.	Minor	Local	Medium Term	**Low**	Possible	**Low**
Storm Water PCD No.2	Marikana Thornveld	Clearance of vegetation could impact on plant life habitat and diversity.	Minor	Local	Medium Term	**Low**	Possible	**Low**
	Geological Dyke	In the event that the PCD should leak and cause groundwater pollution, the faults and dykes could act as preferential groundwater flow zones for groundwater pollution migration.	Moderate	Local	Medium Term	**Medium**	Unlikely	**Low**

Activity with new Footprint	Relevant Environmental Feature that could influence Site Selection	Potential Impact	Magnitude	Scale	Duration	Consequence	Probability	Significance
Storm Water PCD No.3	None	-	-	-	-	-	-	-
Storm Water PCD No.4	None	-	-	-	-	-	-	-
New Salvage Yard	None	-	-	-	-	-	-	-
HERNIC TSF RWD	None	-	-	-	-	-	-	-
Expansion of the HERNIC TSF	Marikana Thornveld	Clearance of vegetation could impact on plant life habitat and diversity.	Minor	Local	Medium Term	**Low**	Possible	**Low**
	Underground Mining	Should insufficient safety factors be used for deposition, over deposition could cause subsidence.	Major	Local	Medium Term	**Medium**	Unlikely	**Low**

7.9 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

The impact significance assessment methodology utilized by JMA Consulting to decide the extent to which the initial; site layout needs revision, is the same as the methodology to be used during the EIA phase for the proper EIA. The methodology is used widely by EAP's in South Africa and represents best practice. The basic elements used in the Evaluation of Impact Significance are described in the Table 7.9(a) and the characteristics used to describe the consequence of an impact are outlined in Table 7.9(b).

Table 7.9(a): Key elements in the evaluation of Impact Significance

Element	Description	Questions applied to the test of Significance
Consequence	An impact or effect can be described as the change in an environmental parameter, which results from a particular project activity or intervention. Here the term consequence refers to: • The sensitivity of the receiving environment, including its capacity to accommodate the kinds of changes the project may bring about • The type of change and the key characteristics of the change (these are magnitude, extent and duration) • The importance of the change (the level of public concern/ value attached to environment by the stakeholders and the change effected by the project) The following should be considered in the determination of impact consequence: • Standards and Guidelines (e.g. pollution and emissions thresholds) • Scientific evidence and professional judgement • Points of reference from comparable cases • Levels of stakeholder concern	Will there be a change in the biophysical environment? Is the change of consequence (of any importance)?
Probability	Likelihood/ Chances of an impact occurring	Is the change likely to occur?
Effectiveness of the Management Measures	Significance of the impact needs to be determined both without management measures and with management measures. The significance of the unmanaged impact needs to be determined so there is an appreciation of what could occur in the absence of management measures and of the effectiveness of the proposed management measures.	Will the management measures reduce impact to an acceptable level?
Uncertainty/ Confidence	Uncertainty in impact prediction and the effectiveness of the proposed management measures. Sources of uncertainty in impact prediction include: • Scientific uncertainty – limited understanding of an ecosystem or affected stakeholder and the processes that govern change • Data uncertainty – restrictions introduced by incomplete, contradictory or incomparable information, or by insufficient measurement techniques • Policy uncertainty – unclear or disputed objectives, standards or guidelines	What is the degree of confidence in the significance ascribed to the impact?

Table 7.9(b): Characteristics to be used in Impact Description

Characteristics used to describe Consequence	Sub-Components	Terms used to describe the Characteristics
Type		Biophysical, social or economic
Nature		Direct or Indirect or Cumulative
Status		Positive (a Benefit), Negative (a Cost) or Neutral
Phase of Project		During the Pre-Construction (if applicable), Construction, Operational, Decommissioning/ Post Closure
Timing		Immediate, Delayed
Magnitude	**Sensitivity of the Receiving environment/ receptors**	High, Medium or Low Sensitivity Low capacity to accommodate the change (impact)/ tolerant of the proposed change
	Severity/ Intensity (degree of change measured against thresholds and/ or professional judgment)	Gravity/ seriousness of the impact Intensity / Influence/ Power/ Strength
	Level of Stakeholder concern	High, Medium or Low levels of concern All or some stakeholders are concerned about the change
Spatial Extent The area affected by the impact.		Area/ Volume covered , Distribution, Population Site/ Local, Regional, National or International
Duration (and Reversibility) Length of time over which an impact occurs and potential for recovery of the endpoint from the impact		Short term. Long term Intermittent, Continuous Reversible, Irreversibility Temporary, Permanent
Confidence		High, Medium, Low

The Impact Significance Rating system is presented in Table 7.9(c) and involves four parts:

- Part A: Define impact consequence using the three primary impact characteristics of magnitude, spatial scale/ population and duration;
- Part B: Use the matrix to determine a rating for impact consequence based on the definition identified in Part A;
- Part C: Use the matrix to determine the impact significance rating, which is a function of the impact consequence rating (from Part B) and the probability of occurrence;
- Part D: Define the Confidence level.

Table 7.9(c): Method for rating the Significance of Impacts

PART A: DEFINING CONSEQUENCES OF MAGNITUDE, DURATION AND SPATIAL SCALE (Use these definitions to define the consequence in Part B) + *denotes a positive impact*		
Impact Characteristics	**Definition**	**Criteria**
MAGNITUDE	Major	Substantial deterioration or harm to receptors; receiving environment has an inherent value to stakeholders; receptors of impact are of conservation importance; or identified threshold often exceeded
	Moderate	Moderate/ measurable deterioration of harm to receptors; receiving environment moderately sensitive; or identified threshold occasionally exceeded
	Minor	Minor deterioration (nuisance or minor deterioration) or harm to receptors; change to receiving environment not measurable; or identified threshold never exceeded
	Minor +	Minor improvement; change not measurable; or threshold never exceeded
	Moderate +	Moderate improvement; within or better than the threshold; or no observed reaction
	Major +	Substantial improvement; within or better than the threshold; or favourable publicity
SPATIAL SCALE	Site or Local	Site specific or confined to the immediate project area
	Regional	May be defined in various ways e.g. cadastral, catchment, topographic
	National/ International	Nationally or beyond
DURATION	Short term	Quickly reversible. Less than two years
	Medium term	Reversible over time. Life of the project
	Long term	Permanent. Beyond closure

PART B: DETERMINING CONSEQUENCE RATING (Rate consequence based on definition of magnitude, spatial extent and duration)					
			SPATIAL SCALE		
			Site or Local	**Regional**	**National/ International**
MAGNITUDE					
Minor	**DURATION**	**Long term**	**Medium**	**Medium**	**High**
		Medium term	**Low**	**Low**	**Medium**
		Short term	**Low**	**Low**	**Medium**
Moderate	**DURATION**	**Long term**	**Medium**	**High**	**High**
		Medium term	**Medium**	**Medium**	**High**
		Short term	**Low**	**Medium**	**Medium**
Major	**DURATION**	**Long term**	**High**	**High**	**High**
		Medium term	**Medium**	**Medium**	**High**
		Short term	**Medium**	**Medium**	**High**

PART C: DETERMINING SIGNIFICANCE RATING (Rate significance based on consequence and probability)				
		CONSEQUENCE		
		Low	**Medium**	**High**
PROBABILITY (of exposure to impacts)	**Definite**	**Medium**	**Medium**	**High**
	Possible	**Low**	**Medium**	**High**
	Unlikely	**Low**	**Low**	**Medium**

PART D: CONFIDENCE LEVEL		
High	Medium	Low

7.10 POSITIVE AND NEGATIVE IMPACTS

The initial site selections and layouts for the proposed expansions at HERNIC Ferrochrome were done right from the outset with environmental features taken into consideration, subject of course to the availability of footprints areas, as well as subject to governing aspects related to *inter alia* topographic considerations and existing infrastructure layouts.

In the event where negative impacts could occur, the impact assessment conducted in section 7.8, confirmed that positive outcomes could be achieved through innovative design and practicable interventions. In this regard the potential surface water and groundwater impacts which could occur from storm water and process water containment facilities are relevant. Surface water and groundwater pollution was also documented as an I&AP concern during the public participation programme.

Another potentially negative impact raised by I&AP's relates to Air Pollution.

It is important to realize that all the new activities proposed in this project, are aimed at improving environmental management and control at HERNIC, especially also focussing on Water and Air Pollution. The new measures proposed for Process Water, Storm Water and Air Emissions Management will ensure ongoing compliance by HERNIC with the legal water quality and air emissions standards.

7.11 POSSIBLE MITIGATION MEASURES

The mitigation measures contemplated for the potential impacts associated with the proposed new activities are included in the designs of the facilities and can be summarized as:

- The footprint sizes of all the facilities (canals, silt traps and dams) are minimized through detailed design according to site specific surface water run-off characteristics and precipitation event return intervals.
- All facilities conveying or containing "dirty water" are designed with appropriate liner systems to prevent seepage of contaminated water into the sub-surface.
- Furthermore the capacities of these facilities are designed to prevent spillages during storm rainfall events as specified by the regulator.
- The proposed new air quality management systems will be designed to ensure compliance with legal air emission standards.

7.12 MOTIVATION FOR NO ALTERNATIVE SITES

A comprehensive Alternatives Consideration Exercise was conducted on all the proposed activities associated with this application. Specifically as far as Site Alternatives are concerned the following is relevant:

- All activities which represent decommissioning will, due to the fact that they already exist at a specific locality, not have any site alternatives.
- Expansion activities will occur at the existing facilities to be expanded.
- The sites selected for the storm water management related activities, are dictated by topographical and storm water run-off realities at HERNIC.
- Activities associated with re-use of materials are located at the sites where the materials to be re-used is currently located.

The environmental acceptability of all the sites located at relevant environmental features, were confirmed during an environmental impact assessment.

7.13 MOTIVATION FOR THE PREFERRED FINAL SITE LAYOUTS

The proposed sites for the proposed decommissioning, development, expansion and re-use activities at HERNIC are shown on the map depicted as Figure 7.13(a).

The Table below summarizes the Motivations for the Preferred Sites for each of the proposed activities.

Table 7.13(a): Motivations for the Preferred Sites

PROPOSED NEW ACTIVITY	MOTIVATION FOR THE SELECTED SITE
Decommissioning of two Historic Slimes Dams	These are existing facilities that need to be de-commissioned and the existing footprints must be rehabilitated.
Decommissioning of Phase 1 of the H:H Slimes Dam	This is an authorized existing facility and it needs to be decommissioned and closed in-situ as per the original intent and approval.
Development and Expansion of the Process Water and Storm Water Canal System including Silt Traps	The localities for these facilities are governed by the site topography and storm water run-off characteristics as well as the requirements of NWA Regulation GN 704.
Development of the Morula PCD	The locality for this facility is governed by the site topography and storm water run-off characteristics as well as the requirements of NWA Regulation GN 704.
Expansion of Storm Water PCD No.1	This is an existing facility that will be expanded (upgraded).
Development of Storm Water PCD No.2	The locality for this facility is governed by the site topography and storm water run-off characteristics as well as the requirements of NWA Regulation GN 704.
Development of Storm Water PCD No.3	The locality for this facility is governed by the site topography and storm water run-off characteristics as well as the requirements of NWA Regulation GN 704.
Development of Storm Water PCD No.4	The locality for this facility is governed by the site topography and storm water run-off characteristics as well as the requirements of NWA Regulation GN 704.
Expansion of the OB Plant Process Water Dam	This is an existing facility that will be expanded (upgraded).
Expansion of the Plant Process Water Dam	This is an existing facility that will be expanded (upgraded).
Expansion of the CRP Process Water Dam	This is an existing facility that will be expanded (upgraded).
Decommissioning of the Morula Dewatering Dam	This is an authorized existing facility and it needs to be decommissioned and closed in-situ as per the original intent and approval.
Development of a New Salvage Yard	The site selection process for the New Salvage Yard was informed primarily by available land space as well as an optimized location in terms of logistical and operational aspects. The site selected was scrutinized for environmental acceptability by super-imposing the proposed development layout on the environmental features mapped during the baseline studies. The site was found to be acceptable from an environmental perspective.
Expansion of the Tap Hole Fume Extraction System	This is an existing facility that will be expanded (upgraded).
Expansion of the Finished Product Plant Dust Abatement System	This is an existing facility that will be expanded (upgraded).
Expansion of the HERNIC Tailings Storage Facility (TSF) and RWD	This is an existing facility that will be expanded.
Re-Use of Slag Sand at the Fine Slag Processing Plant	The re-use activities are located at the site where the material is currently stockpiled.
Re-Use of Coarse Slag at the Chrome Recovery Plant	The re-use activities are located at the site where the material is currently stockpiled.
Re-Use of Mine Waste Rock at the Mine Waste Rock Stockpile	The re-use activities are located at the site where the material is currently stockpiled.

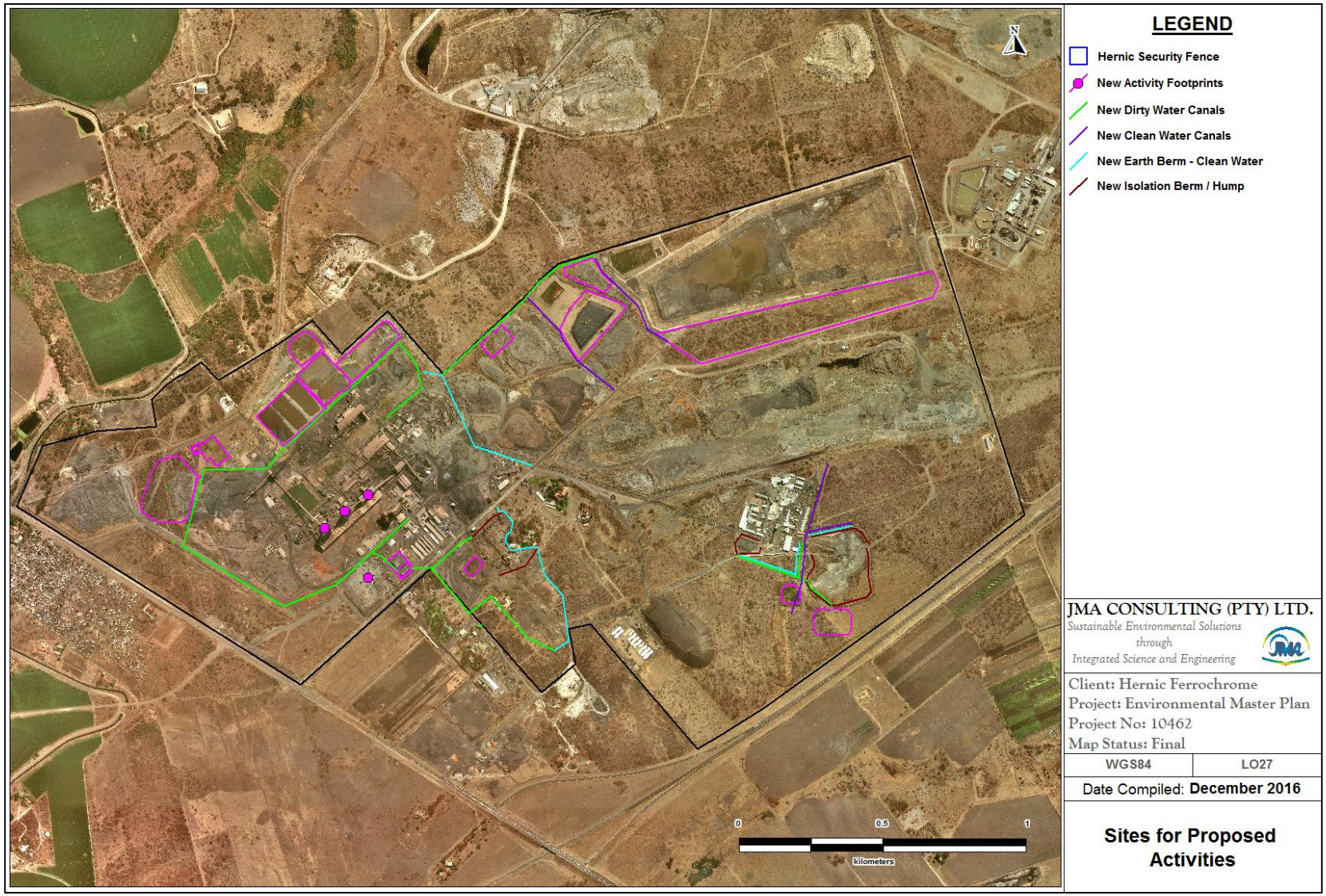

Figure 7.13(a): Preferred Alternative Sites for the Proposed Activities at HERNIC

8. IMPACT AND RISK ASSESSMENT PROCESS

8.1 ENVIRONMENTAL IMPACT AND RISKS IDENTIFIED

Generally, the Impact Assessment method comprises of four parts:

- Activity Identification
- Aspect Identification
- Impact and Risk Definition
- Impact and Risk Evaluation

Firstly, the Activities deemed to have a potential environmental risk (as applicable to all relevant environmental components) was identified, categorised and described in detail in Chapter 4 of this report. This step was administered by the EAP of the project and confirmed with each Specialist contributing to the project.

Activities were identified as defined by the National Environmental Management Act 107 of 1998, where activities means policies, programmes, processes, plans and projects.

This enabled the identification of Aspects associated with an Activity. An Environmental Aspect as defined by the EAP is the mechanisms by which the project activities impact on receptors (e.g. people, economy, infrastructure, institutions and natural environment).

Aspects were identified for all the environmental components considered and for each life cycle phase of an Activity. The EAP provided guidance with regards to the Aspects associated with an Activity, but each specialist considered and finalised the Aspects in terms of the specific environmental component to be evaluated.

Thirdly, an Environmental Impact and Risk was defined for each Aspect related to an Activity. This was done for all the activities on the HERNIC site, current activities as well as proposed new activities. The Nature of the Environmental Impact or Risk was further categorised as either being a direct, indirect or cumulative impact.

Lastly the Impact and Risk was evaluated and assessed with reference to the Impact Assessment Methodology summarised below.

Three impact characteristics namely:

1) Magnitude (major, moderate, minor deterioration or improvement)
2) Spatial Scale (Site/Local, Regional, National/International)
3) Duration (Short term, Medium term, Long term)

were used in matrix format to define the Consequences of impacts as either Low, Medium of High. Thereafter the Significance of the impact was rated based on the Consequence and Probability of the impact occurring. Probability was defined as either: Definite, Possible or Unlikely. Finally, a Confidence Level was assigned to the rating of the Significance of an Impact. The Confidence Level could either be High, Medium or Low.

However, the Impact or Risk associated with an Activity was only evaluated in terms of the environmental components considered to be significantly impacted upon. This applied to all the life cycle phases associated with a particular activity.

8.2 SIGNIFICANCE ASSESSMENT

The basic elements used in the Evaluation of Impact Significance are described in the Table below (Table 8.2(a)) and the characteristics used to describe the consequence of an impact are outlined in Table 8.2(b).The methodology is widely used by EAP's in South Africa and represents best practice.

Table 8.2(a): Key elements in the evaluation of Impact Significance

Element	Description	Questions applied to the test of Significance
Consequence	An impact or effect can be described as the change in an environmental parameter, which results from a particular project activity or intervention. Here the term consequence refers to: • The sensitivity of the receiving environment, including its capacity to accommodate the kinds of changes the project may bring about • The type of change and the key characteristics of the change (these are magnitude, extent and duration) • The importance of the change (the level of public concern/ value attached to environment by the stakeholders and the change effected by the project) The following should be considered in the determination of impact consequence: • Standards and Guidelines (e.g. pollution and emissions thresholds) • Scientific evidence and professional judgement • Points of reference from comparable cases • Levels of stakeholder concern	Will there be a change in the biophysical environment? Is the change of consequence (of any importance)?
Probability	Likelihood/ Chances of an impact occurring	Is the change likely to occur?
Effectiveness of the Management Measures	Significance of the impact needs to be determined both without management measures and with management measures. The significance of the unmanaged impact needs to be determined so there is an appreciation of what could occur in the absence of management measures and of the effectiveness of the proposed management measures.	Will the management measures reduce impact to an acceptable level?
Uncertainty/ Confidence	Uncertainty in impact prediction and the effectiveness of the proposed management measures. Sources of uncertainty in impact prediction include: • Scientific uncertainty – limited understanding of an ecosystem or affected stakeholder and the processes that govern change • Data uncertainty – restrictions introduced by incomplete, contradictory or incomparable information, or by insufficient measurement techniques • Policy uncertainty – unclear or disputed objectives, standards or guidelines	What is the degree of confidence in the significance ascribed to the impact?

Table 8.2(b): Characteristics to be used in Impact Description

Characteristics used to describe Consequence	Sub-Components	Terms used to describe the Characteristics
Type		Biophysical, social or economic
Nature		Direct or Indirect or Cumulative
Status		Positive (a Benefit), Negative (a Cost) or Neutral
Phase of Project		During the Pre-Construction (if applicable), Construction, Operational, Decommissioning/ Post Closure
Timing		Immediate, Delayed
Magnitude	**Sensitivity of the Receiving environment/ receptors**	High, Medium or Low Sensitivity Low capacity to accommodate the change (impact)/ tolerant of the proposed change
	Severity/ Intensity (degree of change measured against thresholds and/ or professional judgment)	Gravity/ seriousness of the impact Intensity / Influence/ Power/ Strength
	Level of Stakeholder concern	High, Medium or Low levels of concern All or some stakeholders are concerned about the change
Spatial Extent The area affected by the impact.		Area/ Volume covered , Distribution, Population Site/ Local, Regional, National or International
Duration (and Reversibility) Length of time over which an impact occurs and potential for recovery of the endpoint from the impact		Short term. Long term Intermittent, Continuous Reversible, Irreversibility Temporary, Permanent
Confidence		High, Medium, Low

The Impact Significance Rating system is presented in Table 8.2(c) and involves four parts:

- Part A: Define impact consequence using the three primary impact characteristics of magnitude, spatial scale/ population and duration;
- Part B: Use the matrix to determine a rating for impact consequence based on the definition identified in Part A;
- Part C: Use the matrix to determine the impact significance rating, which is a function of the impact consequence rating (from Part B) and the probability of occurrence;
- Part D: Define the Confidence level.

Table 8.2(c): Method for rating the Significance of Impacts

PART A: DEFINING CONSEQUENCES OF MAGNITUDE, DURATION AND SPATIAL SCALE (Use these definitions to define the consequence in Part B) + *denotes a positive impact*		
Impact Characteristics	**Definition**	**Criteria**
MAGNITUDE	Major	Substantial deterioration or harm to receptors; receiving environment has an inherent value to stakeholders; receptors of impact are of conservation importance; or identified threshold often exceeded
	Moderate	Moderate/ measurable deterioration of harm to receptors; receiving environment moderately sensitive; or identified threshold occasionally exceeded
	Minor	Minor deterioration (nuisance or minor deterioration) or harm to receptors; change to receiving environment not measurable; or identified threshold never exceeded
	Minor +	Minor improvement; change not measurable; or threshold never exceeded
	Moderate +	Moderate improvement; within or better than the threshold; or no observed reaction
	Major +	Substantial improvement; within or better than the threshold; or favourable publicity
SPATIAL SCALE	Site or Local	Site specific or confined to the immediate project area
	Regional	May be defined in various ways e.g. cadastral, catchment, topographic
	National/ International	Nationally or beyond
DURATION	Short term	Quickly reversible. Less than two years
	Medium term	Reversible over time. Life of the project
	Long term	Permanent. Beyond closure

PART B: DETERMINING CONSEQUENCE RATING (Rate consequence based on definition of magnitude, spatial extent and duration)					
			SPATIAL SCALE		
			Site or Local	**Regional**	**National/ International**
MAGNITUDE					
Minor	**DURATION**	**Long term**	**Medium**	**Medium**	**High**
		Medium term	**Low**	**Low**	**Medium**
		Short term	**Low**	**Low**	**Medium**
Moderate	**DURATION**	**Long term**	**Medium**	**High**	**High**
		Medium term	**Medium**	**Medium**	**High**
		Short term	**Low**	**Medium**	**Medium**
Major	**DURATION**	**Long term**	**High**	**High**	**High**
		Medium term	**Medium**	**Medium**	**High**
		Short term	**Medium**	**Medium**	**High**

PART C: DETERMINING SIGNIFICANCE RATING (Rate significance based on consequence and probability)				
		CONSEQUENCE		
		Low	**Medium**	**High**
PROBABILITY (of exposure to impacts)	**Definite**	**Medium**	**Medium**	**High**
	Possible	**Low**	**Medium**	**High**
	Unlikely	**Low**	**Low**	**Medium**

PART D: CONFIDENCE LEVEL		
High	Medium	Low

The Assessment of the Significance of an Impact is a function of the Impact Consequence and the Probability that the impact will actually occur. This constitutes Part C of the Impact Assessment Methodology.

The Significance of the Impact was determined both without management measures and with management measures. The significance of the unmanaged Impact needs to be determined to ensure that there is an appreciation of what could occur in the absence of management measures and of the effectiveness of the proposed management measures.

8.3 EXTENT TO WHICH IMPACTS AND RISKS COULD BE AVOIDED

For each Environmental Impact or Risk identified and described, a management measure(s) was proposed. The objective of a management measure is to avoid, reduce or manage impacts consistent with best practice.

Management measures were proposed by each specialist and were incorporated into the EMPr prepared for this project (Part B of this report).

As mentioned above, these measures, specifically the effectiveness of these measures were assessed in terms of their ability to avoid, remove an impact entirely, render it insignificant or reduce its magnitude. Technical details of these measures as well as the monitoring requirements to ensure the effectiveness of the measures are detailed in Part B of this report.

9. IMPACT AND RISK SIGNIFICANCE ASSESSMENT

This section of the report considers all the known typical impacts of each of the HERNIC activities.

A Table relaying the impacts associated with the Construction Phase is provided below (Table 9.1(a)). Here the new proposed Activities to be constructed at HERNIC is provided in the first column, the Potential Impact as well as the Aspects affected as described per environmental component is provided in column 2 and 3. The **Significance if Not Mitigated**, a concise description of the Mitigation Type and the **Significance if Mitigated** is provided in the following columns.

This Assessment was also done and provided for the Operational Phase (Table 9.1(b)), the Decommissioning and Closure Phase (Table 9.1(c)) and for the Post Closure Phase (Table 9.1(d)). During these assessments, all the Activities occurring at HERNIC were assessed. This included the new proposed Activities as well as the Activities currently taking place at HERNIC.

The comprehensive Environmental Impact Assessments conducted by the different Specialists and/or EAP for the current and new activities at HERNIC are provided in **APPENDIX 9(A)**. These Impact Assessments are provided in Table format and separately for each life-cycle phase of the project. In addition, these Impact Assessments are provided separately for each environmental component considered.

The Tables provided below represents summary extracts in the format prescribed by DMR from the Tables contained in **APPENDIX 9(A).**

Table 9.1(a): Construction Phase Potential Impact and Mitigation Type Table

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
NEW PROPOSED ACTIVITIES					
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	**Low (Positive)**	Preferential procurement	**Medium (Positive)**
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	**Low (Positive)**	Preferential procurement	**Low (Positive)**
	Loss of soil horizon due to excavation during construction	Soil Horizon	**High**	Minimize impact through effective soil stockpiling as per soil utilization plan	**Medium**
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	**Medium**	Minimize interception volumes trough effective design as per water management plan	**Low**
	Impact on plant life habitat and diversity due to reduction in storm water run-off into the receiving environment	Plant Life Habitat and Diversity	**Medium**	Minimize interception volumes trough effective design as per water management plan	**Low**
	Impact on animal life habitat and diversity due to reduction in storm water run-off into the receiving environment	Animal Life Habitat and Diversity	**Medium**	Minimize interception volumes trough effective design as per water management plan	**Low**
	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	**Medium**	Minimize interception volumes trough effective design as per water management plan	**Low**
	Impact on aquatic ecosystem biodiversity and habitat through the reduction in storm water run-off and catchment yield	Aquatic Ecosystem Habitat and Biodiversity	**Medium**	Minimize interception volumes trough effective design as per water management plan	**Low**
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
Development of the Morula Pollution Control Dam (PCD)	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	**Low (Positive)**	Preferential procurement	**Medium (Positive)**
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	**Low (Positive)**	Preferential procurement	**Low (Positive)**
	Loss of soil horizon due to excavation during construction	Soil Horizon	**High**	Minimize impact through effective soil stockpiling as per soil utilization plan	**Medium**

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	**Low**	Minimize interception volumes trough effective design as per water management plan	**Low**
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	**Medium**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	**Medium**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	**Medium**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	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	**Medium**	Contain run-off water in dirty water system as per water management plan	**Low**
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	**Medium**	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	**Low**
	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	**Medium**	Vehicle gas emission control as per the vehicle fleet management plan	**Low**
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
Expansion of Storm Water Pollution Control Dam (PCD) No. 1	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	**Low (Positive)**	Preferential procurement	**Medium (Positive)**
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	**Low (Positive)**	Preferential procurement	**Low (Positive)**

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Expansion of Storm Water Pollution Control Dam (PCD) No. 1	Loss of soil horizon due to excavation during construction	Soil Horizon	**High**	Minimize impact through effective soil stockpiling as per soil utilization plan	**Medium**
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	**Low**	Minimize interception volumes trough effective design as per water management plan	**Low**
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	**Low**
	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	**Medium**	Vehicle gas emission control as per the vehicle fleet management plan	**Low**
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
Development of Storm Water Pollution Control Dam (PCD) No. 2	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	**Low (Positive)**	Preferential procurement	**Medium (Positive)**
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	**Low (Positive)**	Preferential procurement	**Low (Positive)**

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Development of Storm Water Pollution Control Dam (PCD) No. 2	Loss of soil horizon due to excavation during construction	Soil Horizon	**High**	Minimize impact through effective soil stockpiling as per soil utilization plan	**Medium**
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	**Low**	Minimize interception volumes trough effective design as per water management plan	**Low**
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	**Medium**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	**Medium**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	**Medium**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	**Medium**	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	**Low**
	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	**Medium**	Vehicle gas emission control as per the vehicle fleet management plan	**Low**
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
Development of Storm Water Pollution Control Dam (PCD) No. 3	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	**Low (Positive)**	Preferential procurement	**Medium (Positive)**
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	**Low (Positive)**	Preferential procurement	**Low (Positive)**

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Development of Storm Water Pollution Control Dam (PCD) No. 3	Loss of soil horizon due to excavation during construction	Soil Horizon	**High**	Minimize impact through effective soil stockpiling as per soil utilization plan	**Medium**
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	**Low**	Minimize interception volumes trough effective design as per water management plan	**Low**
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	**Low**
	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	**Medium**	Vehicle gas emission control as per the vehicle fleet management plan	**Low**
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
Development of Storm Water Pollution Control Dam (PCD) No. 4	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	**Low (Positive)**	Preferential procurement	**Medium (Positive)**
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	**Low (Positive)**	Preferential procurement	**Low (Positive)**

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Development of Storm Water Pollution Control Dam (PCD) No. 4	Loss of soil horizon due to excavation during construction	Soil Horizon	**High**	Minimize impact through effective soil stockpiling as per soil utilization plan	**Medium**
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	**Low**	Minimize interception volumes trough effective design as per water management plan	**Low**
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	**Low**
	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	**Medium**	Vehicle gas emission control as per the vehicle fleet management plan	**Low**
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
Expansion of the Ore Beneficiation (OB) Plant Process Water Dam	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	**Low (Positive)**	Preferential procurement	**Medium (Positive)**
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	**Low (Positive)**	Preferential procurement	**Low (Positive)**

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Expansion of the Ore Beneficiation (OB) Plant Process Water Dam	Loss of soil horizon due to excavation during construction	Soil Horizon	**High**	Minimize impact through effective soil stockpiling as per soil utilization plan	**Medium**
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	**Low**	Minimize interception volumes trough effective design as per water management plan	**Low**
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	**Low**
	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	**Medium**	Vehicle gas emission control as per the vehicle fleet management plan	**Low**
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
Expansion of the Plant Process Water Dam	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	**Low (Positive)**	Preferential procurement	**Medium (Positive)**
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	**Low (Positive)**	Preferential procurement	**Low (Positive)**

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Expansion of the Plant Process Water Dam	Loss of soil horizon due to excavation during construction	Soil Horizon	**High**	Minimize impact through effective soil stockpiling as per soil utilization plan	**Medium**
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	**Low**	Minimize interception volumes trough effective design as per water management plan	**Low**
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	**Low**
	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	**Medium**	Vehicle gas emission control as per the vehicle fleet management plan	**Low**
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
Expansion of the Chrome Recovery Plant (CRP) Process Water Dam	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	**Low (Positive)**	Preferential procurement	**Medium (Positive)**
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	**Low (Positive)**	Preferential procurement	**Low (Positive)**

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Expansion of the Chrome Recovery Plant (CRP) Process Water Dam	Loss of soil horizon due to excavation during construction	Soil Horizon	**High**	Minimize impact through effective soil stockpiling as per soil utilization plan	**Medium**
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	**Low**	Minimize interception volumes trough effective design as per water management plan	**Low**
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	**Low**
	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	**Medium**	Vehicle gas emission control as per the vehicle fleet management plan	**Low**
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
Development of a New Salvage Yard	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	**Low (Positive)**	Preferential procurement	**Medium (Positive)**
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	**Low (Positive)**	Preferential procurement	**Low (Positive)**

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Development of a New Salvage Yard	Loss of soil horizon due to clearance of vegetation during construction	Soil Horizon	**Medium**	Minimize impact through effective soil stockpiling as per soil utilization plan	**Medium**
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	**Low**	Minimize interception volumes trough effective design as per water management plan	**Low**
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	**Low**
	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	**Medium**	Vehicle gas emission control as per the vehicle fleet management plan	**Low**
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
Expansion of the Tap Hole Fume Extraction System	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	**Low (Positive)**	Preferential procurement	**Medium (Positive)**
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	**Low (Positive)**	Preferential procurement	**Low (Positive)**

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Expansion of the Finished Product Plant Dust Abatement System	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	**Low (Positive)**	Preferential procurement	**Medium (Positive)**
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	**Low (Positive)**	Preferential procurement	**Low (Positive)**
Southern Expansion of the Ore Beneficiation (OB) Plant Tailings Storage Facility (TSF)	Positive impact on local economic efficiency through local job creation	Socio-Economic Economic Efficiency	**Low (Positive)**	Preferential procurement	**Medium (Positive)**
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	**Low (Positive)**	Preferential procurement	**Low (Positive)**
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	**Low**	Minimize interception volumes trough effective design as per water management plan	**Low**
	Impact on topographical landform due to construction of the new TSF footprint	Topography Morphology	**Low**	Limit expansion in footprint area as per detailed design	**Low**
	Loss of soil horizon due to clearance of vegetation as well as excavations during construction	Soil Horizon	**High**	Minimize impact through effective soil stockpiling as per soil utilization plan	**Medium**
	Impact on plant life habitat and diversity due to the clearance of vegetation	Plant Life Habitat and Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on animal life habitat and diversity due to the clearance of vegetation	Animal Life Habitat and Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on wetlands habitat, service provision capability and hydrological function due to the clearance of vegetation	Wetlands Habitat, FSP and PES	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design	**Low**
	Impact on aquatic ecosystem biodiversity due to the clearance of vegetation	Aquatic Ecosystems Bio-Diversity	**Low**	Avoid sensitive areas through site selection and minimize development footprint through optimal design.	**Low**
	Increase in fugitive dust from the construction activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Increase in gaseous emissions originating from construction vehicle exhaust fumes	Air Quality Gaseous Emissions	**Medium**	Vehicle gas emission control as per the vehicle fleet management plan	**Low**
	Noise - Noise Level exceeding acceptable noise level 45dBA closer than 400m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**

Construction Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
	Noise - Noise Level exceeding acceptable noise level 45dBA at and more than 600m from HERNIC activities	Noise Ambient Sound Levels and Noise Incidents	**Medium**	Replace reverse hooters with non-tonal noise alarms	**Low**
	Visual impact due to the generation of dust during clearance of vegetation and construction activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
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	**Low (Positive)**	Preferential procurement	**Medium (Positive)**
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	**Low (Positive)**	Preferential procurement	**Low (Positive)**
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	**Low (Positive)**	Preferential procurement	**Medium (Positive)**
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	**Low (Positive)**	Preferential procurement	**Low (Positive)**
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	**Low (Positive)**	Preferential procurement	**Medium (Positive)**
	Positive impact on local socio-cultural demographics through the employment of local people	Socio-Cultural Demographic Process	**Low (Positive)**	Preferential procurement	**Low (Positive)**

Table 9.1(b): Operational Phase Potential Impact and Mitigation Type Table

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
CURRENT ACTIVITIES AND INFRASTRUCTURE AND PROCESSES					
Hernic Operations as a whole	Local grievances due to historic project-induced in-migration	Socio-Cultural Cultural Processes	**Medium**	Improve communication and attend to local grievances as per the Social and Labour Plan	**Low**
	Increase in impacts classified nuisance factors	Socio-Cultural Geographic Processes	**Medium**	Improve communication on environmental matters as per Environmental Awareness Plan and attend to air quality aspects as per Air Quality Management Plan	**Low**
	Increased perception of environmental harm to local people	Socio-Cultural Institutional Processes	**Medium**	Improve communication on environmental matters as per Environmental Awareness Plan and attend to reporting of environmental monitoring as per Environmental Monitoring Plan	**Medium**
	Increase in local employment and procurement	Socio-Economic Economic Efficiency	**Medium (Positive)**	Preferential procurement and effective socio-economic upliftment programmes as per the Social and Labour Plan	**Medium (Positive)**
	Increased impact on poverty alleviation through employment	Socio-Economic Economic Equity	**Medium (Positive)**	Preferential procurement as per Social and Labour Plan	**Medium (Positive)**
	Increase in Tax Revenues	Socio-Economic Economic Equity	**High (Positive)**	Enhance business sustainability and growth through effective environmental management as per the EMPr	**High (Positive)**
	Increase in social funds	Socio-Economic Economic Equity	**Medium (Positive)**	Implement effective socio-economic upliftment programmes as per the Social and Labour Plan	**Medium (Positive)**
	Loss of income from alternative land use	Socio-Economic Economic Efficiency	**Medium**	Minimize residual impact after closure through effective rehabilitation as per Decommissioning and Closure Plan	**Medium**
	Decrease in adjacent property values	Socio-Economic Economic Equity	**Low**	Minimize residual impact after closure through effective rehabilitation as per Decommissioning and Closure Plan	**Low**
	Impact on local economic diversity	Socio-Economic Economic Stability	**Medium**	Implement non-mining business development programmes as per the Social and Labour Plan.	**Low**
	Increase in local resource intensity	Socio-Economic Economic Stability	**Medium**	Develop and implement Optimal Resource Use Plan (water/electricity, etc.)	**Medium**
	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	**Low**	No mitigation required	**Low**
	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	**Medium**	Monitor and audit as per the noise monitoring plan	**Medium**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Access Roads	Increase in tipping trucks trips due to transportation of ferrochrome from HERNIC	Traffic Demand	**Low**	Manage traffic demand to coincide with daytime and off-peak hours	**Low**
	Increase in supplier vehicles trips due to transportation of goods and products to and from HERNIC	Traffic Demand	**Low**	Manage through road safety awareness campaigns	**Low**
	Increase in bus trips due to transportation of employees to and from HERNIC	Traffic Demand	**Low**	Manage through road safety awareness campaigns	**Low**
	Increase in pedestrian movement due to transportation of employees to and from HERNIC	Traffic Demand	**Low**	Manage through road safety awareness campaigns	**Low**
	Increase in light vehicle trips due to transportation of employees to and from HERNIC	Traffic Demand	**Low**	Manage through encouragement to use large capacity vehicles	**Low**
	Soil erosion of road verge due to poor basal cover	Soil Horizon	**Medium**	Maintain road verge as per the road maintenance plan	**Low**
	Soil contamination due to spillages from road	Soil Contamination	**Medium**	Clear spills as per the ongoing emergency response plan	**Low**
	Impact on surface water quality due to spillages on the road surface	Surface Water Quality	**Medium**	Clear spills as per the ongoing emergency response plan	**Low**
	Proliferation of alien plant species on the road verge	Plant Life Bio-Diversity	**Medium**	Eradicate invasive species as per the invader species management plan	**Low**
	Animal deaths due to collisions with animals	Animal Life Bio-Diversity	**Medium**	Manage through traffic control programme (speed limit and signboards)	**Low**
	Impact on surface water quality and hence the aquatic habitat due to spillages on the road surface	Aquatic Ecosystems Habitat	**Medium**	Clear spills as per the ongoing emergency response plan	**Low**
	Increase in fugitive dust due to the transport of materials and product	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Increase in gaseous emissions originating from vehicle exhaust fumes	Air Quality Gaseous Emissions	**Medium**	Vehicle gas emission control as per the vehicle fleet management plan	**Low**
	Visual impact due to increase in fugitive dust	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Railway Lines	Soil erosion of rail line verge due to poor basal cover	Soil Horizon	**Medium**	Maintain rail line verge as per the road maintenance plan	**Low**
	Soil contamination due to spillages from rail cars	Soil Contamination	**Medium**	Clear spills as per the ongoing emergency response plan	**Low**
	Impact on surface water quality due to spillages from rail cars	Surface Water Quality	**Medium**	Clear spills as per the ongoing emergency response plan	**Low**
	Animal deaths due to collisions with animals	Animal Life Bio-Diversity	**Medium**	Manage through traffic control programme (speed limit and signboards)	**Low**
	Impact on surface water quality and hence the aquatic habitat due to spillages from rail cars	Aquatic Ecosystems Habitat	**Medium**	Clear spills as per the ongoing emergency response plan	**Low**
	Increase in fugitive dust due to the transport of materials and product	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
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	**Medium**	Provide faunal species migratory support for smaller species	**Low**
Water Supply	Soil erosion along pipe lines in case of pipe bursts	Soil Horizon	**Medium**	Repair pipe bursts as per the emergency action plan	**Low**
Power Supply	Collisions of avifaunal species (birds) with overhead power lines	Animal Life Bio-Diversity	**Medium**	Install bird flappers in sensitive areas	**Low**
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	**High**	Clear spills as per the ongoing emergency response plan. Regular Inspections of the Tanks and Collection Sumps as per maintenance plan	**Low**
	Groundwater contamination due to hydrocarbon spillages/leakages from diesel fuel tanks	Groundwater Quality	**Medium**	Clear spills as per the ongoing emergency response plan. Regular Inspections of the Tanks and Collection Sumps as per maintenance plan	**Low**
	Surface water contamination due to hydrocarbon spillages/leakages from diesel fuel tanks	Surface Water Quality	**Low**	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	**Low**
	Impact on plant life due to hydrocarbon spillages/leakages from diesel fuel tanks	Plant Life Bio-Diversity	**Medium**	Clear spills as per the ongoing emergency response plan. Regular Inspections of the Tanks and Collection Sumps as per maintenance plan	**Low**
	Impact on animal life due to hydrocarbon spillages/leakages from diesel fuel tanks	Animal Life Bio-Diversity	**Medium**	Clear spills as per the ongoing emergency response plan. Regular Inspections of the Tanks and Collection Sumps as per maintenance plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Fuel Supply	Impact on surface water quality and hence the aquatic habitat due to hydrocarbon spillages/leakages from diesel fuel tanks	Aquatic Ecosystems Habitat	**Low**	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	**Low**
Internal Roads	Soil erosion of road verge due to poor basal cover	Soil Horizon	**Medium**	Maintain road verge as per the road maintenance plan	**Low**
	Soil contamination due to spillages from road	Soil Contamination	**Medium**	Clear spills as per the ongoing emergency response plan	**Low**
	Deterioration of the groundwater resource quality if dust suppression of road surfaces is not done with clean water	Groundwater Quality	**Low**	Use clean water for dust suppression as per air quality management plan – no process water should be used for dust suppression	**Low**
	Impact on surface water quality due to spillages on the road surface	Surface Water Quality	**Medium**	Clear spills as per the ongoing emergency response plan	**Low**
	Proliferation of alien plant species on the road verge	Plant Life Bio-Diversity	**Medium**	Eradicate invasive species as per the invader species management plan	**Low**
	Animal deaths due to collisions with animals	Animal Life Bio-Diversity	**Medium**	Manage through traffic control programme (speed limit and signboards)	**Low**
	Increase in fugitive dust due to the transport of materials and product	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Increase in gaseous emissions originating from vehicle exhaust fumes	Air Quality Gaseous Emissions	**Medium**	Vehicle gas emission control as per the vehicle fleet management plan	**Low**
	Visual impact due to increase in fugitive dust	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
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	**Medium**	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per soil utilization plan	**Low**
	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	**Medium**	Maintain vegetative basal cover as per soil utilization plan	**Low**
	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	**High**	Clear spillages as per emergency response plan	**Medium**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Morula Mining Shaft Complex	Soil contamination due to accidental spillages and infiltration of dirty water from conveyors	Soil Contamination	**Medium**	Clear spillages as per emergency response plan	**Low**
	Soil quality as a result of the long term stockpiling of soil	Soil Fertility	**Medium**	Fertilize topsoil on stockpile as per the soil utilization plan	**Low**
	Depletion in the quantity of groundwater as a dewatering consequence around the decline shafts	Groundwater Quantity	**Medium**	Minimize groundwater influx into mine through grouting of decline shaft walls. Monitor groundwater levels as per groundwater monitoring plan	**Low**
	Deterioration of the groundwater resource quality resulting from spillages /seepages from the water storage dams	Groundwater Quality	**Medium**	Manage dam levels as per the water management plan. Monitor groundwater quality as per groundwater monitoring plan	**Low**
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Surface Water Quantity	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Proliferation of alien plant species at the ROM stockpile as well as at the topsoil stockpile	Plant Life Habitat	**Medium**	Eradicate invasive species as per the invader species management plan	**Low**
	Impact on animal life due to a loss in faunal migratory connectivity as a result of conveyors	Animal Life Habitat	**Medium**	Provide faunal species migratory support for smaller species	**Low**
	Possible dewatering of wetlands as a result of the dewatering effect of the decline shafts	Wetlands Habitat, FSP and PES	**Medium**	Minimize groundwater influx into mine through grouting of decline shaft walls. Monitor groundwater levels as per groundwater monitoring plan	**Low**
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Increase in dust fallout resulting from windblown dust from the emergency ROM stockpile and the topsoil stockpile	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Increase of dust fallout resulting from the handling and movement of ore along the conveyors	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Morula Mining Shaft Complex	Visual impact due to increase in fugitive dust from stockpiles and conveyors	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Visual impact due to ROM stockpile and soil stockpiles shapes and heights changing the landscape morphology	Visual Aspects Visual Intrusion Landscape Morphology	**Medium**	Restrict footprints to delineated areas and manage size, shape and height of stockpiles as per operational plan	**Low**
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	**Medium**	Reshape and flatten steep slopes. Perform backfill and rehabilitate as per annual rehabilitation plan	**Low**
	Ongoing hydro-mining and inefficient ongoing backfilling and final rehabilitation could result in unstable backfilled areas in the open pit	Topography Stability	**Medium**	Conduct efficient ongoing rehabilitation as per the decommissioning and closure plan	**Low**
	Inefficient re-soiling during the ongoing rehabilitation cold result in erosion	Soil Horizon	**Medium**	Place and compact soils as per soil utilization plan	**Low**
	Inefficient re-soiling during the ongoing rehabilitation cold result in soil infertility	Soil Fertility	**Medium**	Fertilize soils as per soil utilization plan	**Low**
	Leaking pipes carrying contaminated storm water and hydro-mining slurry could cause soil contamination	Soil Contamination	**Medium**	Monitor and repair leaks as per the emergency response plan.	**Low**
	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	**Medium**	Monitor groundwater levels around the mine as per groundwater monitoring programme	**Medium**
	Water entering the open pit will deteriorate in quality due to presence of water soluble constituents in the backfilled material	Groundwater Quality	**Medium**	Monitor groundwater quality within and adjacent to open pit as per the groundwater monitoring programme	**Medium**
	Depletion in the quantity of surface water due to the interception of affected storm water in the pit	Surface Water Quantity	**Medium**	Minimize interception of storm water as per the water management plan	**Low**
	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	**High**	Include this area in the annual rehabilitation plan as well as in the decommissioning and closure plan	**Medium**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	Aquatic Ecosystems Habitat and Bio-Diversity	**High**	Include this area in the annual rehabilitation plan as well as in the decommissioning and closure plan	**Medium**
	Mine machinery used for the mining, material transport and ongoing rehabilitation operation, generates dust	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Visual impact due to increase in fugitive dust	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
Morula Mining Underground Operation	Blasting in the underground mine could cause damage to surface located mining infrastructure	Ground Vibration	**Medium**	Blast according to the blasting plan. Conduct vibration monitoring as per the blasting monitoring plan	**Low**
	Blasting in the underground mine could cause damage to surface located houses of adjacent property owners	Ground Vibration	**Low**	Blast according to the blasting plan. Conduct vibration monitoring as per the blasting monitoring plan	**Low**
	Depletion in the quantity of groundwater as a dewatering consequence above the underground mine workings	Groundwater Quantity	**Medium**	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	**Low**
	Possible dewatering of wetlands as a result of the dewatering effect of the underground mine	Wetlands Habitat, FSP and PES	**Medium**	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	**Low**
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	**Medium**	Conduct dumping in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	**Low**
	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	**Medium**	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	**Low**
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Surface Water Quantity	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Morula Mine Waste Rock Dump	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Increase in dust fallout resulting from windblown dust from the mine waste rock dump	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Visual impact due to increase in fugitive dust from stockpiles and conveyors	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Visual impact due to mine waste rock stockpile shape and height changing the landscape morphology	Visual Aspects Visual Intrusion Landscape Morphology	**Medium**	Restrict footprint to delineated area and manage size, shape and height of mine waste rock dump as per operational plan	**Low**
Mine Sewage Plant	Spillage/leakage/seepage from the sludge drying beds could cause soil contamination	Soil Contamination	**Low**	Maintain and operate sludge drying beds according to sewerage plant maintenance and operational plan	**Low**
	Spillage/leakage/seepage from the sludge drying beds could cause groundwater contamination	Groundwater Quality	**Low**	Maintain and operate sludge drying beds according to sewerage plant maintenance and operational plan	**Low**
	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	**Medium**	Monitor discharge water quality as per surface water monitoring plan. Maintain sewerage plant as per operational plan	**Low**
	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	**Medium**	Monitor discharge water quality as per surface water monitoring plan. Maintain sewerage plant as per operational plan	**Low**
Morula Mine Storm Water Berms and Canals	Soil contamination in the event of spillages/leakages from canals	Soil Contamination	**Medium**	Clear spills as per the emergency response plan	**Low**
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	**Medium**	Minimize interception volumes trough effective design as per water management plan	**Low**
	Impact on plant life habitat and diversity due to reduction in storm water run-off into the receiving environment	Plant Life Habitat and Diversity	**Medium**	Minimize interception volumes trough effective design as per water management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	Animal Life Habitat and Diversity	**Medium**	Minimize interception volumes trough effective design as per water management plan	**Low**
	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	**Medium**	Minimize interception volumes trough effective design as per water management plan	**Low**
	Impact on aquatic ecosystem biodiversity and habitat through the reduction in storm water run-off and catchment yield	Aquatic Ecosystem Habitat and Biodiversity	**Medium**	Minimize interception volumes trough effective design as per water management plan	**Low**
Morula Dewatering Dam	Soil Contamination due to seepage/spillages from the dam	Soil Contamination	**High**	Prevent seepage/spillages through effective storage control as per the water management plan	**Medium**
	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	**Medium**	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	**Low**
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
Alloys Smelting Plant General Infrastructure	Soil erosion due to possible poor vegetative (grass) basal cover	Soil Horizon	**Medium**	Maintain Vegetative Basal Cover	**Low**
	Soil contamination due to accidental spillages	Soil Contamination	**Medium**	Clean up Spills Immediately as per emergency response plan	**Low**
	Depletion in the quantity of surface water due to interception and containment of dirty water	Surface Water Quantity	**Medium**	Minimise the interception of surface water as per water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Alloys Smelting Plant General Infrastructure	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Increase in gaseous emissions originating from vehicle exhaust fumes	Air Quality Gaseous Emissions	**Medium**	Vehicle gas emission control as per the vehicle fleet management plan	**Low**
Raw Materials Stockpile Area 1	The raw materials stockpiles could present potentially dangerous/ unstable topographical landform features	Topography Morphology	**Medium**	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	**Low**
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through raw materials	Soil Contamination	**High**	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off diversion, interception and containment as per water management plan	**Medium**
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through raw materials	Groundwater Quality	**Medium**	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	**Low**
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	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	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Visual impact due to increase in fugitive dust from the stockpile area	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Raw Materials Stockpile Area 2	The raw materials stockpiles could present potentially dangerous/ unstable topographical landform features	Topography Morphology	**Medium**	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	**Low**
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through raw materials	Soil Contamination	**High**	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off diversion, interception and containment as per water management plan	**Medium**
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through raw materials	Groundwater Quality	**Medium**	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	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Increase in dust fallout resulting from windblown dust from the materials stockpiles as well as from the handling of materials	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Visual impact due to increase in fugitive dust from the stockpile area	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
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	**High**	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off diversion, interception and containment as per water management plan	**Medium**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	Groundwater Quality	**Medium**	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	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Increase in dust fallout resulting from windblown dust from the materials stockpiles as well as from the handling of materials	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Visual impact due to increase in fugitive dust from the stockpile area	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
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	**High**	Minimize stockpile sizes and provide concrete slabs where practical. Optimize storm water run-off diversion, interception and containment as per water management plan	**Medium**
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through OB plant materials	Groundwater Quality	**Medium**	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	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Ore Beneficiation (OB) Plant – Lumpy and Fines Section (HMS and Spiral Plants)	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Increase in dust fallout resulting from windblown dust from the materials stockpiles as well as from the handling of materials	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Visual impact due to increase in fugitive dust from the stockpile area	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
Mixed Material Stockpiling and Screening	The mixed materials stockpiles could present potentially dangerous/ unstable topographical landform features	Topography Morphology	**Medium**	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	**Low**
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the mixed materials	Soil Contamination	**High**	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	**Medium**
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the mixed materials	Groundwater Quality	**Medium**	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	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Mixed Material Stockpiling and Screening	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Increase in dust fallout resulting from windblown dust from the materials stockpiles as well as from the handling of materials	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Visual impact due to increase in fugitive dust from the stockpile area	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
Returns Materials Stockpiles	The returns materials stockpiles could present potentially dangerous/ unstable topographical landform features	Topography Morphology	**Medium**	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	**Low**
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the returns materials	Soil Contamination	**High**	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	**Medium**
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the returns materials	Groundwater Quality	**Medium**	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	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	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	**Medium**	Dust suppression as per the air quality management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Pelletizing and Sintering Plants 1 & 2	Soil contamination due to infiltration of dirty water	Soil Contamination	**High**	Isolate, intercept an contain dirty water as per the water management pan	**High**
	Soil contamination due to settling of dust on the downwind soil surface	Soil Contamination	**High**	Control dust fallout as per the air quality management plan	**Medium**
	Deterioration of the groundwater resource quality due to the infiltration of dirty water	Groundwater Quality	**Medium**	Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Impact on air quality as a result of the generation of fugitive dust due to the movement of material	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Impact on air quality due to the uncontrolled emissions of particulate matter	Air Quality Particulate Matter	**Medium**	Control particulate matter emissions as per the air quality management plan	**Low**
	Impact on air quality due to the uncontrolled emissions of gaseous emissions	Air Quality Gaseous Emissions	**Medium**	Control gaseous emissions as per the air quality management plan	**Low**
	Visual impact due to fugitive dust and particulate matter emissions from the pelletizing and sintering plants	Visual Aspects Visual Intrusion	**Medium**	Dust suppression and particulate matter emissions control as per the air quality management plan	**Low**
	Visual impact due to the presence of the large buildings housing the pelletizing plants	Visual Aspects Visual Intrusion	**Medium**	No mitigation possible	**Medium**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Furnaces 1, 2, 3 and 4	Soil contamination due to infiltration of dirty water	Soil Contamination	**High**	Isolate, intercept an contain dirty water as per the water management pan	**High**
	Soil contamination due to settling of dust on the downwind soil surface	Soil Contamination	**High**	Control dust fallout as per the air quality management plan	**Medium**
	Deterioration of the groundwater resource quality due to the infiltration of dirty water	Groundwater Quality	**Medium**	Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Impact on air quality as a result of the generation of fugitive dust due to the movement of material	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Impact on air quality due to the uncontrolled emissions of particulate matter	Air Quality Particulate Matter	**Medium**	Control particulate matter emissions as per the air quality management plan	**Low**
	Impact on air quality due to the uncontrolled emissions of gaseous emissions	Air Quality Gaseous Emissions	**Medium**	Control gaseous emissions as per the air quality management plan	**Low**
	Visual impact due to fugitive dust and particulate matter emissions from the pelletizing and sintering plants	Visual Aspects Visual Intrusion	**Medium**	Dust suppression and particulate matter emissions control as per the air quality management plan	**Low**
	Visual impact due to the presence of the large buildings housing the furnaces	Visual Aspects Visual Intrusion	**Medium**	No mitigation possible	**Medium**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Ferrochrome Break Floor Area	Soil contamination due to infiltration of dirty water	Soil Contamination	**Medium**	Isolate, intercept an contain dirty water as per the water management pan	**Medium**
	Deterioration of the groundwater resource quality due to the infiltration of dirty water	Groundwater Quality	**Medium**	Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Impact on air quality as a result of the generation of fugitive dust due to the movement of material	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Visual impact due to fugitive dust emissions from the break floor area	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
Finished Product Plant	High traffic volume due to the number of trucks used for the transportation of ferrochrome from HERNIC	Traffic Demand	**Low**	Manage traffic demand to coincide with daytime and off-peak hours	**Low**
	The final product stockpiles could present potentially dangerous/ unstable topographical landform features	Topography Morphology	**Medium**	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	**Low**
	Soil contamination due to infiltration of dirty water	Soil Contamination	**Medium**	Isolate, intercept an contain dirty water as per the water management pan	**Medium**
	Deterioration of the groundwater resource quality due to the infiltration of dirty water	Groundwater Quality	**Medium**	Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Finished Product Plant	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	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	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Increase in dust fallout resulting from windblown dust from the transport of materials	Air Quality Dust Fallout	**Medium**	Cover trucks as per the transport contract	**Low**
	Visual impact due to increase in fugitive dust from the final product stockpile area	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
Slag Stockpiling Areas	The slag stockpiles could present potentially dangerous/ unstable topographical landform features	Topography Morphology	**Medium**	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	**Low**
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag stockpiles	Soil Contamination	**High**	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	**Medium**
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag stockpiles	Groundwater Quality	**Medium**	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	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Slag Stockpiling Areas	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Increase in dust fallout resulting from windblown dust from the slag stockpiles as well as from the handling of materials	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Visual impact due to increase in fugitive dust from the slag stockpile area	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
Primary Chrome Recovery Plant (CRP)	The slag and product stockpiles at the CRP could present potentially dangerous/ unstable topographical landform features	Topography Morphology	**Medium**	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	**Low**
	Soil contamination due to infiltration of dirty water	Soil Contamination	**Medium**	Isolate, intercept an contain dirty water as per the water management pan	**Medium**
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag stockpiles	Soil Contamination	**High**	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	**Medium**
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag stockpiles	Groundwater Quality	**Medium**	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	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Primary Chrome Recovery Plant (CRP)	Increase in dust fallout resulting from windblown dust from the slag stockpiles as well as from the handling of materials	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Visual impact due to increase in fugitive dust from the slag stockpile area	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
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	**Medium**	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	**Low**
	Soil contamination due to infiltration of dirty water	Soil Contamination	**Medium**	Isolate, intercept an contain dirty water as per the water management pan	**Low**
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag sand stockpiles	Soil Contamination	**Medium**	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	**Low**
	Deterioration of the groundwater resource quality due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag sand stockpiles	Groundwater Quality	**Medium**	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	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	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	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Visual impact due to increase in fugitive dust from the slag sand stockpile area	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Product Rail Dispatch Area	The stockpiles at the product rail dispatch area could present potentially dangerous/ unstable topographical landform features	Topography Morphology	**Medium**	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	**Low**
	Soil contamination due to infiltration of dirty water	Soil Contamination	**Low**	Isolate, intercept an contain dirty water as per the water management pan	**Low**
	Deterioration of the groundwater resource quality due to infiltration of dirty water	Groundwater Quality	**Low**	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	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Increase in dust fallout resulting from windblown dust from the stockpiles as well as from the handling of materials	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Visual impact due to increase in fugitive dust from the product rail dispatch area	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
Platinum Group Minerals (PGM) Plant	Soil contamination due to spillages of slurry during the beneficiation/recovery processes	Soil Contamination	**Medium**	Clear up spillages as per the emergency response plan	**Low**
	Soil contamination due to infiltration of dirty water in the area	Soil Contamination	**High**	Isolate, intercept an contain dirty water as per the water management pan	**High**
	Soil contamination due to settling of dust on the downwind soil surface resulting from material handling and transport	Soil Contamination	**High**	Control dust fallout as per the air quality management plan	**Medium**
	Deterioration of the groundwater resource quality due to infiltration of dirty water	Groundwater Quality	**Medium**	Optimize storm water run-off diversion, interception and containment as per water management plan. Monitor groundwater quality as per groundwater monitoring plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	Surface Water Quantity	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Increase in dust fallout resulting from windblown dust from the PGM plant as well as from the handling of materials	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Visual impact due to increase in fugitive dust from the PGM plant	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
Internal Transport and Contractors Yard and Wash Bay	Soil contamination due to spillages of fuel, oil and wash water	Soil Contamination	**High**	Clear up spillages as per the emergency response plan	**Medium**
	Deterioration of the groundwater resource quality due to spillages of fuel, oil and wash water	Groundwater Quality	**High**	Clear up spillages as per the emergency response plan. Monitor groundwater quality as per groundwater monitoring plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from spillages of fuel, oil and wash water	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from spillages of fuel, oil and wash water	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	**Low**	Maintain H:H liner integrity. Conduct groundwater monitoring as per the groundwater monitoring plan.	**Low**
	Soil contamination resulting from potential spillages of water from the RWD	Soil Contamination	**Medium**	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	**Low**
	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	**Low**	Maintain H:H liner integrity. Conduct groundwater monitoring as per the groundwater monitoring plan.	**Low**
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this area	Surface Water Quantity	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from potential spillages of water from the RWD	Surface Water Quality	**Medium**	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	**Low**
	Impact on plant life resulting from potential spillages of water from the RWD	Plant Life Habitat, Bio-Diversity	**Medium**	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	**Low**
	Impact on animal life resulting from potential spillages of water from the RWD	Animal Life Habitat, Bio-Diversity	**Medium**	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	**Low**
	Impact on wetlands resulting from potential spillages of water from the RWD	Wetlands Habitat, FSP and PES	**Medium**	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	**Low**
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
H:H Slimes Dam and Return Water Dam (RWD) – The RWD is still operational as Process Water Dam	Impact on the quality of surface water resulting from potential spillages of water from the RWD	Aquatic Ecosystems Bio-Diversity	**Medium**	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	**Low**
	Visual Intrusion as a result of the alteration to the landscape morphology of the capped H:H Facility	Visual Aspects Visual Intrusion	**Medium**	No mitigation possible	**Medium**
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	**Medium**	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	**Low**
	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	**Medium**	Maintain liner integrity. Conduct groundwater monitoring as per the groundwater monitoring plan.	**Low**
	Soil contamination resulting from potential spillages of water from the TSF and the RWD	Soil Contamination	**Medium**	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	**Low**
	Potential loss in soil horizon due to erosion along the TSF side walls	Soil Horizon (Erosion)	**High**	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	**Medium**
	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	**Medium**	Maintain liner integrity. Conduct groundwater monitoring as per the groundwater monitoring plan.	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from potential spillages of water from the TSF and RWD	Surface Water Quality	**Medium**	Operate the dam operational and storage levels as per the water management plan. Clear up spillages as per the emergency response plan	**Low**
	Impact on plant life resulting from potential spillages of water from the TSF and the RWD	Plant Life Habitat, Bio-Diversity	**Medium**	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	**Low**
	Impact on animal life resulting from potential spillages of water from the TSF and the RWD	Animal Life Habitat, Bio-Diversity	**Medium**	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
HERNIC Tailings Storage Facility (TSF) including the Southern Expansion of the TSF and Return Water Dam (RWD)	Impact on wetlands resulting from potential spillages of water from the TSF and the RWD	Wetlands Habitat, FSP and PES	**Medium**	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	**Low**
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from potential spillages of water from the RWD	Aquatic Ecosystems Bio-Diversity	**Medium**	Operate the dam storage levels as per the water management plan. Clear up spillages as per the emergency response plan	**Low**
	Increase in fugitive dust from the TSF operation	Air Quality Dust Fallout	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Visual impact due to increase in fugitive dust from the TSF operation	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Visual Intrusion as a result of the alteration to the landscape morphology of the capped H:H Facility	Visual Aspects Visual Intrusion	**Medium**	No mitigation possible	**Medium**
Existing Salvage Yard	Soil Contamination due to Infiltration of Dirty Water	Soil Contamination	**Medium**	Daily removal of Spillages. Dust Suppression. Maintain Roofed Area and Concrete Pads. Maintain Optimum Functioning of Clean and Dirty Water Control and Management.	**Low**
	Deterioration of the groundwater resource quality due to spillages of liquids and materials resulting from the salvage operations	Groundwater Quality	**High**	Clear up spillages as per the emergency response plan. Monitor groundwater quality as per groundwater monitoring plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from potential spillages of dirty storm water from the salvage yard area	Surface Water Quality	**Medium**	Operate the dam operational and storage levels as per the water management plan. Clear up spillages as per the emergency response plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from potential spillages of dirty storm water from the salvage yard area	Aquatic Ecosystems Bio-Diversity	**Medium**	Operate the dam operational and storage levels as per the water management plan. Clear up spillages as per the emergency response plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Alloys Plant Sewage Plant	Spillage/leakage/seepage from the sludge drying beds could cause soil contamination	Soil Contamination	**Low**	Maintain and operate sludge drying beds according to sewerage plant maintenance and operational plan	**Low**
	Spillage/leakage/seepage from the sludge drying beds could cause groundwater contamination	Groundwater Quality	**Low**	Maintain and operate sludge drying beds according to sewerage plant maintenance and operational plan	**Low**
	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	**Medium**	Monitor discharge water quality as per surface water monitoring plan. Maintain sewerage plant as per operational plan	**Low**
	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	**Medium**	Monitor discharge water quality as per surface water monitoring plan. Maintain sewerage plant as per operational plan	**Low**
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	**Medium**	Characterize and classify fine waste. Monitor groundwater within the rehabilitated opencast pit, as well as beyond pit perimeter as per groundwater monitoring plan	**Low**
	Deterioration of the groundwater resource quality due to the disposal of OB plant coarse waste in the open pit	Groundwater Quality	**Medium**	Characterize and classify coarse waste. Monitor groundwater within the rehabilitated opencast pit, as well as beyond pit perimeter as per groundwater monitoring plan	**Low**
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	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Visual impact due to increase in fugitive dust from the coarse waste backfill operation	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
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))				

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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 Actvities 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	**Medium**	Implement effective groundwater abstraction plan	**Low**
	Positive impact on the groundwater resource quality due to the removal of contaminants from the weathered zone aquifers	Groundwater Quality	**Medium (Positive)**	Implement effective groundwater abstraction plan	**Medium (Positive)**
Groundwater Treatment Plant	Soil Contamination due to leakage/spills and infiltration of contaminated groundwater	Soil Contamination	**Medium**	Clear up spillages as per the emergency response plan	**Low**
	Depletion of surface water quantity due to the capture of direct rainfall in the ponds	Surface Water Quantity	**Medium**	Minimize interception volumes through effective design as per water management plan	**Low**
	Contamination of surface water due to spillages of contaminated water	Surface Water Quality	**Medium**	Provision of sufficient capacity for storage of untreated groundwater	**Low**
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water from the plant area	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from potential spillages of dirty storm water from the plant area	Aquatic Ecosystems Bio-Diversity	**Medium**	Operate the pond operational and storage levels as per the water management plan. Clear up spillages as per the emergency response plan	**Low**
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	**High (Positive)**	Maintain air quality abatement systems as per air quality management plan	**High (Positive)**
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	**Medium**	Prevent seepage/spillages through effective storage control as per the water management plan	**Low**
	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	**Low**	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
New Process Water and Storm Water Canal System including Silt Traps	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
New Morula Pollution Control Dam (PCD)	Soil Contamination due to seepage/spillages from the dam	Soil Contamination	**Medium**	Prevent seepage/spillages through effective storage control as per the water management plan	**Low**
	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	**Low**	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	**Low**
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
New Storm Water Pollution Control Dam (PCD) No. 1	Soil Contamination due to seepage/spillages from the dam	Soil Contamination	**Medium**	Prevent seepage/spillages through effective storage control as per the water management plan	**Low**
	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	**Low**	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	**Low**
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
New Storm Water Pollution Control Dam (PCD) No. 1	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
New Storm Water Pollution Control Dam (PCD) No. 2	Soil Contamination due to seepage/spillages from the dam	Soil Contamination	**Medium**	Prevent seepage/spillages through effective storage control as per the water management plan	**Low**
	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	**Low**	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	**Low**
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
New Storm Water Pollution Control Dam (PCD) No. 3	Soil Contamination due to seepage/spillages from the dam	Soil Contamination	**Medium**	Prevent seepage/spillages through effective storage control as per the water management plan	**Low**
	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	**Low**	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	**Low**
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
New Storm Water Pollution Control Dam (PCD) No. 3	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
New Storm Water Pollution Control Dam (PCD) No. 4	Soil Contamination due to seepage/spillages from the dam	Soil Contamination	**Medium**	Prevent seepage/spillages through effective storage control as per the water management plan	**Low**
	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	**Low**	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	**Low**
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
New Ore Beneficiation (OB) Plant Process Water Dam	Soil Contamination due to seepage/spillages from the dam	Soil Contamination	**Medium**	Prevent seepage/spillages through effective storage control as per the water management plan	**Low**
	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	**Low**	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	**Low**
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
New Ore Beneficiation (OB) Plant Process Water Dam	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
New Plant Process Water Dam	Soil Contamination due to seepage/spillages from the dam	Soil Contamination	**Medium**	Prevent seepage/spillages through effective storage control as per the water management plan	**Low**
	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	**Low**	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	**Low**
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
New Chrome Recovery Plant (CRP) Process Water Dam	Soil Contamination due to seepage/spillages from the dam	Soil Contamination	**Medium**	Prevent seepage/spillages through effective storage control as per the water management plan	**Low**
	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	**Low**	Minimize infiltration through storage control as per the water management plan. Monitor groundwater quality as per the groundwater monitoring plan.	**Low**
	Depletion in the quantity of surface water due to isolation and storage of water from of dirty water areas	Surface Water Quantity	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
New Chrome Recovery Plant (CRP) Process Water Dam	Decrease in quality of surface water due to possible spillage of contaminated water from dam	Surface Water Quality	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
	Depletion in the quantity of surface water due to the interception and storage of affected storm water from this area	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from dirty water run-off from this area	Aquatic Ecosystems Bio-Diversity	**Medium**	Intercept and contain dirty water as per the water management plan	**Low**
New Salvage Yard	Soil Contamination due to Infiltration of Dirty Water	Soil Contamination	**Medium**	Daily removal of Spillages. Dust Suppression. Maintain Roofed Area and Concrete Pads. Maintain Optimum Functioning of Clean and Dirty Water Control and Management.	**Low**
	Deterioration of the groundwater resource quality due to spillages of liquids and materials resulting from the salvage operations	Groundwater Quality	**High**	Clear up spillages as per the emergency response plan. Monitor groundwater quality as per groundwater monitoring plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from potential spillages of dirty storm water from the salvage yard area	Surface Water Quality	**Medium**	Operate the dam operational and storage levels as per the water management plan. Clear up spillages as per the emergency response plan	**Low**
	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	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from potential spillages of dirty storm water from the salvage yard area	Aquatic Ecosystems Bio-Diversity	**Medium**	Operate the dam operational and storage levels as per the water management plan. Clear up spillages as per the emergency response plan	**Low**
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	**High (Positive)**	Maintain air quality abatement systems as per air quality management plan	**High (Positive)**
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	**High (Positive)**	Maintain air quality abatement systems as per air quality management plan	**High (Positive)**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	**Medium**	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	**Low**
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag sand stockpiles	Soil Contamination	**High**	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	**Medium**
	Deterioration of the groundwater resource quality due to infiltration of soluble contaminants into the subsurface	Groundwater Quality	**Medium**	Rework current arising slag stockpiles as quickly as possible. Conduct groundwater monitoring as per the groundwater monitoring plan.	**Low**
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	**Medium**	Minimize interception volumes through effective design as per water management plan	**Low**
	Contamination of surface water due to spillages of contaminated water	Surface Water Quality	**Medium**	Provide silt traps to improve water quality in recovery sumps	**Low**
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from potential spillages of dirty storm water	Aquatic Ecosystems Bio-Diversity	**Medium**	Clear up spillages as per the emergency response plan	**Low**
	Impact on air quality due to movement of materials	Air Quality Fugitive Dust	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Impact on air quality due to vehicle movement	Air Quality Gaseous Emissions	**Medium**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	Visual impact due to increase in fugitive dust from the plant operation	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
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	**Medium**	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	**Low**
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the slag stockpiles	Soil Contamination	**High**	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	**Medium**
	Loss of soil horizon during excavation activities	Soil Distribution	**High**	Avoid unnecessary disturbance of of underlying soils	**Medium**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Coarse Slag at the Chrome Recovery Plant (CRP)	Deterioration of the groundwater resource quality due to infiltration of soluble contaminants into the subsurface	Groundwater Quality	**Low**	Rework current arising slag stockpiles as quickly as possible. Conduct groundwater monitoring as per the groundwater monitoring plan.	**Low**
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	**Medium**	Minimize interception volumes through effective design as per water management plan	**Low**
	Contamination of surface water due to spillages of contaminated water	Surface Water Quality	**Medium**	Provide silt traps to improve water quality	**Low**
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from potential spillages of dirty storm water	Aquatic Ecosystems Bio-Diversity	**Medium**	Clear up spillages as per the emergency response plan	**Low**
	Impact on air quality due to movement of materials	Air Quality Fugitive Dust	**Medium**	Dust suppression as per the air quality management plan	**Low**
	Impact on air quality due to vehicle movement	Air Quality Gaseous Emissions	**Medium**	Minimize gaseous emissions through vehicle movement management plan	**Low**
	Visual impact due to increase in fugitive dust from the plant operation	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**
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	**Medium**	Conduct stockpiling in accordance with standard civil engineering stability design criteria as well as subject to conditions as per operational plan	**Low**
	Soil contamination due to infiltration/leaching of soluble contaminants due to rainwater infiltrating through the waste rock stockpiles	Soil Contamination	**High**	Minimize stockpile sizes. Optimize storm water run-off diversion, interception and containment as per water management plan	**Medium**
	Depletion of surface water quantity through the interception and containment of affected storm water run-off	Surface Water Quantity	**Medium**	Minimize interception volumes through effective design as per water management plan	**Low**
	Depletion in the quantity of surface water due to isolation, interception and storage of affected storm water	Aquatic Ecosystems Habitat	**Medium**	Optimize the interception of surface water as per the water management plan	**Low**
	Impact on the quality of surface water resulting from potential spillages of dirty storm water	Aquatic Ecosystems Bio-Diversity	**Medium**	Clear up spillages as per the emergency response plan	**Low**
	Impact on air quality due to movement of materials	Air Quality Fugitive Dust	**Medium**	Dust suppression as per the air quality management plan	**Low**

Operational Phase Activity	Potential Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Re-Use of Mine Waste Rock at the Mine Waste Rock Stockpile	Impact on air quality due to vehicle movement	Air Quality Gaseous Emissions	**Medium**	Minimize gaseous emissions through vehicle movement management plan	**Low**
	Visual impact due to increase in fugitive dust from the waste rock stockpile operation	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per the air quality management plan	**Low**

Table 9.1(c): Decommissioning and Closure Phase Potential Impact and Mitigation Type Table

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	**Medium**	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.	**Low**
	Possible damage to the two graveyards on site	Heritage, Archaeological and Palaeontological	**High**	Clearly demarcate and fence graveyards sites. Communicate localities to all decommissioning and closure contractors.	**Low**
	Loss of jobs and income due to closure	Socio Economic Economic Efficiency	**High**	Implement effective retrenchment packages and support local suppliers in transitioning to other industries	**High**
	Decrease and/or termination of funds available for social projects	Socio Economic Economic Equity	**Medium**	Plan projects with exit strategy in collaboration with beneficiaries	**Medium**
	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	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	**High**	Demolish large infrastructure, buildings e.g. pelletizing plant and furnaces etc. as per final rehabilitation, decommissioning and closure plan	**Low**
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				

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Fuel Supply	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
Internal Roads	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Internal Roads	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Morula Mining Shaft Complex	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
Morula Mining Opencast Operation	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Morula Mining Opencast Operation	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
Morula Mining Opencast Operation	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Morula Mining Underground Operation	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Morula Mining Opencast Operation	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
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	**High**	Clearly demarcate and fence graveyards sites. Communicate localities to all decommissioning and closure contractors.	**Low**
Mine Waste Rock Dump	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
Mine Sewage Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Mine Sewage Plant	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	High	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	High (Positive)
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	High	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	High (Positive)
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Medium	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Low
	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	Medium	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Low
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Medium	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Low
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	High	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Low
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	High	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Low
	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	Medium	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Low
	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	Medium	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Low
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Low	Minimize gaseous emissions through vehicle maintenance plan	Low
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	Medium	Dust suppression as per air quality management plan	Low
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Medium	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Low

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Morula Dewatering Dam	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
Alloys Smelting Plant General Infrastructure	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Alloys Smelting Plant General Infrastructure	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	**High**	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Raw Materials Stockpile Area 1	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Raw Materials Stockpile Area 1	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
Raw Materials Stockpile Area 2	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Raw Materials Stockpile Area 2	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	**High**	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	**Low**
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Ore Beneficiation Plant – Lumpy and Fines Section (HMS and Spiral Plants)	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	The generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	**High**	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	**Low**
Mixed Material Stockpiling and Screening	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Mixed Material Stockpiling and Screening	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
Returns Materials Stockpiles	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Returns Materials Stockpiles	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Pelletizing and Sintering Plants 1 & 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	Surface Water Quantity	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	**High**	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Furnaces 1, 2, 3 and 4	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	**High**	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	**Low**
Ferrochrome Break Floor Area	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
Finished Product Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Finished Product Plant	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Finished Product Plant	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	**High**	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	**Low**
Slag Stockpiling Areas	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Slag Stockpiling Areas	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	**High**	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	**Low**
Primary Chrome Recovery Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Primary Chrome Recovery Plant	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Primary Chrome Recovery Plant	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	**High**	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	**Low**
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Fine Slag Processing Plant (Secondary CRP)	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	**High**	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	**Low**
Product Rail Dispatch Area	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Product Rail Dispatch Area	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Product Rail Dispatch Area	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	**High**	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	**Low**
Platinum Group Minerals (PGM) Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Platinum Group Minerals (PGM) Plant	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
Internal Transport and Contractors Yard and Wash Bay	Possible damage to the two graveyards on site	Heritage, Archaeological and Palaeontological	**High**	Clearly demarcate and fence graveyards sites. Communicate localities to all decommissioning and closure contractors.	**Low**
	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Internal Transport and Contractors Yard and Wash Bay	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Internal Transport and Contractors Yard and Wash Bay	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
Redundant Historic Bag Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Redundant Historic Bag Plant	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	**High**	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	**Low**
Redundant Old Civil Workshop	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Redundant Old Civil Workshop	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Redundant Old Civil Workshop	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	**High**	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	**Low**
Rehabilitated Quarry Area	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Rehabilitated Quarry Area	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
Two Historic Slimes Dams	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	Positive impact on visual intrusion due to the shaping and landscaping of the facility	Visual Aspects Visual Intrusion	**High**	Demolish large infrastructure and shape as per final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Decommissioning of Phase 1 of the H:H Slimes 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	Aquatic Ecosystems Bio-Diversity	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	Positive impact on visual intrusion due to the shaping and landscaping of the facility	Visual Aspects Visual Intrusion	**High**	Demolish large infrastructure and shape as per final rehabilitation, decommissioning and closure plan	**Low**
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	Surface Water Quantity	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	Positive impact on visual intrusion due to the shaping and landscaping of the facility	Visual Aspects Visual Intrusion	**High**	Demolish large infrastructure and shape as per final rehabilitation, decommissioning and closure plan	**Low**
Existing Salvage Yard	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Existing Salvage Yard	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Existing Salvage Yard	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
Alloys Plant Sewage Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Alloys Plant Sewage Plant	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
OB Plant Fines in Open Pit (Slurry)	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	High	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	High (Positive)
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Medium	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Low
	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	Medium	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Low
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Medium	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Low
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	High	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Low
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	High	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Low
	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	Medium	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Low
	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	Medium	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Low
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Low	Minimize gaseous emissions through vehicle maintenance plan	Low
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	Medium	Dust suppression as per air quality management plan	Low
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Medium	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Low
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	Medium	Dust suppression as per air quality management plan	Low

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
OB Plant Coarse Waste in Open Pit (Trucks)	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
Plant Drinking Water Dam	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Plant Drinking Water Dam	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
Plant Drinking Water Treatment Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Plant Drinking Water Treatment Plant	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Plant Process Water Dam and Silt Traps	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
OB Plant Return Water Dam	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
OB Plant Return Water Dam	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	Aquatic Ecosystems Bio-Diversity	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
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	**Medium**	Plan projects with exit strategy in collaboration with beneficiaries	**Medium**
	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Plant Storm Water Pollution Control Dam (PCD)	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
Groundwater Treatment Plant	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Groundwater Treatment Plant	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
Alloys Smelting Plant Air Quality Control Systems	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
New Process Water and Storm Water Canal System including Silt Traps	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
New Morula 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	Surface Water Quantity	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
New Storm Water Pollution Control Dam (PCD) No. 1	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
New Storm Water Pollution Control Dam (PCD) No. 1	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
New Storm Water Pollution Control Dam (PCD) No. 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	Surface Water Quantity	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
New Storm Water Pollution Control Dam (PCD) No. 3	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
New Storm Water Pollution Control Dam (PCD) No. 3	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
New Storm Water Pollution Control Dam (PCD) No. 4	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
New Ore Beneficiation (OB) Plant Process Water Dam	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	High	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	High (Positive)
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	High	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	High (Positive)
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	Medium	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	Low
	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	Medium	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Low
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	Medium	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Low
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	High	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Low
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	High	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	Low
	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	Medium	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Low
	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	Medium	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	Low
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	Low	Minimize gaseous emissions through vehicle maintenance plan	Low
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	Medium	Dust suppression as per air quality management plan	Low
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	Medium	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	Low

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
New Plant Process Water Dam	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
New 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	Aquatic Ecosystems Habitat	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
New Chrome Recovery Plant (CRP) Process Water Dam	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
New Salvage Yard	Improvement to the topographical morphology due to the shaping of the land surface to be free draining	Topography Morphology	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
New Salvage Yard	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
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	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Expansion of the Tap Hole Fume Extraction System	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	**High**	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	**Low**
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	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Expansion of the Finished Product Plant Dust Abatement System	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	Positive impact on visual intrusion due to the demolition and removal of large structures	Visual Aspects Visual Intrusion	**High**	Demolish large infrastructure and buildings as per final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	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	**High**	Demolish large infrastructure and shape as per final rehabilitation, decommissioning and closure plan	**Low**
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Coarse Slag at the Chrome Recovery Plant (CRP)	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	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	**High**	Demolish large infrastructure and shape as per final rehabilitation, decommissioning and closure plan	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	**Medium**	Shape rehabilitated facilities (open pit, TSF, H:H facility) to stable topographic profile	**Low**
	Improvement to the soil horizon due to resoiling, and a reduction in erosion, due to the revegetation of the rehabilitated areas	Soil Horizon	**Medium**	Resoil rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil fertility due to the fertilization of soils prior to revegetation	Soil Fertility	**Medium**	Fertilize rehabilitated areas as per final rehabilitation, decommissioning and closure plan	**Low**
	Improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof	Soil Contamination	**High**	Remediate/ dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan	**Low**
	Changes in land use due to the transformation of the mining and smelting land use to agricultural land use	Land Use	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use	Land Capability	**High**	Implement final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use	**High (Positive)**
	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities	Groundwater Quality	**Medium**	Minimise the potential for infiltration through scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site	Surface Water Quality	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas	Plant Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	Improvement in animal life habitat and bio-diversity due to the revegetation of rehabilitated areas	Animal Life Habitat and Bio-Diversity	**High**	Revegetate rehabilitated areas as per the final rehabilitation, decommissioning and closure plan	**Low**
	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	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**

Decommissioning Phase Activity	Potential Impact	Environmental Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
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	Aquatic Ecosystems Bio-Diversity	**Medium**	Maintain storm water management measures as per the water management plan until the site has been fully rehabilitated	**Low**
	Gaseous emissions from vehicles used for decommissioning and transport	Air Quality Gaseous Emissions	**Low**	Minimize gaseous emissions through vehicle maintenance plan	**Low**
	The generation of dust during decommissioning activities	Air Quality Dust Fallout	**Medium**	Dust suppression as per air quality management plan	**Low**
	Noise impact due to the decommissioning activities (demolition, vehicle movement, reverse hooters, etc.)	Noise Ambient Sound Level	**Medium**	Implement noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical	**Low**
	Increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site	Traffic Demand	**Medium**	Implement road safety awareness campaigns	**Low**
	Visual intrusion due to the generation of dust during decommissioning activities	Visual Aspects Visual Intrusion	**Medium**	Dust suppression as per air quality management plan	**Low**
	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	**High**	Demolish large infrastructure and shape as per final rehabilitation, decommissioning and closure plan	**Low**

Table 9.1(d): Post Closure Phase Potential Impact and Mitigation Type Table

Post Closure Environmental Component	Potential Residual Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Socio-Cultural/ Socio-Economic Environment	Permanent loss of Agricultural Land.	Socio-Economic Economic Efficiency	**Medium**	Develop post closure land use as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	**Low**
	Residual Environmental Impacts could result in on-going external costs for the local community	Socio-Economic Economic Efficiency	**Medium**	Residual environmental impact management as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	**Low**
	Potential impact on community health and safety	Socio-Cultural Institutional Processes	**High**	Develop post closure land use as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	**Low**
Heritage, Archaeological and Palaeontological Environment	Potential Impact on Graveyards	Heritage Resources Cultural Aspects	**High**	Graveyard monitoring, aftercare and maintenance as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	**Low**
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	**Medium**	Surface monitoring, aftercare and maintenance as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	**Low**
Soils, Land Capability and Land Use	Loss of soil due to erosion	Soil Horison	**Medium**	Soil and vegetation monitoring, aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	**Low**
	Loss in soil fertility	Soil Fertility	**Medium**	Soil monitoring, aftercare and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	**Low**
	Possible patches of contaminated soil may manifest as denuded vegetation	Soil Contamination	**Medium**	Soil and vegetation monitoring, aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	**Low**

Post Closure Environmental Component	Potential Residual Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Soils, Land Capability and Land Use	The stated post closure Land Use for the rehabilitated HERNIC areas in general is Extensive Grazing. Possible denudation of re-vegetated areas	Land Use	**Medium**	Soil and vegetation monitoring, aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	**Low**
	The stated post closure Land Capability for the rehabilitated HERNIC areas in general is the Chamber of Mines Grazing Capability Class.	Land Capability	**Medium**	Soil and vegetation aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	**Low**
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	**Medium**	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	**Low**
	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	**Low**	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	**Low**
	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	**Low**	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	**Low**

Post Closure Environmental Component	Potential Residual Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
Groundwater Environment	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	**Medium (Positive)**	Identify areas in which groundwater remediation is required. Optimise the abstraction of groundwater - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	**Medium (Positive)**
	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	**Medium**	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	**Low**
Surface Water Environment	Depletion in the quantity of Surface Water due to the capture of direct rainfall.	Surface Water Quantity	**Medium**	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	**Low**
	Contamination of the surface water resource due to contaminated run-off from ineffectively rehabilitated areas	Surface Water Quality	**Medium**	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	**Low**
Plant Life Environment	Possible discharge and seepage degrading floral habitat.	Plant Life Habitat	**Medium**	Monitoring, aftercare and maintenance of rehabilitation - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	**Low**
	Proliferation of alien and invasive species.	Plant Life Bio-Diversity	**Medium**	Monitoring, aftercare and maintenance of vegetation cover - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	**Low**
Animal Life Environment	Possible discharge and seepage degrading faunal habitat.	Animal Life Habitat	**Medium**	Monitoring, aftercare and maintenance of rehabilitation - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	**Low**

Post Closure Environmental Component	Potential Residual Impact	Aspects Affected	Significance if Not Mitigated	Mitigation Type	Significance if Mitigated
	Proliferation of alien and invasive species.	Animal Life Bio-Diversity	**Medium**	Monitoring, aftercare and maintenance of vegetation cover - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	**Low**
Wetland Environment	There will be no post closure residual impacts on the two wetlands delineated downgradient from HERNIC.				
Aquatic Ecosystems Environment	Possible discharge and seepage degrading surface and groundwater resources.	Aquatic Ecosystems Biodiversity	**Medium**	Monitoring, aftercare and maintenance of rehabilitation and groundwater remediation - all as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	**Low**
Air Quality Environment	Fine Fugitive Dust emanating from Rehabilitated Areas where Stable Vegetative Cover has not yet established.	Air Quality Dust Fallout	**Low**	Soil and vegetation monitoring, aftercare (re-soil and re-vegetate) and maintenance (fertilize) as per the Final Rehabilitation, Decommissioning and Mine Closure Plan	**Low**
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	**Low**	None Required	**Low**

10. SUMMARY OF SPECIALIST REPORTS

Specialist Reports were compiled for the following Environmental Components considered:

- Socio-Cultural/ Socio-Economic Environment
- Archaeological and Heritage Environment
- Palaeontological Environment
- Land Use
- Blasting and Vibration Environment
- Traffic Aspects
- 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

Each Specialist Report was compiled in strict accordance with the Environmental Impact Assessment Regulations (GNR 982) of 04 December 2014, Appendix 6. Specialist Reports are provided as Appendices to this report – see Chapter 7 for their APPENDIX references.

The specialist reports contain the detailed impact assessments conducted by each specialist as well as the management plan for that specific environmental component.

A concise summary of the Specialist Reports which informed the Impact Assessment and Final Site Layout Process for the new proposed activities at HERNIC is relayed in the Table below (Table 10(a)).

Table 10(a): Summary of the Specialist Reports which informed the Impact Assessment/Final Site Layout Process.

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS INCLUDED IN THE EIA REPORT (YES/NO)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
Socio-Cultural & Socio-Economic Environment	The development of the new proposed activities will provide the local and regional economy with medium to high benefits in terms of employment, income, impact on low income groups, community development funds and tax revenues. A social risk related to the high percentage of unskilled labour that local contractors to HERNIC recruit from outside the local area. This situation dramatically reduces HERNIC's direct impact on poverty in the local area and increases the potential for conflict with the local community. The positive socio-economic impacts outweigh the negative socio-economic impacts of the operation.	Yes	Section 7.4, Section 9 and Section 12
Heritage & Archaeological Environment	The locality of two graveyards located within the site was mapped and geo-referenced. The graveyards will not be affected by either the current or the new proposed activities.	Yes	Section 7.4 and Section 7.7, Section 9 and Section 12
Palaeontological Environment	Due to the geological setting, it is extremely unlikely that fossils will be exposed as a result of new developments.	Yes	Section 7.4, Section 9 and Section 12
Land Use	New developments will not alter the current land use status of mining/industrial. Soil stripping and stockpiling should be performed according to soil scientist specifications when preparing new development footprints.	Yes	Section 7.4, Section 9 and Section 12
Blasting & Vibration	New developments do not require any blasting activities. The underground mining section is currently in care and maintenance and therefore no blasting is currently conducted on site. When underground mining and hence blasting activities commence, the ground vibration levels expected on surface from single panels blasting is relatively low. There are no private residences near the mine and thus no influence on privately owned infrastructure is expected.	Yes	Section 7.4, Section 9 and Section 12

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS INCLUDED IN THE EIA REPORT (YES/NO)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
Traffic Aspects	The new proposed activities will not have a negative impact on the existing road network within the project area as an increase in traffic is not expected from the new developments.	Yes	Section 7.4, Section 9 and Section 12
Topography	The topography of the study area influences the surface water, soils and vegetation components of the biophysical environment as well as aspects such as visual, noise and air quality assessments. The main concern pertaining to topography is to maintain/support stable and safe surface topographical conditions as far as possible during each life cycle phase of the operations.	Yes	Section 7.4, Section 9 and Section 12
Soils & Land Capability	Potentially sensitive landscapes in the survey area were grouped into the following categories: Natural Wetland soils, Natural (wetland) Drainage features, Wetland/Riparian vegetation, Erodible soils and Vegetative cover, Anthropogenic moisture, Paleochannels and Naturally buried soils. No future developments are planned in these sensitive areas. A Fatal Flaw Assessment was also performed providing a map that indicates features and buffers for avoidance. This map was consulted when determining the final site layout. During development of the new Storm Water PCD No.2 , unnecessary disturbance of Red Apedal Soils (from dykes parent material) which support a high vegetation diversity should be avoided as par as possible. Soil Stripping and Stockpiling should be performed according to the soil scientist specifications to ensure disturbed soil can be utilised efficiently during the rehabilitation phase.	Yes	Section 7.4, Section 7.7, Section 9 and Section 12
Geology & Geochemistry	A Fatal Flaw Assessment was performed providing a map that indicates features and buffers for avoidance. The geology underlying the HERNIC sites comprises of mafic to ultramafic igneous rocks of the Rustenburg Layered Suite within the Western limb of the Bushveld Igneous Complex and dip at an angle of around 17° to the north. These lithologies range from norites and anorthosites through to gabbros, harzburgites, magnetites and pyroxenites. No sinkholes and surface subsidence due to dolomitic or karst areas will therefore manifest within the study area.	Yes	Section 7.4, Section 7.7, Section 9 and Section 12

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS INCLUDED IN THE EIA REPORT (YES/NO)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
Geology & Geochemistry	The western limb of the Bushveld Igneous Complex has however been, and is still currently, being extensively mined for chromium, platinum and the associated PGE's by both opencast and underground mining methods. Sinkholes and surface subsidence associated with the underground mining extents could thus however potentially occur in the north-eastern parts of the property due to underground mining. There are three major diabase dykes at HERNIC which strike in a north-westerly to north-north-westerly direction. Several large scale (regional) faults have been identified and delineated within the study area as well. The most predominant faults are the normal faults that trend in a northerly direction within the western and central regions of the HERNIC operations. These normal faults form part of the eastern side of a regional graben structure situated to the west of HERNIC. A Reverse fault is also identified trending in a northerly to north-westerly direction to the east of the normal faults where the chromitite layers are displaced to the north. These faults significantly influence the continuity of the chromitite seams and thus the extent of the mining operations as well.		
Groundwater Environment	The new proposed activities will remove several of the historic sources of groundwater pollution and will also lead to the more efficient isolation of other potential groundwater pollution sources. The removal and isolation of the potential pollution sources will therefore essentially reduce the infiltration of contaminants into the underlying groundwater resource, as a result of the proposed source directed measures to be implemented. The efficiency of the proposed source control measures is required to be monitored as part of the annual groundwater monitoring programme. Based on the nature and status of the current activities and details regarding the proposed new activities it is clearly evident that the proposed activities will lead to improved water and waste management on site. Historical groundwater contamination on site will be managed through a groundwater remediation plan.	Yes	Section 7.4, Section 7.7, Section 9 and Section 12

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS INCLUDED IN THE EIA REPORT (YES/NO)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
Surface Water Environment	Impacts on the surface water quality and quantity as a result of the current as well as the new proposed activities can be managed to be insignificant. In order to achieve this, the new proposed water management measures need to be constructed and commissioned.	Yes	Section 7.4, Section 9 and Section 12
Plant Life Environment	The majority of the new developments will be done in areas considered to be transformed habitat. As far as the untransformed habitat is concerned, it invariably represents isolated patches of Secondary Marikana Thornveld, which is neither endangered nor critically endangered.	Yes	Section 7.4, Section 7.7, Section 9 and Section 12
Animal Life Environment	The majority of the new developments will be done in areas considered to be of low sensitivity with little suitable habitat for faunal species, whilst the Secondary Marikana Thornveld is considered to be of an intermediate sensitivity for faunal species. The study area overall has been impacted upon as a result of long term mining activities and associated edge effects. These impacts have resulted in a relatively low faunal abundance and diversity in the vicinity of the mine, with little habitat connectivity and limited movement potential between habitats for larger faunal species.	Yes	Section 7.4, Section 7.7, Section 9 and Section 12
Wetland Environment	Two ephemeral drainage lines were encountered to the north (and outside) of the HERNIC site boundary. It is unlikely that the new proposed activities will have a significant impact on the feature far north of the HERNIC site boundary. Possible spillage of tailings into the wetland feature closest to the HERNIC site boundary from the adjacent tailings dams could however occur. It must be ensured that the tailings management facilities are in working order and that any seepage or spills from the tailings facility are controlled.	Yes	Section 7.4, Section 7.7, Section 9 and Section 12
Aquatic Ecosystems Environment	The aquatic resources in the vicinity of the study area are already under severe stress due to the various point and diffuse sources of pollutants associated with existing regional mining activities, increasing industrial activities, residential settlements and agricultural activities in the immediate	Yes	Section 7.4, Section 7.7, Section 9 and Section 12

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS INCLUDED IN THE EIA REPORT (YES/NO)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	area. However, as the proposed new activities is an extension of existing mining activities, including some more positive activities such as the re-use of Sand Slag, Course Slag and Mine Waste Rock Stockpiles, and the decommissioning of two Historic Slimes Dams, and is proposed to take place well away from the demarcated sensitive riparian zones, should all the mitigation, management and monitoring measures as provided by the aquatic ecosystems specialist be adhered to, the new proposed activities are not anticipated to have a significant impact on the receiving aquatic environment.		
Air Quality Environment	As a result of the fine material to be stored on the Tailings Storage Facility (TSF; 80w/w% smaller than 75µm), the outcome of a specific dispersion modelling scenario indicates a slight increase in the ambient air quality concentrations for PM10 and PM2.5. It is foreseen likely that supplementary abatement and mitigation strategies will be required in addition to conventional measures to mitigate the additional fine particles stored on the TSF (and the southern expansion thereof).	Yes	Section 7.4, Section 9 and Section 12
Noise Environment	Considering the results of the ambient sound measurements as well as the noise modelling results, there is a potential for a noise impact, defined to be of a medium significance. There is however little proof that noise is of concern to the surrounding receptors with no reported noise complaints. It would be unfair to expect that noises (from current and new proposed activities at the project) to be inaudible under all circumstances as this is an unrealistic expectation that is not required or expected from any other agricultural, commercial, industrial or transportation related noise source. It is however important that HERNIC takes care to ensure that the sound produced by the activities is at a reasonable level in relation to the existing ambient sound levels.	Yes	Section 7.4, Section 9 and Section 12
Visual Aspects	The only visual cumulative impact that the presence of the HERNIC Operations will have in the larger area is that of contributing to the Visual Character or Sense of Place, by having a similar character as other activities in the direct and wider region.	Yes	Section 7.4, Section 9 and Section 12

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS INCLUDED IN THE EIA REPORT (YES/NO)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
	The primary informant of the Visual Character is the spatial form and character of the natural landscape together with the cultural transformation associated with historic use and habitation. A landscape can be said to have a strong sense of place, regardless of whether it is considered to be scenically beautiful or not. In this instance the region discussed in the mining belt between Brits and Rustenburg has a very specific character, which is a mining/industrial and residential/rural combination. The area itself and the site of the HERNIC Operations, both have a relatively moderate visual quality, but fits into the character of place.		

11. ENVIRONMENTAL IMPACT STATEMENT

11.1 SUMMARY OF KEY FINDINGS OF ENVIRONMENTAL IMPACT ASSESSMENT

A comprehensive Environmental Impact and Risk Assessment was conducted for various relevant activities related to the existing and proposed new activities at HERNIC Ferrochrome. These activities are described in detail in Section 4.2 and 4.3 of this EIA Report.

The EIA conducted was of high integrity with a very high degree of confidence, mainly due to:

- Comprehensive base line descriptions were compiled by a team of specialists for the following environmental components:

  - 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

- The base line studies provided detailed, site specific quantitative descriptions of the current and future situation at HERNIC Ferrochrome.
- Detailed project and process descriptions for existing and proposed new activities at HERNIC Ferrochrome were provided by the applicant and which could be used to identify aspects and related impacts.
- In addition specialist reports were compiled by number of specialists addressing aspects related to waste management, water management and air quality management.
- The same specialists that conducted the base line studies, performed detailed empirical, analytical, numerical and stochastical modelling to support the impact assessments for various critical environmental components including ground water, surface water and air quality.
- Formal Impact and Risk Significance Assessment Matrices, based on the official DEA guidelines were then used to assess the impacts and risk associated with all the identified activities, for all four life cycle phases of the project.

- The impact and risk significance assessment matrices considered the following criteria:

  - Magnitude (Intensity or Severity)
  - Spatial Scale (Extent)
  - Duration
  - Consequence
  - Probability of Occurrence

- Based on the rating obtained, Impact and Risk Significance was determined to fall in one of the following three possible outcomes:

PART C: DETERMINING SIGNIFICANCE RATING (Rate significance based on consequence and probability)				
		CONSEQUENCE		
		Low	Medium	High
PROBABILITY (of exposure to impacts)	Definite	Medium	Medium	High
	Possible	Low	Medium	High
	Unlikely	Low	Low	Medium

- The key findings of the Impact and Risk Assessment will be discussed with reference to the Impact and Risk significance Categories listed above, for each of the project life cycle phases.

11.1.1 Construction Phase

HERNIC Ferrochrome represents an existing facility comprising mining operations (open cast and underground), as well as a Ferrochrome Smelting Operation. The open cast mining activities have ceased in 2014 whilst the underground mining is currently in care and maintenance but with re-commissioning now imminent.

The Smelting Plant is also an existing operation. However, HERNIC Ferrochrome are applying for authorizations for a number of "new" activities which are listed below and for which most, the construction phase is relevant:

- Decommissioning of two Historic Slimes Dams
- Decommissioning of Phase 1 of the H:H Slimes Dam
- Development and Expansion of the Site Storm Water and Process Water Management Facilities:
  - Development and Expansion of the Process Water and Storm Water Canal System including Silt Traps
  - Development of the Morula PCD
  - Expansion of Storm Water PCD No.1
  - Development of Storm Water PCD No.2
  - Development of Storm Water PCD No.3
  - Development of Storm Water PCD No.4
  - Expansion of the OB Plant Process Water Dam
  - Expansion of the Plant Process Water Dam
  - Expansion of the CRP Process Water Dam
- Decommissioning of the Morula Dewatering Dam
- Development of a New Salvage Yard
- Expansion of the Tap Hole Fume Extraction System
- Expansion of the Finished Product Plant Dust Abatement System
- Expansion of the HERNIC Tailings Storage Facility (TSF) and RWD
- Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Fine Slag at the Fine Slag Processing Plant
- Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Coarse Slag at the Chrome Recovery Plant
- Re-Use (Screening, Stockpiling, Internal Use and /or Selling) of Mine Waste Rock at the Mine Waste Rock Stockpile

The key findings of the Construction Phase Impact and Risk Assessment have been summarized from the Impact and Risk Significance Table (Table 9.1(a)) and are now given for each new activity and as per Environmental Component in Table 11.1.1(a) below. The Table reflects the Impact and Risk Significance for both, **before mitigation**, as well as for **after mitigation** and synoptically references the mitigation type/measures to be implemented.

From Table 11.1.1(a) it is clear that the most significant impacts during construction relate to **Soils** and **Land Capability** for which a pre-mitigation significance rating of **High** is recorded. Mitigation will lower the significance to **Medium**.

Impacts associated with the other environmental components are essentially **Medium** when not mitigated and then improve to **Low** after mitigation.

Positive impacts can be achieved for Socio-Economic and Socio-Cultural aspects provided that local people can be employed during construction activities

Table 11.1.1(a): Key Findings - Construction Phase Impact and Risk

Environmental Component	Impact and Risk prior to Mitigation	Impact and Risk after Mitigation	Comment
Socio Economic	**Low (Positive)**	**Medium (Positive)**	Local economic efficiency could be boosted from low to medium through local job creation during construction of the upgrades, expansions and new developments. The assessed impact prior to mitigation can be positively enhanced if local people could be involved in the construction phase of new activities.
Socio-Cultural	**Low Positive**	**Low Positive**	The in-migration of people into the area is limited as a result of the fact that HERNIC do employ local people. The situation is not going to improve drastically as a result of the construction of the proposed new infrastructure.
Heritage & Archaeological	**No Impact**	**No Impact**	None of the new development's construction will impact on any of the identified heritage resources – 2 grave yards.
Blasting & Vibration	**No Impact**	**No Impact**	Blasting will not be employed during construction of any of the proposed new activities.
Traffic	**No Impact**	**No Impact**	The limited extent and duration of the proposed construction activities, as well as the fact that contractors will operate from the contractors yard on site, results in a No Impact situation during construction.
Topography	**Low**	**Low**	The construction of the proposed new section of the TSF will permanently alter the natural elevation and slope on the development footprint. However during the construction phase this impact will be low as only the starter walls will be completed.
Soils	**High**	**Medium**	In the development footprints of all new activities the soil profile will permanently be disturbed. The impact can be mitigated through selective and efficient stockpiling of topsoil for later use during rehabilitation.
Land Capability	**High**	**Medium**	In the development footprints of all new activities the soil profile will permanently be disturbed. The impact can be mitigated through selective and efficient stockpiling of topsoil for later use during rehabilitation.
Land Use	**No Impact**	**No Impact**	The current land use of mining and industrial will not be compromised by the new developments.
Geology & Geochemistry	**No Impact**	**No Impact**	None of the construction activities will impact on the site geology or geochemistry.
Groundwater	**No Impact**	**No Impact**	None of the construction activities will impact on the groundwater underlying the site.

Environmental Component	Impact and Risk prior to Mitigation	Impact and Risk after Mitigation	Comment
Surface Water	**Medium**	**Low**	The construction of the proposed new activities will require that surface water run-off is captured and contained to ensure that no pollution of the receiving surface water bodies occur during or after construction has finished. However, most of the new measures are water management measures (canals, silt traps, PCD's, etc) designed to capture the smallest volume of run-off possible, thereby optimizing the management of storm water run-off generated on the site.
Plant Life	**Medium**	**Low**	The construction phase impact on plant life relates to the clearance of vegetation during the construction period. The impact is mitigated by restricting the clearance of vegetation to the footprints plus a small buffer zone, by siting new developments in already impacted areas and by avoiding sensitive plant life areas.
Animal Life	**Medium**	**Low**	The animal life impacts are directly associated with the plant life impacts as removal of the vegetation and the fencing of the development areas will impact animal life habitat and bio-diversity. The impact is mitigated by restricting the clearance of vegetation to the footprints plus a small buffer zone, by siting new developments in already impacted areas and by avoiding sensitive plant life areas.
Wetlands	**Medium**	**Low**	None of the two wetlands delineated by the wetland specialists will be directly impacted by the construction of any of the proposed new activities at HERNIC. Impacts to wetland habitat, FSP and PES will therefore be indirect in nature and will be associated with surface water impacts pertaining to quantity and quality. These impacts are mitigated through the optimal design of the water management measures.
Aquatic Ecosystems	**Medium**	**Low**	Aquatic ecosystems are invariably associated with surface water features (including wetlands) and therefore will also be indirectly impacted as a result of impacts on surface water quantity and quality. These impacts are mitigated through the optimal design of the water management measures.
Air Quality	**Medium**	**Low**	Air quality impacts during the construction phase are associated with the generation of dust and gaseous emissions during the construction activities. These impacts are mitigated trough dust suppression as well as by implementing a regular vehicle maintenance programme.
Noise	**Medium**	**Low**	Noise impacts during the construction phase are restricted to the noise generated by construction vehicles the most intrusive of which is the sound made by reverse hooters on vehicles. This impact can fully be mitigated by the fitting of non-tonal reverse alarms on the construction vehicles.
Visuals	**Medium**	**Low**	The visual impacts during construction pertain to the visual intrusion caused by dust generation. The mitigation for this is effective dust suppression.

11.1.2 Operational Phase

The impact assessment for the HERNIC operational phase includes all the activities taking place, including both the existing as well as the proposed new activities. In the case where a new activity represents an upgrade of an existing one, the assessment for the proposed new activity is the relevant one.

The key findings of the Operational Phase Impact and Risk Assessment have been summarized from the Impact and Risk Significance Table (Table 9.1(b)) and are now given per activity (existing and new) as per Environmental Component in Table 11.1.2(a) below. The Table reflects the Impact and Risk Significance for both, **before mitigation**, as well as for **after mitigation** and synoptically references the mitigation type/measures to be implemented.

From Table 11.1.2(a) it is clear that most impacts can be mitigated and managed down to **Low** significance.

The noise profile during night time shows a slight exceedance of the applicable limits for receptors closers than 550 m from the HERNIC site and is rated to have a significance of **Medium**. However no complaints have been received from any receptors. It is proposed that a noise audit be conducted.

An opportunity exists for HERNIC to make a Medium Positive impact on socio-economic conditions through a preferential procurement programme for local suppliers.

Table 11.1.2(a): Key Findings – Operational Phase Impact and Risk

Environmental Component	Impact and Risk prior to Mitigation	Impact and Risk after Mitigation	Comment
Socio Economic	**Medium (Positive)**	**Medium (Positive)**	The operations at HERNIC will have an overall positive socio-economic impact. Increases in tax revenues and in local employment and procurement will off-set negative impacts related to potential loss in revenue due to the loss of the original land use as well as a possible decrease in neighbouring property values. These aspects must be managed towards a positive outcome through implementation of the Social and Labour Plan.
Socio-Cultural	**Medium**	**Low**	The negative impacts relate to the in-migration of people into the area in search of jobs as well as the concerns by locals for health related environmental impacts. The key to address these impacts to a low significance is to have good and transparent communication regarding aspects related to socio-cultural and bio-physical environmental impacts.
Heritage & Archaeological	**No Impact**	**No Impact**	The two grave sites of significance have been demarcated to ensure no impact during the operational phase.
Blasting & Vibration	**Medium**	**Low**	Blasting in the underground mine, if not done properly, can possibly damage surface located mining infrastructure above the blast area. This impact can be managed effectively to a low significance through adherence to the blasting plan. Vibration morning as per the blasting plan is essential.
Traffic	**Low**	**Low**	The impact due to an increased traffic demand caused by the transport of equipment, raw materials, product and people was assessed by the specialist as of low significance. The situation can be improved through optimization of the delivery and dispatch of materials (utilization rail transport).
Topography	**Medium**	**Low**	Topographic impacts relate primarily to the creation of potential unstable features during open cast mining, during stockpiling of materials (raw materials, slag, mine waste rock, mixed materials, product, etc.) as well as during the deposition of slimes on the TSF. These impacts can effectively be managed to low significance by conducting materials stockpiling and slimes deposition according to standard civil engineering stability criteria and through continuous backfilling and rehabilitation of the open pit.
Soils	**High** / **Medium**	**Medium** / **Low**	Soil impacts vary between erosion of road and rail verges, fertility issues for soil stockpiles and ongoing rehabilitation in the open pit and soil contamination due to spillages from fuel tanks, spillages of materials in plant operational areas, spillages and seepages from dams and stockpiles, and spillages from pipe bursts. Management of these impacts relate to conformance with the specifications in the soil utilization plan as well as the cleaning up of spillages and seepages according to the emergency response plan. Spillages and seepages from dams should be managed as per the water management plan.

Environmental Component	Impact and Risk prior to Mitigation		Impact and Risk after Mitigation		Comment
Land Capability	**High**	**Medium**	**Medium**	**Low**	During the operational phase, any impacts on the land capability will be the same as that observed for soils. Soil impacts vary between erosion of road and rail verges, fertility issues for soil stockpiles and ongoing rehabilitation in the open pit and soil contamination due to spillages from fuel tanks, spillages of materials in plant operational areas, spillages and seepages from dams and stockpiles, and spillages from pipe bursts. Management of these impacts relate to conformance with the specifications in the soil utilization plan as well as the cleaning up of spillages and seepages according to the emergency response plan. Spillages and seepages from dams should be managed as per the water management plan.
Land Use	**No Impact**		**No Impact**		The operational phase activities will not compromise the current land use of mining and beneficiation.
Geology & Geochemistry	**No Impact**		**No Impact**		Although operational phase mining will deplete the mineral resource, it is not deemed as an environmental impact. The geochemistry of the site and operations is inert and the generation of AMD is not a threat.
Groundwater	**Medium**		**Low**		Impacts on the quantity of groundwater relate to the de-watering effects of the open-cast and underground mine workings. Whilst nothing can be done about the open pit dewatering, the dewatering caused by the underground mining can be minimized through prevention of surface subsidence through effective stope support. Impacts on the quality of ground water relates to the infiltration of soluble contaminants into the sub-surface from spillages , dirty water ponding, infiltration into and through stockpiles and dumps, and the seepage/leakage from dams. These impacts are all managed as per the water management and emergency response plans and comprise the minimization of residence times of stockpiles, the cleaning up of spillages, the prevention of storm water ponding and the lining of dams.
Surface Water	**Medium**		**Low**		The depletion in the quantity of surface water results primarily from the isolation, interception and storage of affected storm water all over the site. This impact is managed through optimization of the interception of surface water as per the water management plan. The impact on the quality of surface water results from potential spillages of dirty storm water. This impact is managed through interception and containment of dirty water as per the water management plan.

Environmental Component	Impact and Risk prior to Mitigation	Impact and Risk after Mitigation	Comment
Plant Life	**Medium**	**Low**	Plant life impacts relate to proliferation of invader species on denuded areas and on stockpiles and dumps, loss in bio-diversity as a result of the interception of surface water run-off and potential spillages from the TSF RWD and H:H Dump RWD. These impacts are managed through the invader species eradication programme and the water management plan.
Animal Life	**Medium**	**Low**	Animal life impacts also occur due to collisions with vehicles, the restriction of animal migration patterns due to fencing and the impact on animal life habitat and bio-diversity as a result of impacts on plant life. These impacts are managed through awareness programmes as well as through the plant life measures.
Wetlands	**Medium**	**Low**	The main threat to wetlands at HERNIC is associated with unlikely spillages of water/slurry from the TSF and its associated RWD. The situation must be managed through the effective operation of the TSF and its RWD as per the water and waste management plan.
Aquatic Ecosystems	**Medium**	**Low**	Impacts on the aquatic ecosystems are directly related to impacts on surface water. The depletion in the quantity of surface water results primarily from the isolation, interception and storage of affected storm water all over the site. This impacts on aquatic ecosystem habitat. This impact is managed through optimization of the interception of surface water as per the water management plan. The impact on the quality of surface water results from potential spillages of dirty storm water. This impacts on aquatic ecosystem bio-diversity. This impact is managed through interception and containment of dirty water as per the water management plan.
Air Quality	**Medium**	**Low**	Air quality impacts manifest for gaseous emissions, particulate matter emissions and dust fallout due to plant stack emissions, vehicle emissions and fugitive dust from vehicle activity and wind blown dust from stockpiles and the TSF. These impacts are mitigated quite effectively through the air abatement systems, dust suppression and vehicle maintenance plan.
Noise	**Medium**	**Medium**	Noise impacts relate essentially to the overall plant noise with some noise incidents such as vehicle reverse hooters superimposed there-on. The day time noise profile falls fully within the required limits but the night time noise show a slight exceedance. Noise incidents are managed through installed non-tonal reverse alarms on vehicles.

Environmental Component	Impact and Risk prior to Mitigation	Impact and Risk after Mitigation	Comment
Visuals	**Medium**	**Low**	Visual intrusion impacts are caused by large structures such as the pelletizing plants and the furnaces as well as by dust emissions resulting from the movement of vehicles and windblown dust from stockpiles and the TSF. The dust fallout is mitigated through dust suppression.

11.1.3 Decommissioning and Closure Phase

The decommissioning and closure phase of the activities at HERNIC essentially represents a reversed construction phase with the final objective of achieving an environmental condition that will support the agreed Post Closure Land Use. Each and every activity being decommissioned must therefore support this land use.

Decommissioning and closure activities generically follow the following action sequence;

- Demolition and removal of surface infrastructure
- Excavation of foundations/road surfaces and the removal and re-use or disposal of the excavated materials
- Backfilling of excavations (including mining voids)
- Cleaning of the land surface from contaminated materials and soils and the disposal/remediation thereof
- Shaping of the land surface to support free draining conditions (including plant areas, backfilled excavations, waste dumps, dams, etc.)
- Re-soiling of the land surface to support vegetative growth
- Re-vegetation of the land surface to support the agreed post closure land use
- Aftercare and monitoring

NB! Water management infrastructure (canals, silt traps and PCD's) are left intact and operational until surface run-off from the rehabilitated site has improved to a level where run-off water can be discharged into the receiving environment. These features would therefore be the last to be rehabilitated, decommissioned and closed.

The key findings of the Decommissioning and Closure Phase Impact and Risk Assessment have been summarized from the Impact and Risk Significance Table (Table 9.1(c)) and are now given per activity and as per Environmental Component in Table 11.1.3(a) below. The Table reflects the Impact and Risk Significance for both, **before mitigation**, as well as for **after mitigation** and synoptically references the mitigation type/measures to be implemented.

From Table 11.1.3(a) it is clear that the decommissioning and closure activities proposed for the site, will result in a huge improvement of environmental impact and risk, with an overall significance outcome of **Low**.

However, as far as the socio-economic impact of closure of the site is concerned, the mitigation potential is limited and the end impact will be **high**.

Table 11.1.3(a): Key Findings – Decommissioning and Closure Phase Impact and Risk

Environmental Component	Impact and Risk prior to Mitigation	Impact and Risk after Mitigation	Comment
Socio Economic	**High**	**High**	Decommissioning and Closure will cause loss of jobs and income. The impact can be softened through implementation of effective retrenchment packages and support for local suppliers in transitioning to other industries. Decrease and/or termination of funds available for social projects can be countered by planning projects with exit strategy in collaboration with beneficiaries.
Socio-Cultural	**Medium**	**Low**	Decommissioning will have a negative impact on land use patterns as a result of the closure of the site. In mitigation, improve communication and attend to local grievances as per the Social and Labour Plan. Also improve communication on environmental matters as per Environmental Awareness Plan and attend to reporting of environmental monitoring as per Environmental Monitoring Plan.
Heritage & Archaeological	**High**	**Low**	The potential for possible damage to the two graveyards on site is high during decommissioning. Clearly demarcate and fence graveyards sites. Communicate localities to all decommissioning and closure contractors.
Blasting & Vibration	**No Impact**	**No Impact**	Blasting is not currently foreseen for the decommissioning and closure phase. If demolition works require blasting, a project specific impact and risk assessment must be conducted.
Traffic	**Medium**	**Low**	Decommissioning will see an increase in heavy vehicle traffic due to rubble and dismantled infrastructure removal from site. Implement road safety awareness campaigns to counter possible negative impacts.
Topography	**Medium**	**Low**	Decommissioning will bring an 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 profiles.
Soils	**High**	**Low**	Decommissioning will result in improvement to the soil horizon due to re-soiling, a reduction in erosion, due to the revegetation of the rehabilitated areas, improvement to soil fertility due to the fertilization of soils prior to revegetation and an improvement to soil contamination due to the removal of contaminated soil and the remediation/ disposal thereof. The achieve this, re-soil and fertilize rehabilitated areas and dispose of contaminated soil as per the final rehabilitation, decommissioning and closure plan
Land Capability	**High**	**High(Positive)**	Decommissioning will bring changes in the land capability due to the termination in mining and smelting land use and the conversion to agricultural land use. This will be achieved through implementation of the final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use.

Environmental Component	Impact and Risk prior to Mitigation	Impact and Risk after Mitigation	Comment
Land Use	**High**	**High(Positive)**	Decommissioning will facilitate changes in land use due to the transformation of the mining and smelting land use to agricultural land use. This will require implementation of the final rehabilitation, decommissioning and closure plan with the ultimate objective of achieving a post closure agricultural (grazing) land use.
Geology & Geochemistry	**No Impact**	**No Impact**	Although operational phase mining would have depleted the mineral resource, it is not deemed as an environmental impact. The geochemistry of the site and operations is inert and the generation of AMD is not a threat.
Groundwater	**Medium**	**Low**	Increase in the infiltration of soluble contaminants into the subsurface as a result of surface disturbances during decommissioning activities can cause groundwater pollution. This can be prevented by scheduling of decommissioning activities where the soil profile is disturbed to occur in the dry season.
Surface Water	**Medium**	**Low**	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 during decommissioning as well as the deterioration of surface water quality in the event that affected storm water from decommissioning sites is released from the site. The remedy is to maintain storm water management measures as per the water management plan until the site has been fully rehabilitated.
Plant Life	**High**	**Low**	Decommissioning will bring a huge improvement in plant life habitat and bio-diversity due to the revegetation of rehabilitated areas. The re-vegetation must be done as per the final rehabilitation, decommissioning and closure plan.
Animal Life	**High**	**Low**	Decommissioning will also cause an 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.
Wetlands	**No Impact**	**No Impact**	Decommissioning of the HERNIC site is not anticipated to have any direct impact on any wetland in the area.
Aquatic Ecosystems	**Medium**	**Low**	Impact on aquatic ecosystems habitat will result 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. An impact on aquatic ecosystems bio-diversity could also occur 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.
Air Quality	**Medium**	**Low**	Air quality impacts during the decommissioning phase will comprise gaseous emissions from vehicles used for decommissioning and transport and the generation of dust during decommissioning activities.

Environmental Component	Impact and Risk prior to Mitigation	Impact and Risk after Mitigation	Comment
			Minimize gaseous emissions through vehicle maintenance plan and do dust suppression as per air quality management plan.
Noise	**Medium**	**Low**	Noise impact due to the decommissioning activities originate from demolition, vehicle movement, reverse hooters, etc. The impact can be mitigated through the implementation of noise abatement measures (e.g. non-tonal reverse alarms, etc.) where practical.
Visuals	**High**	**Low**	Decommissioning will cause a visual intrusion due to the generation of dust during decommissioning activities. This can be mitigated through dust suppression as per air quality management plan. However, a positive impact on visual intrusion will result from the demolition and removal of large structures such as the pelletizing plant and furnaces, as per final rehabilitation, decommissioning and closure plan.

11.1.4 Post Closure Phase

The post closure phase for a rehabilitated and decommissioned activity essentially starts when the rehabilitation has been completed. In the case of mining activities the issuing of a closure certificate will only be considered when a aftercare and monitoring period has lapsed and which shows sustainable fulfilment with the closure objectives.

With reference to possible Residual Impacts after Closure, the key findings of the Impact and Risk Assessment have been summarized from the Impact and Risk Significance Table (Table 9.1(d)) and are now given as per Environmental Component in Table 11.1.4(a) below. The Table reflects the Impact and Risk Significance for both, **before mitigation**, as well as for **after mitigation** and synoptically references the mitigation type/measures to be implemented.

Regular reference is made in Table 11.1.4(a) to Post Closure Aftercare and Monitoring. It should be noted that the aftercare and monitoring programme will form an integral part of the Final Rehabilitation, Decommissioning and Mine Closure Plan that will be developed in support of the formal Application for Mine Closure to be lodged with the Competent Authority prior to mine closure.

From Table 11.1.4(a) it is clear that the residual impacts expected to persist after closure can all be managed to a **Low** significance during the aftercare and monitoring period, to a level which will not compromise the agreed Post Closure Land Use of Grazing.

The Environmental components for which residual impacts could persist are:

- Socio-Economic
- Socio-Cultural
- Heritage
- Topography
- Soils
- Land Capability
- Land Use
- Groundwater
- Surface Water
- Plant Life
- Animal Life
- Aquatic Ecosystems
- Air Quality
- Visual Aspects

The most persistent of these residual impacts will be the impact on groundwater quality which could require ongoing remediation post closure.

Environmental components for which **no residual impact** will be present include:

- Blasting and Vibration
- Traffic
- Geochemistry
- Wetlands
- Noise

Table 11.1.4(a): Key Findings – Post Closure Phase Residual Impacts and Risks

Environmental Component	Impact and Risk prior to Mitigation	Impact and Risk after Mitigation	Comment
Socio Economic	**Medium**	**Low**	Socio-Economic residual impact relate to the post closure land use in which agricultural use will only be partially reinstated. Rehabilitation will be done to support cattle grazing potential which will allow the land to be used commercially for farming subject to certain conditions of grazing potential limitations.
Socio-Cultural	**High**	**Low**	Rehabilitation and mine closure will make all aspects on the site safe for humans and animals. However, if the rehabilitated site is allowed to deteriorate, it could pose a threat to community health. For this reason the post closure aftercare and monitoring is of the utmost importance to ensure a sustainable post closure state safe for human and animal occupation.
Heritage & Archaeological	**High**	**Low**	In the event that a sustainable post closure land use is not reinstated, heritage and archaeological resources on the site (graveyards) will be prone to vandalism and destruction. In order to prevent this, a sustainable post closure land use must be established.
Blasting & Vibration	**No Impact**	**No Impact**	There will be no post closure residual blasting and vibration impact.
Traffic	**No Impact**	**No Impact**	There will be no post closure residual traffic impact. Traffic demand for any posy closure agricultural land use will be much less than for a mining and industrial land use.
Topography	**Medium**	**Low**	Rehabilitation and closure will aim to make all demolished structures, excavations, open pits, dumps and dams safe from a topographical stability and safety perspective. Post closure aftercare and monitoring is required to confirm the stability and safety of all rehabilitation.
Soils	**Medium**	**Low**	Although soils will be rehabilitated to comply with contaminated land quality objectives, a loss in soil horizon and fertility is inevitable. Furthermore, hidden soil contamination could migrate to surface through capillary action. Post closure aftercare and monitoring is essential to confirm that contaminated soils have been removed or remediated to an acceptable and sustainable standard.
Land Capability	**Medium**	**Low**	The proposed post closure land capability objective is to achieve the Chamber of Mines Grazing Capability Class. Post closure aftercare and monitoring is essential to confirm that the post closure land capability objective is met in a sustainable fashion.
Land Use	**Medium**	**Low**	The post closure land use objective is to support sustainable commercial agricultural use - grazing capability. Post closure aftercare and monitoring is essential to confirm that the post closure land use objective is met in a sustainable fashion.

Environmental Component	Impact and Risk prior to Mitigation	Impact and Risk after Mitigation	Comment
Geology & Geochemistry	**No Impact**	**No Impact**	Due to the mining of the Chromite and PGM ore bodies, the geology of the site will remain in an altered state post closure. However, in view of the fact that the site will be geochemically stable (no AMD will be generated) post closure, this residual impact is not deemed to be of any significance.
Groundwater	**Medium**	**Low**	Historical infiltration of soluble contaminants into the sub-surface has resulted in a groundwater pollution plume existing underneath the HERNIC footprint. This impact will be addressed through various mitigation measures during the operational and decommissioning phases as per the groundwater management plan. However some residual groundwater pollution is likely to persist post closure. The post closure impact will be managed through an ongoing groundwater remediation programme. Post closure aftercare and monitoring is essential to confirm that the post closure groundwater remediation objectives are met.
Surface Water	**Medium**	**Low**	In its fully rehabilitated state, the surface water impact post closure for the HERNIC site should be low as the site should be free draining and all storm water run-off should be clean. However in the event that erosion and denudation of rehabilitated areas occur, a post closure residual surface water quality impact could manifest. The full remedy for this situation lies in the post closure aftercare and monitoring programme, specifically as it pertains to soils, vegetation and surface water management.
Plant Life	**Medium**	**Low**	In its fully rehabilitated state, the plant life impact post closure for the HERNIC site should be low as the site should be fully re-vegetated. However in the event that erosion and denudation of rehabilitated areas occur, a post closure residual plant life impact could manifest. The full remedy for this situation lies in the post closure aftercare and monitoring programme, specifically as it pertains to vegetation management.
Animal Life	**Medium**	**Low**	Animal life impacts post closure will be directly correlated with plant life impacts. In its fully rehabilitated state, the plant life impact post closure for the HERNIC site should be low as the site should be fully re-vegetated. However in the event that erosion and denudation of rehabilitated areas occur, a post closure residual plant life impact could manifest. The full remedy for this situation therefore lies in the post closure aftercare and monitoring programme, specifically as it pertains to vegetation management.
Wetlands	**No Impact**	**No Impact**	There will be no post closure residual impacts on the two wetlands delineated downgradient from HERNIC
Aquatic Ecosystems	**Medium**	**Low**	Aquatic Ecosystems impacts post closure will be directly correlated with surface water impacts. In its fully rehabilitated state, the surface water impact post closure for the HERNIC site should be low as the site should be free draining and all storm water run-off should be clean. However in the event that erosion and denudation of rehabilitated areas occur, a post closure residual surface water quality impact could manifest.

Environmental Component	Impact and Risk prior to Mitigation	Impact and Risk after Mitigation	Comment
			The full remedy for this situation therefore lies in the post closure aftercare and monitoring programme, specifically as it pertains to soils, vegetation and surface water management.
Air Quality	**Low**	**Low**	Air Quality impacts post closure will be directly correlated with plant life impacts In its fully rehabilitated state, the plant life impact post closure for the HERNIC site should be low as the site should be fully re-vegetated. However in the event that erosion and denudation of rehabilitated areas occur, a post closure residual plant life impact could manifest. The full remedy for this situation therefore lies in the post closure aftercare and monitoring programme, specifically as it pertains to vegetation management.
Noise	**No Impact**	**No Impact**	There will be no post closure residual noise impact.
Visuals	**Low**	**Low**	Although some of the HERNIC infrastructure and rehabilitated landforms (e.g. the rehabilitated TSF) could still be on site due to alternative use for them being found, the post closure visual profile of the site will be fully acceptable when assessed against the post closure land use as well as against the regional sense of place.

11.2 FINAL SITE MAP

Refer to figure 11.2(a) for a Final Site Map for the HERNIC project. A large scale version of the Final Site Map is attached as **APPENDIX 11(A)**.

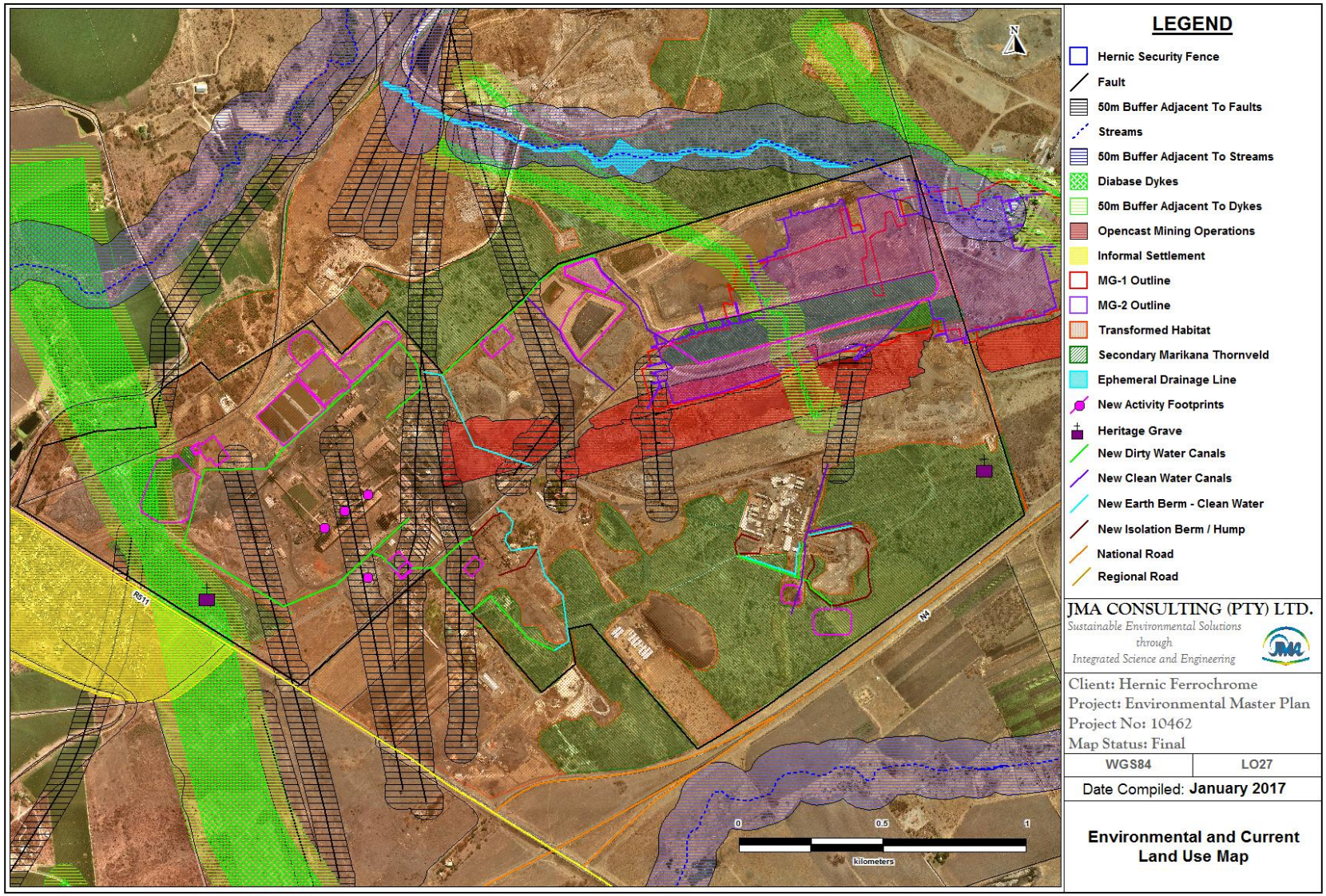

Figure 11.2(a): HERNIC Final Site Map.

11.3 SUMMARY OF POSITIVE AND NEGATIVE IMPLICATIONS

The HERNIC operations in general can have a **positive** impact on the local Socio-Economic conditions of the area. This can be achieved through the implementation of a preferential procurement programme and can be managed through implementation the Social and Labour Plan.

The Impact assessment further indicated that through the implementation of the different environmental management programmes and plans, the biophysical environment can also be effectively protected against significant harm. The proposed new activities which form part of this application, all have the objective of achieving this gaol. The overall outcome of the implementation of these programmes will be **positive**.

As with any operation of this nature and magnitude, closure of the site will have **negative** socio-economic and socio-cultural consequences post closure. Measures proposed for the decommissioning and closure phase will attempt to mitigate these impacts.

The post closure situation will see the implementation of a new Land Use, namely agricultural grazing. Furthermore several buildings and other infrastructure will be available for development/use. This certainly represents a **positive** outcome.

12. PROPOSED IMPACT MANAGEMENT OBJECTIVES/OUTCOMES

This section provides the proposed impact Management Objectives, and the impact Management Outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation.

Table 12(a) summarizes the information.

Table 12(a): Proposed Impact Management Objectives and Management Outcomes

Environmental Component	Management Objective	Construction Phase Management Outcomes	Operational Phase Management Outcomes	Decommissioning and Closure Phase Management Outcomes	Post Closure Phase Management Outcomes
Socio-Cultural/ Socio-Economic Environment	Positive Community Liaisons.	Local labour/ local suppliers involved in Construction Activities.	Local labour/ local suppliers involved in the Operations of the Site.	Local labour/ local suppliers involved in Decommissioning and Closure Activities.	Sustainable Socio-Cultural/ Economic Legacy to be Visible.
Archaeological and Heritage Environment	No Impact on the Heritage Resources (two Graveyards).	Heritage Resources not to be impacted during the Construction Activities.	Heritage Resources not to be impacted during the Operations of the Site.	Heritage Resources not to be impacted during the Decommissioning and Closure Activities.	No Residual Impact on the Heritage Resources to be present.
Palaeontological Environment	No Impact on the Palaeontological Resources (Fossils).	Palaeontological Resources not to be impacted during the Construction Activities.	Palaeontological Resources not to be impacted during the Operations of the Site.	Palaeontological Resources not to be impacted during the Decommissioning and Closure Activities.	No Residual Impact on the Palaeontological Resources to be present.
Land Use	Stable, Self-Sustaining Locally Indigenous Vegetative Cover.	Impact to be Restricted to within the HERNIC Operations Perimeter.	Impact to be Restricted to within the HERNIC Operations Perimeter.	Impact to be Restricted to within the HERNIC Operations Perimeter.	Post Closure Land Use of Extensive Grazing to be supported.
Infrastructure (Roads)	Good and Safe Road Conditions.	Road Conditions that Pose No Safety Risk.	Road Conditions that Pose No Safety Risk.	Road Conditions that Pose No Safety Risk.	Road Conditions that Pose No Safety Risk.
Blasting and Vibration Environment	Minimize Damage to Surface Infrastructure.	No Damage to Surface Infrastructure	No Damage to Surface Infrastructure	No Damage to Surface Infrastructure	No Damage to Surface Infrastructure
Traffic Aspects	Ensure Free Flowing Traffic.	No congestion of Traffic at and around HERNIC Operations.	No congestion of Traffic at and around HERNIC Operations.	No congestion of Traffic at and around HERNIC Operations.	No congestion of Traffic at and around HERNIC Operations.
Topography	Minimize Alteration to the Natural Elevation and Slope of the Topography.	Topographical Impact to be restricted to Development Footprint and appropriate Buffer Zone.	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.	Topographical Impact to be restricted to within the HERNIC Operations Perimeter.	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.	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.	No Visible Signs of Erosion. Soil Fertility that allows for Stable, Self-Sustaining Vegetation Cover.	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	No Management Outcomes proposed	No Management Outcomes proposed	No Management Outcomes proposed

Environmental Component	Management Objective	Construction Phase Management Outcomes	Operational Phase Management Outcomes	Decommissioning and Closure Phase Management Outcomes	Post Closure Phase Management Outcomes
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.	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.	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.	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.	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.	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.	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.	Restrict Impact to Development Footprint and appropriate Buffer Zone. Absence of Invasive Alien Species.	Restrict Impact within the HERNIC Operations Perimeter. Absence of Invasive Alien Species.	Restrict Impact within the HERNIC Operations Perimeter. 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.	Restrict Impact to Development Footprint and appropriate Buffer Zone.	Restrict Impact within the HERNIC Operations Perimeter.	Restrict Impact within the HERNIC Operations Perimeter.	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 development within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives.	No activities within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives.	No activities within demarcated wetland areas. Surface Water Quality to be Complaint with Resource Quality Objectives.	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.

Environmental Component	Management Objective	Construction Phase Management Outcomes	Operational Phase Management Outcomes	Decommissioning and Closure Phase Management Outcomes	Post Closure Phase Management Outcomes
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.	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.	Surface Water Quality to be Compliant with the Background Biomonitoring Profile and According to the Ecological Reserve.	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.	Air Quality to be Compliant with the Conditions set out in the AEL.	Air Quality to be Compliant with the Conditions set out in the AEL.	Air Quality to be Compliant with the Conditions set out in the AEL.
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)).	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).	Noise Level at Surrounding Receptors to be within the Acceptable Noise Level (SANS 10103:2008 (Urban)).	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.	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.	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.	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.	No residual visible air quality impact. Final landforms to present no visual intrusion within the Surrounding Natural Landscape.

13. FINAL PROPOSED ALTERNATIVES

As far as the **proposed new activities** are concerned, several alternatives were assessed during the Scoping Phase and beyond during the EIA Phase.

The types of alternatives considered included property, location, type of activity, design/layout, technology and operational aspects, as well as the no-go option.

The motivated site alternatives are listed in Table 13(a) below.

Table 13(a): Motivations for the Preferred Sites

PROPOSED NEW ACTIVITY	MOTIVATION FOR THE SELECTED SITE
Decommissioning of two Historic Slimes Dams	These are existing facilities that need to be de-commissioned and the existing footprints must be rehabilitated.
Decommissioning of Phase 1 of the H:H Slimes Dam	This is an authorized existing facility and it needs to be decommissioned and closed in-situ as per the original intent and approval.
Development and Expansion of the Process Water and Storm Water Canal System including Silt Traps	The localities for these facilities are governed by the site topography and storm water run-off characteristics as well as the requirements of NWA Regulation GN 704.
Development of the Morula PCD	The locality for this facility is governed by the site topography and storm water run-off characteristics as well as the requirements of NWA Regulation GN 704.
Expansion of Storm Water PCD No.1	This is an existing facility that will be expanded (upgraded).
Development of Storm Water PCD No.2	The locality for this facility is governed by the site topography and storm water run-off characteristics as well as the requirements of NWA Regulation GN 704.
Development of Storm Water PCD No.3	The locality for this facility is governed by the site topography and storm water run-off characteristics as well as the requirements of NWA Regulation GN 704.
Development of Storm Water PCD No.4	The locality for this facility is governed by the site topography and storm water run-off characteristics as well as the requirements of NWA Regulation GN 704.
Expansion of the OB Plant Process Water Dam	This is an existing facility that will be expanded (upgraded).
Expansion of the Plant Process Water Dam	This is an existing facility that will be expanded (upgraded).
Expansion of the CRP Process Water Dam	This is an existing facility that will be expanded (upgraded).
Decommissioning of the Morula Dewatering Dam	This is an authorized existing facility and it needs to be decommissioned and closed in-situ as per the original intent and approval.
Development of a New Salvage Yard	The site selection process for the New Salvage Yard was informed primarily by available land space as well as an optimized location in terms of logistical and operational aspects. The site selected was scrutinized for environmental acceptability by super-imposing the proposed development layout on the environmental features mapped during the baseline studies. The site was found to be acceptable from an environmental perspective.
Expansion of the Tap Hole Fume Extraction System	This is an existing facility that will be expanded (upgraded).
Expansion of the Finished Product Plant Dust Abatement System	This is an existing facility that will be expanded (upgraded).
Expansion of the HERNIC Tailings Storage Facility (TSF) and RWD	This is an existing facility that will be expanded.
Re-Use of Slag Sand at the Fine Slag Processing Plant	The re-use activities are located at the site where the material is currently stockpiled.
Re-Use of Coarse Slag at the Chrome Recovery Plant	The re-use activities are located at the site where the material is currently stockpiled.
Re-Use of Mine Waste Rock at the Mine Waste Rock Stockpile	The re-use activities are located at the site where the material is currently stockpiled.

The overall final proposed alternatives are given in Table 13(b).

Table 13(b): Final Proposed Alternatives

Activity	Alternative Property	Alternative Site	Alternative Type of Activity	Alternative Design/Layout	Alternative Technology	Alternative Operational Aspects	No-Go Alternative
Decommissioning of two Historic Slimes Dams	Existing Activity on the Farm De Kroon 444 JQ	Existing Activity	The decommissioning of the two Historic Slimes Dams is a legal requirement.	No design or layout is required to decommission the two Historic Slimes Dams. A procedure will be documented by a qualified civil engineer.	The decommissioning of the two Historic Slimes Dams will be done through standard civil construction technologies as determined by site and material conditions.	Alternative 1. Mechanical removal of the Slimes from the two Historic Slimes Dams followed by transport of the material on trucks via road for depositing on the H:H Slimes Dam. Alternative 2. Hydro-mining of the slimes from the two Historic Slimes Dams, followed by slurrying and pumping of the slurried slimes for depositing on the H:H Slimes Dam. Alternative 3. Mechanical mining of the slimes from the two Historic Slimes Dams, followed by on-site pelletizing and recycling through the Furnaces to extract residual chrome.	The option of not implementing the activity will result in a legal non-compliance.
Motivation for Preferred Alternative	No Property Alternative	No Site Alternative	No Activity Type Alternative.	No Design/Layout Alternative.	No Technology Alternative.	**Preferred Alternative is Alternative 3 with a possible combination with Alternative 1.**	The no-go option is not feasible.
Decommissioning of Phase 1 of the H:H Slimes Dam	Existing Activity on the Farm De Kroon 444 JQ	Existing Activity	The decommissioning of Phase 1 of the H:H Slimes Dam is a legal requirement.	A formal civil engineering design, giving full compliance with DWS and DEA standard procedure requirements as relating to the closure of Waste Disposal Facilities, is currently being performed to rehabilitate and close the H:H facility.	The decommissioning of the H:H Slimes Dam will be done through standard civil construction technologies as determined by site and material conditions.	Alternative 1: Deposition of the slimes from the two Historic Slimes Dams onto the H:H Slimes Dam, followed by final shaping, capping and closure of the H:H Slimes Dam. Alternative 2: No additional deposition but only final shaping, capping and closure of the H:H Slimes Dam.	The option of not implementing the activity will result in a legal non-compliance.
Motivation for Preferred Alternative	No Property Alternative	No Site Alternative	No Activity Type Alternative.	No Design/Layout Alternative.	No Technology Alternative.	**The preferred Alternative is Alternative 1. Alternative 2 is equally acceptable.**	The no-go option is not feasible.

Activity	Alternative Property	Alternative Site	Alternative Type of Activity	Alternative Design/Layout	Alternative Technology	Alternative Operational Aspects	No-Go Alternative
Development and Expansion of the Site Storm Water and Process Water Management Measures	Existing Activity on the Farm De Kroon 444 JQ	The site locations for the process water and storm water management systems are dictated by the location of the current mining and smelting activities, as well as by surface topographical and footprint availability considerations.	The upgrading of the Storm and Process Water Management Systems is required in order to comply with GNR 704 as well as with DWS Best Practice Guidelines on Water Management at Mines.	The design and layout of these facilities need to comply with rigorous DWS Best Practice Guidelines and need to conform the GNR 704. Designs are done in strict compliance with these requirements.	The upgrading of the Storm and Process Water Management Systems will be done through standard civil construction technologies as determined by the approved designs as well as site conditions.	The actual upgrading and operation of the Storm Water and Process Water management systems will be done in strict compliance with DWS approved designs as well as DWS Best Practice Guidelines for process water and storm water management at mines.	The option of not implementing the activity will result in a legal non-compliance.
Motivation for Preferred Alternative	No Property Alternative	No Site Alternatives Existing locations will be used as far as possible. Alternatives are excluded due to the fact that placement of drains, silt traps and dams are dictated by topographical and footprint availability considerations.	No Activity Type Alternative.	No Design/Layout Alternative.	No Technology Alternative.	No Operational Aspects Alternative.	The no-go option is not feasible.
Decommissioning of the Morula Dewatering Dam	Existing Activity on the Farm De Kroon 444 JQ	Existing Activity	The decommissioning of the Morula Dewatering Dam is a legal requirement.	A civil engineering design and closure protocol is currently being performed to decommissioning the Morula Dewatering Dam according to DWS Best Practice.	The decommissioning of the Morula Dewatering Dam will be done through standard civil construction technologies as determined by site and material conditions.	The decommissioning will be done in strict compliance with DWS Best Practice and according to a documented closure work protocol.	The option of not implementing the activity will result in a legal non-compliance.
Motivation for Preferred Alternative	No Property Alternative	No Site Alternatives	No Activity Type Alternative.	No Design/Layout Alternative.	No Technology Alternative.	No Operational Aspects Alternative.	The no-go option is not feasible.

Activity	Alternative Property	Alternative Site	Alternative Type of Activity	Alternative Design/Layout	Alternative Technology	Alternative Operational Aspects	No-Go Alternative
Development of New Salvage Yard	Activity Required on the Farm De Kroon 444 JQ	Two Site Alternatives were considered. Site Alternative 1: Upgrading and Expansion of the Existing Salvage Yard. Site Alternative 2: Development of a New Salvage Yard in proximity to the redundant Old Civil Workshop Area.	The Hernic Mining and Smelting Operations generate a large volume of salvageable materials and a Salvage Yard is therefore a basic requirement.	The design and layout of the new Salvage Yard is dictated by logistical considerations, none of which have any environmental implication.	The development of the new Salvage Yard will be done through standard civil construction technologies as determined by the approved designs as well as site conditions.	The construction of the new Salvage Yard will be done in strict compliance with the DEA approved designs and the operation will be done in compliance with DEA Norms and Standards.	The option of not implementing the activity will compromise the entire Hernic mining and smelting operation.
Motivation for Preferred Alternative	No Property Alternative	Site Alternative 1 was discarded as the site is too small. **Site Alternative 2** is the preferred alternative site as it is big enough, it is located along favourable access route, it does not interfere with existing plant activities and is located optimally from a salvage logistical perspective.	No Activity Type Alternative.	No Design/Layout Alternative.	No Technology Alternative.	No Operational Aspects Alternative.	The no-go option is not feasible.

Activity	Alternative Property	Alternative Site	Alternative Type of Activity	Alternative Design/Layout	Alternative Technology	Alternative Operational Aspects	No-Go Alternative
Expansion of the Tap Hole Fume Extraction System	Existing Activity on the Farm De Kroon 444 JQ	The fume extraction system is required at the existing furnace tap holes.	Air quality control, and in this instance particulate emission abatement at the furnaces, is a legal requirement.	The design and layout of these measures are dictated by the existing site specific conditions. No new stacks are required as cleaned gas will be vented through existing stacks.	Alternative 1: Cyclones Alternative 2: Electrostatic Precipitators Alternative 3: Fabric/Bag Filters Alternative 4: Wet Scrubbers Alternative 5: Combinations of the above	Alternative 1: Vent the cleaned gas through current active stacks. Alternative 2: Vent the cleaned gas through existing but currently in-active, or new stacks.	The option of not implementing the activity will result in a legal non-compliance.
Motivation for Preferred Alternative	No Property Alternative	No Site Alternative	No Activity Type Alternative.	No Design/Layout Alternative.	Furnaces 1 and 2 – **Existing** Technology is Wet Scrubbers. No alternative required. Furnaces 3 and 4 – **Existing** Technology is Bag Filters. No alternative required.	**The Preferred Operational Alternative is Alternative 2.**	The no-go option is not feasible.
Expansion of the Finished Product Plant Dust Abatement System	Existing Activity on the Farm De Kroon 444 JQ	The dust abatement system is required at the existing crushing and screening plant.	Air quality control, and in this instance dust abatement at the finished product plant, is a legal requirement.	The existing bag plant just needs to be enlarged to increase its capacity and efficiency.	Old Furnace 3 & 4 Bag Filter will be installed here.	The plant will be operated as per the instructions in the design report.	The option of not implementing the activity will result in a legal non-compliance.
Motivation for Preferred Alternative	No Property Alternative	No Site Alternative.	No Activity Type Alternative.	No Design/Layout Alternative.	No Technology Alternative.	No Operational Aspects Alternative.	The no-go option is not feasible.

Activity	Alternative Property	Alternative Site	Alternative Type of Activity	Alternative Design/Layout	Alternative Technology	Alternative Operational Aspects	No-Go Alternative
Expansion of the HERNIC Tailings Storage Facility (TSF) and associated RWD	Existing Activity on the Farm De Kroon 444 JQ	The expansion of the TSF can only be done in a southerly direction. The RWD will be expanded in a westerly direction. The footprint expansion size is limited due to the proximity of the underground and opencast mining.	The expansion of the TSF and RWD is a basic requirement to cater for the disposal of the Smelting and PGM Plant Fine Tailings. The waste is deposited as a tailings.	The design and layout for the TSF Expansion is governed by the design and layout of the current facility, the available footprint for expansion as well as the current disposal method and infrastructure.	The expansion of the TSF will be done through standard civil construction technologies as determined by the approved designs as well as site conditions.	The expansion of the TSF will be done in strict compliance with the DWS approved designs and the operation will be done in accordance with Standard Best Practices and the Operational Plan for the TSF Dam.	The option of not implementing the activity will compromise the entire Hernic mining and smelting operation.
Motivation for Preferred Alternative	No Property Alternative	No Site Alternative.	No Activity Type Alternative.	No Design/Layout Alternative.	No Technology Alternative.	No Operational Aspects Alternative.	The no-go option is not feasible.
Re-use of Fine Slag from the Fine Slag Processing Plant	Existing Activity on the Farm De Kroon 444 JQ	The fine slag is one of the two final products from the Fine Chrome Recovery Plant It therefore represents an existing activity.	The fine slag is one of the two final products from the Fine Chrome Recovery Process.	The manufacturing of the Fine Slag represents a current activity. No design or layout alternative is applicable.	The manufacturing of the Fine Slag represents a current activity. No alternative technology is required.	The Fine Slag is manufactured in an existing activity. Selling of the fine slag entails the placement of orders, payment and then loading onto trucks with a front end loader and transport from the site by road.	The option of not implementing the activity will result in the requirement for Disposal of the Fine Slag.
Motivation for Preferred Alternative	No Property Alternative	No Site Alternative.	No Activity Type Alternative.	No Design/Layout Alternative.	No Technology Alternative.	No Operational Aspects Alternative.	The no-go option does not support the overall waste management objectives.
Re-use of Coarse Slag (Slag Chips) from the Chrome Recovery Plant.	Existing Activity on the Farm De Kroon 444 JQ	The Slag Chips is one of the two final products from the Chrome Recovery Plant It therefore represents an existing activity.	The Slag Chips is one of the two final products from the Chrome Recovery Process.	The manufacturing of the Slag Chips is a current activity. No design/layout alternative applicable.	The manufacturing of the Slag Chips represents a current activity. No alternative technology is required for the selling of the Slag Chips.	The Slag Chips are manufactured in an existing activity. Selling of the Slag Chips entails the placement of orders, payment and then loading onto trucks with a front end loader and transport from the site by road.	The option of not implementing the activity will result in the requirement for Disposal of the Slag Chips.
Motivation for Preferred Alternative	No Property Alternative	No Site Alternative.	No Activity Type Alternative.	No Design/Layout Alternative.	No Technology Alternative.	No Operational Aspects Alternative.	The no-go option does not support the overall waste management objectives.

Activity	Alternative Property	Alternative Site	Alternative Type of Activity	Alternative Design/Layout	Alternative Technology	Alternative Operational Aspects	No-Go Alternative
Re-use of Mine Waste Rock from the Mine Waste Rock Dump.	Existing Activity on the Farm De Kroon 444 JQ	The manufacturing of the aggregate represents a crushing and screening operation of mine waste rock currently contained on the Morula Mine Waste Rock Dump. There is ample space for the aggregate plant, transport routes are favourable and the required storm water management measures will be in place.	The manufacturing of aggregate from the Mine Waste Rock represents a crushing and screening process.	The infrastructure required to support the crushing and screening of the Mine Waste Rock comprises a small and standardized crushing and screening plant whilst the actual site layout is governed by the existing infrastructure and access roads.	The crushing and screening of the Mine Waste Rock comprises a small and standardized crushing and screening operation. Neither this, nor the selling of the Aggregate requires any technology.	The Aggregate is manufactured through a standard crushing and screening operation. Selling of the aggregate entails the placement of orders, payment and then loading onto trucks with a front end loader and transport from the site by road.	The option of not implementing the activity will result in the requirement for Disposal of the Mine Waste Rock.
Motivation for Preferred Alternative	No Property Alternative	No Site Alternative.	No Activity Type Alternative.	No Design/Layout Alternative.	No Technology Alternative.	No Operational Aspects Alternative.	The no-go option does not support the overall waste management objectives.

14. ASPECTS FOR INCLUSION AS CONDITIONS OF AUTHORIZATION

This section of the report relays aspects, as identified by each Specialist and the EAP, to be included as conditions of Environmental Authorisation in Table 14(a).

Table 14(a): Aspects for Inclusion as Conditions of Environmental Authorization

Environmental Component	Aspects for Inclusion as Conditions of Environmental Authorisation
Socio-Cultural/ Socio-Economic Environment	No Aspects identified/listed as Conditions to be included of Environmental Authorisation.
Archaeological and Heritage Environment	• The Graveyards must be demarcated with Fences or with Walls and must be Fitted with Access Gates. • Regulated Visitor Hours should be implemented that is compatible with Mine Safety rules. This will not be necessary if the Graveyards are located next to the National or a Public Road which provides direct Access to the Graveyards. • Corridors of at least 30m should be maintained between the Graveyard's Fence and any Developmental Components such as Infrastructure or Roads that may be developed in the future. • The Graveyards should be Inspected every three months. Inspections should be noted in an Inspection Register. The Register should outline the State of the Graveyards during each inspection. Reports on Damages to any of the Graves or to the Graveyard (fence, walls, gates) should be followed with the necessary Maintenance Work. Maintenance Work should be recorded in the Inspection Register. • Graveyards should be kept Tidy from any Invader Weeds and any other Refuse. • A site specific Heritage Management Plan (HMP) must be developed and implemented for the Burial Grounds. The HMP must be submitted to SAHRA for comment and approval prior to Construction. The HMP must include Visitor Access Protocols and a Monitoring Programme for the Graves. • If any evidence of Archaeological Sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), Fossils or other categories of Heritage Resources are found during the Proposed Development, SAHRA APM Unit (Natasha Higgitt/John Gribble 021 462 5402) must be alerted. If unmarked Human Burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Mimi Seetelo 012 320 8490), must be alerted immediately. A Professional Archaeologist or Palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the findings. If the newly discovered Heritage Resources prove to be of Archaeological or Palaeontological significance, a Phase 2 Rescue Operation may be required subject to a permit issued by SAHRA.
Palaeontological Environment	If Fossils are Uncovered in the course of Construction Activities, HERNIC must Immediately call in a Qualified Palaeontologist to Assess the situation and, if necessary, undertake Excavation of the Fossils.
Soils, Land Use and Land Capability	• HERNIC must take full cognizance of the Land Use Sensitivities of the Proposed New Activities and must take all Sensitive and Buffer Zones identified into consideration throughout the life of Smelter/Mine. • HERNIC must further comply with the Recommendations for Mitigation, Management and Monitoring as stated by the Soil Scientist. • The Approval is subject to the Development of the Proposed New Activities being sited in Accordance with the Approximate Proposed Location of such sites (as provided), and that should these Proposed Locations be shifted slightly for any reason, that these shifted sites do not intrude into the Sensitive and Buffer Zones.
Infrastructure (Roads)	No Aspects identified/listed as Conditions to be included of Environmental Authorisation.
Blasting and Vibration Environment	The Ground Vibration limits recommended for Blasting Operations at point of measurement Xstrata Eland Mine Plant 20 mm/s, Xstrata Eland Mine Tailings Facility 15.6 mm/s, General structures on surface 25 mm/s.

Environmental Component	Aspects for Inclusion as Conditions of Environmental Authorisation
Traffic Aspects	• It is Recommended to Upgrade the R511 / Road B intersection from a three way stop controlled intersection to a priority controlled intersection with priority on the R511 road. • Upgrade the R511 / N4 Off-Ramp intersection from a three way stop controlled intersection to a priority controlled intersection with priority on the R511 road. The upgrading of the R511 / N4 Off-Ramp should be part and in line of the N4 Bakwena Highway future plans. • It is Recommended to Improve the safety at the R511 / Access to Hernic Ferrochrome intersection be provided with street lights. • In terms of Public Transport provision as well as Pedestrian Safety no on-street pick up / drop offs at the intersection of the R511 and the Access to the Mine, should be allowed (drop-offs / pickup should be done on site).
Topography	Create Stable Landforms and Free-Draining Surfaces.
Geology and Geochemistry	No Aspects identified/listed as Conditions to be included of Environmental Authorisation.
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. 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. All the Mitigation, Management and Monitoring Measures should be put in place during each Project Life-Cycle Phase.
Plant Life Environment	Stable, Self-Sustaining Locally Indigenous Vegetative Cover that Supports the Post Closure Land Use. Absence of Invasive Alien Species. All the Mitigation, Management and Monitoring Measures should be put in place during each Project Life-Cycle Phase.
Animal Life Environment	Stable, Self-Sustaining Locally Indigenous Vegetative Cover that Supports the Post Closure Land Use. Absence of Invasive Alien Species. All the Mitigation, Management and Monitoring Measures should be put in place during each Project Life-Cycle Phase.
Wetland Environment	Stable, Self-Sustaining Freshwater Ecological Systems. Surface Water Quality to be Complaint with Resource Quality Objectives. All the Mitigation, Management and Monitoring Measures should be put in place during each Project Life-Cycle Phase
Aquatic Ecosystems Environment	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. All the Mitigation, Management and Monitoring Measures should be put in place during each Project Life-Cycle Phase.
Air Quality Environment	Supplementary Abatement and Mitigation Strategies will be Required in addition to Conventional Measures to Mitigate the Additional Fine Particles stored on the TSF following the PGM Extraction Plant.
Noise Environment	Maintain Acceptable Noise Level (SANS 10103:2008 (Urban)) at Surrounding Receptors.
Visual Aspects	No Aspects identified/listed as Conditions to be included of Environmental Authorisation.

15. ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE

The Table below (Table 15(a)) presents Assumptions, Uncertainties and Gaps in Knowledge in terms of each Environmental Component assessed by the team of Specialists, which relate to the assessment, predictive methods/models (if applied) as well as the mitigation measures proposed.

Table 15(a): Assumptions, Uncertainties and Gaps in Knowledge per Environmental Components Assessed

Environmental Component	Assumptions	Uncertainties	Gaps in Knowledge
Socio-Cultural/ Socio-Economic Environment	It is assumed that HERNIC will adhere to legally required and current industry management principles.	• The potential external costs associated with the project were based on information supplied by sub-specialists for the Environmental Impact Assessment of the project. • The economic impact model was based on information supplied by HERNIC (Pty) Ltd. • In the absence of local economic data, the size of the local Madibeng economy is based on high level estimates derived from a historic (2010) figures obtained from a commercial database (IHS Global Insight) and current Stats SA provincial statistics. • Economic multipliers, average salaries and wages and value added as a percentage of total income were based on provincial and national averages.	Occupational Health and Safety of the HERNIC Ferrochrome Complex falls outside the scope of the Social and Economic Impact Assessment (SEIA).
Archaeological and Heritage Environment	This study was primarily based on priori assumptions (or hypothetical evidence) such as the fact the heritage character of the larger project area is known according to the types and ranges of heritage resources which have been identified during earlier archaeological surveys which have been done in the past. These priori assumptions were correlated with empirical evidence which was derived from the fieldwork observations.	It is possible that the base line heritage survey may have missed heritage resources in the Project Area as heritage sites may occur in clumps of vegetation or tall grass while others may lie below the surface of the earth and may only be exposed once development commences.	No Gaps in Knowledge stated.
Palaeontological Environment	As the rocks of the Bushveld Complex are of igneous origin there is no possibility of fossils being present.	There is a slight, but very unlikely, possibility that fossils could be present in Quaternary alluvial deposits present in low-lying areas.	No Gaps in Knowledge stated.
Land Use	Information recorded in-field was of a qualitative nature. The dryland/irrigated agricultural production potential is subjective, given that yields assume a high level of expertise and management, and furthermore the unpredictable rainfall patterns also play a role.	No Uncertainties specified.	No Gaps in Knowledge stated.
Blasting and Vibration Environment	The project is part of an existing mining operation. The anticipated levels of ground vibration estimated in this study were calculated using standard accepted methodology according to international and local regulations.	No Uncertainties specified.	No Gaps in Knowledge stated.

Environmental Component	Assumptions	Uncertainties	Gaps in Knowledge
Blasting and Vibration Environment	• Blasting operations will only be conducted in the underground workings at levels between 50 - 350 m below surface. • Assumption is made that the predictions are a good estimate with significant safety factors to ensure that expected levels are based on worst case scenarios. These will have to be confirmed with actual measurements once the operation is active. • The baseline data was used as guideline of expected levels and predictions adjusted to yield similar levels than the baseline. There is no other information available that qualifies the recorded data. • The Blasting and Vibration study was based on data provided by HERNIC and internationally accepted methods and methodology used for calculations and predictions.	No Uncertainties specified.	No Gaps in Knowledge stated.
Traffic Aspects	The expected trip generation during the AM and PM Peak hour was determined based on a number of assumptions: • Estimated number of employees at the mine areas: ±979 employees (Supervision (3%), skilled (75%), semi-skilled (7%) to unskilled people (2.1%), 2% administration, ±32 skilled employees • Number of working shifts: 3shifts (morning 05:30 to 13:30, Afternoon 14:30 to 20:30 and Night 21:30 to 04:30) and 08:00 to 16:00 • Lifespan of the mine >20 years • Growth Rate (applied to project the background traffic: 2% per annum • Transport Mode: Conveyer belt, Loading and hauling with trucks and shovel, excavators (used to transport ferrochrome and material to and from the mine, internal roads), Private vehicles 15% (mostly used by skilled employees) and Buses 85% (used by the majority of semi-skilled to unskilled employees) • Transport requirements: Buses with a capacity of 60 passengers and taxi's with a capacity of 15 passengers will transport employees to and from the mine, Private Vehicle Occupancy rate 1.8 people/car	No Uncertainties specified.	No Gaps in Knowledge stated.

Environmental Component	Assumptions	Uncertainties	Gaps in Knowledge
Traffic Aspects	• It is assumed that the ferrochrome will be transported by 30 ton interlink, side tipping trucks, 365 days per year, in daylight hours.	No Uncertainties specified.	No Gaps in Knowledge stated.
Topography	The information used was obtained from the relevant published 1:50 000 topographical maps, detailed on site surveys of the surface topography and no assumptions were made during the topographical assessment.	No predictive methods were used during the topographical assessment, hence no uncertainties will be described.	The information used was obtained from the following published 1:50 000 topographical maps and verified during the site investigations: 1:50 000 Topographical Map Series of South Africa. Sheet 2527 DB; Brits (2001).
Soils and Land Capability	• The volume of available in-situ 'topsoil' (suitable topsoils and subsoils), calculated for the soil utilization (stripping) guide is precise up till the weathering/hard rock layer or G-horizon, since this figure was calculated using both soil depth and extent (area). • The total volume of the 'topsoil' 'stockpiles' (dumps, piles, and banks) was estimated. Although the total area of the 'stockpiles' is known, the height of the 'stockpiles' is not known. Thus, for the purposes of the rehabilitation 'topsoil' budget, the average 'stockpile' height was estimated at 2.5m in order to calculate a volume. • The volume of 'waste' (and 'non-waste') overburden in soil areas may be calculated, since both the depth and extent (area) are known. However, the total volume of 'waste' and 'non-waste' dumps/piles/banks/prepared surfaces is unknown, since the heights (above the surface) and depths (below the surface) of these features are also unknown. This aspect was not included in our scope of work. Although the heights of the various features can be measured, it would not be possible to determine the depths of 'waste' / 'non-waste' layers below the surface, the aforementioned since a manual soil auger is only 1.5m in length, and furthermore because such layers are frequently too hard to penetrate with the auger. • The predictive methods used throughout the soils, land capability and land use investigations adhere to the relevant regulating requirements and are both applicable to and adequate for the investigations conducted.	The vast majority of the information used/ recorded during the various studies was quantitatively/ qualitatively obtained, before, during, and after the field work exercise. Information that was collected during the various studies was either verified or quantified during the field investigations conducted on site, or afterwards by soil analysis of modal soil profiles (pits) or comparison with published data for the area.	• A knowledge gap exists for the heights/ depths and thus volumes of the 'waste' and 'non-waste' areas (dumps/ piles/ banks/ prepared surfaces), and the 'topsoil' 'stockpiles' (dumps/ piles/ banks). However, the location, classification and extent (area) of these features was mapped. • A further knowledge gap exists for the intensity and extent of potential soil pollution in the survey area. This may be a direct or indirect result of smelting (HERNIC); mining (HERNIC's Morula opencast and underground mine, Impala Platinum Mine, and Crocodile Mine); and private light industrial (Silverstone Crushers, Gravmax, RASA, workshops, and a concrete producer) activities; both on-site as well as in the adjacent and surrounding areas.

Environmental Component	Assumptions	Uncertainties	Gaps in Knowledge
Soils and Land Capability	These methods include the soil survey intensity (i.e. grid spacement), and the recording of observed / estimated data during the fieldwork exercise, as well as the analytical determinations conducted on the modal soil samples collected for agricultural analyses. • The 150m-grid auger observation interval was utilised throughout the survey area. The aforementioned survey interval is recommended for areas where detailed soil information is required (where large amounts of surface disturbance will, or have already occurred). The 150m-grid intensity represents the generally accepted minimum industry standard that will achieve a high mapping purity, ensuring that the area does not have to be revisited in the future in order to refine detail. • Observed soil variables are recorded accurately in the field (at each auger point / pit position). The 'Recorded soil variables' are either: 'Recorded per horizon' or 'Recorded per profile'. • Estimated soil variables are recorded approximately in the field (at each auger point / pit position), and include surface features (% of surface cover), topsoil organic carbon (%), clay content (%), sand grade (dominantly fine, medium, or coarse), and cultivation factors (coarse fragments %). The latter four estimates were adjusted slightly (where necessary), after comparing them with the soil analytical data of the modal soil profiles (topsoils and subsoils) that were collected. • The agricultural soil analyses were conducted at the laboratories of The Institute for Soil, Climate, and Water (ISCW) (Agricultural Research Council) on eight samples that were collected from five modal soil pits. The data is likely to be precise given that the laboratory has a long history and professional staff. • Due to the quantitative investigative nature of the assessment (soil form, effective rooting depth, signs of wetness in the soil profile, and slope), no significant assumptions were made. Furthermore the guidelines governing the classification of land capabilities and wetlands are clearly defined.		• Quantification (concentrations and distribution patterns) of the aforementioned would be obtained by analysing the soil/ 'waste'/ 'non-waste' samples that were collected from each auger point during the course of the soil survey, thereby providing 'Analytical Indicators of Pollution, Salinity and Wetness'. The aforementioned samples are currently stored in a deep freeze on site at HERNIC. A Contaminated Land Assessment may be conducted (recommended) in the future, based on the analytical data (and mapping) derived from the analysis of these stored samples.

Environmental Component	Assumptions	Uncertainties	Gaps in Knowledge
Geology and Geochemistry	Due to the quantitative investigative nature of the assessment no significant assumptions were made with regards to this Geology Specialist Study. All information included in the study was verified during the field investigations conducted at HERNIC.	All the information used during the geology baseline assessment was quantitatively obtained from and verified during the various field work programmes conducted on site. With the exception of the laboratory results, all the information used during the geological specialist study was either verified or quantified during the field investigations conducted on site.	The Geology Specialist Study was specifically undertaken with reference to the HERNIC site and no detailed geological investigations were therefore conducted for areas adjacent to the HERNIC operations. Although numerous geological exploration boreholes have been drilled on site, specifically adjacent to the historic opencast and current underground mining operations at HERNIC, no geological logs of the boreholes were provided. The interpretations of the geological logs have been made available, but the actual geological logs were not made available for this Geology Specialist Study Report. If provided, the geological logs could be used to confirm ore thicknesses and depths as well as the presence of linear geological features such as dykes and faults in support of this Geology Specialist Study.
Groundwater Environment	• The samples submitted for analysis, whether material or water samples are representative of that specific material / water body. • The information recoded during the drilling and the geochemical results obtained from the samples analysed are assumed to be representative of the specific geological environment at HERNIC. • The groundwater modelling is performed subject to the source-pathway-receptor hierarchy, and will investigate: the generation of soluble/mobile contaminants at the surface, the mobilization of these contaminants through the material and into the subsurface, the mixing of these contaminants within the saturated zone, as well as the	All the information used during the groundwater baseline assessment was quantitatively obtained from and verified during the various field work programmes conducted on site. With the exception of the laboratory results, all the information used during this Groundwater Specialist Study was either verified or quantified during the field investigations conducted on site.	This Groundwater Specialist Study was specifically undertaken with reference to the HERNIC site and no detailed geological or hydrogeological investigations were therefore conducted for areas adjacent to the HERNIC operations. Although numerous geological exploration boreholes have been drilled on site, specifically adjacent to the historic opencast and current underground mining operations at

Environmental Component	Assumptions	Uncertainties	Gaps in Knowledge
Groundwater Environment	subsequent lateral migration of these contaminants away from the potential points of infiltration within the saturated zone assuming that all the contaminants are mobile and conservative, i.e. they won't break down or chemically react within the groundwater system. Because a model is a simplified version of the real world phenomenon, various assumptions are made: • Rainfall will be consistent with the average annual rainfall figures. • Rainfall recharge is consistent across the entire site, expect for the opencast pit and areas covered by prepared / lined footprints. • Recharge through the base of the footprints is constant throughout the extent of the footprint. • Mining will take place and defined and scheduled. • The groundwater levels recorded are representative of the aquifers adjacent to the boreholes. • The weathered zone aquifers will display unconfined conditions and all groundwater flow will take place as porous flow, not fractured flow. • The calculated aquifer permeabilities and transmissivities are representative of the entire aquifer system. • Groundwater abstraction will take place as authorised or specified. • The source control and resource directed measures will be implemented as stated. • The groundwater qualities recorded at the monitoring boreholes is representative of the adjacent aquifer systems.		HERNIC, no geological logs of the boreholes were provided. The interpretations of the geological logs have been made available, but the actual geological logs were not made available for this Groundwater Specialist Study Report. If provided, the geological logs could be used to confirm ore thicknesses and depths as well as the presence of linear geological features such as dykes and faults in support of this Groundwater Specialist Study. No recorded long term groundwater abstraction volumes have been made for the abstraction of groundwater from the opencast pit, underground workings or several groundwater abstraction boreholes. The groundwater abstraction volumes which have been authorised in the WUL were therefore used as part of the groundwater impact assessment calculations. It is required that HERNIC install flow meters along each of the major groundwater abstraction points, to quantify and confirm the groundwater abstraction volumes on site.

Environmental Component	Assumptions	Uncertainties	Gaps in Knowledge
Surface Water Environment	• The surface water quantity impact was derived from Quatenary catchment studies and data published by the National Water Research Commission the WRC2005 Report. • Surface Water quality interpretations were made from one sample run per location conducted primarily during end of February 2016 and first week of March 2016. • Site inspections and observations on more than seven separate occasions during 2016 added to the conclusions made and mitigation measures presented that were deemed necessary. • Mitigation based on the improvements to existing surface water management measures were brainstormed with HERNIC and aligned to be practical and to consider future operational plans. • The mitigation measures proposed should be cost effective and based on best practice. • The water use at HERNIC was balanced using long term average rainfall figures and water volumes extracted from the irrigation canal; • The water balance presented includes metered flows and estimated flows and losses; • The closure land use for surface water considerations was assumed to be below capacity grazing land and at least wilderness land for surplus waste rock or slag stockpiles. • The open cast will eventually be completely rehabilitated by backfilling and shaping; • To provide free draining conditions would not be propagated at all cost.	• Water as source for continuous operations at HERNIC is highly dependent on the water from the Hartebeespoort Dam and groundwater. The water balances give only some indication as to the impact expected if prolonged drought conditions at the site would exist. • The main water losses at the TSF of tailings from the OB Plant and furnaces were estimated as well as all evaporation losses. However the total losses estimated tally with the import of water.	The site is considered a small site and all operations known to the specific industry. The measures proposed for mitigating the identified impacts do not require exceptional technical skills but rather environmental and civil engineering skills and experience applying industry standards (i.e. for clean and dirty surface water management, flood calculations, sediment control and rehabilitation and closure strategies).
Plant Life Environment	Sampling by its nature, means that not all individuals are assessed and identified. With ecology being dynamic and complex, some aspects (some of which may be important) may have been overlooked due to seasonal and temporal variances. It is, however, expected that floral communities have been accurately assessed and considered and sufficient information is available to allow informed decision making to take place.	Sampling by its nature, means that not all individuals are assessed and identified. Some species and taxa within the study area may have been missed during the assessment.	• The ecological assessment is confined to the study area and does not include the neighbouring and adjacent properties; these were however considered as part of the desktop assessment; • Due to the unseasonal drought conditions, aspects of floral ecology, some which may be

Environmental Component	Assumptions	Uncertainties	Gaps in Knowledge
Plant Life Environment			important, are likely to have not been recorded. However, extensive literature reviews of national, regional and local species databases were undertaken in order to address any perceived gaps in knowledge in order to accurately assess the floral ecology of the area.
Animal Life Environment	With ecology being dynamic and complex, some aspects (some of which may be important) may have been overlooked. It is, however, expected that most faunal and floral communities have been accurately assessed and considered.	Sampling by its nature, means that not all individuals are assessed and identified. Some species and taxa within the study area may have been missed during the assessment.	• The ecological assessment is confined to the study area and does not include the neighbouring and adjacent properties; these were however considered as part of the desktop assessment. • Due to the nature and habits of most faunal taxa it is unlikely that all species would have been observed during a site assessment of limited duration. Therefore, site observations are compared with literature studies where necessary.
Wetland Environment	The freshwater resource delineation as presented in the wetland study is regarded as a best estimate of the boundary based on the site conditions present at the time of the assessment.	Wetland and terrestrial areas form transitional areas where an ecotone is formed as vegetation species change from terrestrial species to facultative and obligate wetland species. Within the transition zone some variation of opinion on the wetland boundary may occur, however if the Department of Water Affairs (DWAF), 2005 and 2008 method is followed, all assessors should get largely similar results.	• The assessment is confined to the study area and does not include the neighbouring and adjacent properties; these were however considered as part of the desktop assessment. • The freshwater resource assessment is confined to the study area and does not include the neighbouring and adjacent properties. The general surroundings were however considered in the desktop assessment of the study area.

Environmental Component	Assumptions	Uncertainties	Gaps in Knowledge
Aquatic Ecosystems Environment	The data collected at each assessment point analysed are based on a single assessment. While historical data on the aquatic resources is available and utilised for the interpretation of the results obtained, temporal data is however limited. However, based on the reference data available and based on the observations on site, the information available is deemed adequate to provide a reasonable level of understanding of the systems for the study.	Aquatic and terrestrial ecosystems are dynamic and complex. It is likely that aspects, some of which may be important, could have been overlooked. A more reliable assessment of the biota would require routine seasonal sampling, with sampling being undertaken on a quarterly basis to cover seasonal variability. Based on the reference data available and based on the observations on site the information available is however, deemed adequate to provide and understanding of the systems for the study and for the assessment of impacts and the proposed mitigation measures.	No Gaps in Knowledge stated.
Air Quality Environment	The purpose / objective of the study were to identify and quantify the expected effect of HERNIC's impact, emanating from atmospheric emissions on the surrounding ambient air quality. Model comparisons were done where Model 1 represented baseline emissions and Model 2 incorporated the New Activities: • Secondary emissions from stockpiles, roads, loading/unloading and raw material primary transfer points were included in the assessment. • Building/Roof fugitive emissions are applicable for this study. • Tapping emissions are applicable for this study, and was simulated as 10min emissions every 2-hours per furnace. • Information on emissions for each of the different sources is based on actual emission concentration ranges from historical emission sampling reports and estimations per design criteria in the absence of sampling data, unless stated otherwise such as for ammonia; which also includes associated uncontrolled emission characteristics, if applicable or relevant. • Uncontrolled emissions were applicable for this investigation in view of the specific operations, at an availabilities for relevant APCE's with the uncontrolled emissions as specified. When applicable, uncontrolled emissions are modelled on a daily basis, accounting for the equivalent number of hours per day respectively. As a	In accordance with the US EPA Guideline on Air Quality Models (US EPA, 2005, two key types of uncertainty exist: • Reducible uncertainty • Resulting from uncertainties associated with the input values and with the limitations of the model in terms of its capability and calculations. More representative input data and improved model capability can hence improve reducible • Inherent uncertainty • This entails the uncertainty associated with numerical models used to provide numerical representation / approximation of the atmosphere's turbulent (stochastic) nature. Models provide estimations to concentrations which are averages obtained for several repetitions the same event. Therefore, an individual specific measure value can deviate significantly from the average value modelled, and this uncertainty may be responsible for a ± 50% deviation from the measured value. As a result of these uncertainties the dispersion models may underestimate or overestimate predicted ground-level concentrations. The US	o Gaps in Knowledge stated.

Environmental Component	Assumptions	Uncertainties	Gaps in Knowledge
Air Quality Environment	worst-case conservative approach, all the uncontrolled emissions are then modelled to occur at the same time of the day (i.e. to occur simultaneously) in order to assess their cumulative effect, and the time of day is chosen to be when stable poor dispersion atmospheric conditions occur, which is usually between 23h00 and 00h00 at night. • It is also understood that the processing units are operated and automated to such an extent that the availability of the different APCE systems are 99% or better, per AEL conditions, with incidents of uncontrolled emissions being limited. • This assessment made provision for these availabilities. • Diesel consumption and or its contribution/impact could potentially be conservatively overestimated. • Chromium (VI) emissions are based on monitoring / sampling data and associated uncertainties apply.	EPA Guideline on Air Quality Models (US EPA, 2005) also states that: "Models are reasonably reliable in estimating the magnitude of highest concentrations occurring sometime, somewhere within an area. For example, errors in highest estimated concentrations of +/- 10 to 40 percent are found to be typical, i.e., certainly well within the often-quoted factor of two accuracy that has long been recognized for these models. However, estimates of concentrations that occur at a specific time and site are poorly correlated with actually observed concentrations and are much less reliable."	
Noise Environment	Noise experienced at a certain location is the cumulative result of innumerable sounds emitted and generated both far and close, each in a different time domain, each having a different spectral character at a different sound level. Each of these sounds are also impacted differently by surrounding vegetation, structures and meteorological conditions that result in a total cumulative noise level represented by a few numbers on a sound level meter. While it is difficult to define the character of a measured noise in terms of numbers (third octave sound power levels), it is impossible to accurately model noise levels from any operation. The projected noise levels are the output of a numerical model with the accuracy depending on the assumptions made during the setup of the model. Assumptions include: • The octave sound power levels selected for processes and equipment is accurately represent the sound character and power levels of this processes/equipment. The determination of these levels in itself is subject to errors, limitations and assumptions with any potential errors carried over to any model making use of these results;	A brief methodology and limitations for acoustical measurement as per experience, current National and International guidelines are supplied below: • Acoustical measurements conducted to determine the contribution from industrial facilities (large quantity of machinery operational) is technically difficult. It is not always possible to gauge which equipment is operational and which is non-functioning; • Because a sound level measured is the combination of sounds both near and far, sound measurements near a receptor can only indicate a sound environment where recommended noise levels are exceeded. These measurements cannot define the origin of potential noise sources, neither easily differentiate between a loud far-off noise nor a softer, but closer sound; • Determination of road traffic and other noise sources of significance are important (traffic counts). In areas where roads are busy road	No Gaps in Knowledge stated.

Environmental Component	Assumptions	Uncertainties	Gaps in Knowledge
Noise Environment	• Sound power emission levels from processes and equipment change depending on the load the process and equipment is subject too. While the octave sound power level is the average (equivalent) result of a number of measurements, this measurement relates to a period that the process or equipment was subject to a certain load. Normally these measurements are collected when the process or equipment is under high load. The result is that measurements generally represent a worse-case scenario; • As it is unknown which processes and equipment will be operational, modelling considers a scenario where all processes and equipment are under full load 100% of the time. The result is that projected noise levels would likely over-estimate noise levels; • The impact of atmospheric absorption is simplified and very uniform meteorological conditions are considered. This is an over-simplification and the effect of this in terms of sound propagation modelling is difficult to quantify; and • Acoustical characteristics of the ground are over-simplified with ground conditions accepted as uniform. 75% hard ground conditions will be modelled as a precaution. Due to these assumptions modelling generally could be out with as much as +10 dBA although realistic values ranging between 3 – 5 dBA Noise from an operation is normally over-estimated rather than under-estimated. Monitoring during the operational phase can assist in the calibration of the model to improve modelling values. is more common in practice.	traffic generally contributes to a significant portion of the ambient noise; • Measurements over wind speeds of 3 m/s will provide data potentially influenced by wind-induced noises. Therefore data analysis will have to be read in conjunction with meteorological conditions data and noise levels during windy conditions discarded. The use of an all-weather wind shield is recommended. • Ambient sounds will vary with seasons as faunal activity increase and decrease, similarly as vegetation (in particular foliage) changes; • Measurements recorded near rivers, streams, wetlands, trees and bushy areas can be high. This is due to faunal activity which can dominate the sound levels around the measurement point. It is technically very difficult to "mask" fauna activity during a measurement period or find an area where there is no faunal activity that will not contribute unwanted sounds to measurements; and • Considering one variable/weighted/time is not sufficient for and acoustical assessment. LAMin, LAeq, LAeq, LCeq, LAMax, LA10, LA90 and spectral analysis forms part of the many variables to be considered.	
Visual Aspects	In view of the large amount of high integrity topographical and project information available and based on the fact that an on-site photographic and visual assessment could be performed, no assumptions of note had to be made. The information available for, and data generated during the visual assessment, facilitated a baseline description and impact assessment of high detail and integrity.	In view of the large amount of high integrity topographical and project information available and based on the fact that an on-site photographic and visual assessment could be performed, there are no uncertainties.	In view of the large amount of high integrity topographical and project information available and based on the fact that an on-site photographic and visual assessment could be performed, there are no knowledge gaps.

16. REASONED OPINION FOR AUTHORIZATION

16.1 REASONS FOR AUTHORIZATION

A comprehensive section detailing the need and desirability of this project is provided in Section 6 of this report. Based on the outcome of the high integrity impact and risk assessment there appears no scientific evidence that environmental impacts associated with either the current or the proposed new activities of HERNIC will result in impacts of unacceptable magnitude and risk.

All impacts and risks identified for all the life cycle phases of the project can indeed be fully managed to acceptable levels using existing best practice methodologies. In this regard HERNIC, has demonstrated their full capacity and commitment towards managing their mining and beneficiation related impacts to acceptable levels.

Furthermore, the fact that the new proposed activities will occupy a relatively small footprint area which occurs within the boundaries of the already impacted existing larger footprint, the associated impacts are deemed to be acceptable impacts; provided that the new proposed activities do not occur within sensitive areas or buffer zones.

It is therefore recommended by the EAP that approval be granted to HERNIC to continue with their existing activities as well as to proceed with the proposed new activities as applied for, subject of course to conditions as could be specified by the relevant regulatory authorities within their respective mandates of regulation.

16.2 CONDITIONS TO BE INCLUDED IN AUTHORIZATION

16.2.1 Conditions to be included in the EMPr

Conditions for approval remain the prerogative and responsibility of the relevant regulatory authority. However, the Recommendation for Approval by the team of Specialists is relayed in Section 14 of this report and that of the EAP is made subject to the following conditions:

- That upon approval, the Draft Environmental Management Plan, the details of which are essentially contained in the EMPR, be implemented as proposed, or alternatively with motivated alterations.
- That on-going monitoring and auditing, also as proposed in the EMPR be conducted during the life span of the project.
- That environmental management measures be adapted, or continued, based on the outcome of the monitoring and auditing programmes.

16.2.2 Rehabilitation Requirements

The requirements for rehabilitation are set out fully in the Impact Significance Table for the Decommissioning Phase – Table 9.1(c). The required outcomes for the rehabilitation of the site are detailed in Table 12(a).

17. PERIOD OF ENVIRONMENTAL AUTHORIZATION

The HERNIC operations are quite dynamic and alterations, expansions, upgrades and additions are required almost on an ongoing basis, implying that amendments, variations and new applications are lodged on a regular basis. However, the expected Life of Mine for HERNIC is some 60 years, but the Life of the Ferrochrome Smelting Plant can be longer and is primarily a function of market conditions.

Most of the designs for operational facilities are done for time periods varying between 20 years and 25 years. It would therefore seem realistic to request that whichever authorizations are granted, they be granted for time periods of at least 20 to 25 years.

18. CONFIRMATION OF UNDERTAKING IN EMPR

The Undertaking required to meet the requirements of this section is provided at the end (Chapter 10) of the EMPr and is applicable to both the Environmental Impact Assessment Report (this report) and the EMPr.

19. FINANCIAL PROVISION

19.1 QUANTUM REQUIRED FOR MANAGEMENT AND REHABILITATION

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**

19.2 DETERMINATION OF THE QUANTUM

The annual OPEX budget as reflected in section 19.1 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)**.

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

Table 19.2(a): Closure Cost Provisioning 2017 – Existing Activities

Table 19.2(b): Closure Cost Provisioning 2017 – Proposed New Activities

Table 19.2(c): Aftercare and Maintenance 2017 – Existing + Proposed New Activities

Table 19.2(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 19.2(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 19.2(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

19.3 CONFIRM FUNDS TO BE AVAILABLE

19.3.1 Confirmation of OPEX Budget Funds

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

19.3.2 Confirmation of Closure Quantum Funds

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

20. DEVIATIONS FROM SCOPING REPORT AND PLAN OF STUDY

20.1 DEVIATIONS FROM IMPACT ASSESSMENT METHODOLOGY

No deviations were made in terms of the methodology used in determining the significance of the potential environmental impacts and risks as proposed in the Final Scoping Report submitted to DMR on the 13th of March 2017.

20.2 MOTIVATION FOR DEVIATION

There is no motivation for deviation in terms of the methodology used in determining the significance of the potential environmental impacts and risks, as no deviations were made in this regard.

21. OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

21.1 IMPACT ON SOCIO-ECONOMIC CONDITIONS OF DIRECTLY AFFECTED PERSONS

The proposed rehabilitation activities at HERNIC will enable its operations to continue providing the local and regional economy with medium - high benefits in terms of employment, income, impact on low income groups, community development funds and tax revenues. This is especially relevant in this period of down-scaling of mining activities in the area and high levels of local unemployment. The project is also in line with local economic development priorities.

There are a number of negative socio-economic impacts of HERNIC's operations that can be rated low to medium including:

- Grievances related to historic project in-migration
- Perceptions of a decline in community health and safety
- An increase in nuisance factors
- A potential over-exposure of the local economy to international commodity prices
- An increase in the resource intensity of the economy

These impacts could largely be mitigated through proper management measures.

Apart from the negative socio-economic impacts above, the study identified a social risk related to the high percentage of unskilled labour that local contractors to HERNIC recruit from outside the local area. This situation dramatically reduces HERNIC's direct impact on poverty in the local area and increases the potential for conflict with the local community.

Enhancement strategies to increase the percentage of local (especially unskilled) labour and local suppliers, is specifically relevant to HENRIC since it will not only increase the net benefit that HERNIC holds for the local community but also lower its social risk operating in the local area.

In the closure and post-closure phases of HERNIC the permanent loss of agricultural land, the loss of jobs and income as well as community health and safety aspects are considered medium-high negative impacts. A properly designed mine closure plan could effectively mitigate these risks.

The conclusion is that HERNIC's positive socio-economic impacts outweigh the negative socio-economic impacts of the operation.

21.2 IMPACT ON THE NATIONAL ESTATE (SECTION 3(2) OF THE NHRA)

The Heritage Impact Assessment performed for HERNIC revealed the following type of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) in the Project Area, namely:

- Two graveyards

All graveyards and graves can be considered to be of high significance.

South Africa's heritage resources ('national estate') are protected by international, national and regional legislation which provides regulations, policies and guidelines for the protection, management, promotion and utilization of heritage resources. South Africa's 'national estate' includes a wide range of various types of heritage resources as outlined in Section 3 of the National Heritage Resources Act (NHRA, Act No 25 of 1999).

According to the NHRA (Act No 25 of 1999) heritage resources are categorised using a three-tier system, namely Grade I (national), Grade II (provincial) and Grade III (local) heritage resources.

At the provincial level, heritage legislation is implemented by Provincial Heritage Resources Agencies (PHRAs) which apply the National Heritage Resources Act (Act 25 of 1999) together with provincial government guidelines and strategic frameworks. Metropolitan or Municipal (local) policy regarding the protection of cultural heritage resources is also linked to national acts and is implemented by the South African Heritage Resources Agency (SAHRA) and the Provincial Heritage Resources Agencies.

At a national level heritage resources are dealt with by the National Heritage Council Act (Act No 11 of 1999) and the National Heritage Resources Act (Act No 25 of 1999).

21.2.1 Legislation Relevant to Heritage Resources

The identification, evaluation and assessment of heritage resources in South Africa are regulated by the following legislation:

- National Environmental Management Act (NEMA) Act 107 of 1998
- National Heritage Resources Act (NHRA) Act 25 of 1999
- Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
- Development Facilitation Act (DFA) Act 67 of 1995

21.2.2 The National Heritage Resources Act (NHRA)

According to the NHRA (Act No 25 of 1999) the 'national estate' comprises the following:

- Archaeological artefacts, structures and sites older than 100 years
- Ethnographic art objects (e.g. prehistoric rock art) and ethnography
- Objects of decorative and visual arts
- Military objects, structures and sites older than 75 years
- Historical objects, structures and sites older than 60 years
- Proclaimed heritage sites
- Graveyards, burial grounds and graves older than 60 years
- Meteorites and fossils
- Objects, structures and sites or scientific or technological value.

Elaborating on the above the 'national estate' also includes:

- Places, buildings, structures and equipment of cultural significance
- Places to which oral traditions are attached or which are associated with living heritage
- Historical settlements and townscapes
- Landscapes and features of cultural significance
- Geological sites of scientific or cultural importance
- Archaeological and paleontological sites of importance
- Sites of significance relating to the history of slavery
- Movable objects (e.g. archaeological, paleontological, meteorites, geological specimens, military and ethnographic objects, books etc.)

21.2.3 Heritage Impact Assessment Studies

According to Section 38 of the National Heritage Resources Act (Act No 25 of 1999) a Heritage Impact Assessment (HIA) process must be followed under the following circumstances:

- The construction of a linear development (road, wall, power line, canal etc.) exceeding 300m in length
- The construction of a bridge or similar structure exceeding 50m in length
- Any development or activity that will change the character of a site and which exceeds 5 000m2 or which involve three or more existing erven or subdivisions thereof
- Re-zoning of a site exceeding 10 000 m2
- Any other category provided for in the regulations of SAHRA or a provincial heritage authority

21.2.4 Regulations with regard to Heritage Resources

The regulations outlined below are applicable to the types and ranges of heritage resources which are the most common in the region where the heritage study was conducted, namely:

Buildings and structures

According to Section 34(1) of the NHRA (Act No 25 of 1999) no person may alter (demolish) any structure or part thereof which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

A structure means any building, works, device or any other facility made by people and which is fixed to land and which includes fixtures, fittings and equipment associated with such structures.

Alter means any action which affects the structure, appearance or physical properties of a place or object, whether by way of structural or any other works such as painting, plastering, decorating, etc..

Graves and burial grounds

Graves and burial grounds are divided into the following:

- Ancestral graves
- Royal graves and graves of traditional leaders
- Graves of victims of conflict
- Graves designated by the Minister
- Historical graves and cemeteries
- Human remains

In terms of Section 36(3) of the NHRA (Act No 25 of 1999) no person, without a permit issued by the relevant heritage resources authority, may:

- Destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
- Destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- Bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation, or any equipment which assists in the detection or recovery of metals.

Unidentified graves are handled as if they are older than 60 years until proven otherwise.

Human remains that are less than 60 years old are subject to provisions of the Human Tissue Act (Act 65 of 1983) and to local regulations. Exhumation of graves must conform to the standards set out in the Ordinance on Excavations (Ordinance no. 12 of 1980) (replacing the old Transvaal Ordinance no. 7 of 1925).

Permission must also be gained from the descendants (where known), the National Department of Health, Provincial Department of Health, Premier of the Province and local police. Furthermore, permission must also be gained from the various landowners (i.e. where the graves are located and where they are to be relocated) before exhumation can take place. Human remains can only be handled by a registered undertaker or an institution declared under the Human Tissues Act (Act 65 of 1983 as amended).

Archaeology, Palaeontology and Meteorites

Section 35(4) of the NHRA (Act No 25 of 1999) deals with archaeology, palaeontology and meteorites and states that no person without a permit issued by the responsible heritage resources authority (national or provincial) may:

- Destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site or any meteorite;
- Destroy, damage, excavate, remove from its original position, collect or own any archaeological or paleontological material or object or any meteorite;
- Trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or paleontological material or object, or any meteorite; or bring onto or use at an archaeological or paleontological site any excavation equipment or any equipment that assists in the detection or recovery of metals or archaeological and paleontological material or objects, or use such equipment for the recovery of meteorites.
- Alter or demolish any structure or part of a structure which is older than 60 years.

- Heritage resources may only be disturbed or moved by an archaeologist after being issued with a permit received from the South African Heritage Resources Agency (SAHRA). In order to demolish heritage resources the developer has to acquire a destruction permit by from SAHRA.
- The graveyards will not be affected by HERNIC's operations.
- However, the following management measures should be implemented in order to ensure that the graveyards remain unaffected during HERNIC's operation and eventual closure, namely:
- The graveyards must be demarcated with fences or with walls and must be fitted with access gates.
- Regulated visitor hours should be implemented that is compatible with mine safety rules. This will not be necessary if the graveyards are located next to the national or a public road which provides direct access to the graveyards.
- Corridors of at least 20 m should be maintained between the graveyard's fence and any developmental components such as infrastructure or roads that may be developed in the future.
- The graveyards should be inspected every three months. Inspections should be noted in an inspection register. The register should outline the state of the graveyards during each inspection. Reports on damages to any of the graves or to the graveyard (fence, walls, gates) should be followed with the necessary maintenance work. Maintenance work should be recorded in the inspection register.
- Graveyards should be kept tidy from any invader weeds and any other refuse.

22. REQUIREMENTS IN TERMS OF SECTION 24(4)(A) AND (B) OF THE ACT

An Environmental Impact Assessment Report checklist Table has been compiled in accordance with the guideline as set out in the EIA Regulations (GNR 982) of 04 December 2014; Appendix 4.

This Table serves to show that section 24(4)(a) and (b) of the Act have been adhered to when compiling this report.

The chapter which relays the specific information required as per the regulation is given in the second column of the Table.

24 (4) Procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment -		
(a)	**must ensure, with respect to every application for an environmental authorisation -**	**Section**
(i)	coordination and cooperation between organs of state in the consideration of assessments where an activity falls under the jurisdiction of more than one organ of state;	N/A
(ii)	that the findings and recommendations flowing from an investigation, the general objectives of integrated environmental management laid down in this Act and the principles of environmental management set out in section 2 are taken into account in any decision made by an organ of state in relation to any proposed policy, programme, process, plan or project;	5
(iii)	that a description of the environment likely to be significantly affected by the proposed activity is contained in such application;	7
(iv)	investigation of the potential consequences for or impacts on the environment of the activity and assessment of the significance of those potential consequences or impacts; and	9
(b)	**must include, with respect to every application for an environmental authorisation and where applicable-**	**Section**
(i)	investigation of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity;	7
(ii)	investigation of mitigation measures to keep adverse consequences or impacts to a minimum;	9, 12
(iii)	investigation, assessment and evaluation of the impact of any proposed listed or specified activity on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999), excluding the national estate contemplated in section 3(2)(i)(vi) and (vii) of that Act;	9, 21
(iv)	reporting on gaps in knowledge, the adequacy of predictive methods and underlying assumptions, and uncertainties encountered in compiling the required information;	15
(v)	investigation and formulation of arrangements for the monitoring and management of consequences for or impacts on the environment, and the assessment of the effectiveness of such arrangements after their implementation;	12 & EMPR
(vi)	consideration of environmental attributes identified in the compilation of information and maps contemplated in subsection (3); and	7
(vii)	provision for the adherence to requirements that are pre scribed in a specific environmental management Act relevant to the listed or specified activity in question	5

END OF EIAR