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Environmental Management Plan (EMPr)

Mining of Sand on Portion 8 of Farm Kruisfontein 193,
Humansdorp, Eastern Cape

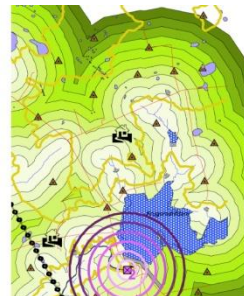
Final

July 2022

Kouga Sand (Pty) Ltd

GCS Project Number: 21-0703

DMRE Ref No: EC30/5/1/3/2/10704MP





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Information contained in this report relating to the project description is based on information supplied by the client and other client-appointed sources. It is assumed that the information provided to GCS is correct.

Environmental and social data, as well as Environmental Impact Assessment, provided in this report is based on information supplied by specialists in their respective fields, as well as existing information pertaining to the area in question (including previous site investigation data and information from the Department of Environmental Affairs' Online Screening Tool). It has been assumed that the information provided to GCS to perform the outcomes of this report is correct.

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NOTE: Notable additions/changes since the Draft Basic Assessment Report (DBAR) (dated June 2022) are indicated by *italic underlined* text in this report.

ACRONYMS AND ABBREVIATIONS

BA	Basic Assessment
CA	Competent Authority
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CBA	Critical Biodiversity Area
CLO	Community Liaison Officer
DFFE	Department of Forestry, Fisheries and Environment
DMRE	Department of Mineral Resources and Energy
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners of South Africa
EAR	Environmental Audit Report
ECA	Environmental Conservation Act, 1989 (Act No. 73 of 1989)
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ERAP	Emergency Response Action Plan
ESA	Ecological Support Area
FPA	Fire Protection Agency
FPO	Fire Protection Officer
GCS	GCS Water and Environmental Consultants (Pty) Ltd
GDP	Gross Domestic Product
GIS	Geographic Information System
GN	Government Notice
GNR	Government Notice Regulation
GPS	Global Positioning System
h	hours
ha	hectare
HCS	Hazardous Chemical Substance
HIA	Heritage Impact Assessment
HiP	Hluhluwe-iMfolozi Park
I&AP	Interested and Affected Party
IAP	Invasive Alien Plants
Imvukuzane Resources	Imvukuzane Resources (Pty) Ltd
km	kilometre
L	litres
m	metres

m ²	square metres
m ³	cubic metres
mamsl	metres above mean sea level
mm	millimetres
MSDS	Material Safety Data Sheets
NCR	Noise Control Regulations
NEMA	National Environmental Management Act, 1998 (Act No, 107 of 1998)
NEM: AQA	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
NEM: BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEM: WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NHRA	National Heritage Resources Agency
NFEPA	National Freshwater Ecosystems Priority Area
NPAES	National Protected Areas Expansion Strategy
NRTA	National Road Traffic Act, 1996 (Act No. 93 of 1996)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
OHSA	Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)
PM	Project Manager
PPE	Personal Protective Equipment
PPP	Public Participation Process
SABS	South African Bureau of Standards
SACNASP	South African Council for Natural Scientific Professionals
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SANS	South African National Standards
SAPS	South African Police Services
SARTSM	South African Road Traffic Signs Manual
SCC	Species of Conservation Concern
SS	Site Supervisor
SWMP	stormwater management plan
TOPS	Threatened or Protected Species
WMA	Water Management Area
WUL	Water Use License
WULA	Water Use License Application

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1 INTRODUCTION

1.1 Background

GCS Water and Environmental Consultants (Pty) Ltd (GCS) was appointed by Kouga Sand (Pty) Ltd (Kouga Sand) to conduct the Environmental Authorisation (EA) process for the proposed mining of sand on Portion 8 of Kruisfontein No. 193, Humansdorp, Eastern Cape. This application for EA is being undertaken on behalf of Kouga Sand (the applicant) and, as such, will be submitted to the Department of Mineral Resources and Energy (DMRE) as the competent authority.

Owing to the nature and scale of the project, an Application for EA is required. The Applications for EA and Mining Permit have been undertaken in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and the Mineral and Petroleum Resources Development Act, 2002 (MPRDA). A detailed description of the aspects of the project covered in this Environmental Management Programme (EMPr) is provided in Section 2.

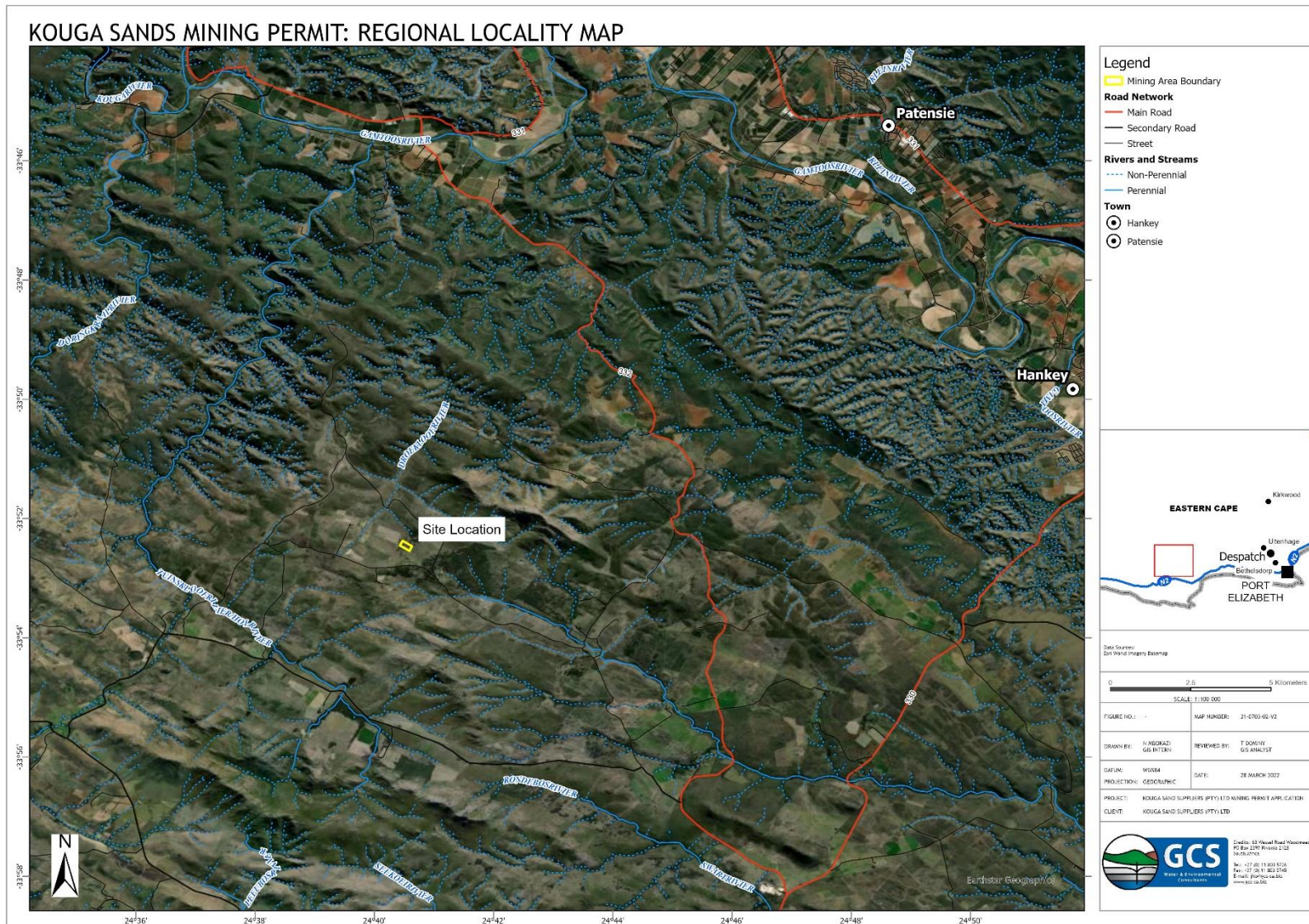


Figure 1-1: Regional Locality Map

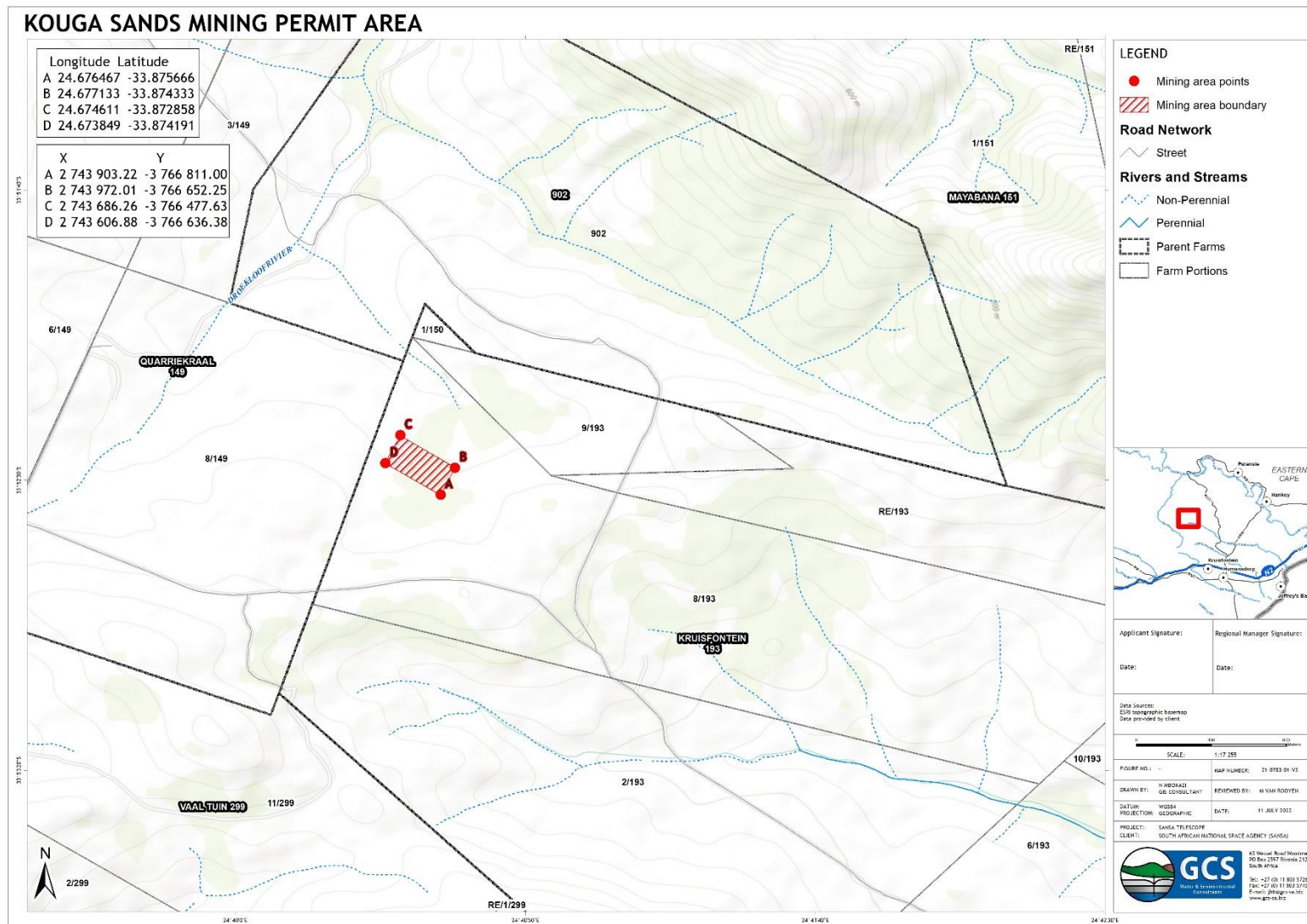


Figure 1-2: Locality Map indicating GPS coordinates

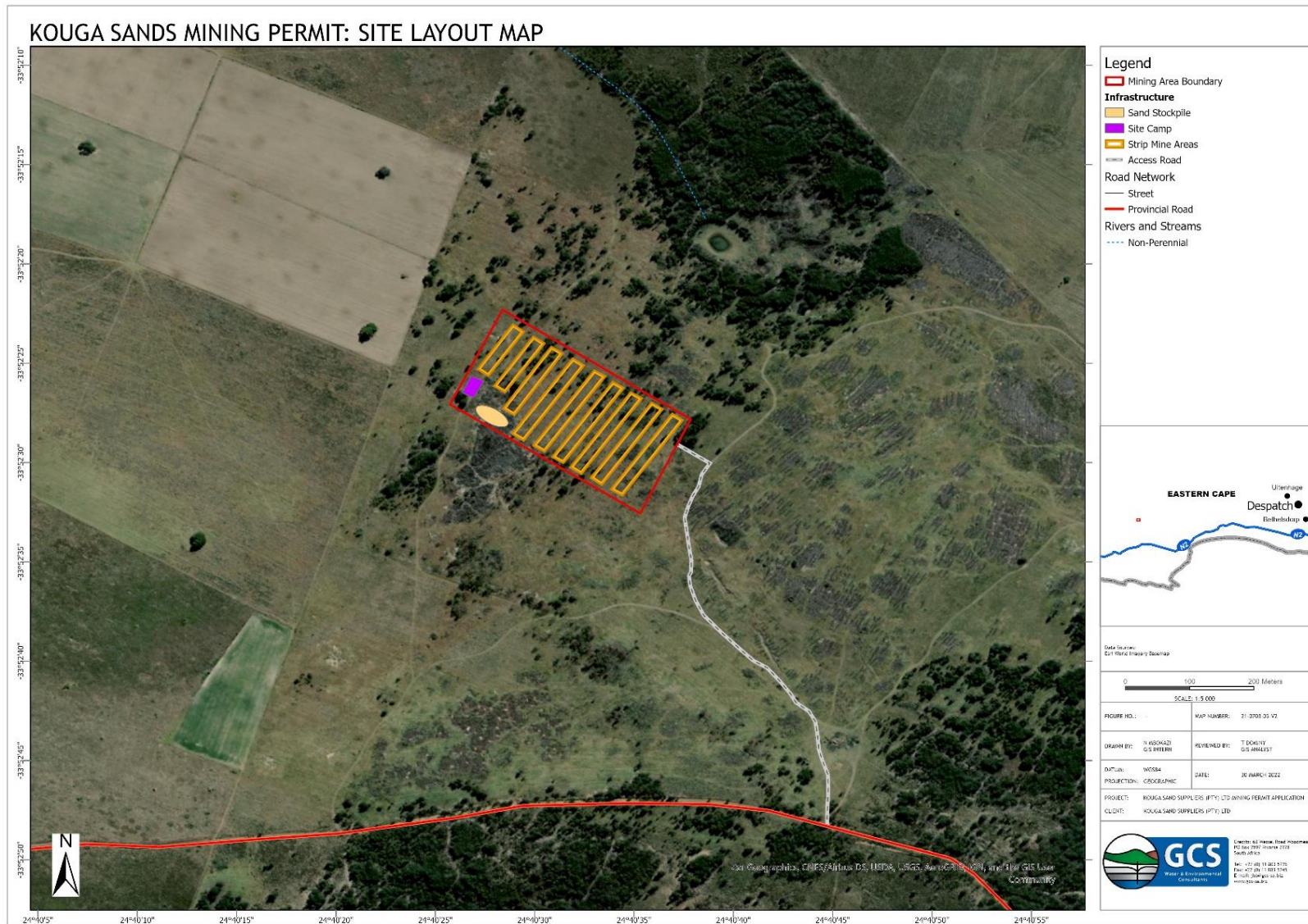


Figure 1-3: Proposed Layout

1.2 Purpose of the EMPr

Section 19 of the NEMA Environmental Impact Assessment (EIA) Regulations of 2014, as amended (GN R982 in GG 38282, December 2014), requires that the Applicant submit an EMPr to the Competent Authority. This EMPr will form part of the EA for the proposed new sand mine, once approved.

The EMPr is an important environmental management tool, developed in line with best practices under NEMA and other environmental legislation, and informed by the EAP's professional experience as well as any relevant specialist information. The EMPr provides management guidance for activities undertaken at the development site. If correctly followed, the EMPr ensures that any adverse environmental impacts which could result from the development are adequately managed and mitigated.

The EMPr outlines all environmental management and monitoring actions required throughout the project lifecycle. The EMPr is legally binding and any person who contravenes the provisions herein is liable for imprisonment or a fine. This document should be viewed as "live" and thus, should be updated as and when necessary. The purpose of this document is therefore to guide environmental management throughout the various lifecycle phases of the proposed development.

The objectives of the EMPr are as follows:

- Ensure compliance with the relevant environmental legislation and conditions of the EA;
- Ensure that development activities are appropriately managed;
- Verify environmental performance through information on impacts as they occur;
- Respond to changes or unforeseen events; and
- Provide feedback on the continual improvement in environmental performance.

It is understood that all contract documentation related to the construction, operation and decommissioning (if required) of the proposed development will include the conditions of the EA and provisions of the EMPr. It is important to note that the contractual obligations must include the recording of any complaints on the project in the environmental register. Further, it is incumbent on the ECO to keep an accurate audit trail showing compliance with the EMPr during the construction phase.

This EMPr will remain a dynamic document throughout the life of the project. Once the EA has been issued by DMRE, the EMPr must be updated to include the specific conditions in the EA, as well as any required monitoring or reporting requirements of DMRE.

1.3 Content of the EMPr

According to Appendix 4 of the NEMA EIA Regulations of 2017, as amended (GNR 326 in GG 40772, April 2017), the EMPr for a project must include certain information. Table 1-1 describes how this report meets those requirements.

Table 1-1: Contents of this Environmental Management Programme (EMPr)

REQUIREMENT	SECTION IN THIS REPORT
Details of– (i) the EAP who prepared the EMPr; and (ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Section 1.4 Appendix A
A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 1.7
A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Figure 1-4 and Figure 1-5
A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including– (i) Planning and design; (ii) Pre-construction activities; (iii) Construction activities; (iv) Rehabilitation of the environment after construction and where applicable post-closure; and (v) Where relevant, operation activities;	Section 5
A description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated above will be achieved, and must, where applicable, include actions to– (i) Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) Comply with any prescribed environmental management standards or practices; (iii) Comply with any applicable provisions of the Act regarding the closure, where applicable; and	Section 5 Section 6 Section 7

(iv) Comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;	
The method of monitoring the implementation of the impact management actions;	Section 5
The frequency of monitoring the implementation of the impact management actions;	Section 5
An indication of the persons who will be responsible for the implementation of the impact management actions;	Section 5
The time periods within which the impact management actions must be implemented;	Section 5
The mechanism for monitoring compliance with the impact management actions;	Section 5
A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 5
An environmental awareness plan describing the manner in which— (i) The applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 4.15 Section 5
Any specific information that may be required by the competent authority.	NA

1.4 Details of the EAP

The details of the EAP who prepared this report can be found in Table 1-2. The EAP CV and registrations are attached as **Appendix A**.

Table 1-2: Details of the EAP

ITEM	DETAILS	
Company Name	GCS Water and Environmental Consultants (Pty) Ltd	
Company Representative	Magnus van Rooyen	<u>Janice Callaghan</u>
Professional Registration	<u>Pr.Sci.Nat</u>	<u>Cand.Sci.Nat, EAPASA</u>
Telephone No.	+27 (0)31 764 7430	<u>+27 (0)31 764 7430</u>
Facsimile No.	+27 (0)11 803 5745	<u>+27 (0)11 803 5745</u>
E-mail Address	<u>magnusvr@gcs-sa.biz</u>	<u>janicec@gcs-sa.biz</u>
Postal Address	PO Box 819, Gillitts, 3603	<u>PO Box 819, Gillitts, 3603</u>

1.5 Details of the Applicant

The applicant is Kouga Sand. The relevant contact details for the applicant are provided in Table 1-3.

Table 1-3: Details of the Applicant

ITEM	DETAILS		
Project Applicant	Kouga Sand (Pty) Ltd		
Registration Number:	K2021769912		
Trading Name:	Kouga Sand		
Responsible Person:	Lu-Daan van Niekerk		
Contact Persons	Lu-Daan van Niekerk		
Postal Address	Chatten Farm, Humansdorp		
Postal Code:	6330	Cell:	0837949497
E-mail:	info@luvan.co.za		

1.6 Assumptions and Limitations

This EMPr has been drafted with the acknowledgement of the following assumptions and limitations:

- Information used to guide the development of this EMPr was gained during the site visit, through the national web-based screening tool, through specialist input and using the EAP's experience in such developments;
- The mitigation measures recommended in this EMPr document are based on the preliminary risks/impacts identified in the BAR. These impacts were identified according to the activities described and the known receiving environment.

1.7 Applicable legislation, policy and best practice guidelines

The EMPr has been developed using knowledge of relevant national, provincial and local legislation and policy as well as best practice guidelines. The Applicant is bound to comply with the legislation and policy provisions throughout the life cycle of the project. Table 1-4 lists the relevant legislation and guidelines applicable to the development.

The environment is considered to be composed of biophysical, ecological, economic and social components. Construction is a disruptive activity, and all due consideration must be given to the environment, including the social environment during the execution of the project to minimize negative impacts on affected parties. Minimisation of areas disturbed by construction activities (i.e. the footprint of the development area) should reduce many of the construction-related environmental impacts of the project and reduce rehabilitation

requirements and costs. All relevant standards relating to international, national, provincial and local legislation, as applicable, should be adhered to. This includes requirements relating to waste generation and emissions, waste disposal practices, noise regulations, road traffic ordinances, etc. Every effort should be made to minimize, reclaim, and/or recycle waste materials.

Table 1-4: Applicable legislation, policy and best practice guidelines

LEGISLATION/ GUIDELINES	DESCRIPTION	APPLICABILITY
The Constitution of the Republic of South Africa (Act 108 of 1996)	<p>The Constitution is the supreme act to which all other acts must speak to and sets out the rights for every citizen of South Africa and aims to address past social injustices. With respect to the environment, Section 24 of the constitution states that:</p> <p>“Everyone has the right:</p> <ol style="list-style-type: none"> a) To an environment that is not harmful to their health or well-being; b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that: <ol style="list-style-type: none"> i. Prevent pollution and ecological degradation; ii. Promote conservation; and iii. Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development”. 	The Applicant must ensure that environmental impacts are avoided, mitigated or managed as far as possible throughout the life cycle of the project.
National Environmental Management Act (Act 107 of 1998), as amended	<p>Framework law giving effect to the constitutional environmental right. Provides the framework for regulatory tools in respect of environmental impacts. Section 24 of NEMA regulates environmental authorisations.</p> <p>Section 28(1) states that “Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment”.</p>	<p>Applicable listed activities identified in terms of the 2014 NEMA EIA Regulations, as amended, are:</p> <ul style="list-style-type: none"> • Listing Notice 1, Activity 21; • Listing Notice 1, Activity 22(i); and • Listing Notice 1, Activity 27. <p>As such, a BA process must be followed to obtain the necessary EA in terms of the NEMA.</p> <p>The Applicant must ensure that environmental impacts are avoided, mitigated or managed as far as possible throughout the life cycle of the project.</p>

LEGISLATION/ GUIDELINES	DESCRIPTION	APPLICABILITY
<p>Environmental Conservation Act (73 of 1989) (ECA), as amended</p>	<p>The ECA has now largely been replaced by the NEMA but certain provisions remain in force.</p> <p>Section 21 of the ECA relates to the control of activities that may have a detrimental effect on the environment, which require written authorization issued by the relevant authority.</p> <p>The national Noise Control Regulations (NCR) (GN R154 in Government Gazette No. 13717 dated 10 January 1992) (NCR) were promulgated in terms of Section 25 of the ECA, relating to noise, vibration and shock. The NCRs were revised under Government Notice Number R55 of 14 January 1994 to make it obligatory for all authorities to apply the regulations. In accordance with the Act, two procedures exist for assessing and controlling noise, respectively:</p> <ul style="list-style-type: none"> • South African National Standard (SANS) 10328:2008 Methods for environmental noise impact assessments; • SANS 10103:2004 ‘The measurement and rating of environmental noise with respect to annoyance and speech communication’; and • Other SANS. 	<p>The proposed development is likely to <i>temporarily</i> increase ambient noise levels during the construction and operational phases. Noise impacts are closely related to construction <u>and mining</u> activities and <u>trucks transporting the product from site. It must be emphasized that there will be a maximum of four trucks per day removing material from site.</u> The EMPr includes mitigation measures relating to the mitigation of noise impacts.</p>
<p>National Environmental Management: Waste Act (Act 59 of 2008) (NEM: WA), as amended</p>	<p>Regulates inter alia the duty of care, management, transport and disposal of waste. Section 16(1) of the NEM: WA provides that:</p> <p>“A holder of waste must, within the holder’s power, take all reasonable measures to -</p> <ol style="list-style-type: none"> a) avoid the generation of waste and where such generation cannot be avoided, to minimise the toxicity and amounts of waste that are generated; b) reduce, re-use, recycle and recover waste; c) where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner; d) manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through the noise, odour or visual impacts; e) prevent any employee or any person under his or her supervision from contravening this Act; and 	<p>While no Waste Management Licence is required for this development, the Applicant must ensure that waste is appropriately managed throughout the life cycle of the project, as per the proposed mitigation measures in Section 8, where relevant, and the EMPr.</p>

LEGISLATION/ GUIDELINES	DESCRIPTION	APPLICABILITY
	<p>f) prevent the waste from being used for an unauthorised purpose.”</p> <p>The NEM: WA also provides for a licensing regime specific to waste management activities.</p>	
<p>National Environmental Management: Air Quality Act (Act 39 of 2004) (NEM: AQA), as amended</p>	<p>Regulates activities which may have a detrimental effect on ambient air quality including certain processes and dust-generating activities.</p> <p>The NEM: AQA Dust Control Regulations (1 November 2013). prescribe dust fallout rates for residential and non-residential areas. For activities where the dustfall standard is exceeded, a dustfall monitoring report must be compiled and submitted.</p>	<p>An Air Emissions Licence will not be required, however, a duty of care should be employed during construction to minimise air pollution as far as possible. The Applicant must take all reasonable measures to minimise the generation of dust and ensure compliance with the Dust Control Regulations.</p>
<p>National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEM: BA)</p>	<p>The Act <u>provides for the management and conservation of South Africa’s biodiversity within the framework of the NEMA. This Act allows for the protection of species and ecosystems that warrant national protection, the sustainable use of indigenous biological resources, the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources and the establishment and functions of the South African National Biodiversity Institute (SANBI).</u> The 2007 Threatened or Protected Species Regulations (GN R150, as amended) provides protection through a permit system as well as through the identification of restricted activities. If required, the relevant permits will be applied for.</p> <p>The Act also provides for duty of care with regards to control of alien species and provides a listing of threatened or protected ecosystems and species in one of the following four categories: critically endangered (CR), endangered (EN), vulnerable (VN), protected (species only), and least threatened (LT).</p> <p><u>The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction. This includes preventing further degradation and loss of structure, function and composition of threatened ecosystems. The purpose of listing protected ecosystems is primarily to preserve witness sites of exceptionally high conservation value.</u></p>	<p>The site is located within Critical Biodiversity Area (CBA) 1, Ecological Support Area (ESA) 1 and 2 and Freshwater Ecosystem Priority Area (FEPA) Sub catchments, based on the DEFF screening tool (24 March 2022). Care must be taken to ensure no protected species or ecosystems are lost, and permits must be applied for if necessary.</p> <p>The Applicant must also control and eradicate alien and invasive species in line with the NEM: BA Alien and Invasive Species Regulations.</p>

LEGISLATION/ GUIDELINES	DESCRIPTION	APPLICABILITY
	<p>The NEM: BA Alien and Invasive Species Regulations (Government Notice 590 of August 2014) categorises the different types of alien and invasive plant and animal species and how they should be managed:</p> <ul style="list-style-type: none"> • Category 1a Listed Invasive Species - species that must be combatted or eradicated; • Category 1b Listed Invasive Species - species that must be controlled; • Category 2 Listed Invasive Species - species that require a permit and must not be allowed to spread outside of the designated area; and • Category 3 Listed Invasive Species - species which are subject to exemptions in terms of the section requiring a permit, but where such a species occurs in riparian areas, must, for these regulations, be considered to be a Category 1b Listed Invasive Species and must be managed according to regulation 3. 	
Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA)	<p>The purpose of CARA is to ensure that natural agricultural resources of South Africa are conserved through maintaining the production potential of land, combating and preventing erosion, preventing the weakening or destruction of water sources, protecting vegetation, and combating weeds and invader plants. Most of the provisions are accounted for in more recent legislation such as NEM: BA and NEMA and no applications are required in terms of CARA.</p>	<p>Measures to mitigate potential impacts on agricultural resources, such as soil erosion, alien invasion and protection of vegetation and water resources are included in the EMPr.</p>
National Water Act (Act 36 of 1998) (NWA)	<p>Section 2 of the National Water Act, 1998 (Act No. 36 of 1998) (NWA) provides for the protection, use, development, conservation and control of water resources while ensuring:</p> <ul style="list-style-type: none"> • Promoting sustainable use of water; • Protection of aquatic and associated ecosystems and biological diversity; and • Reducing and preventing pollution and degradation of water resources. <p>Sections 12 -20 of the NWA include provisions relating to the protection of water resources, including the water reserve and water quality. Section 13 relates to the</p>	<p>Specialists have confirmed that there are no natural watercourses or wetlands located within the study area. No water use triggers have been identified, as such, no water use license has been applied for.</p> <p>Measures have been included in the EMPr to ensure that any potential impacts on water resources are appropriately mitigated.</p> <p>The Department of Water and Sanitation (DWS) has been consulted, however no comments have been received to date. Should the need arise, the DWS</p>

LEGISLATION/ GUIDELINES	DESCRIPTION	APPLICABILITY
	<p>establishment of water quality objectives, including:</p> <ul style="list-style-type: none"> • The presence and concentration of particular substances in the water • The characteristics and quality of the water resource and the in-stream and riparian habitat • The characteristics and distribution of aquatic biota • The regulation and prohibition of in-stream and land-based activities which may affect the quantity and quality of the water resources <p>Section 19 of the NWA provides for pollution prevention and requires that a person who owns, controls occupies or uses the land in question, is responsible for taking reasonable measures to prevent pollution of water resources. A catchment management agency may take action to prevent or remedy the pollution and recover all reasonable costs from the responsible party. The 'reasonable measures' which have to be taken may include measures to:</p> <ul style="list-style-type: none"> • Cease, modify or control any act or process causing the pollution; • Comply with any prescribed waste standard or management practice; • Contain or prevent the movement of pollutants; • Eliminate any source of pollution; • Remedy the effects of the pollution; and • Remedy the effect of any disturbance to the bed and banks of a watercourse". <p>Pollution may be deemed to occur when the following are affected:</p> <ul style="list-style-type: none"> • The quality, pattern, timing, water level and assurance of instream flow; • The water quality, including the physical, chemical and biological • Characteristics of the water; • The character and condition of the in-stream and riparian habitat; • The characteristics, condition and distribution of the aquatic biota". <p>Section 21 of the NWA recognises and defines water uses that require the approval of the Department of Water and Sanitation</p>	<p>will confirm the applicable water uses and processes to be followed.</p>

LEGISLATION/ GUIDELINES	DESCRIPTION	APPLICABILITY
	(DWS) in the form of a General Authorisation or Water Use Licence (WUL). There are restrictions on the extent and scale of identified activities, determined through a risk assessment, for which General Authorisations apply.	
The National Heritage Resources Act (Act 25 of 1999) (NHRA)	In terms of the NHRA, any person who intends to undertake “any development ... which will change the character of a site exceeding 5,000 m ² in extent”, “the construction of a road...powerline, or pipeline...exceeding 300 m in length” must at the very earliest stages of initiating the development notify the responsible heritage resources authority, namely the South African Heritage Resources Agency (SAHRA) or the relevant provincial heritage agency.	A Heritage assessment has been undertaken and the recommendations will form part of this EMPr.
Occupational Health and Safety Act (Act 85 of 1993) (OHSA)	Makes provision to protect the health and safety of employees at work or others affected by activities undertaken by businesses or industries.	The Applicant must adhere to the stipulations within the Act throughout the lifecycle of the activity.
Hazardous Substances Act (Act 15 of 1973)	<p>Hazardous Substances Act aims to control the production, import, use, handling and disposal of hazardous substances. Under the Act, hazardous substances are defined as substances that are toxic, corrosive, irritant, strongly sensitising, flammable and pressure generating under certain circumstances and may injure, cause ill-health or even death in humans.</p> <p>Where hazardous substances from any of the 4 groups below are to be used, (see below) care must be taken to ensure that or sourced from a licensed sourced, transported, handled and disposed of in compliance with the provisions of the Act.</p> <ul style="list-style-type: none"> • Group I: industrial chemicals (IA) and pesticides (IB); • Group II: 9 classes of wastes excluding Class 1: explosives and class 7: radioactive substances; • Group III: electronic products and group; and • Group IV: radioactive substances. <p>The list of group IA hazardous substances is provided in the Act.</p>	Hazardous substances may be stored, handled or transported as part of the proposed project and include diesel and other liquid fuel, oil and hydraulic fluid, cement, etc.

1.8 Aspects of the activity that are covered by the EMPr

The proposed mine comprises various aspects which fall within the 4.99 ha development area, and which are the subject of this EMPr. These are outlined in this Section.

The Global Positioning System (GPS) coordinates of the proposed mine are provided in Table 1-5 with a corresponding map of GPS points in Figure 1-3. The approximate mid-point of the proposed area to be developed is at at 33° 52' 27.99"S 24° 40' 32.08"E.

Table 1-5: GPS coordinates

Point on Map	Latitude	Longitude
Point A	33° 52' 32.49"S	24° 40' 35.36"E
Point B	33° 52' 27.84"S	24° 40' 37.86"E
Point C	33° 52' 22.24"S	24° 40' 28.41"E
Point D	33° 52' 27.05"S	24° 40' 25.82"E

1.9 Description of Proposed Activity

The mining will be conducted as an opencast operation with the sand removed at surface and put through a screen to remove all root material from the sand.

The excavation will be conducted with an excavator which will excavate the sand from the mining area in a concurrent strip-mining process to a depth not exceeding 3m. The sand will be put through a drum-sieve to remove any plant root material that might be in the sand. The sand will then be stockpiled and loaded on tipper trucks for transport from the site to the point of sale. It is envisaged that four (4) truck loads of material will be removed from site per day. The site will be mined in sections within the greater mining area, with concurrent rehabilitation as mining progresses.

An access road to the application area already exists in the form of a farm road.

The following infrastructure will be positioned on site:

- Product stockpile (100m²);
- Opencast pits (4.5ha); and
- Site office (50m²).

It is anticipated that there will be three (3) workers present on site. These workers will not be housed on site.

1.10 Project Phases and Activities

The proposed project will have the following phases which are included within the scope of this EMPr:

Planning and Design Phase activities will include:

- Site design and layout;
- Identification of service infrastructure already present in the area;
- Construction planning; and
- Relevant permitting.

Construction phase activities will include:

- Vegetation clearance;
- Topsoil stripping and stockpiling *where necessary*; and
- Site establishment.

During the operational phase, activities will include:

- Excavation;
- Stormwater Management;
- Removal of alien invasive vegetation;
- Concurrent rehabilitation; and
- Use of roads.

Decommissioning and rehabilitation activities will include:

- Removal of offices;
- Revegetation;
- Replacement of topsoil; and
- Profiling of site.

Throughout the project lifecycle, the construction, operating and decommissioning teams must be prepared for unplanned emergencies or incidents threatening human health or the environment.

1.11 Composite Environmental Sensitivity Map

Based on the results of the desktop assessment and specialist opinions, a composite environmental sensitivity map showing the proposed sand mine is shown in Figure 1-4

Key sensitive features identified within the proposed project footprint through the Department of Forestry, Fisheries and Environment (DFFE) Screening Report include the following:

- Very High Terrestrial and Aquatic Sensitivity based on the web-based national screening tool owing to the location within National Freshwater Ecosystem Priority Area (NFEPA) and Critical Biodiversity Area (CBA) 1; and
- High Agricultural and Palaeontology Sensitivity.



Figure 1-4: Composite Environmental Sensitivity Map

2 ENVIRONMENTAL IMPACT STATEMENT

Appendix 4 of the 2014 NEMA EIA Regulations, as amended, requires that the EMP include a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development. The impacts identified during the Basic Assessment phase are summarised in this Section.

There are no impacts rated “High” or Very High”. All negative impacts are reduced to “Low” significance post-mitigation.

2.1 Negative Impacts

The following potential impacts associated with the proposed project are rated as **Medium (Negative) significance (pre-mitigation)**:

- Loss of minimal indigenous vegetation present on site;
- Spread of alien invasive plant species;
- Contamination as a result of leaking portable toilet facilities; and
- Alteration of catchment drainage due to change in baseline topography.

It must be emphasised that all of these medium negative impacts can be mitigated to a low significance.

2.2 Positive Impacts

The following impacts associated with the proposed project are considered to be of **Positive** significance:

- Removal of alien invasive vegetation existing on site;
- Potential employment opportunities for a limited number of local residents; and
- Potential economic benefit for the area from the sale of the product.

In the decommissioning phase, the receiving environment will be rehabilitated as closely as possible to the natural condition of the area.

3 ROLES AND RESPONSIBILITIES

The effective implementation of this EMPr is dependent on established and clear roles, responsibilities and reporting lines within an institutional framework. This section of the EMPr gives guidance to the various environmental roles and reporting lines, however, project-specific requirements will ultimately determine the need for the appointment of a specific person(s) to undertake specific roles and or responsibilities. As such, it must be noted that if no specific person, for example, an Environmental Control Officer (ECO) is appointed, the holder of the EA remains responsible for ensuring that the duties of the ECO indicated in this document are undertaken. See Table 3-1.

Table 3-1: Roles and Responsibilities for Implementation of the EMPr

Responsible Person	Roles and Responsibilities
Project Manager (PM)	<p><u>Role</u> The PM is accountable for ensuring compliance with the EMPr and any conditions of approval from the competent authority (CA). The PM is to objectively monitor the implementation of the EMPr according to relevant environmental legislation, and the conditions of the EA.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be fully conversant with the conditions of the EA; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Developer and its Contractor(s); - Issuing of site instructions to the Contractor for corrective actions required; - Monitor the implementation of the EMPr throughout the project through site inspections and meetings. Overall management of the project and EMPr implementation; and - Ensure that periodic environmental performance audits are undertaken on the project implementation.
Site Supervisor (SS)	<p><u>Role</u> The SS reports directly to the PM, oversees site works, liaises with the contractor(s). The SS is responsible for the day-to-day implementation of the EMPr and for ensuring the compliance of all contractors with the conditions and requirements stipulated in the EMPr.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Must be fully conversant with the conditions of the EMPr and EA. - Oversees site works, liaison with Contractor and PM; - Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; - Be aware of the findings and conclusions of all EA related to the development; - Must ensure that all landowners have the relevant contact details of the site staff, SS and PM; - Issuing of site instructions to the Contractor for corrective actions required; - Will issue all non-compliances to contractors; - Undertake regular and comprehensive site inspections/audits of the site according to the generic EMPr and applicable licenses to monitor compliance as required; - Educate the construction team about the management measures contained in the EMPr and environmental licenses; - Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective; - Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements (to be compiled once detailed designs have been completed);

	<ul style="list-style-type: none"> - In consultation with the SS order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses; - Liaison between the PM, Contractors, authorities and other lead stakeholders on all environmental concerns; - Compile a regular Environmental Audit Report (EAR) highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; - Keep a record of environmental incidents (spills, impacts, legal transgressions etc.) as well as corrective and preventive actions taken; - Keep a public complaints register in which all complaints are recorded, as well as action taken; - Facilitate training for all personnel on the site - this may range from carrying out the training to reviewing the training programmes of the Contractor; - Follow-up on pre-warnings, defects, non-conformance reports; - Measure and communicate environmental performance to the Contractor; - Maintenance, update and review of the EMPr; and - Communication of all modifications to the EMPr to the relevant stakeholders
<p>Contractor</p>	<p><u>Role</u> The Contractor has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMPr and that Method Statements are implemented as described (to be compiled once detailed designs have been completed). External contractors must ensure compliance with this EMPr while performing the onsite activities as per their contract with the Project Developer. The contractors are required, where specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented (to be compiled once detailed designs have been completed).</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Project delivery and quality control for the development services as per appointment; - Employ a suitably qualified person to monitor and report to the Project Developer’s appointed person on the daily activities on-site during the construction period; - Ensure that safe, environmentally acceptable working methods and practices are implemented, and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; - Attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; - Ensure that contractors’ staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the SS.

4 ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE

To ensure accountable and demonstrated implementation of the EMPr, several reporting systems, documentation controls and compliance mechanisms must be in place as a minimum requirement.

4.1 Document control/Filing system

The holder of the EA is solely responsible for the upkeep and management of the EMPr file. As a minimum, all documentation detailed below will be stored in the EMPr file. A hard copy of all documentation shall be filed, while an electronic copy may be kept where relevant. A duplicate file will be maintained in the office of the SS (where applicable). This duplicate file must remain current and up-to-date. The filing system must be updated, and relevant documents added as required. The EMPr file must be made available at all times on request by the CA or other relevant authorities. The EMPr file will form part of any environmental audits undertaken as prescribed in the EIA Regulations.

4.2 Documentation to be available

At the outset of the project the following preliminary list of documents shall be placed in the filing system and be accessible at all times:

- A full copy of the signed EA from the CA in terms of NEMA;
- Any amendments to the EA;
- Copy of the generic and site-specific EMPr as well as any amendments thereof;
- Copy of declaration of implementing generic EMPr and subsequent approval of site-specific EMPr and amendments thereof;
- All method statements (to be compiled once detailed designs have been completed);
- Completed environmental checklists;
- Minutes and attendance register of environmental site meetings;
- An up-to-date environmental incident log;
- A copy of all instructions or directives issued;
- A copy of all corrective actions signed off. The corrective actions must be filed in such a way that a clear reference is made to the non-compliance record;
- Complaints register.

4.3 Monthly Environmental Checklist

The SS is required to complete a Monthly Environmental Checklist, the format of which is to be agreed upon prior to commencement of the activity. The SS is required to sign and date the checklist, retain a copy in the EMPr file and submit a copy of the completed checklist to the PM weekly. The checklists

will form the basis for the Monthly Environmental Reports. Copies of all completed checklists will be attached as Annexures to the EAR as required in terms of the EIA Regulations.

4.4 Required Method Statements

The method statement will be done in such detail that the SS can assess whether the contractor's proposal is in accordance with the EMPr (to be compiled once detailed designs have been completed).

The method statement must include the following:

- Development procedures;
- Materials and equipment to be used;
- Getting the equipment to and from the site;
- How the equipment/ material will be moved while on site;
- How and where the material will be stored;
- The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- Timing and location of activities;
- Compliance/ non-compliance with the EMPr; and
- Any other information deemed necessary by the SS.

Unless indicated otherwise by the Project Manager, the Contractor shall provide the following method statements to the Project Manager no less than 14 days prior to the commencement date of the activity:

- Site establishment;
- Vegetation management - Protected, clearing, aliens, felling;
- Access management - Roads, gates, crossings etc.;
- Fire plan;
- Waste management -transport, storage, segregation, classification, disposal (all waste streams);
- Social interaction - complaints management, compensation claims, access to properties etc.;
- Emergency preparedness - Spills, training, other environmental emergencies;
- Dust and noise management methodologies; and
- Heritage and palaeontology management.

The SS shall monitor and ensure that the contractors perform in accordance with these method statements. Completed and agreed method statements between the holder of the MP and the contractor must be included in the environmental file. A generic format of a method statement is supplied as Appendix B.

4.5 Environmental Incident Log

The SS is required to maintain an up-to-date and current Environmental Incident Log. The Environmental Incident Log is a means to record all environmental incidents and/or all non-compliance notice would not be issued. An environmental incident is defined as:

- Any deviation from the listed impact management actions (listed in this EMPr) that may be addressed immediately by the SS. (For example, a contractor's staff member littering or a drip tray that has not been emptied);
- Any environmental impact resulting from an action or activity by a contractor in contravention of the environmental stipulations and guidelines listed in the EMPr which as a single event would have a minor impact but which if cumulative and continuous would have a significant effect (for example no toilet paper available in the ablutions for an afternoon); and
- General environmental information such as road kills or injured wildlife.

The SS is to record all environmental incidents in the Environmental Incident Log. All incidents regardless of severity must be reported to the Developer. The Log is to be kept in the EMPr file and at a minimum, the following will be recorded for each environmental incident:

- The date and time of the incident;
- Description of the incident;
- The name of the Contractor responsible;
- The incident must be listed as significant or minor;
- If the incident is listed as significant, a non-compliance notice must be issued, and recorded in the log;
- Remedial or corrective action taken to mitigate the incident; and
- Record of repeat minor offences by the same contractor or staff member.

The Environmental Incident Log will be captured in the EAR.

4.6 Non-compliance

A non-compliance notice will be issued to the responsible contractor by the SS or PM. The non-compliance notices will be issued in writing; a copy filed in the EMPr file and will at a minimum include the following:

- Time and date of the non-compliance;
- Name of the contractor responsible;
- Nature and description of the non-compliance;
- Recommended / required corrective action; and
- Date by which the corrective action is to be completed.

The contractors shall act immediately when a notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the development site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. The SS should be made aware of any complaints. Any non-compliance with the agreed procedures of the EMPr is a transgression of the various statutes and laws that define how the environment is managed. Failure to redress the cause shall be reported to the relevant CA for them to deal with the transgression, as it deems fit. The contractor is deemed not to have complied with the EMPr if, inter alia, there is a deviation from the environmental conditions, impact management outcomes and impact management actions activities, as approved in generic and site-specific EMPr as relevant as set out in the EMPr, which deviation has, or may cause, an environmental impact.

4.7 Corrective action records

For each non-compliance notice issued, a documented corrective action must be recorded. On receiving a non-compliance notice from the SS, the contractor will ensure that the corrective actions required take place within the stipulated timeframe. On completion of the corrective action, the SS is to issue a Corrective Action Report in writing. If satisfied that the corrective action has been completed, the SS is to sign-off on the Corrective Action Report and attach the report to the non-compliance notice in the EMPr file.

Corrective action is considered complete once the report has been signed off by the SS

4.8 Photographic record

A digital photographic record will be kept. The photographic record will be used to show before, during and post-rehabilitation evidence of the project as well used in cases of damages claims if they arise. Each image must be dated, and a brief description note attached.

The Contractor shall:

- Allow the SS access to take photographs of all areas, activities and actions.
- The SS shall keep an electronic database of photographic records which will include:
 - Pictures of all areas designated as work areas, camp areas, development sites and storage areas taken before these areas are set up;
 - All bunding and fencing;
 - Road conditions and road verges;
 - Condition of all farm fences;
 - Topsoil storage areas;
 - All areas to be cordoned off during construction;
 - Waste management sites;
 - Ablution facilities (inside and out);

- Any non-conformances deemed to be “significant”;
- All completed corrective actions for non-compliance;
- All required signage;
- Photographic recordings of incidents;
- All areas before, during and post-rehabilitation; and
- Include relevant photographs in the Final Environmental Audit Report.

4.9 Complaints register

The SS shall keep a current and up-to-date complaints register. The complaints register is to be a record of all complaints received from communities, stakeholders and individuals. The Complaints Record shall:

- Record the name and contact details of the complainant;
- Record the time and date of the complaint;
- Contain a detailed description of the complaint;
- Where relevant and appropriate, contain photographic evidence of the complaint or damage (SS to take relevant photographs); and
- Contain a copy of the SS written response to each complaint received and keep a record of any further correspondence with the complainant. The SS’s written response will include a description of any corrective action to be taken and must be signed by the Contractor, SS and affected party. Where a damage claim is issued by the complainant, the SS shall respond as described below.

4.10 Claims for damages

If a Claim for Damages is submitted by a community, landowner or individual, the SS shall:

- Record the full detail of the complaint as described above;
- The PM will evaluate the claim and associated damage and submit the evaluation to the Senior Site Representative for approval;
- Following consideration by the PM, the claim is to be resolved and settled immediately, or the reason for not accepting the claim communicated in writing to the claimant. Should the claimant not accept this, the SS shall, in writing report the incident to the Developer’s negotiator and legal department; and
- A formal record of the response by the SS to the claimant as well as the rectification of the method of making payments not amount will be recorded in the EMPr file.

4.11 Interactions with I & APs

Open, transparent and good relations with affected landowners, communities and regional staff are an essential aspect to the successful management and mitigation of environmental impacts.

The SS shall:

- Ensure that all queries, complaints and claims are dealt with within an agreed timeframe;
- Ensure that any or all agreements are documented, signed by all parties and a record of the agreement kept in the EMPr file;
- Ensure that complaints telephone numbers are made available to all landowners and affected parties; and
- Ensure that contact with affected parties is courteous at all times.

4.12 Environmental audits

Internal environmental audits of the activity and implementation of the EMPr must be undertaken. The findings and outcomes are included in the EMPr file and submitted to the CA at intervals as indicated in the EA.

The SS must prepare a monthly EAR. The final report will be circulated to the PM and filed in the EMPr file. At a frequency determined by the EA, the SS shall submit the monthly reports to the CA. At a minimum, the monthly report is to cover the following:

- Environmental Checklists;
- Deviations and non-compliances with the checklists;
- Non-compliances issued;
- Completed and reported corrective actions;
- Environmental Monitoring; and
- General environmental findings and actions.

4.13 Biannual External Environmental Audit

As recommended by the biodiversity specialist, the applicant must appoint an Environmental Control Officer, who meets the requirements of the NEMA: EIA Regulations (2014) as amended, to conduct biannual audits of the operations for the duration of the project. An audit report must be compiled for each audit and submitted to the DMRE.

4.14 Final environmental audits

On completion of the rehabilitation and/or requirements of the EA, a final EAR is to be prepared and submitted to the CA. The EAR must comply with Appendix 7 of the EIA Regulations.

4.15 Environmental Training and Awareness-Raising

The Contractor, sub-contractors and employees require an appropriate level of environmental awareness and competence to ensure continued compliance with environmental legislation, conditions of the EA and the provisions in the EMPr. Training needs should be identified based on the available and existing capacity of site personnel (including all Contractors and sub-contractors) to undertake the required management actions and monitoring activities. All personnel must be adequately trained to perform their designated tasks to an acceptable standard.

Upfront environmental training is aimed at:

- Promoting environmental awareness;
- Informing the main contractor of all environmental procedures, policies and programmes applicable;
- Providing generic training on the implementation of environmental management specifications; and
- Providing job-specific environmental training to understand the key environmental features of the construction site and the surrounding environment.

Training will be offered in the main languages. In addition to the upfront environmental training by the ECO, the Contractor should make provision for regular training or “Toolbox Talks”.

General environmental awareness must be fostered to ensure that environmental incidents are minimised and there is environmental compliance.

5 PROPOSED IMPACT MANAGEMENT ACTIONS

This section outlines aspects related to the development of the proposed mine and associated infrastructure and for each aspect, a set of prescribed impact management outcomes and associated impact management actions have been identified. Holders of EAs are responsible to ensure the implementation of these outcomes and actions for all projects as a minimum requirement, to mitigate the impact of such aspects.

This must be signed and dated on each page by both the contractor and the holder of the EA prior to commencement of the activity. The method statements are prepared and agreed to by the holder of the EA (to be compiled once detailed designs have been completed - a generic format is supplied as Appendix B). Each method statement must also be duly signed and dated on each page by the contractor and the holder of the EA. This template, once signed and dated, is legally binding. The holder of the EA will remain responsible for its implementation.

Appendix 4 of the 2014 NEMA EIA Regulations requires that the EMPr aim to achieve the following through the proposed impact management actions:

- Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;
- Comply with any prescribed environmental management standards or practices;
- Comply with any applicable provisions of the Act regarding the closure, where applicable; and
- Comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable.

It must be noted that this section has been revised based on comments received from I&APs. As such, there are no specific changes marked as per the Disclaimer.

Table 5-1: Environmental Training

Impact management outcome	Impacts on the environment are minimised during site establishment and the development footprint is kept to the demarcated development area.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - All staff must receive environmental awareness training prior to the commencement of the activities; - The Contractor must allow for sufficient sessions to train all personnel; - Refresher environmental awareness training is available as and when required; - All staff are aware of the conditions and controls linked to the EA and within the EMPr and made aware of their roles and responsibilities in achieving compliance with the EA and EMPr; - The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a minimum: <ul style="list-style-type: none"> a) Safety notifications; and b) No littering. - Environmental awareness training must include as a minimum the following: <ul style="list-style-type: none"> a) Description of significant environmental impacts, actual or potential, related to their work activities; b) Mitigation measures to be implemented when carrying out specific activities; c) Emergency preparedness and response procedures; e) Procedures to be followed when working near or within sensitive areas; f) Wastewater management procedures; g) Water usage and conservation; h) Solid waste management procedures; i) Sanitation procedures; j) Fire prevention; k) Disease prevention; and l) Prevention and containment of spills, leaks and other impacts to watercourses - A record of all environmental awareness training courses undertaken as part of the EMPr must be available; - Educate workers on the dangers of open and/or unattended fires; - A staff attendance register of all staff to have received environmental awareness training must be available. - Course material must be available and presented in appropriate languages that all staff can understand. 	PM Contractor SS	<ul style="list-style-type: none"> • Schedule training sessions with all contractors as required prior to construction • Document all trainees 	Prior to the start of construction activities	SS	Schedule training sessions with all contractors as required prior to construction	<ul style="list-style-type: none"> • Training register/s • Information posters • Training materials

Table 5-2: Site Establishment Development

Impact management outcome	Impacts on the environment are minimised during site establishment and the development footprint is kept to the demarcated development area.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - Minimize activity duration; - All excavated areas will be cordoned off; - Limit the operational footprint; - A method statement must be provided by the contractor prior to any onsite activity that includes the layout of the mining area in the form 	PM Contractor SS	<ul style="list-style-type: none"> • SS to approve method statements • Approved method statements to be included in the 	Prior to the start of construction activities	SS	Prior to construction	<ul style="list-style-type: none"> • Approved method statements included in updated EMPr

<p>of a plan showing the location of key infrastructure and services (where applicable), including but not limited to ablution facilities, hazardous materials storage areas (including fuels), designated access routes, waste and wastewater management;</p> <ul style="list-style-type: none"> - Location of infrastructure must be within approved area to ensure that the site does not impact on sensitive areas identified in the environmental assessment or site walkthrough; - Sites must be located where possible on previously disturbed areas; - The use of existing accommodation for contractor staff, where possible, is encouraged; - Identification of access-restricted areas is to be informed by the environmental assessment, site walkthrough, and any additional areas identified during development; - To mitigate the localised visual impact through the storage of equipment and machinery, and the storage of reflective materials, a shade cloth fence can be erected around the construction camp/s. - Erect, demarcate and maintain a temporary barrier with clear signage around the perimeter of any access restricted area, colour coding could be used if appropriate; and - Unauthorised access and development related activity inside access restricted areas are prohibited. 		<p>updated EMPr - a generic format is supplied as Appendix B</p>				<p>(to be compiled once detailed designs have been completed - a generic format is supplied as Appendix B)</p>
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Table 5-3: Access Roads and Traffic

Impact management outcome	Minimise impact on traffic mobility and access and minimise the impact on the local road network					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - All contractors must be made aware of all these permissible access routes; - Adequate road signage according to the South African Road Traffic Signs Manual (SARTSM); - Maximum use of both existing servitudes and existing roads must be made to minimize further disturbance; - The applicant will assist with appropriate, timely and high-quality maintenance required in terms of TRH20; - Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense; - Implementation of pedestrian safety initiatives. 	PM Contractor SS	<ul style="list-style-type: none"> • Training of contractors • Road maintenance programme 	Prior to the start of construction activities	SS	Prior to construction	<ul style="list-style-type: none"> • Training registers • Photographic records of affected access routes • Complaints register • Environmental incident register

Table 5-4: Water Use and Supply Management

Impact management outcome	Undertake responsible water usage.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - Onsite water harvesting measures for rainwater are recommended where possible; - Ensure water conservation is being practised by: <ol style="list-style-type: none"> Minimising water use during the cleaning of equipment; Undertaking regular audits of water systems; Including a discussion on water usage and conservation during environmental awareness training; and Possible recycling of greywater is recommended where possible. 	PM Contractor SS	<ul style="list-style-type: none"> • Keep records of water sources and volumes on site 	All phases (ongoing)	SS	All phases (ongoing)	<ul style="list-style-type: none"> • Records of water sources and volumes on site • Training registers • Training materials

Table 5-5: Stormwater and Wastewater Management

Impact management outcome	Impacts on the environment caused by stormwater and wastewater discharges during construction are avoided.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - Restrict vehicle movement to designated access roads. - Restrict vegetation clearing to specific footprints. - Capture and contain runoff from areas cleared of vegetation, and existing access roads - Responsible waste management must be implemented to minimize pollution of water resources. - After every rainfall event, the contractor must check the site for erosion damage and rehabilitate this damage immediately. - Demarcated dirty areas to be limited to roads, parking areas and chemical storage areas. - Regarding portable chemical toilets, the following must be implemented: <ul style="list-style-type: none"> o Only portable chemical toilets with a sealed reservoir will be allowed on site. o The capacity of the reservoirs in the portable chemical toilets must be monitored on a daily basis to ensure that they can be serviced timeously. o All removal of the collected sewage waste from the portable chemical toilets must be conducted by a registered service provider for disposal at a municipal waste water treatment facility. 	PM Contractor SS	<ul style="list-style-type: none"> • Compile and implement stormwater management measures • Certificates of safe disposal for general, hazardous and recycled waste • Record spills/ discharges and environmental incidents 	All phases (ongoing)	SS	All phases (ongoing)	<ul style="list-style-type: none"> • Certificates of safe disposal for general, hazardous and recycled waste • Complaints register • Environmental incident register

Table 5-6: Solid and Hazardous Waste Management

Impact management outcome	Wastes are appropriately stored, handled and safely disposed of at a recognised waste facility.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - Even though the impacts of contamination of the area by petrochemical spillages are considered to be low pre-mitigation, the following mitigation measures must be included to further reduce the significance of the impact: <ul style="list-style-type: none"> o All plant and equipment that make use of petrochemical substances must be checked for leakages on a daily basis. o All plant and equipment that are found to be leaking must be removed from the property and only returned once the leakages have been addressed. o If any petrochemical substances are stored on the property, this storage must be done on an impermeable surface in a bunded area that makes provision for 110% of volume of the substances that are stored. o All refuelling of plant and equipment must be conducted over a drip tray. o If any plant or equipment is to be parked on site, these must be parked within the demarcated construction footprint that has been cleared. o If any spillages from plant or equipment occur, the spill must be immediately contained, the contaminated soils must be collected and bagged in impermeable bags and stored on site to be removed and disposed of by a registered service provider. 	PM Contractor SS	<ul style="list-style-type: none"> • Compile and implement appropriate stormwater management measures • Certificates of safe disposal for general, hazardous and recycled waste • Record spills/ discharges and environmental incidents 	All phases (ongoing)	SS	All phases (ongoing)	<ul style="list-style-type: none"> • Certificates of safe disposal for general, hazardous and recycled waste • Complaints register • Environmental incident register • Training register • Training materials

Impact management outcome	Wastes are appropriately stored, handled and safely disposed of at a recognised waste facility.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - Even though the impacts of contamination of the area by domestic waste are considered to be low pre-mitigation, the following mitigation measures must be included to further reduce the significance of the impact: <ul style="list-style-type: none"> o A designated eating area must be established within the mining area. o Covered domestic waste bins must be present at the eating area to receive all the domestic waste generated by the labour. o The capacity of these domestic bins must be monitored on a daily basis to ensure they are emptied timeously. o The domestic waste from these waste bins must be removed off site and disposed of at a municipal landfill site on a weekly basis or more regularly if the bins fill up quicker. 						

Table 5-7: Vegetation Clearing

Impact management outcome	Vegetation clearing is restricted to the authorised development footprint of the proposed infrastructure.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - Indigenous vegetation outside of the designated Works area must be left undisturbed; - Restrict all movement of vehicles and heavy machinery to permissible areas. No off-road driving beyond designated areas may be allowed; - Restrict the movement of personnel and construction vehicles to where they are needed; - Strategically plan the location of site camps and laydown areas so that minimal vegetation is cleared; - Provision must be made for concurrent rehabilitation of the mining operations which will ensure that the permit area is mined in designated sections; - The mined out sections will be rehabilitated and planted with an indigenous grass seed mix in the first growing season after it has been mined out. This will limit the operational area to the current operational area; - A seedbed of alien plants will be present within the cleared soils. This seedbed and the plants that originate from it must be managed as follows: <ul style="list-style-type: none"> o The Mining Permit footprint must be clearly surveyed and demarcated before any construction or operations are set to commence, to ensure that the area to be cleared is limited to only the areas that are necessary for the mining activities. o The cleared areas must be regularly monitored for the establishment of alien plant species. These must be cleared when they appear. o If alien invasive plant species become a problem on the mining area, a formal Alien Invasive Management Plan must be set up and implemented. This plan must make provision for the identification and eradication of these species. 	PM Contractor SS	<ul style="list-style-type: none"> • Certificates of safe disposal for general, hazardous and recycled waste • Implementation of an alien and invasive plant control and eradication plan 	All phases (ongoing)	SS	All phases (ongoing)	<ul style="list-style-type: none"> • Environmental incident register • Training register • Training materials • Monitoring of success of rehabilitation • Register of herbicide usage • Certificates of safe disposal for general, hazardous and recycled waste

<ul style="list-style-type: none"> - The SS must undertake monthly compliance monitoring audits. Terrestrial ecosystem aspects that must be monitored related to monitoring freshwater ecosystem impacts include: <ul style="list-style-type: none"> - The condition of the demarcations/fence. - Evidence of any no-go area incursions. - The condition of temporary runoff, erosion and sediment control measures and evidence of any failures or sediment deposits. - Evidence of erosion. - Visual assessment of stormwater quality. - The condition of waste bins and the presence of litter within the working area. - Evidence of solid waste dumping within the no-go areas. - Evidence of hazardous materials spills and soil contamination. - Presence of alien invasive and weedy vegetation within the working area. - Rehabilitation and revegetation methods and success. 						
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Table 5-8: Protection of Fauna

Impact management outcome	Disturbance to fauna is minimised.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - If possible, the construction activities are to commence in the winter months to ensure that the animal species that will actively move from the site is not currently rearing young as the movement with young animals could potentially cause mortality amongst the young animals; - No poaching will be tolerated under any circumstances. All animal dens close to the works areas must be marked as “No-Go” areas; - No Threatened or Protected species (ToPs) and/or protected fauna as listed according to NEM: BA and relevant provincial ordinances may be removed and/or relocated without appropriate authorisations/permits; - In areas where snakes are abundant, snake deterrents to be deployed; - Strict speed limits must be set and adhered to; - Driving between dusk and dawn should be permissible to emergency situations only; - Monitor the establishment of invasive species and remove as soon as detected, whenever possible before regenerative material can be formed, destroy all material to prevent re-establishment 	PM Contractor SS	<ul style="list-style-type: none"> • Demarcation of SCC, sensitive habitats prior to construction. 	All phases (ongoing)	SS	All phases (ongoing)	<ul style="list-style-type: none"> • Environmental incident register • Training register • Training materials • Monitoring of success of rehabilitation

Table 5-9: Protection of Heritage Resources

Impact management outcome	Impact on heritage resources is minimised.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - For any chance finds of heritage resources, such as graves, all work must cease in the affected area and the Contractor must immediately inform the SS. A heritage specialist must be called to site for inspection. The relevant heritage resource agency (the Institute) must also be informed about the finding. - The heritage specialist will assess the significance of the resource and guide the way forward. 	PM Contractor SS	<ul style="list-style-type: none"> • Reporting of heritage findings to SAHRA • Reporting of graves/human remains to SAPS 	All phases (ongoing)	SS	All phases (ongoing)	<ul style="list-style-type: none"> • Environmental incident register • Training register • Training materials • Permits for damage or repairs to heritage sites

Impact management outcome	Impact on heritage resources is minimised.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - A heritage management plan should be compiled that indicates buffer zones and management actions for known and unknown heritage sites and sites of social importance in the prospecting area. Under no circumstances may any heritage material be destroyed or removed from the site unless under the direction of a heritage specialist. - Should any recent remains be found on site that could potentially be human remains, the SAPS as well as the Institute must be informed. No SAPS official may remove remains until the correct permit/s have been obtained. - The local community should be engaged when an area is cleared to assist with identifying graves as well as places of social and spiritual significance. 						<ul style="list-style-type: none"> • Records of reports to heritage agencies/ SAPS

Table 5-10: Health and Safety

Impact management outcome	All precautions are taken to minimise the risk of injury, harm, illness or complaints.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - Identify fire hazards, demarcate and restrict public access to these areas as well as notify the local authority of any potential threats e.g. large brush stockpiles, fuels etc.; - All unattended open excavations must be adequately fenced or demarcated; - Ensure warning signs are erected on the perimeter of these areas. - Adequate protective measures must be implemented to prevent unauthorised access to the Works area; - Ensure structures vulnerable to high winds are secured; and - Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged. 	Community Liaison Officer (CLO)	<ul style="list-style-type: none"> • Appointment of CLO and implementation of the complaints register process 	All phases (ongoing)	CLO	All phases (ongoing)	<ul style="list-style-type: none"> • Complaints register • Training register • Training materials
<ul style="list-style-type: none"> - Ensure that the workforce is sensitised to the effects of HIV/ acquired immunodeficiency syndrome (AIDS); - The Contractor must ensure that information posters on AIDS are displayed in the Contractor Camp area; - Appropriate Personal Protective Equipment (PPE) to be provided to all staff on site; - Medical support must be made available as appropriate; and - Provide access to Voluntary HIV Testing and Counselling Services. 	PM Contractor SS	<ul style="list-style-type: none"> • Awareness raising and posters • Access to appropriate PPE 	All phases (ongoing)	SS	All phases (ongoing)	<ul style="list-style-type: none"> • Number of staff reporting as sick/ number of sick leave days • Complaints register • Training register • Training materials

Table 5-11: Sanitation

Impact management outcome	Clean and well-maintained toilet facilities are available to all staff to minimise the risk of disease and impact on the environment.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - Minimum 1 toilet per 10 users. - Only portable chemical toilets with a sealed reservoir will be allowed on site. 	PM Contractor SS	<ul style="list-style-type: none"> • Demarcation of SCC, sensitive habitats prior to construction 	All phases (ongoing)	SS	All phases (ongoing)	<ul style="list-style-type: none"> • Complaints register

<ul style="list-style-type: none"> - The capacity of the reservoirs in the portable chemical toilets must be monitored daily to ensure that they can be serviced timeously. - The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for ablutions must be permitted under any circumstances; - Toilets must not be located within the 1:100yr flood line of a watercourse or the recommended buffer of any wetlands. - Toilets must be secured to the ground to prevent them from toppling due to wind or any other cause. - Spillage should be prevented when the toilets are cleaned or emptied. - Toilets must be emptied before long weekends and workers holidays and must be locked after working hours. - Toilets must be serviced weekly, and the ECO must inspect toilets to ensure compliance with health standards. - Waste must be disposed of at a suitably licensed facility. - A copy of the waste disposal certificates must be maintained. 		<ul style="list-style-type: none"> • Certificates of safe disposal for general, hazardous and recycled waste • Record spills/ discharges and environmental incidents 				<ul style="list-style-type: none"> • Training register • Training materials • Certificates of safe disposal for general, hazardous and recycled waste • Environmental incident register
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Table 5-12: Emergency procedures

Impact management outcome	Emergency procedures are in place to enable a rapid and effective response to all types of environmental emergencies.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project; - The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation; - All staff must be made aware of emergency procedures as part of environmental awareness training; - The relevant local authority must be made aware of a fire as soon as it starts; and - In the event of an emergency, necessary mitigation measures to contain the spill or leak must be implemented. 	PM Contractor SS	<ul style="list-style-type: none"> • Compile ERAP prior to the commencement of construction • Demarcation of SCC, sensitive habitats prior to construction • Certificates of safe disposal for general, hazardous and recycled waste • Record spills/ discharges and environmental incidents 	All phases (ongoing)	SS	All phases (ongoing)	<ul style="list-style-type: none"> • Complaints register • Training register • Training materials • ERAP • Environmental incident register

Table 5-13: Hazardous Substances

Impact management outcome	Safe storage, handling, use and disposal of hazardous substances.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - No refuelling, servicing or chemical storage should occur within 50m of any watercourse. - The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible; - Even though the impacts of contamination of the area by petrochemical spillages are considered to be low pre-mitigation, the following mitigation measures must be included to further reduce the significance of the impact: 	PM Contractor SS	<ul style="list-style-type: none"> • Compile ERAP prior to the commencement of construction • Compile HCS control sheet • MSDS 	All phases (ongoing)	SS	All phases (ongoing)	<ul style="list-style-type: none"> • Complaints register • Training register • Training materials • ERAP • HCS control sheet and updates

<ul style="list-style-type: none"> ○ All plant and equipment that make use of petrochemical substances must be checked for leakages on a daily basis. ○ All plant and equipment that are found to be leaking must be removed from the property and only returned once the leakages have been addressed. ○ If any petrochemical substances are stored on the property, this storage must be done on an impermeable surface in a bunded area that makes provision for 110% of volume of the substances that are stored. ○ All refuelling of plant and equipment must be conducted over a drip tray. ○ If any plant or equipment is to be parked on site, these must be parked within the demarcated construction footprint that has been cleared. ○ If any spillages from plant or equipment occur, the spill must be immediately contained, the contaminated soils must be collected and bagged in impermeable bags and stored on site to be removed and disposed of by a registered service provider. - All hazardous substances must be stored in suitable containers as defined in the Method Statement (to be compiled once detailed designs have been completed - a generic format is supplied as Appendix B); - Containers must be marked to indicate contents, quantities and safety requirements; - All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill/leak from the stored containers; - Bunded areas to be suitably lined with a South African Bureau of Standards (SABS) approved liner; - No unauthorised access into the hazardous substances' storage areas must be permitted; - No smoking must be allowed within the vicinity of the hazardous storage areas; - Adequate fire-fighting equipment must be made available at all hazardous storage areas; - An appropriately sized spill kit kept onsite relevant to the scale of the activity/s involving the use of hazardous substances must be available at all times; - The responsible operator must have the required training to make use of the spill kit in emergencies; - An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken. 		<ul style="list-style-type: none"> • Demarcation of SCC, sensitive habitats prior to construction • Certificates of safe disposal for general, hazardous and recycled waste • Record spills/ discharges and environmental incidents 				<ul style="list-style-type: none"> • MSDS • Spill kits available on site • Environmental incident register
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Table 5-14: Equipment Maintenance and Storage Aspect

Impact management outcome	Soil, surface water and groundwater contamination are minimised.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - During servicing of vehicles or equipment, a suitable drip tray must be used to prevent spills onto the soil; - Leaking equipment must be repaired immediately or be removed from the site to facilitate repair; - All areas must be monitored for oil and fuel spills; - Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available. 	PM Contractor SS	<ul style="list-style-type: none"> • Compile ERAP prior to the commencement of construction • Compile HCS control sheet • MSDS • Certificates of safe disposal for general, hazardous and recycled waste • Record spills/ discharges and environmental incidents 	All phases (ongoing)	SS	All phases (ongoing)	<ul style="list-style-type: none"> • Complaints register • Training register • Training materials • ERAP • HCS control sheet and updates • MSDS • Spill kits available on site • Environmental incident register

Table 5-15: Dust Emissions Aspect

Impact management outcome	Dust prevention measures are applied to minimise the generation of dust.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the SS. - Comply with the National Dust Control Regulations, GN 36974 of 1 November 2013, in terms of the NEM: AQA, as amended, and all applicable local bylaws. - Removal of vegetation must be avoided until soil stripping is required and similarly exposed surfaces must be re-vegetated or stabilised as soon as is practically possible. - Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present. - During high wind conditions, the SS must evaluate the situation and make recommendations as to whether dust damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level. - Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind. - Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the SS. - Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas. - All incoming and outgoing truck loads must be covered. - Avoid dust-generating works during extremely windy conditions. - Apply an appropriate dust suppression protocol to limit the generation of dust through construction activities and traffic on unsealed roads - there may be the need for frequent wetting of the access road. 	PM Contractor SS	<ul style="list-style-type: none"> • Compile ERAP prior to the commencement of construction • MSDS • Certificates of safe disposal for general, hazardous and recycled waste • Record spills/ discharges and environmental incidents 	All phases (ongoing)	SS	All phases (ongoing)	<ul style="list-style-type: none"> • Complaints register • Training register • Training materials • ERAP • MSDS • Spill kits available on site • Certificates of safe disposal for general, hazardous and recycled waste • Environmental incident register

<ul style="list-style-type: none"> - When working near (within 100 m) a potential sensitive receptor, limit the number of simultaneous activities to a minimum as far as possible. - Ensure that all construction vehicles are maintained to the manufacturer's specifications. 						
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Table 5-16: Noise Mitigation Aspect

Impact management outcome	Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - The Contractor must keep the noise level within acceptable limits. - Comply with the Noise Control Regulations in terms of Section 25 of the ECA (GN R154 of 10 January 1992) and all local noise bylaws. - Any complaints received by the Contractor regarding noise must be recorded and communicated to the ECO and DPM. - Operating hours as determined by the environmental authorisation are adhered to during the development phase. Where not defined, it must be ensured that development activities must still meet the impact management outcome related to noise management. 	PM Contractor SS	<ul style="list-style-type: none"> • Control of working hours 	All phases (ongoing)	SS	All phases (ongoing)	<ul style="list-style-type: none"> • Complaints register • Training register • Training materials • Environmental incident register

Table 5-17: Fire Prevention Aspect

Impact management outcome	Prevention of uncontrollable fires.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - Ensure compliance with the National Veld and Forest Fire Act (101 of 1998); - Designate smoking areas where the fire hazard could be regarded as insignificant; - Smoking must be controlled as per the Tobacco Products Control Act, 1993 (Act No. 83 of 1993), as amended. - Firefighting equipment must be available on all vehicles located on site; - The local Fire Protection Agency (FPA) must be informed of construction activities; - Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site; - Two-way swap of contact details between SS and FPA. 	PM Contractor SS	<ul style="list-style-type: none"> • Emergency contact details on site 	All phases (ongoing)	SS	All phases (ongoing)	<ul style="list-style-type: none"> • Complaints register • Training register • Training materials • Emergency contact details on site • Environmental incident register

Table 5-18: Stockpile Aspect

Impact management outcome	Reduce erosion and sedimentation as a result of stockpiling.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - The designated work area is to be cleared- topsoil is to be removed and stockpiled for later reinstatement. - All material that is excavated during the project development phase (either during piling (if required) or earthworks) must be 	PM Contractor SS	<ul style="list-style-type: none"> • Demarcation of SCC, sensitive habitats and watercourses prior to construction 	All phases (ongoing)	SS	All phases (ongoing)	<ul style="list-style-type: none"> • Complaints register • Training register • Training materials

Impact management outcome	Reduce erosion and sedimentation as a result of stockpiling.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<p>stored appropriately on site to minimise impacts to watercourses, watercourses and water bodies.</p> <ul style="list-style-type: none"> - All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods. - The slope and height of stockpiles must be limited to 1.5m and are not be sloped more than a ratio of 1:2 to avoid collapse. - During periods of strong winds and heavy rain, the stockpiles must be covered with appropriate material (e.g. cloth, tarpaulin etc.) if possible. - Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material to prevent erosion of the material. 		<ul style="list-style-type: none"> • Implementation of the approved alien and invasive plant control and eradication plan 				<ul style="list-style-type: none"> • Emergency contact details on site • Environmental incident register

Table 5-19: Civil works Aspect

Impact management outcome	Impact on the environment minimised during civil works.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - Where terracing is required, topsoil must be collected and retained for re-use later to rehabilitate disturbed areas. - Areas to be rehabilitated include terrace embankments. - Where required, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled. - These areas can be stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly. - All excess spoil generated during excavation activities must be disposed of in an appropriate manner and at a recognised landfill site. - Spoil can, however, be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes. 	PM Contractor SS	<ul style="list-style-type: none"> • Demarcation of SCC, sensitive habitats and watercourses prior to construction • Implementation of the alien and invasive plant control and eradication plan 	All phases (ongoing)	SS	All phases (ongoing)	<ul style="list-style-type: none"> • Complaints register • Training register • Training materials • Certificates of safe disposal for general, hazardous and recycled waste • Environmental incident register

Table 5-20: Socio-Economic Aspect

Impact management outcome	Enhanced socio-economic development.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - Ensure that construction workers are identifiable. All workers should carry identification cards and wear identifiable clothing. - Fence off the construction site and control access to these sites. - Appoint an independent security company to monitor the site. - Develop and implement communication strategies to facilitate community liaison. - Communicate the limitation of opportunities created by the project through Community Leaders and Ward Councillors. - Wherever feasible, residents should be recruited to fill semi and unskilled jobs. 	CLO	<ul style="list-style-type: none"> • Recording complaints/grievances in the complaints register • Maintain records of correspondence with Interested and Affected Parties 	All phases (ongoing)	SS CLO	All phases (ongoing)	<ul style="list-style-type: none"> • Complaints register • Training register • Training materials • HIV Infections Policy

Impact management outcome	Enhanced socio-economic development.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - Women should be given equal employment opportunities and encouraged to apply for positions. - Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process. - Sustain continuous communication and liaison with neighbouring owners and residents. - Ensure that operators and drivers are properly trained and make them aware, through regular toolbox talks, of any risk they may pose to the community. Place specific emphasis on the vulnerable sector of the population such as children and the elderly. - Regularly monitor the effect that construction is having on infrastructure and immediately report any damage to infrastructure to the appropriate authority. - Ensure that where communities' access is obstructed that this access is restored to an acceptable state. - Ensure that all affected landowners and tourist associations are regularly consulted. - A Grievance Mechanism should be put in place and all grievances should be dealt with transparently. 						

Table 5-21: Visual Aspect

Impact management outcome	Minimise the visual impact					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - Ensure that the site is in a visually acceptable state at all times. - Use suitable building finishes/colours that blend in with the surrounding landscape. - Set up visual screens (such as trees, shrubs or hedges) along the perimeter of the study area. - Choose suitable types of lighting that minimize glare and sky glow. - Utilize motion sensor lights at security buildings. - Ensure a complaints register is in place to record and address complaints. - Implement concurrent rehabilitation, and ensure the smallest area possible is cleared of vegetation at a time. 	PM Contractor SS	<ul style="list-style-type: none"> • Recording complaints/grievances in the complaints register • Maintain records of correspondence with Interested and Affected Parties • Concurrent rehabilitation. 	All phases (ongoing)	SS	All phases (ongoing)	<ul style="list-style-type: none"> • Complaints register • Training register • Training materials • Environmental incident register

Table 5-22: Landscaping and Rehabilitation Aspect

Impact management outcome	Areas disturbed during the development phase are returned to a state that approximates the original condition.					
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
<ul style="list-style-type: none"> - Prior to rehabilitation, a specialist ecologist should conduct a site visit at the commencement of the rehabilitation phase of the project to ensure that the contractor is adequately informed of the rehabilitation requirements associated with the works. 	PM Contractor SS	<ul style="list-style-type: none"> • Rehabilitation Plan/Strategy • Quantum Cost Calculation for Rehabilitation 	All phases (ongoing)	SS	All phases (ongoing)	<ul style="list-style-type: none"> • Complaints register • Training register • Training materials

<ul style="list-style-type: none"> - Provision must be made for concurrent rehabilitation of the mining operations which will ensure that the permit area is mined in designated sections. - The mined out sections will be rehabilitated and planted with an indigenous grass seed mix in the first growing season after it has been mined out. This will limit the operational area to the current operational area. - A seedbed of alien plants will be present within the cleared soils. This seedbed and the plants that originate from it must be managed as follows: <ul style="list-style-type: none"> o The Mining Permit footprint must be clearly surveyed and demarcated before any construction or operations are set to commence, to ensure that the area to be cleared is limited to only the areas that are necessary for the mining activities. o The cleared areas must be regularly monitored for the establishment of alien plant species. These must be cleared when they appear. o If alien invasive plant species become a problem on the mining area site, a formal Alien Invasive Management Plan must be set up and implemented. This plan must make provision for the identification and eradication of these species. o Undertake continual monitoring to identify erosion as early as possible to remedy. 						<ul style="list-style-type: none"> • Environmental incident register
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6 CLOSURE

6.1 Closure Objectives

The closure objectives for the site have been identified as follows:

- At closure, all stockpiles, infrastructure and equipment will be removed. Other residue deposits, if any, will be removed and disposed of at a registered waste site.
- All waste will be removed to a registered waste facility and scrap metal, if any, will be sold to a recycling company.
- Hydrocarbons and any contaminated soil will be removed from site.
- The slope faces will be profiled to a gradient of 1:3, to allow the depression created in the topography through mining to be absorbed into the landscape.
- Sharp edges will be prevented in order to blend the site in with the surrounding landscape.
- The sides of the mine will be ripped and topsoiled, and revegetated.
- The revegetated areas will display adequate vegetation cover.
- Internal roads will be ripped and rehabilitated.
- No erosion will take place on the production faces.
- The aesthetics of the area will be largely reinstated as far as possible.
- The rehabilitated area will be kept clear of alien invasive species.
- Animals will be able to return safely to the site and the proposed land-use, grazing, will be achieved within 2 years after rehabilitation has been completed.
- Residents will not be subjected to any post closure social or environmental impacts.

6.2 Closure Goals

The closure vision is underpinned by the more specific closure objectives listed in this section. These objectives are stated qualitatively and would become more specific as the actual closure measures are devised, implemented and their performance determined:

- **Physical stability:** To remove and/or stabilise surface infrastructure that is present on the mine to facilitate the implementation of the planned final land use;
- **Environmental quality:** To ensure that local environmental quality is not adversely affected by possible physical effects and chemical contamination arising from the mine site, as well as to sustain catchment yield as far as possible after closure;

- **Health and safety:** To limit the possible health and safety threats to humans and animals using the rehabilitated mine site as it becomes available;
- **Land capability/land use:** To re-instate suitable land capabilities over the various portions of the mine site to facilitate the progressive implementation of the planned final land use;
- **Aesthetic quality:** To leave behind a rehabilitated mine site that, in general, is not only neat and tidy, giving an acceptable overall aesthetic appearance, but which in terms of this attribute is also aligned to the planned final land use;
- **Biodiversity:** To encourage, where appropriate, the re-establishment of indigenous vegetation on the rehabilitated mine sites such that the terrestrial and aquatic biodiversity is largely re-instated over time; and
- **Social:** To ensure that the infrastructure transfers, if applicable, measures and/or contributions made by the mine towards the long-term socio-economic benefit of the local communities are lasting and sustainable.

7 FINANCIAL PROVISION

Section 24P of NEMA requires that:

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

Furthermore, the regulations now require a mine to conduct an annual review of the following:

- A final rehabilitation plan;
- An annual rehabilitation plan; and
- An environmental risk assessment report.

The financial closure liability calculations are initial estimates that have been prepared by GCS and submitted as part of the EIA/EMP Report for the proposed site. The required closure costs should the mine undergo sudden closure as well as for Life Of Mine (LOM) were calculated using the infrastructure data and layouts as described in the EIA and EMP Report.

Currently there are no liabilities at the proposed site (Greenfield site). Upon completion of construction activities and commencement of operational activities at the proposed site, it is recommended that the financial provision be reviewed and updated to account for any shortfalls or differences. Table 7-1 indicates a preliminary total closure cost for both LOM and Sudden Closure.

Table 7-1: Preliminary Financial Provisioning

Kouga Sand Preliminary Financial Provisioning		LOM Closure Cost	Sudden Closure Cost
1	Surface Infrastructure	R46 401.66	R46 401.66
1.1	Buildings & Structures	R27 841.00	R27 841.00
1.2	Fencing	R18 560.66	R18 560.66
2	Mining Areas & Waste Sites	R262 456.24	R262 456.24
2.1	Opencast Area	R261 958.47	R261 958.47
2.2	Stockpile	R497.76	R497.76
	Sub Total 1	R308 857.90	R308 857.90
	12% Preliminary and General		
	10% Contingency	R30 885.79	R30 885.79
	Sub Total 2 (excluding VAT)	R339 743.69	R339 743.69
	Grand Total (including VAT)	R390 705.24	R390 705.24

8 DECLARATION

The proponent/applicant or holder of the EA affirms that he/she will abide and comply with the prescribed impact management outcomes and impact management actions and have the understanding that the impact management outcomes and impact management actions are legally binding. The proponent/applicant or holder of the EA affirms that he/she will provide written notice to the CA 14 days prior to the date on which the activity will commence of commencement of construction to facilitate compliance inspections.

Signature Proponent/applicant/ holder of EA

Date

NOTE:

Should the EA be transferred to a new holder, this declaration must be completed by the new holder and submitted with the application for an amendment of the EA in terms of Regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted for an amendment to an environmental authorisation will be considered to be incomplete should a signed copy of the EMPr not be submitted. Once approved, the EMPr becomes legally binding to the new EA holder.

APPENDIX A

Curriculum Vitae of Environmental Assessment Practitioner (EAP)



MAGNUS VAN ROOYEN

Technical Director

CORE SKILLS

- Environmental Impact Assessments
- Scoping Reports
- Preliminary Environmental Assessment
- Mining Right and Applications
- Environmental Management Programmes
- Strategic Environmental Assessments
- Wildlife Management Plans

DETAILS

Qualifications

- BSc - Botany & Zoology
- B.SC Honours - Botany
- Specialist Student
- Post Graduate Diploma in Teaching
- Masters Degree: Environmental Management

Memberships

- SACNASP
- International Association of Impact Assessors

Languages

- English - fluent
- Afrikaans- fluent
- German - fair
- Dutch - fair
- Zulu - adequate

PROFILE

In addition to holding a Masters Degree: Environmental Management, Magnus also holds a BSc degree in Botany and Zoology, an Honours Degree in Botany and a Post Graduate Certificate in Education.

Magnus has 13 years' experience in projects involving Environmental Impact Assessments in various developmental sectors (Mining and Agricultural Sector, National Roads, Pipelines, Dams, and Residential Developments), conducting of Specialist Biodiversity Assessments associated with Environmental Impact Assessments and Project Feasibility Studies. He has experience in the compilation of Resettlement Policy Framework Plans associated with infrastructure development projects.

Magnus has experience in working on various private and public sectors as well as rural and urban environments in various countries.

His expertise lies within the mining sector where he has gained extensive exposure to all the aspects of mining projects from the pre-feasibility, prospecting, environmental impact assessment

Magnus has experience in the following areas:

- Environmental Impact Assessments
- Scoping Reports
- Preliminary Environmental Assessment
- Mining Right and Permit Applications
- Environmental Management Programmes
- Strategic Environmental Assessments
- Wildlife Management Plans

WORK EXPERIENCE

Year	Employer	Position	Role and Responsibility
2007 - 2020	JG Afrika (Pty) Ltd	Executive Associate	Project Management of an environmental contingent of 4 people and conducting Environmental Impact Assessments
2006 - 2007	JG Afrika (Pty) Ltd	Environmental Scientist	Conducted a wide range of infrastructure related Environmental Impact Assessments
2002 - 2005	Department of Conservation Ecology, University of Stellenbosch	Biodiversity Researcher	Conducted field work, sampling, laboratory work and logistics associated with two projects within the Conservation Ecology Department
2002 - 2005	Department of Botany and Zoology, University of Stellenbosch	Junior Lecturer in Botany	Lectured Botany practical component of the first-year Natural Science Degree
2001 - 2002	Paul Roos Gymnasium	Biology Teacher	Teaching the South African Biology curriculum to high school students

PROJECT EXPERIENCE

<p>Biodiversity Assessment Projects</p>	<p><u>Biodiversity Assessment Projects</u></p> <p>Mamatwan Tailings Facility Biodiversity and Wetland Assessment for the site to be used for the establishment of the new tailings facility on the South32 Mamatwan Manganese Mine near Hotazel.</p> <p>Hillside Aluminum Desalination Plant Biodiversity Screening Assessment for the infrastructure network associated with the South32 Hillside Aluminum Desalination Plant in Richards Bay.</p> <p>Lichtenburg Siding Expansion Biodiversity Assessment for the proposed expansion of the Lichtenburg Cement Siding, North West Province.</p> <p>Nacala Dam Project Riparian Vegetation Study for the Ecological Reserve Determination Specialist Study for the Environmental Impact Assessment for the Nacala Dam Project in Mozambique.</p> <p>National Route N8 Vegetation Specialist Study for the Environmental Impact Assessment for the National Route N8. National Route N2 uMgeni Interchange Improvements Environmental Impact Assessment for proposed improvements to the uMgeni Road Interchange and the National Route N2. The project included an extensive public participation process within the city of Durban, KwaZulu-Natal during the process.</p> <p>Qudeni Link Road Vegetation Specialist Study for the Environmental Impact Assessment for the Qudeni Rural Link Road.</p> <p>Municipal Landfill Site Identification Negative mapping and ground truthing for the options analysis for the identification of a District Municipality Landfill Site.</p>
<p>Port Related Projects</p>	<p>Pier 1 Phase 2 expansion Environmental Impact Assessment for proposed expansions to Pier 1 within the Durban Harbour. Locomotive Turning Table in the Port of Richards Bay Environmental Impact Assessment for proposed Locomotive Turn Table in within the Port of Richards Bay.</p> <p>Rail line construction in the Port of Richards Bay Environmental Impact Assessment for proposed additional rail line into the Richards Bay Coal Terminal in the Port of Richards Bay.</p>

PROJECT EXPERIENCE

	<p>Environmental Monitoring - RME Projects Durban Harbour Environmental Monitoring Duties for all the RME construction projects within the Durban harbour.</p> <p>Ore Loading Facility at Kalia in Guinea Environmental Impact Assessment for the proposed Ore Loading Facility in Kalia in Guinea, West.</p>
<p>Roads Projects</p>	<p>National Route N2 uMgeni Interchange Improvements Environmental Impact Assessment for proposed improvements to the uMgeni Road Interchange and the National Route N2. The project included an extensive public participation process with a range of public and private sector stakeholders.</p> <p>National Route N11 upgrade Environmental Impact Assessment for proposed upgrade of the National Route N11. The project included a public participation process with a range of public and private sector stakeholders as well as specialist studies associated with the river crossings.</p> <p>National Route N2 improvement and upgrade Environmental Impact Assessment for proposed upgrade of the National Route N2. The project included a public participation process with a range of public and private sector stakeholders as well as specialist studies associated with the river crossings.</p> <p>National Route N3 Chota Motala Interchange Environmental Audits Environmental Monitoring for the construction of the Chota Motala Interchange on the National Route N3.</p> <p>National Route R30 Environmental Audits Environmental Monitoring for the construction of the National Route R30.</p>
<p>Agricultural Projects</p>	<p>uMngano Community Dairy Development Project Environmental and Social Impact Assessment for the Development of a 200ha dairy for the uMngano Community in KwaZulu-Natal, South Africa.</p> <p>uMngano Community Vegetable Project Environmental and Social Impact Assessment for the Development of a 180ha vegetable growing project for the uMngano Community in KwaZulu-Natal, South Africa.</p> <p>Sundays River Citrus Project Environmental and Social Impact Assessment for the Development of a 100ha citrus project in the Sundays River Valley in the Eastern Cape, South Africa.</p>
<p>Water Projects</p>	<p>Nacala Dam project in Mozambique for the Millennium Challenge Corporation Environmental and Social Impact Assessment for the Nacala Dam project in Nacala, Mozambique. The study included the management of a range of specialist studies which included; biodiversity (fauna and flora) assessments, health impact assessments, social impact assessments, a hydrocensus, geotechnical investigation and an ecological flow requirement assessment. The project was conducted under the auspices</p>

PROJECT EXPERIENCE

	<p>of the Millennium Challenge Corporation.</p> <p>Mpofana Bulk Water Supply Scheme Environmental Impact Assessment for the Bulk Water Supply Scheme which included an extensive public facilitation process with affected landowners and other specialist studies.</p> <p>KwaHlokoHloko Rural Water Supply Scheme Environmental Impact Assessment for the Rural Water Supply Scheme which included an extensive public facilitation process with the rural landowners and tribal leaders.</p> <p>Conservation Management Plans</p> <p>Ndumo Game Reserve Management Plan Compilation of the Management Plan for the KwaZulu-Natal Wildlife Ndumo Game Reserve in northern KwaZulu-Natal. The compilation was conducted in accordance to the National Environmental Management: Protected Areas Act (No 57 of 2003).</p>
<p>Mining Projects</p>	<p>Uithoek Colliery for Miranda Mineral Holdings Environmental Impact Assessment for the establishment of the Uithoek Colliery including the management of a range of specialist studies which included a hydrological and geohydrological assessment, a biodiversity assessment, a social and heritage assessment and a repatriation plan for residents on the site.</p> <p>Burnside Colliery for Miranda Mineral Holdings Environmental Impact Assessment for the establishment of the Burnside Colliery including the management of a range of specialist studies which included a hydrological and geohydrological assessment, a biodiversity assessment, a social and heritage assessment and a repatriation plan for residents on the site.</p> <p>Ultimate Goal Colliery for Corobrik (Pty) Ltd Environmental Impact Assessment for the establishment of the Ultimate Goal Colliery including the management of a range of specialist studies which included a hydrological and geohydrological assessment, a biodiversity assessment, a social and heritage assessment and a repatriation plan for residents on the site.</p> <p>Klipwaal Gold Mine for Miranda Mineral Holdings Environmental Due Diligence assessment on the Klipwaal Gold Mine which included an assessment of completed and required rehabilitation, a contaminated land liability assessment and an evaluation of the structure and the possible impact of the slurry dams.</p> <p>Afrimat Quarries Compliance Audits Compliance audits and Due Diligence assessments of the Afrimat Quarry operations in South Africa. These audits are conducted on a two yearly basis.</p> <p>Private and Public Sector Development Projects Provincial Legislature Precinct Environmental and Social Impact Assessment for the proposed Provincial Legislature Precinct. This study consisted of a large public facilitation component and extensive engagement with private and public sector stakeholders.</p>

PROJECT EXPERIENCE

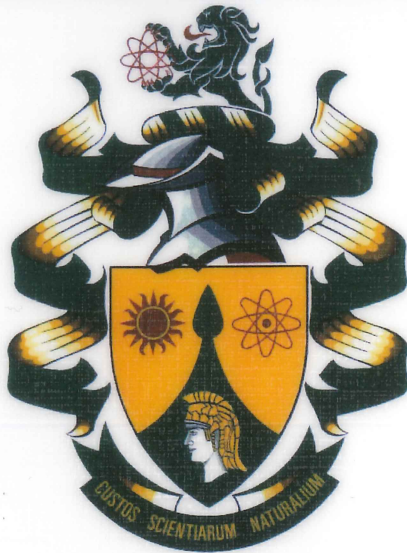
	<p>Camps Drift Canal Mixed Use Development Environmental Impact Assessment for proposed improvements to the uMgeni Road Interchange and the National Route N2. The project included an extensive public participation process within the city of Durban, KwaZulu-Natal during the process.</p> <p>Tiger Lodge Development Environmental Impact Assessment for the proposed Tiger Lodge Tourism Development.</p> <p>Paradise Lodge Development Environmental Impact Assessment for the proposed Paradise Lodge Tourism Development.</p>
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DECLARATION

I, Magnus Van Rooyen hereby declare that the details furnished above are true and correct to the best of my knowledge and belief and I undertake to inform you of any changes therein, immediately. In case any of the above information is found to be false or untrue or misleading or misrepresenting, I am aware that I may be held liable for it.

Signature:

Date: 27/02/2021



THE SOUTH AFRICAN COUNCIL
FOR
NATURAL SCIENTIFIC PROFESSIONS

herewith certifies that

Magnus van Rooyen

Registration number: 400335/11

is registered as a

Professional Natural Scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003

(Act 27 of 2003)

in the following field(s) of practice

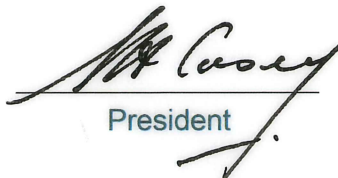
(Schedule I of the Act)

Environmental Science

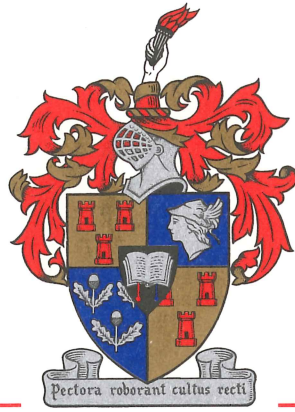
31 August 2011

31 August 2011

Pretoria


President


Chief Executive Officer



UNIVERSITY OF STELLENBOSCH

This is to certify that whereas

MAGNUS VAN ROOYEN

*had complied with all the conditions prescribed
in the Act, Statute and Rules of the University,
the degree*

MASTER OF PHILOSOPHY

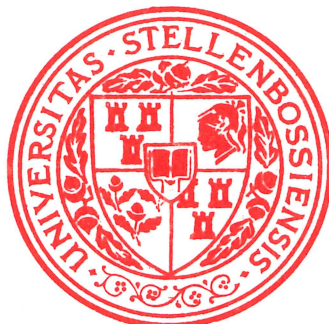
(MPhil)

(Environmental Management)

*with all the rights and privileges pertaining thereto was conferred on
him at a congregation of the University in December 2004.*

RECTOR AND VICE CHANCELLOR

DEAN



REGISTRAR

21 November 2006

Endorsement: This is a duplicate of the original certificate, which was lost or destroyed as far as can be determined by the University.

This certificate was issued in both Afrikaans and English. In the unlikely event of an inconsistency in the wording, the Afrikaans text shall have precedence.



Janice Callaghan

Junior Environmental Consultant

CORE SKILLS

- Water Use Licensing
- EIAs and BARs
- Section 24G reports
- RSIP reports
- Auditing
- Annual Decommissioning, Rehabilitation and Closure Updates

DETAILS

Qualifications

- BSc (Hons) Environmental Science
- Certificate from UCT in Occupational Health and Safety
- Certificate from University of British Columbia in Ecodesign for Cities and Suburbs

Membership

- Cand.Sci.Nat
- AIEMA
- Society of South African Geographers
- IAIAsa

Languages

- English - fluent
- Afrikaans - fluent

Countries Worked In

- South Africa
- Mozambique

PROFILE

Janice is a Junior Environmental Consultant at GCS Water and Environmental since April 2018 with 4 years' experience. She forms part of the Durban Environmental Unit and has undertaken various applications including Water Use License Applications, Integrated Water and Waste Management Plans, Environmental Impact Assessments and Environmental Management Programmes.

She pays great attention to detail and is a self-motivated individual, who is passionate about the environment with a particular interest in biogeography and conservation. Janice is both team player and able to work independently and is always keen to learn. Her methodical and organized approach benefits her in the workplace when meeting deadlines and she copes well under pressure.

Professional Affiliations:

- SACNASP (Cand.Sci.Nat)
- IAIAsa
- AIEMA
- SSAG

Areas of Expertise:

- Reviewing specialist studies and compiling reports;
- Database compilation and management;
- Compiling environmental authorisation applications for various mining projects in terms of NEMA, NEM:WA and NWA;
- Undertaking environmental audits;
- Compiling Annual Financial Provisioning Updates;
- Rehabilitation Strategy Implementation Plan;
- Report writing;
- Compilation of tender documents;
- Writing proposals;
- Assisting with information material and report compilation.



Work Experience

Period	Employer	Position	Role/ Responsibility
March 2020 to present	GCS	Junior Environmental Consultant	<ul style="list-style-type: none">- Undertaking environmental authorization processes- Mine closure and financial provisioning- Environmental Officer assistance to Buffalo Coal- Client liaison- Project management
April 2018 to March 2020	GCS	Intern	<ul style="list-style-type: none">- Assisting environmental consultants with environmental applications



Project Experience

Year	Client	Project Description	Role/Responsibility
Audits			
2019	Buffalo Coal	Annual EMPr and WUL audits for Coalfields, Aviemore and Magdalena operations	Assisting the lead auditor in site work and compilation of the audit reports.
2020	Buffalo Coal	Annual EMPr and WUL audits for Coalfields, Aviemore and Magdalena operations	Assisting the lead auditor in site work and compilation of the audit reports.
2020	Samancor	Annual audits for 6 operations	Assisting with compilation and internal review of the documents prior to sending for client review.
2020	Eskom	Legal compliance audit for Majuba power station	Assisting the lead auditor in site work and compilation of the audit reports.
2020	Eskom	Biennial PCB Audit	Assisting the lead auditor in site work and compilation of the audit reports.
2021	ZAC	Annual IWUL Audit	Lead auditor undertaking the site audit and compilation of report.
2021	Northam Platinum	Biennial Environmental Performance Audits for Booyesdal's North and South Operations	Assisting lead auditor with document compilation, and review of final document before sending to the client for review.
2021	Arcadis	Audit of EnviroServ's Mavoco Landfill Site	Lead auditor undertaking the site audit and compilation of report.
2021	Arcadis	Review of Harmony's Deelkraal Landfill	Documentation review and report.
2021	Tronox	Norms and Standards Audit of Waste Management	Assisting the lead auditor to undertake the audit and report compilation.
2021	Buffalo Coal	Annual EMPr and WUL audits for Coalfields, Aviemore and Magdalena operations	Assisting the lead auditor in site work and compilation of the audit reports.
2022	Tharisa	External EMPr Audit	Lead auditor responsible for the compilation of report
RSIPs			
2019	Buffalo Coal	Magdalena Colliery RSIP Update	Updating the RSIP undertaken in 2014 prior to the commencement of S24G activities
2020	Exxaro	Rietkuil RSIP	Compiling a RSIP for the Rietkuil Siding in compliance with their IWUL
2020	Exxaro	Belfast RSIP Update	Finalising the document with client comments



Project Experience

2020	Marula Platinum	RSIP update	Undertaking the annual update of the RSIP in compliance with the IWUL
2020	Anglo American	Mafube Coal RSIP update	Undertaking the annual update of the RSIPs in compliance with the IWUL
2020	Tharisa Minerals	RSIP update	Internal review of the update compiled by GCS prior to sending to the client for review.
IWULAs			
2018	Frame Knitting Manufacturers	WULA for borehole	Report writing and compilation, license application forms, public participation and follow-ups with DWS.
2018 - 2020	Buffalo Coal	Magdalena IWULA Amendment	Report writing and compilation, and data analysis
2018 - 2019	Tendele Coal	Somkhele IWULA Amendment	Public participation and associated report writing
2018 - 2020	South 32	Roypoint IWULA	Data management, public participation
2018 - 2019	Buffalo Coal	Aviemore New Adit and Access Road WULA	Data management, report compilation and submission
2020 - present	Celrose Clothing	WULA for borehole	Project management, client liaison
2020 - present	Buffalo Coal	Coalfields IWULA Finalisation	Uploading of documents to e-WULAAS portal, client liaison
EMPr Amendments			
2021	Interwaste	EMP Amendment for the Interwaste Waste Management Facility in Germiston, Gauteng	Update the current EMPr to reflect on-site activities and fulfill the regulatory requirements.
2021	De Beers Consolidated Mines Limited	Environmental Management Programme Amendment Application for the Voorspoed Diamond Mine, Free State Province	Assisting with the finalization of the EMPr for public review and submission
2021	Dorning Group	Stonewall Quarry EMPr Amendment	Update the current EMPr to reflect on-site activities and fulfill the regulatory requirements.
2021	Sibanye Stillwater	Burnstone EMPr Amendment	Report writing and compilation, public participation
2021	Exxaro Coal	Thabametsi EMPr Amendment	Amend the current EMPr to reflect on site conditions.
2022	Northam Platinum	Booyendal North and South EMPr Amendments	Amend the current EMPr to make provision for
Environmental Authorisations			
2018 - 2019	Buffalo Coal	Coalfields Calcine Plant BA	Report writing and compilation, public participation
2018 - 2019	Buffalo Coal	Aviemore New Adit and Access Road EA	Data management, report compilation and submission



Project Experience

2018 - 2020	ZAC	ZAC New Adit and Opencast Mining Operations	Report writing and compilation of BARs, public participation
2018 - 2019	Buffalo Coal	Magdalena S24G application	Writing and compiling Section 24G EIA, and EMPr, and public participation
2020	Phumaf Engineering	Gauteng Rapid Land Release Environmental Assessments	Compilation of Scoping Report and Basic Assessment Reports, public participation
2019 - 2021	Buffalo Coal	Magdalena Waste Management License EIA	Report writing, public participation
2021	Exxaro/Cennergi	Grootegeluk Self Generation/Lephalale Solar Environmental Authorisation	Information review, report writing and compilation, public participation
2022	Kouga Sand	Mining Permit Application	Information review, report writing and compilation, public participation
2022	Mentorskraal Familie Trust	Mining Permit Application	Information review, report writing and compilation, public participation
2022	Hard Ventures	Prospecting Right Application	Information review, report writing and compilation, public participation
2022	Imvukazane Resources	Prospecting Right Application	Information review, report writing and compilation, public participation
Mine Closure and Financial Provisioning			
2019	Buffalo Coal	Annual Financial Provisioning Update in terms of GNR 1147 for Magdalena, Aviemore and Wesselsnek	Updating closure costing; annual rehabilitation plan; final rehabilitation, decommissioning and closure plan; and environmental risk assessment for each site.
2020	Buffalo Coal	Annual Financial Provisioning Update in terms of GNR 1147 for Magdalena, Aviemore and Wesselsnek	Updating closure costing; annual rehabilitation plan; final rehabilitation, decommissioning and closure plan; and environmental risk assessment for each site.
2020 - present	Corobrik/Investec	Application for mine closure for the Corobrik Avoca site for a development to be undertaken	Mine closure application in terms of NEMA and the MPRDA.
2021	Midmar Crushers	Prospecting Right Closure	Compile an Environmental Risk Report and the Final Performance Assessment Report in support of the MPRDA requirements.
2021	Buffalo Coal	Annual Financial Provisioning Update in terms of GNR 1147 for Magdalena, Aviemore and Wesselsnek	Updating closure costing; annual rehabilitation plan; final rehabilitation, decommissioning and closure plan; and environmental risk assessment for each site.
Environmental Officer			
2019 - present	Buffalo Coal	Ad hoc work as required	Environmental Officer assistance to Buffalo Coal
Renewable Energy			
2021	Cennergi	Lephalale Solar Plant	Environmental assessment for a solar plant



Project Experience

Other			
2018 - present	Exxaro	Belfast RAP	LRP analysis and RAP compilation
2018	Airports Company South Africa	KSIA Storm Water Monitoring	Sorting of monitoring data
2018	CIG	Standerton SIA	Database compilation and management, data analysis, assisting with report writing
2018 - present	CIG	Standerton Oil Mill Phase 2	Data management, stakeholder engagement
2020	Tendele Coal	Somkhele Health Impact Assessment	Undertake an environmental Health Impact Assessment under the guidance of an external reviewer, in terms of the IFC and South African Department of Health Guidelines for undertaking such an assessment.



Project Experience

DECLARATION

I, Janice Callaghan, hereby declare that the details furnished above are true and correct to the best of my knowledge and belief and I undertake to inform you of any changes therein, immediately. In case any of the above information is found to be false or untrue or misleading or misrepresenting, I am aware that I may be held liable for it.

Signature: 

Date: 04 May 2022



herewith certifies that
Janice Susan Callaghan
Registration Number: 122924
is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Environmental Science (Candidate Natural Scientist)

Effective 11 March 2020

Expires 31 March 2023



A handwritten signature in black ink, appearing to read 'Botha', is written over a horizontal line.

Chairperson

A handwritten signature in black ink, appearing to read 'M. ...', is written over a horizontal line.

Chief Executive Officer





Registration No. 2019/955

Herewith certifies that

Janice Callaghan

is registered as an

Environmental Assessment Practitioner

***Registered in accordance with the prescribed criteria of Regulation 15. (1)
of the Section 24H Registration Authority Regulations
(Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the
National Environmental Management Act (NEMA), Act No. 107 of 1998, as
amended).***

Effective: 01 March 2022

Expires: 28 February 2023

Chairperson

Registrar





UNIVERSITY OF TM
KWAZULU-NATAL

INYUVESI
YAKWAZULU-NATALI

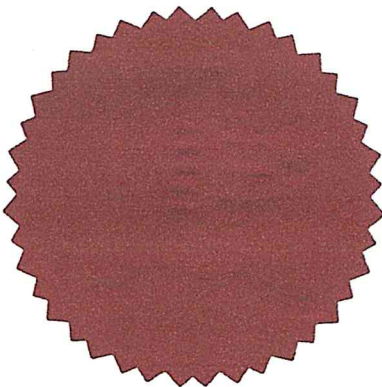
This is to certify that

Janice Susan Callaghan

was admitted this day
at a congregation of the University
to the degree of

Bachelor of Science Honours
(Environmental Science)

having satisfied the conditions prescribed for the degree



AS van Jaarsveld
Vice - Chancellor

SS Mokoena
Registrar

O Mutanga
Acting Dean



213574191

12 April 2017

LIV PROTECTED



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APPENDIX B
Generic Method Statement

Generic Method Statement

Information pertaining to the activity which will be undertaken:

What activity will take place?
How will the activity be undertaken (methods)?
Machinery/plant/equipment or vehicles which will be needed?
Materials required and relevant hazard status?
Where on site will the activity take place and what will the extent of the activity be?
Timeframes of activity (start and end dates)?

Impact and Risk Assessment of the Activity:

Impact sources	
Receptors	
Objective	
Risks	
Notes	

The following signatures represent a binding agreement to the Method Statement and EMPr by all Contractors and Sub-Contractors involved in the above activity.

Role	Name	Company	Date	Signature
Client				
Engineer/Applicant's representative				
Contractor				
ECO				