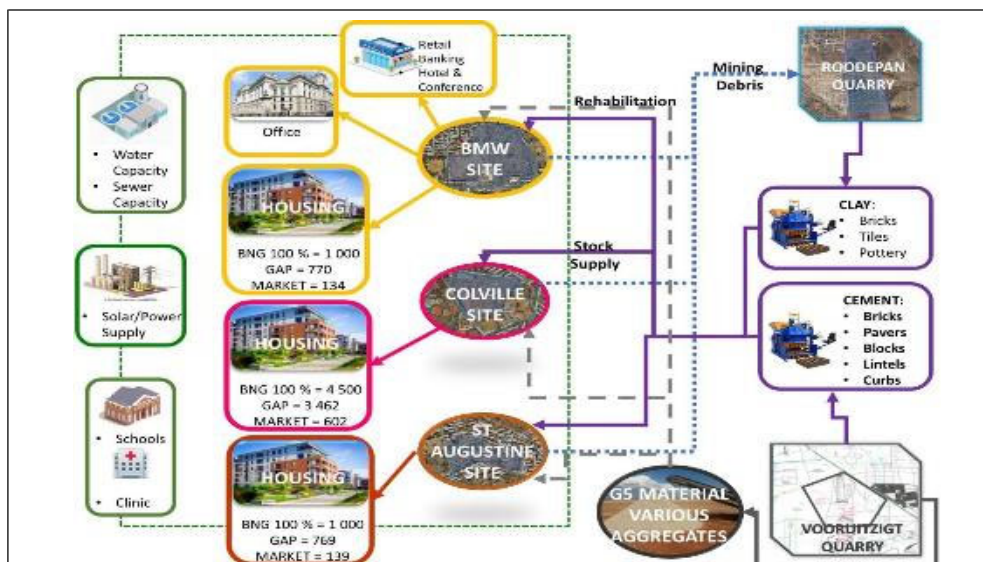
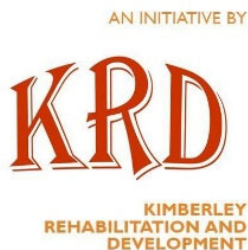


Application for an Environmental Authorisation (EA) for the proposed “Changing the Face of a City” Project in Kimberley, Northern Cape Province

Draft Environmental Management Programme (Draft EMPr) for the Colville Site

DENC Reference Number:

Report Prepared on behalf of:



Report Prepared by



October 2020

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Table of Contents

Disclaimer.....	vi
List of Abbreviations.....	vii
1 Introduction and Scope of Report.....	1
1.1 Background.....	1
1.2 Purpose of the Environmental Management Programme (EMPr).....	2
1.3 Report Index in Relation to the NEMA Regulations.....	3
2 Location of the Proposed Activity	6
3 Project Team	9
4 Project Description.....	10
4.1 Infrastructure.....	10
4.2 Employment.....	10
4.3 Site Establishment.....	10
4.4 Services.....	11
4.4.1 Water for the proposed development.....	11
4.4.2 Power.....	11
4.4.3 Sanitation.....	11
4.4.4 Contractors Camp and Laydown Area.....	11
4.4.5 Access Roads.....	11
4.4.6 Stockpiles of Raw Materials.....	11
4.5 Fuel Storage.....	11
4.6 Construction Materials.....	11
4.7 Occupational Health and Safety.....	12
5 Organisational Structure	13
5.1 Department of Environment and Nature Conservation (DENC).....	13
5.2 Applicant: Kimberley Rehabilitation and Development (KRD).....	13
5.2.1 Site Manager/Engineer.....	14
5.2.2 Safety Health and Environmental (SHE) Officer.....	14
5.3 Environmental Control Officer.....	15
5.4 Independent external auditor.....	16
5.5 Contractors.....	17
6 Legal Review.....	18
6.1 Compliance with Legislation and Regulations.....	18
6.2 Required Environmental Permits, Licences and Authorisations.....	18
6.2.1 Waste disposal.....	18
6.2.2 Storage of hazardous substances.....	19
6.2.3 Protected Trees.....	19
6.2.4 Alien Invasive Species.....	19
6.2.5 Health and Safety.....	19

6.2.6	Heritage Resources.....	19
6.2.7	Water Use Authorisation (WUA)	19
7	Guidelines for the Environmental Management Programme	20
7.1	Environmental Code of Conduct.....	20
7.2	General Guidelines	20
7.3	Environmental Principles	21
7.4	Incidents and Non-Conformances	21
7.5	Penalties and Liabilities	22
8	Quantitative Impact Assessment.....	23
8.1	Methodology.....	23
8.2	Results	25
8.2.1	Impacts during Construction and Operational Phases.....	25
8.2.2	Potential Impacts Associated with the Decommissioning and Closure Phase	31
9	Environmental Management Programme	32
10	Monitoring and compliance.....	50
10.1	Monitoring	50
10.2	Reporting Procedures	50
10.2.1	Documentation	50
10.2.2	Environmental Register	50
10.2.3	Non-Conformance Report	51
10.2.4	Environmental Emergency Response.....	51
10.2.5	Method Statements	52
10.2.6	Public Communication and Liaison with I&APs	52
11	Awareness Training	54

List of Tables

Table 1-1:	Requirements of Appendix 4 of GNR 326.....	3
Table 2-1:	List of Affected Farms and Farm Portions Illustrating the Relevant Activities	6
Table 3-1:	Details of the Project Team.....	9
Table 7-1:	Classification of Environmental Incident	21
Table 8-1:	Criteria for Assessing Significance of Impacts.....	24
Table 8-2:	Interpretation of Impact Rating.....	24
Table 8-3:	Summary of Potential Environmental Impacts Associated with the Proposed Development....	25
Table 8-4:	Summary of Potential Environmental Impacts Associated with the Housing Development	26
Table 9-1:	Environmental Programme for the Planning Phase.....	33
Table 9-2:	Environmental Programme for the Construction Phase	35
Table 9-3:	Environmental Programme for the Operational Phase	48

List of Figures

Figure 1-1:	Changing the face of the City Project Summary	1
Figure 2-1:	Project Location	7
Figure 2-2:	Sensitive Environments.....	8
Figure 5-1:	Institutional Arrangements	13

Disclaimer

The opinions expressed in this Report have been based on the information supplied to Ndi Geological Consulting Services (Pty) Ltd by Kimberley Rehabilitation and Development (KRD). The opinions in this Report are provided in response to a specific request from KRD to do so. Ndi Geological Consulting Services (Pty) Ltd has exercised all due care in reviewing the supplied information. Whilst Ndi Geological Consulting Services (Pty) Ltd has compared key supplied data with expected values, the accuracy of the results and conclusions from the review are entirely reliant on the accuracy and completeness of the supplied data. Ndi Geological Consulting Services (Pty) Ltd does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them. Opinions presented in this report apply to the site conditions and features, as they existed at the time of Ndi Geological Consulting Services (Pty) Ltd 's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this Report, about which Ndi Geological Consulting Services (Pty) Ltd had no prior knowledge nor had the opportunity to evaluate.

List of Abbreviations

CA:	Competent Authority
CARA:	Conservation of Agricultural Resources Act, 1983
DENC:	Northern Cape Department of Environment and Nature Conservation
DMR:	Department of Mineral Resources
EA:	Environmental Authorisation
EAP:	Environmental Assessment Practitioner
EAPASA:	Environmental Assessment Practitioners Association of South Africa
ECO:	Environmental Control Officer
EIA:	Environmental Impact Assessment
EMPr:	Environmental Management Plan
GPS:	Global Positioning System
HAS:	Hazardous Substances Act, 1993 (Act 85 of 1993)
HSRA:	Health and Safety Risk Assessment
I&APs:	Interested and Affected Parties
KRD:	Kimberley Rehabilitation and Development
MSDS:	Material Safety Data Sheets
NCR:	Non-Conformance Reports
NEM: WA:	National Environmental Management: Waste Act, 2008 (Act 59 of 2008)
NEMA:	National Environmental Management Act, 1998 (Act 107 of 1998)
NHRA:	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NWA:	National Water Act, 1998 (Act No. 36 of 1998)
OHS:	Occupational Health and Safety
OHSA:	Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)
PPE:	Personal Protective Equipment
PPPA:	Public-Private Partnership Agreement
SHE:	Safety, Health and Environmental
WUA:	Water Use Authorisation

1 Introduction and Scope of Report

1.1 Background

Kimberley Rehabilitation and Development (KRD) is proposing to develop various infrastructure, mining (mining permit application) and industrial developments to change the face of Kimberley City located in Sol Plaatje Local Municipality, Northern Cape Province.

The project will contribute to the city and the province in terms of infrastructure and socio-economic development. KRD has conducted extensive calculations, investigations and consultations in the compilation of the project plan and its various components and its integration into a single integrated business model. The information and calculations all indicate the feasibility of the project if implemented as an integrated model. This project cannot succeed if the various individual activities do not contribute to the execution of the project plan.

Figure 1-1 summarizes the scope of the project entitled “Changing the Face of a City” which KRD is packaging for implementation:

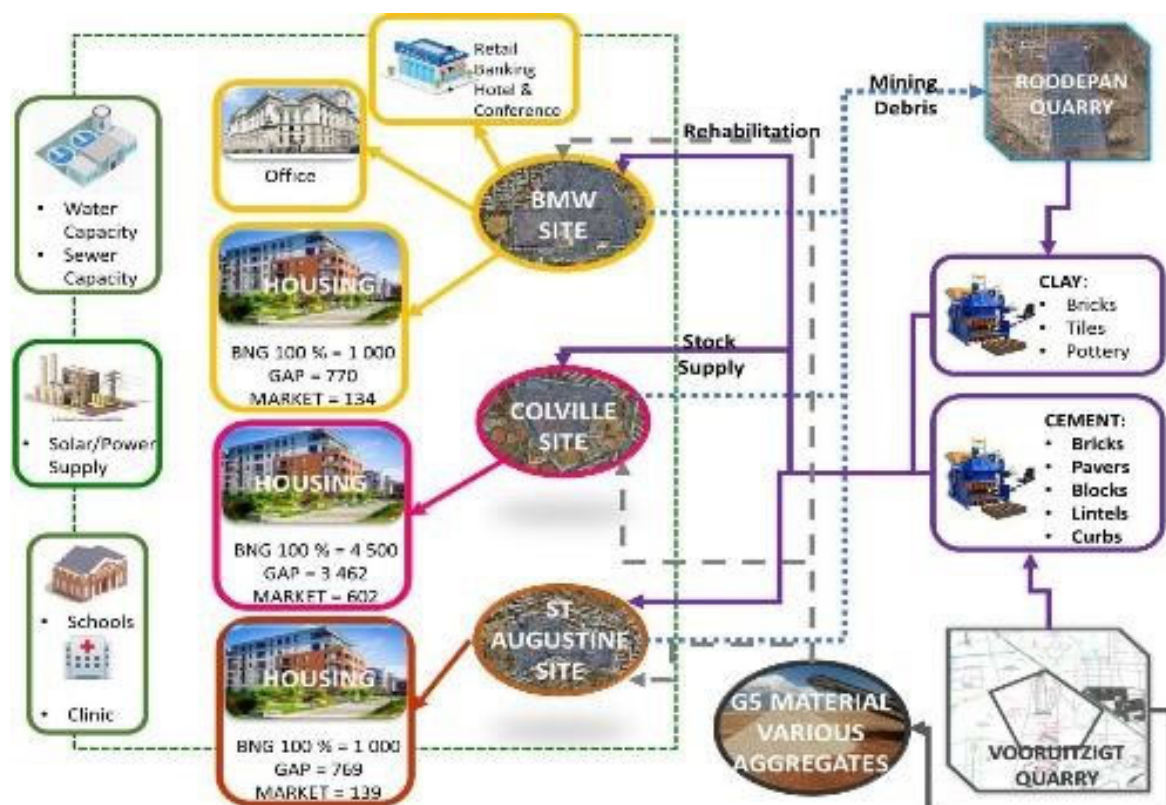


Figure 1-1: Changing the face of the City Project Summary

The proposed project will entail removal of mining debris three sites (BMW, St. Augustine and Colville) to the Roodepan Quarry, which is vacant and has been unattended for the last \pm 80 years.

The debris will be transported to the Roodepan Quarry where the debris will be reworked to extract the clay content, which will be used for the manufacturing of clay bricks. The clay bricks together with the cement bricks manufactured at the Vooruitzigt Quarry will be used for the development of the three development sites (BMW, St. Augustine and Colville). The unused material will be used to fill the quarry in accordance with an approved Environmental Management Plan (EMPr) which will be submitted to the Northern Cape Department of Environment and Nature Conservation (DENC) as part of a separate application.

The Colville site has been earmarked for the construction of a residential housing development. It is expected that municipal infrastructure will not be able to meet additional demand for services and the project will therefore include upgrading of services. Infrastructure construction consisting of:

- Bulk Earthworks;
- Streets and stormwater including shallow stormwater attenuation ponds;
- Water and sanitation reticulation;
- Electrical reticulation and street lighting; and
- Bulk services connections to each site: water, sewer, electrical.

Electrical feed will be via overhead or underground electrical cables. The electrical source will be from existing Kimberley Municipal substations. Alternative energy sources such as renewable sources will also be part.

Water will be delivered to each site with a new bulk supply pipeline from the existing 'New Park' reservoir complex.

The construction and operation of the Colville project triggers activities listed in GNR 327 of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) and will require an Environmental Authorisation (EA) from the DENC.

Ndi Geological Consulting Services (Pty) Ltd was appointed by KRD as the Independent Environmental Assessment Practitioner (EAP) to undertake the application for an EA to be submitted to the DENC, the Competent Authority (CA).

The reports and documentation for the EA application process have been compiled and finalised for submission to the DENC for the EA in terms of the NEMA for consideration and decision-making.

1.2 Purpose of the Environmental Management Programme (EMPr)

The purpose of this EMPr is to ensure that the impacts of the proposed project are kept to the minimum. This EMPr is based on the principles of the NEMA, which include:

- To avoid, minimise, or correct pollution and degradation of the environment;
- To avoid or minimise waste and to re-use or re-cycle waste where possible;
- To apply a risk averse and cautious approach;
- To anticipate and prevent negative impacts on the environment (physical, biological, social, economic, and cultural). Where these impacts cannot be prevented, such impacts must be minimized or remedied;
- That negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimized and remedied;
- Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must consider the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option; and
- The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.

The NEMA stipulates that anyone who causes pollution or degradation of the environment is responsible for preventing impacts occurring, continuing or recurring and for the costs of repair of the environment. Other legislation that contain requirements which were taken into consideration in drafting the EMPr, include:

- National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA);
- National Water Act, 1998 (Act No. 36 of 1998) (NWA);
- National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA); and
- Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) (OHSA).

This EMPr among other things:

- Presents an action plan for the implementation of mitigation measures with the purpose of regulating the Contractor's conduct or method of working;
- Provides specific environmental guidance for construction and operation activities;
- Incorporates measures to manage and mitigate construction activities so that negative environmental impacts are avoided or reduced;
- Identifies and allocates responsibilities for specific actions associated with the management of construction activities to mitigate negative environmental impacts; and
- Provides an outline of the activities which require monitoring and the assessment thereof.

1.3 Report Index in Relation to the NEMA Regulations

Appendix 4 of GNR 326 published in terms of NEMA stipulates the minimal requirements and issues that need to be addressed in the EMPr. This report strives to address all these requirements as per regulations. Table 1-1 indicates the regulations that have been addressed and the section of the EMPr where these requirements can be found.

Table 1-1: Requirements of Appendix 4 of GNR 326

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for EMPr	Section where addressed in the EMPr
Appendix 4 (a)	details of <ol style="list-style-type: none"> the EAP who prepared the EMPr; and the expertise of that EAP to prepare an EMPr, including a curriculum vitae; 	Section 3
Appendix 4 (b)	a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 4
Appendix 4 (c)	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 any areas that should be avoided, including buffers	Figure 2-1
Appendix 4 (d)	a description of the impact management objectives, 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- <ol style="list-style-type: none"> planning and design; pre-construction activities; construction activities; rehabilitation of the environment after construction and where applicable post closure; and where relevant, operation activities; 	Section 9
Appendix 4 (e)	a description and identification of impact management outcomes required for the aspects contemplated in paragraph (d);	Section 9
Appendix 4 (f)	a description of proposed impact management actions, identifying the way the impact management objectives and outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable, include actions to:	Section 9

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for EMPr	Section where addressed in the EMPr
	<ul style="list-style-type: none"> 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 closure, where applicable; and iv. Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable. 	
Appendix 4 (g)	The method of monitoring the implementation of the impact management actions contemplated in paragraph (f).	Section 9 Section 10
Appendix 4 (h)	The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f).	Section 9 Section 10
Appendix 4 (i)	an indication of the persons who will be responsible for the implementation of the impact management actions	Section 9
Appendix 4 (j)	the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 9
Appendix 4 (k)	the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 9
Appendix 4 (l)	a program for reporting on compliance, considering the requirements as prescribed by the Regulations;	Section 9
Appendix 4 (m)	<p>an environmental awareness plan describing the manner in which-</p> <ul style="list-style-type: none"> 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 to avoid pollution or the degradation of the Environment. 	Section 11
Appendix 4 (n)	Any specific information that may be required by the competent authority.	None
Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for EMPr	Section 6
Appendix 4 (a)	<p>details of</p> <ul style="list-style-type: none"> iii. the EAP who prepared the EMPr; and iv. the expertise of that EAP to prepare an EMPr, including a curriculum vitae; 	Section 3
Appendix 4 (b)	a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 4
Appendix 4 (c)	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 any areas that should be avoided, including buffers	Figure 2-2
Appendix 4 (d)	<p>a description of the impact management objectives, 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-</p> <ul style="list-style-type: none"> vi. planning and design; vii. pre-construction activities; viii. construction activities; ix. rehabilitation of the environment after construction and where applicable post closure; and x. where relevant, operation activities; 	Section 9

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for EMPr	Section where addressed in the EMPr
Appendix 4 (e)	a description and identification of impact management outcomes required for the aspects contemplated in paragraph (d);	Section 9
Appendix 4 (f)	a description of proposed impact management actions, identifying the way the impact management objectives and outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable, include actions to: <ul style="list-style-type: none"> v. avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; vi. comply with any prescribed environmental management standards or practices; vii. comply with any applicable provisions of the Act regarding closure, where applicable; and viii. Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable. 	Section 9
Appendix 4 (g)	The method of monitoring the implementation of the impact management actions contemplated in paragraph (f).	Section 9 Section 10
Appendix 4 (h)	The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f).	Section 9 Section 10
Appendix 4 (i)	an indication of the persons who will be responsible for the implementation of the impact management actions	Section 9
Appendix 4 (j)	the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 9
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Appendix 4 (l)	a program for reporting on compliance, considering the requirements as prescribed by the Regulations;	Section 9 and 10
Appendix 4 (m)	an environmental awareness plan describing the manner in which- <ul style="list-style-type: none"> iii. the applicant intends to inform his or her employees of any environmental risk which may result from their work; and iv. risks must be dealt with to avoid pollution or the degradation of the Environment. 	Section 11
Appendix 4 (n)	Any specific information that may be required by the competent authority.	None

2 Location of the Proposed Activity

All the project sites are located in and around the Kimberley City in the Sol Plaatje Local Municipality, which is in the Francis Baard District Municipality, Northern Province (Table 2-1 and Figure 2-1).

Table 2-1: List of Affected Farms and Farm Portions Illustrating the Relevant Activities

Site	Property Description	Property Owner
Colville Site	Erf 5025 Kimberley	Sol Plaatje Local Municipality

The affected property is owned by the Sol Plaatje Local Municipality. KRD held several engagement meetings with the Sol Plaatje Municipality and Provincial economic cluster to discuss the proposed project. A meeting to obtain approval of the proposed project from the Council was held in June 2020 where the council approved the implementation of the proposed project and made the site available to KRD, subject to the conclusion of a Public-Private Partnership Agreement (PPPA) with the Municipality.



Figure 2-1: Project Location

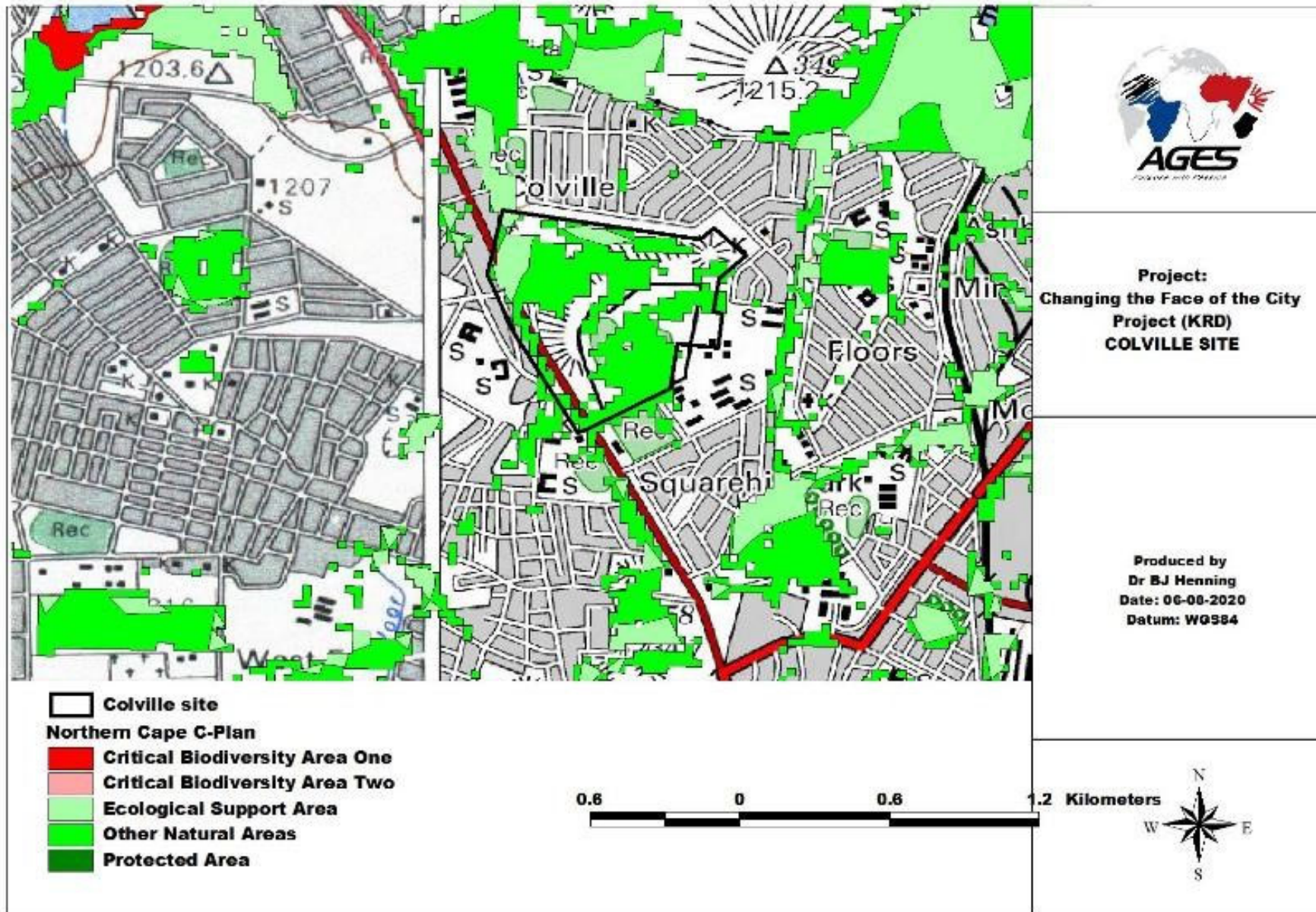


Figure 2-2: Sensitive Environments

3 Project Team

Ndi Geological has been appointed by KRD as the EAP. The project team members as stipulated in Table 3-1 can be contacted for the purposes of this project.

Table 3-1: Details of the Project Team

Contact details of the EAP:
<p>Ndivhudzanyi Mofokeng</p> <p>Ndi Geological Consulting Services (Pty) Ltd</p> <p>38 Ophelia Street</p> <p>Kimberley, 8301</p> <p>Cell: 082 760 8420</p> <p>Tel: 053 842 0687</p> <p>Fax: 086 538 1069</p> <p>atshidzaho@gmail.com/ndi@ndigeoservices.co.za</p>

The EAP, Mrs Ndivhudzanyi is a registered EAP (EAPASA Reg Number 2020/1554) with a BSc (Hons) Earth Sciences in Mining and Environmental Geology. She has close to 10 years' experience in the exploration and open cast work in the mining industry. She has proven leadership skills from supervising exploration rigs (Reverse Circulation and percussion drilling). She has proven working experience in field exploration and mapping, borehole logging, borehole sampling, sample preparation for laboratory analysis, handling of GPS, supervisory duties within the field, geological report and progress report writing, including Prospecting Work Programmes and Environmental Management Plans, handling the Department of Mineral Resources (DMR) documents in general.

4 Project Description

The mining debris will be removed from three sites (BMW, St. Augustine and Colville) to the Roodepan Quarry where the debris will be reworked to extract the clay content, which will be used for the manufacturing of clay bricks. The clay bricks together with the cement bricks manufactured at the Vooruitzigt Quarry will be used for the development of the three development sites (BMW, St. Augustine and Colville). The unused material will be used to fill the quarry in accordance with an approved EMPr.

The project activities that will be undertaken at the Colville site will include:

- Excavation of mining debris;
- Transportation of debris from the Colville site to the Roodepan Quarry;
- Setting of building foundations for the buildings;
- Erection of buildings.

4.1 Infrastructure

It is expected that municipal infrastructure will not be able to meet additional demand for services and the project will therefore include upgrading of services. The required infrastructure that will be constructed at the site will include:

- Bulk Earthworks;
- Streets and stormwater including shallow stormwater attenuation ponds;
- Water and sanitation reticulation;
- Electrical reticulation and street lighting; and
- Bulk services connections for water, sewer, electrical.

Electrical feed will be via overhead or underground electrical cables. The electrical source will be from existing Sol Plaatje Municipal substations. Alternative energy sources such as renewable sources will also be part.

Water will be delivered to each site with a new bulk supply pipeline from the existing 'New Park' reservoir complex.

4.2 Employment

KRD will make use of contactors during the construction phase, who will recruit local people where possible to assist in the removal of the debris from the old mine dump at the site and for construction of the housing development.

4.3 Site Establishment

The construction site camps will be located outside of any sensitive environmental areas, with hazard free accessibility from the main roads for delivery and access to the construction areas. All waste products will be removed from the construction sites to an approved and licensed disposal site. Rehabilitation of the construction sites will be to the same level as to prior establishment. Access to the respective construction site will be possible via pre-existing access roads.

All additives to be used are to be non-poisonous and environmentally sound. Batching of concrete for all purposes is to be done at the construction site camps in a regulated environmentally friendly way. All construction equipment and material also to be stored at the site camps and outside sensitive environmental areas.

4.4 Services

4.4.1 Water for the proposed development

The water required for the development will be supplied by the Sol Plaatje Local Municipality from the existing Riverton Water treatment works which is currently abstracting from the Vaal river. No additional raw water abstraction is envisaged.

4.4.2 Power

All machinery used during the construction will be diesel/petrol driven.

4.4.3 Sanitation

Chemical ablution facilities will be made available to the construction staff at all times during the construction period. These facilities will be serviced regularly, and the waste will be transported to a treatment facility off-site.

Thereafter, the development will be connected to the normal Sol Plaatje Local Municipal sewage reticulation system.

4.4.4 Contractors Camp and Laydown Area

The contractor's camp and laydown areas shall be located outside any sensitive environmental areas as identified by the Environmental Impact Assessment (EIA) and associated specialist studies.

4.4.5 Access Roads.

The existing access roads will be used throughout the construction and operational phases of the project. New roads will be constructed on site as part of site development (internal roads).

Two options are currently being considered for the transportation of material to and from the Colville site as follows:

- use of existing roads (preferred) ; and
- use of N12 by-pass reserve (new road, not preferred due to barriers in the way).

4.4.6 Stockpiles of Raw Materials

The stockpiles will be placed in such a way that they will not impact on any sensitive environmental areas.

4.5 Fuel Storage

To prevent earthmoving machinery moving in and out of the site and disrupting traffic in the area diesel will be stored on site.

Diesel will be required primarily for the earth moving equipment and will be below 80m³ at any given time.

4.6 Construction Materials

Suitable excavated material will be stockpiled outside sensitive environmental areas and used as backfill where required.

Material not suitable for backfilling and all excess excavated material that is not required for backfilling will be disposed of at a registered municipal landfill site. Batching of concrete for all

purposes will be done at the construction site camps in a regulated environmentally friendly way. No batching will be allowed within sensitive environmental areas.

4.7 Occupational Health and Safety

As a basic, all contractor employees and visitors will undergo induction training about health, safety and the environment. This training will be required prior to entering the site for the first time and will be required each time the conditions on-site change such that additional training is required.

Personal Protective Equipment (PPE) will be issued to all persons entering the construction site. PPE includes safety shoes, goggles, earplugs, gloves, hard hats, masks, etc. The PPE required will be dependent on the area that the person is working in, as well as the activity he/she is undertaking. The Contractor will conduct continuous rainfall projection monitoring to ensure the safety of the construction workers.

5 Organisational Structure

The purpose of this section is to define roles for personnel and allocate responsibilities in the implementation and monitoring of the EMPr. Once KRD receives an EA from DENC, KRD will be responsible for appointing an Engineer (Site Manager) who will be responsible for the final design and execution of the project. The Engineer will be responsible for the appointment of the Contractor who will be responsible to ensure that the EMPr is implemented. The reporting relationships and an indication of the institutional linkages on the project are set out in Figure 5-1.

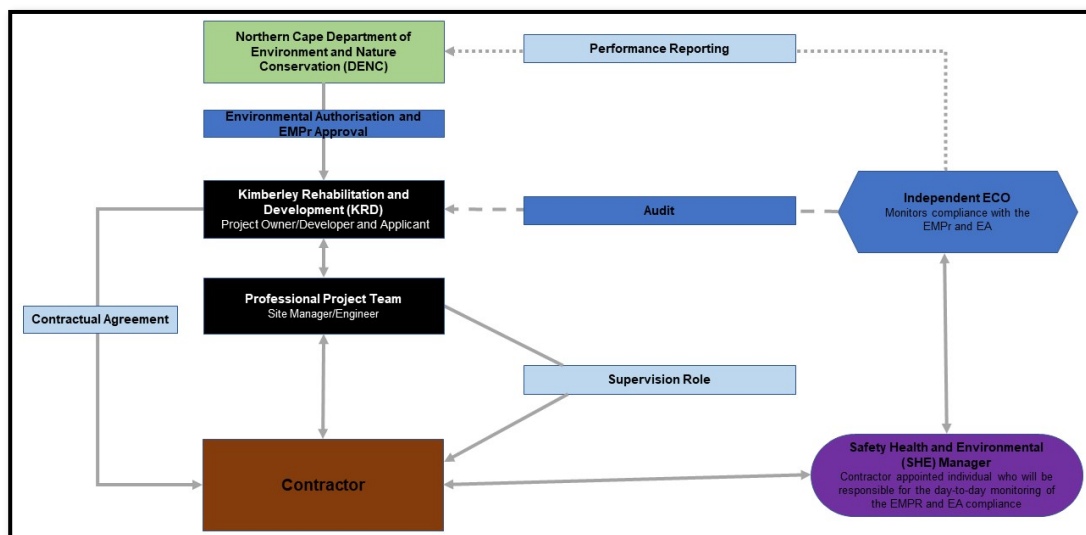


Figure 5-1: Institutional Arrangements

5.1 Department of Environment and Nature Conservation (DENC)

The DENC plays a lead role in the implementation of environmental policies, legislation and regulations. Their role is to ensure that the construction of the housing development is implemented in a sustainable manner, in compliance with the relevant environmental legislation. DENC is responsible for approving the EMPr for the project and any revisions and amendments thereto.

5.2 Applicant: Kimberley Rehabilitation and Development (KRD)

The applicant shall:

- Organize, oversee and administer the construction and operation of the development and ensure that the operation is in accordance with the EA (once issued), this EMPr and all relevant laws, policies and regulations relating to the construction activities being undertaken at the Colville site.
- Make appropriate funding available for the construction, operation and maintenance of the housing development.
- Make appropriate appointments of suitably qualified personnel including the site manager and contractors to operate the development in accordance with the EA requirements and conditions (once issued).
- Handle and deal with all complaints or problems that the appointed SHEQ personnel cannot handle and maintain a record of all such complaints.

- Ensure that sufficient resources (time, financial, human, equipment, etc.) are available to the other role players (e.g. SHEQ personnel, fire-fighter, first-aider) to efficiently perform their tasks.
- Restore the environment in the event of negligence leading to damage to the environment.
- Ensure that the EMPr is included in contractual documents (e.g. Service Level Agreements) so that the all the contractor/s appointed are bound to the conditions/ requirements of the EMPr.
- Appoint an independent external auditor to undertake environmental audits as specified by the EA (once issued) and ensure that the external auditor submits the report to the relevant authority.
- The liability of any non-compliance with legal and other requirements shall ultimately be upon the applicant, KRDC.

5.2.1 Site Manager/Engineer

The site manager will be responsible for the following:

- Overall construction programme, project delivery and quality control for the construction of the facility.
- Overseeing compliance with the Health, Safety and Environmental Responsibilities specific to the project construction.
- Promoting total job safety and environmental awareness by employees, contractors and sub-contractors and ensuring that all employees and contractors and sub-contractors are aware of the importance that the project proponent attaches to safety and the environment.
- Ensuring that the project has a Safety, Health and Environmental (SHE) Manager (or have a designated Environmental Officer function) to monitor and report on the daily activities on-site during the construction period.
- Ensuring that safe, environmentally acceptable working methods and practices are implemented, and that sufficient equipment is made available, is properly operated and maintained in order to facilitate proper access and enable any operation to be carried out safely.
- Meeting on site with the SHE Officer prior to the commencement of construction activities to confirm the construction procedure and designated activity zones.
- Ensuring that all appointed contractors and sub-contractors are aware of this EMPr and their responsibilities in relation to the programme.
- Ensuring that all appointed contractors and sub-contractors repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in the EMPr, to the satisfaction of the SHE Officer.

5.2.2 Safety Health and Environmental (SHE) Officer

The SHE Officer will be appointed by the Contractor during the construction phase. The responsibility of the SHE Officer include day to day overseeing the implementation of the EMPr, monitoring environmental impacts, record-keeping and updating of the EMPr as and when necessary. The SHE Officer is also responsible for monitoring compliance with the conditions of the EMPr and Environmental Authorisation that may be issued to KRDC. The SHE Officer will:

- Be fully conversant with the EMPr;

- Be fully conversant with all relevant environmental legislation applicable to the project, and ensure compliance with them;
- Compilation of Method Statements together with the Principal Contractor that will specify how potential environmental impacts in line with the requirements of the EMPr will be managed, and, where relevant environmental best practice and how they will practically ensure that the objectives of the EMPr are achieved;
- Convey the contents of this EMPr to the construction site staff and discuss the contents in detail with the Contractor;
- Undertake regular and comprehensive inspection of the site and surrounding areas in order to monitor compliance with the EMPr;
- Take appropriate action if the specifications contained in the EMPr are not followed;
- Monitor and verify that environmental impacts are kept to a minimum, as far as possible;
- Order the removal from the construction site of any person(s) and/or equipment in contravention of the specifications of the EMPr;
- Report any non-compliance or remedial measures that need to be applied to the appropriate environmental authorities, in line with the requirements of the EMPr;
- Submitting a report at each site meeting which will document all incidents that have occurred during the period before the site meeting;
- Ensuring that the list of transgressions issued by the Environmental Control Officer (ECO) is available on request; and
- Maintain an environmental register which keeps a record of all incidents which occur on the site during construction. These incidents include:
 - Public involvement / complaints;
 - Health and safety incidents;
 - Incidents involving hazardous materials stored on site; and
 - Non-compliance incidents.

5.3 Environmental Control Officer

An independent ECO must be appointed to monitor the compliance of the proposed project with the conditions of EA (should such authorisation be granted by DENC) during the construction phase (and possibly the operational phase, depending on the requirements of DENC). The ECO must also monitor compliance of the proposed project with environmental legislation and conditions of the EMPr. The ECO will;

- Be fully conversant with the EMPr;
- Be familiar with the recommendations and mitigation measures of the associated EMPr for the project;
- Compilation of a comprehensive project Health and Safety Risk Assessment (HSRA)
- Compilation of health and safety specifications based on risks identified;
- Reviewing and approval of health and safety plan(s) submitted by appointed Principal Contractor(s);
- Conducting monthly health and safety inspections and compiling monthly Occupational Health and Safety (OHS) reports;
- Conducting monthly health and safety audits with audit reports;
- Assisting the Developer/Contractor in the investigation of major accident/incidents;

- Monitoring of site activities for compliance to the Occupational Health and Safety Act (OHSA) and Regulations;
- Establishment and monitoring of project health and safety file;
- Monitoring the Principal Contractor(s') health and safety performance; and
- Preparation of project close-out reports and submission of project health and safety files to the Client.
- Monitor the implementation of the EMPr during the construction and rehabilitation phases;
- Ensure site protection measures are implemented on site;
- Monitor that the Principal Contractor, sub-contractors, construction teams and the Developer are in compliance with the EMPr at all times during the construction and rehabilitation phases of the project;
- Monitor all site activities monthly for compliance.
- Conduct monthly audits of the site according to the EMPr, and report findings to the Developer/Contractor;
- Attend monthly site meetings;
- Recommend corrective action for any environmental non-compliance at the site;
- Compile a monthly report highlighting any non-compliance issues as well as progress and compliance with the EMPr prescriptions. These monthly reports are to be submitted to KRD and DENC; and
- Conduct once-off training with the Contractor on the EMPr and general environmental awareness.

It must be noted that the responsibility of the ECO is to monitor compliance and give advice on the implementation of the EMPr and not to enforce compliance. Ensuring compliance is the responsibility of the Developer and the SHE Officer.

5.4 Independent external auditor

An independent external auditor must be appointed by the applicant to audit compliance with the EA conditions (once issued) and the EMPr. If the frequency is not stipulated in the EA, the audits shall be undertaken annually. The auditor must compile an audit report documenting all findings of the audit which must be submitted to the DENC. Accordingly, the Independent External Auditor will:

- Ensure that there is communication with the site regarding the auditing of the site.
- Submit annual audit reports to KRD and the DENC or as specified in the EA (once issued). The report must include the following:
 - Specifically, state whether the conditions of EA and the EMPr are adhered to.
 - Include an interpretation of all available data regarding the operation of the housing development and all its impacts on the environment.
 - Contain recommendations regarding non-compliance or potential non-compliance and must specify target dates for the implementation of the recommendations and whether corrective actions taken for the previous audit non-conformities was adequate.
 - Show monitoring results graphically and conduct a trend analysis.

5.5 Contractors

The Contractors will be responsible for the implementation of this EMPr and conditions of the EA and must ensure works on site are conducted in an environmentally sensitive manner and fully in accordance with the requirements of the EMPr, at all times. The appointed ECO should work closely with the contractor to ensure that the EMPr and EA are adhered to at all times.

6 Legal Review

6.1 Compliance with Legislation and Regulations

The contractor is required to comply with all relevant national and provincial legislation and regulations including:

- Atmospheric Pollution Prevention Act No. 45 of 1965 for the Control of noxious and offensive gases, smoke, dust and vehicular emissions;
- National Environmental Management: Air Quality Act 39 of 2004, List of Activities which result in Atmospheric Emissions which may have a Significant Detrimental Effect on the Environment – GN R893/2013:
 - Listed activities and associated minimum emission standards identified in terms of Section 21 of the National Environmental Management: Air Quality Act 39 of 2004;
- National Dust Control Regulations, 2013 GN R827/2013;
- Noise Control Regulations, 1992 GN R154;
- National Environmental Management Act No. 107 of 1998:
 - Section 30 Environmental Emergency Reporting Requirements; and
 - Environmental Impact Assessment Regulations, 2014 GN R326/2014.
- National Road Traffic Act, 1996 (Act No. 93 of 1996)
- National Environmental Management: Waste Act, 2009 (Act 59 of 2008):
 - Part 8: Contaminated land
- National Water Act 1998 (No. 36 of 1998):
 - Section 20 Environmental Emergency Reporting Requirements.
- Occupational Health and Safety Act No. 85 of 1993: Controls the exposure of employees and the public to dangerous and toxic substances or activities. Department of Labour;
- National Environmental Management: Biodiversity Act 10 of 2004:
 - Alien and Invasive Species Lists, 2014; and
 - Alien and Invasive Species Regulations, 2014.
- Conservation of Agricultural Resources Act 42 of 1983:
 - Conservation of Agricultural Resources Regulations GNR 1048/84;
- National Forest Act 30 of 1998 – Section 15 (Effect of declaration of protected trees).

6.2 Required Environmental Permits, Licences and Authorisations

6.2.1 Waste disposal

All hazardous waste generated during the construction and operational phases on site will only be disposed of to an appropriate licensed landfill site in terms of the National Environmental Management: Waste Act, 2008 (Act 59 of 2008) (NEM: WA). Copies of the permits or licences of the landfill sites to be used must be obtained and kept on site before the commencement of construction. All general and hazardous waste generated on site shall be separated and

disposed of at the permitted waste disposal site in such a manner as not to cause any nuisance conditions or secondary pollution.

6.2.2 Storage of hazardous substances

Hazardous substances must be stored and handled in accordance with the appropriate legislation and standards. This may include the Hazardous Substances Act, 1993 (Act 85 of 1993) (HAS), the Occupational Health and Safety Act, 1993 (Act 85 of 1993) (OHSA), relevant associated Regulations and applicable SANS standards. The Contractor must ensure that all the relevant Material Safety Data Sheets (MSDS) are present on site always.

6.2.3 Protected Trees

A few individuals of the protected species *Vachellia erioloba* (camel thorn) were documented on site. A licence should be obtained before any of the individuals can be eradicated, or alternatively the trees could be preserved on site.

6.2.4 Alien Invasive Species

The removal of the alien and weed species encountered on the construction area must take place to comply with existing legislation (amendments to the regulations under the Conservation of Agricultural Resources Act, 1983 (CARA) and Section 28 of the NEMA.

6.2.5 Health and Safety

The necessary health and safety measures shall be implemented as required in terms of the OHSA.

6.2.6 Heritage Resources

The National Heritage Resources Act 1999 (Act 25 of 1999) (NHRA) requires permits for the removal of structures or elements of cultural significance on site. The heritage resources assessment conducted for the project found that although the heritage resources affected by the proposed project are of low heritage and/or cultural importance that will be affected by the project, permits must still be acquired from SAHRA.

6.2.7 Water Use Authorisation (WUA)

There is an artificial wetland located on the Colville Site. The need for a Water Use Authorisation (WUA) should be confirmed with the DWS.

7 Guidelines for the Environmental Management Programme

7.1 Environmental Code of Conduct

One of the objectives of the EMPr is to ensure that all the workforce, contractors, sub-contractors and construction staff have an understanding of environmental issues and potential impacts on site activities. This environmental code of conduct provides the basic rules that should be strictly adhered to. It is the responsibility of the Contractor to ensure that each contractor, sub-contractor and workforce understand and adhere to the Code of Conduct.

ENVIRONMENTAL CODE OF CONDUCT

ALL PERSONS ARE OBLIGED TO KEEP TO THE RULES OF THIS CODE OF CONDUCT

Ignorance, negligence, recklessness or a general lack of commitment resulting in environmental degradation or pollution shall not be tolerated!

ENVIRONMENTAL RULES

- Do not waste electricity, water or consumables;
- Only use authorised accesses;
- Do not litter;
- Dispose solid waste to the correct waste containers provided;
- Prevent pollution;
- Use the toilet facilities provided;
- Do not dispose contaminated wastewater to the stormwater or the environment;
- Immediately report any spillage from containers, plant or vehicles;
- Do not burn or bury any waste in the sand;
- Do not trespass onto private properties;
- Strictly leave all animals alone. Never tease, catch or set devices to trap or kill any animal.
- Never damage or remove any trees, shrubs or branches unless it forms part of working instructions and authorisation has been received where necessary;
- Do not deface, draw or cut lettering or any other markings on trees, rocks or buildings in the area;
- Know the firefighting procedure and locations of firefighting equipment; and
- Know the environmental incident procedures.

7.2 General Guidelines

According to Section 28 of the NEMA, the prevention of any site degradation due to non-compliance, administrative or financial problems, and inactivity during the construction phase,

illegal activities, delays caused by archaeological finds, etc. is ultimately the responsibility of the KRD.

The project site must be clearly defined and surveyed according to the project authorisation.

Proper site management and regular monitoring of site works must take place. Proper documentation and record keeping of all complaints and actions taken (as per the Incidents Register and Environmental Checklist) must be issued. Regular site inspections and good control over the construction process must be kept throughout the construction period.

7.3 Environmental Principles

The following environmental principles should always be considered during the pre-construction and the construction phase:

- The footprint of the construction activities must be kept as small as possible;
- As a minimum requirement, all relevant standards relating to international, national; provincial and local legislation will be adhered to; and
- Every effort will be made to implement the waste hierarchy of reduce, reuse, and/or recycle waste material generated on site.

7.4 Incidents and Non-Conformances

According to Section 30 of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA): *“Incident” means an unexpected sudden occurrence including a major emission, fire or explosion leading to serious danger to the public or potential serious pollution of or detriment to the environment, whether immediate or delayed.*

In terms of the above definition:

- The Emergency response plan/method statement should be initiated in response to an incident as classified in Table 7-1. The incident must be reported to the ECO and DENC as per Section 30 (3) of NEMA. An emergency incident report required in terms of Section 30(5) of NEMA must be submitted to DENC’s Environmental Management Inspectorate for processing.
- A chemical spill is defined as a potential liquid hydrocarbon or chemical spill or other release, which can create a hazard to life or property or create environmental damage. Examples include liquid hydrocarbons, compressor or other equipment lube oil, evaporative cooler acid water, liquid odorant, or other substances that contain controlled or hazardous substances. Spills and other environmental incidents have been classified according to the risk to the environment and appropriate responses are indicated in Table 7-1.

Table 7-1: Classification of Environmental Incident

Level	Definition	Response Required
Level 1	A Minor Emergency, which can be controlled, entirely by the personnel and facilities located within the immediate vicinity of the accident/incident site. These include events which cause minor property or equipment damage that are non-disruptive to operations, and do not pose a safety risk to personnel or property outside of the boundaries of the development footprint.	Record in the incidents register and managed accordingly

Level	Definition	Response Required
Level 2	<p>A Level 2 Incident is defined as a Moderate Emergency, which is disruptive, but not extensive, and forces <u>a portion</u> of the employer operation to be suspended or shut down.</p> <p>A Level 2 Incident is a spill or hazardous product release which has the potential to cause harm to personnel, the public, or the environment and includes a chemical spill of more than 35ℓ to land; or any chemical spill to water resources.</p>	Record in the incidents register and managed accordingly
Level 3 to 5 Incidents	A Level 3 to 5 Incident is defined as a Serious (3), Major (4) to Catastrophic (5) alert requiring the intervention of external support services and that can have serious impacts on ecology, humans and on the overall Project.	Report the incident to the ECO immediately. The ECO will submit an emergency incident report to DENC. The incident must also be recorded in the incidents register

In the above cases, it will be the decision of the site management and ECO as to whether work stoppage must be implemented. In most cases, work in the area where the incident occurred will be stopped until all safety clearances have been given unless there is a fatal accident, then the whole site will stop.

7.5 Penalties and Liabilities

Section 24F of NEMA deals with prohibitions relating to commencement or continuation of listed activities. It provides that:

- 1) *Notwithstanding any other Act, no person may-*
 - a) *Commence an activity listed or specified in terms of Section 24(2)(a) or (b) unless the competent authority or the Minister responsible for mineral resources, as the case may be, has granted an environmental authorisation for the activity; or*
 - b) *Commence and continue an activity listed in terms of Section 24(2) (d) unless it is done in terms of an applicable norm or standard.*

Section 49A of the Act deals with relevant offences. It provides that:

- (1) *A person is guilty of an offence if that person-*
 - a) *Commences with an activity in contravention of Section 24F (1)*

Section 49A of the Act deals with the penalties and provides that:

A person convicted of an offence in terms of Section 49A(1)(a) is liable to a fine not exceeding R10 million or to imprisonment for a period not exceeding 10 years, or to both such fine or such imprisonment.

8 Quantitative Impact Assessment

8.1 Methodology

All specialists were required to assess each identified potential impact according to the Impact Assessment Methodology as described below. This methodology has been utilised for the assessment of environmental impacts where the consequence (severity of impact, spatial scope of impact and duration of impact) and likelihood (frequency of activity and frequency of impact) have been considered in parallel to provide an impact rating and hence an interpretation in terms of the level of environmental management required for each impact.

The first stage of any impact assessment is the identification of potential environmental activities¹, aspects² and impacts, which may occur during the commencement and implementation of a project. This is supported by the identification of receptors³ and resources⁴, which allows for an understanding of the impact pathway and an assessment of the sensitivity to change. Environmental impacts⁵ (social and biophysical) are then identified based on the potential interaction between the aspects and the receptors/resources.

The significance of the impact is then assessed by rating each variable numerically according to defined criteria as outlined in Table 8-1. The purpose of the rating is to develop a clear understanding of influences and processes associated with each impact. The severity⁶, spatial scope⁷ and duration⁸ of the impact together comprise the consequence of the impact and when summed can obtain a maximum value of 15. The frequency of the activity⁹ and the frequency of the impact¹⁰ together comprise the likelihood of the impact occurring and can obtain a maximum value of 10. The values for likelihood and consequence of the impact are then read off a significance rating matrix table as shown in Table 8-2.

This matrix thus provides a rating on a scale of 1 to 150 (low, medium low, medium high or high) based on the consequence and likelihood of an environmental impact occurring.

Natural and existing mitigation measures, including built-in engineering designs, are included in the pre-mitigation assessment of significance. Measures such as demolishing of infrastructure, and reinstatement and rehabilitation of land, are considered post-mitigation.

¹An **activity** is a distinct process or task undertaken by an organisation for which a responsibility can be assigned. Activities also include facilities or pieces of infrastructure that are possessed by an organisation.

²An **environmental aspect** is an 'element of an organisations activities, products and services which can interact with the environment'. The interaction of an aspect with the environment may result in an impact.

³**Receptors** comprise but are not limited to people or man-made structures.

⁴**Resources** include components of the biophysical environment.

⁵**Environmental impacts** are the consequences of these aspects on environmental resources or receptors of value or sensitivity, for example, disturbance due to noise and health effects due to poorer air quality. Receptors can comprise, but are not limited to, people or human-made systems, such as residents, communities and social infrastructure, as well as components of the biophysical environment such as aquifers, flora and paleontology. In the case where the impact is on human health or well-being, this should be stated. Similarly, where the receptor is not anthropogenic, then it should, where possible, be stipulated what the receptor is.

⁶**Severity** refers to the degree of change to the receptor status in terms of the reversibility of the impact; sensitivity of receptor to stressor; duration of impact (increasing or decreasing with time); controversy potential and precedent setting; threat to environmental and health standards.

⁷**Spatial scope** refers to the geographical scale of the impact.

⁸**Duration** refers to the length of time over which the stressor will cause a change in the resource or receptor.

⁹**Frequency of activity** refers to how often the proposed activity will take place.

¹⁰**Frequency of impact** refers to the frequency with which a stressor (aspect) will impact on the receptor.

Table 8-1: Criteria for Assessing Significance of Impacts

<p>SEVERITY OF IMPACT</p> <p>Insignificant / non-harmful Small / potentially harmful Significant / slightly harmful Great / harmful Disastrous / extremely harmful</p>	<p>RATING</p> <p>1 2 3 4 5</p>	
<p>SPATIAL SCOPE OF IMPACT</p> <p>Activity specific Site specific Local area (within 5 km of the project) Regional National</p>	<p>RATING</p> <p>1 2 3 4 5</p>	
<p>DURATION OF IMPACT</p> <p>One day to one month One month to one year One year to ten years Life of operation Post closure / permanent</p>	<p>RATING</p> <p>1 2 3 4 5</p>	
<p>FREQUENCY OF ACTIVITY / DURATION OF ASPECT</p> <p>Annually or less / low 6 monthly / temporary Monthly / infrequent Weekly / life of operation / regularly / likely Daily / permanent / high</p>	<p>RATING</p> <p>1 2 3 4 5</p>	
<p>FREQUENCY OF IMPACT</p> <p>Almost never / almost impossible Very seldom / highly unlikely Infrequent / unlikely / seldom Often / regularly / likely / possible Daily / highly likely / definitely</p>	<p>RATING</p> <p>1 2 3 4 5</p>	

Table 8-2: Interpretation of Impact Rating

		Consequence														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Likelihood	1	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
	2	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45
	3	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60
	4	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
	5	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90
	6	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105
	7	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120
	8	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135
	9	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
	10															

High	76 to 150	Improve current management
Medium High	40 to 75	Maintain current management
Medium Low	26 to 39	
Low	1 to 25	No management required

SIGNIFICANCE = CONSEQUENCE x LIKELIHOOD

8.2 Results

8.2.1 Impacts during Construction and Operational Phases

The identified potential positive and negative biophysical, socio-economic and cultural impacts are summarised in Table 8-3.

Table 8-3: Summary of Potential Environmental Impacts Associated with the Proposed Development

Element of Environment	Potential Impact Descriptions
Socio-Economic	Possible job opportunities during the construction and operational phases of the project. Creation and support of small informal businesses during the construction and operational phases of the project.
Hydrogeology	Possible, but limited groundwater contamination.
Surface water	Possible, but limited surface water contamination.
Air Quality	Possible, but limited impact on air quality in the area.
Noise	Possible generation of noise during the construction and operational phases of the proposed project
Visual	Possible visual impacts during the construction and operational phases of the proposed project.
Soils/Land Use/Land Capability	Possible impacts on soils during the construction phase of the proposed project.
Biodiversity	Possible loss and impacts on biodiversity due to construction activities.
Heritage	Possible impacts on graves and heritage resources during the construction phase of the proposed project

The results from the quantification of the identified potential impacts associated with the construction and operation of the project are summarised in Table 8-4.

Table 8-4: Summary of Potential Environmental Impacts Associated with the Housing Development

Phase	Activity	Impact summary	Significance
Planning	Planning of infrastructure placement and design within sensitive habitat	Infrastructure placement and design leading to overall loss of protected floral species; and	Low (-)
		Poor planning leading to an increased footprint.	
Construction	Recruitment and site clearance (removal of debris from the old mine dump)	Possible boost in short term employment and local small business opportunities.	High (+)
		Generation of dust potentially resulting in a health and nuisance impact.	Medium-Low (-)
		Potential impact on safety and security as a result of theft, the occurrence of additional trucks on the roads, uncontrolled lighting of fires on site, littering and driving irresponsibly.	Medium-Low (-)
		Visual impacts as a result of movement of vehicles in the project area.	Low (-)
		Potential squatting of job seekers.	Low (-)
	Site Clearance and construction activities	Local spillages of oils from vehicles and machinery leading to groundwater contamination.	Medium-High (-)
		Improper storage and handling of hazardous materials leading to groundwater contamination.	Medium-High (-)
		Potential deterioration in water quality as a result of accidental spillages of hazardous substances such as hydrocarbons from vehicles and machinery.	Medium-Low (-)
		Possible contaminated dirty water runoff to surrounding areas resulting in the impact on local surface water quality.	Medium-Low (-)
		Debris from poor handling of materials and/or waste blocking watercourses may result in flow impediment and pollution.	Low (-)
		Increase in silt load in runoff due to movement of vehicles on site.	Medium-Low (-)
		Deterioration of water quality as a result of improper handling/ of chemicals.	Medium-Low (-)
		Poor stormwater management leading to runoff from stockpiled material removed causing sedimentation of the water resources.	Medium-Low (-)

Phase	Activity	Impact summary	Significance
		Increase of surface runoff and potentially contaminated water that needs to be contained in the areas where site clearing occurred.	Medium-Low (-)
		Loss of archaeological resources from the site	Medium-Low (-)
		Although no graves were found during the HIA, chance finds of graves in the project area cannot be excluded.	Low (-)
		Impact on the cultural landscape in the area	Low (-)
		Cumulative Impacts: The proposed project will result in a cumulative impact on the loss of archaeological resources in the region	Low (-)
		According to the South African Heritage Resources Agency Information System (SAHRIS) Palaeo Map, portions of the project area fall within a sensitive fossiliferous zone	Low (-)
		Localised chemical pollution of soils as a result of vehicle hydrocarbon spillages and compaction.	Medium-Low (-)
		Localised clearing of vegetation and compaction of the construction footprint will result in the soils being particularly more vulnerable to soil erosion.	Medium-Low (-)
		Localised loss of soil resource and its utilisation potential due to compaction over unprotected ground/soil.	Medium-Low (-)
		Localised loss of soil and land capability due to reduction in nutrient status - de-nitrification and leaching due to stripping and stockpiling footprint areas.	Medium-Low (-)
		The construction of the infrastructure will result in loss of and damage to degraded habitats. Rehabilitation of some of these areas would be possible and should be adhered to. Most habitat destruction will be caused during the construction of the infrastructure.	Medium-Low (-)
		The construction will lead to the loss of individual plants such as grasses, forbs, trees and shrubs that will be cleared on the footprint area. This will mostly occur during the construction phase.	Medium-Low (-)
		Loss of threatened, near threatened and endemic taxa: The anticipated loss of some of the natural habitats that support endemic species will result in the local displacement of endemic listed flora.	Medium-Low (-)
		Due to habitat loss and construction activities animals will migrate from the construction area and animal numbers will decrease	Medium-Low (-)

Phase	Activity	Impact summary	Significance
		Changes in the community structure: It is expected that the faunal species composition will shift, due to an anticipated loss in habitat surface area. In addition, it is predicted that more generalist species (and a loss of functional guilds) will dominate the study area. Attempts to rehabilitate will attract taxa with unspecialised and generalist life-histories. It is predicted that such taxa will persist for many years before conditions become suitable for succession to progress	Medium-Low (-)
		Habitat Fragmentation: The construction of buildings, fences and roads will inevitably result in natural movement patterns being disrupted and, to a varying degree depending on how different species react to these barriers will result in the fragmentation of natural populations. The development will have a low impact in fragmenting the habitats on the property.	Medium-Low (-)
		Spread and establishment of alien invasive species: The construction of the infrastructure almost certainly carries by far the greatest risk of alien invasive species being imported to the site, and the high levels of habitat disturbance also provide the greatest opportunities for such species to establish themselves, since most indigenous species are less tolerant of disturbance. The biggest risk is that seeds of noxious plants may be carried onto the site along with materials that have been stockpiled elsewhere at already invaded sites.	Medium-Low (-)
		An increase in human activity on the site and surrounding areas is anticipated. The risk of wood harvesting, poaching and fires is increased which could have a definite impact on the flora and fauna of the larger area. If staff compounds are erected for construction workers, the risk of pollution because of litter and inadequate sanitation and the introduction of invasive flora are increased. The presence of many construction workers or regular workers during the construction phase on site over a protracted period will result in a greatly increased risk of uncontrolled fires arising from cooking fires, improperly disposed cigarettes etc.	Medium-Low (-)
	Transportation of material to and from the site	Visual intrusion as a result of the movement of machinery and the establishment of the required infrastructure.	Low (-)
		Indirect Impacts: Indirect visual impact due to dust generation as a result of the movement of vehicles and materials, to and from the site area.	Low (-)
		The movement of vehicles and machinery during the construction phase may result in possible increase in dust generation, PM10 and PM2.5 as a result of stockpiling material, use of heavy machinery, and material movement. Gaseous emissions derive from the haul trucks, mining equipment, public vehicles, biomass burning and domestic fuel burning. These gaseous emissions include primarily SO ₂ , CO, CO ₂ , NO _x and hydrocarbons. Vehicles on the roads in Kimberley, and on the national roads (N8, R64 and R357) will also contribute to these gaseous emissions but it is expected that it is not a busy road and therefore the contribution is negligible.	Low (-)
		Increase in carbon emissions and ambient air pollutants (NO ₂ and SO ₂) as a result of movement of vehicles and operation of machinery/equipment.	Low (-)

Phase	Activity	Impact summary	Significance
		Cumulative Impacts: The project will contribute to cumulative air quality impact as there are already activities in the area contributing to air quality pollution.	Low (-)
		Emissions of Green House Gases as a result of the use of construction vehicles and machinery.	Low (-)
		The use of vehicles and machinery may generate nuisance noise in the immediate vicinity	Low (-)
		Cumulative Impact: The project will contribute to the noise in the area, in addition to the noise already existing	Low (-)
		Increase in traffic volumes as a result of transportation of materials to site which may lead to an increase in traffic congestion on roads around the project area increasing the chances of road accidents.	Medium-Low (-)
		The increase in vehicles results in an increased potential for road degradation of the road network in the vicinity of the project.	Medium-Low (-)
	Waste Management	Disposal of hazardous waste including hydrocarbon contaminated soils, rags etc. could result in the contamination of surface runoff	Medium-Low (-)
		Stockpiling material may result in secondary pollution and contamination of surface runoff.	Medium-Low (-)
		Cumulative impact: Contamination of surface water resources	Low (-)
Operational Phase	Operation of the housing development	Visual impact of the constructed three storey housing developments	Low (-)
		Negative impact as a result of additional vehicles on the roads, impacting on local communities' health and safety.	Low (-)
		Boost in employment and local small business opportunities.	High (+)
		The use of vehicles on site poses the risk of chemical spillages including fuel and oils, which may leach into the groundwater.	Low (-)
		Leaks of untreated water from pipelines may occur and also impact on the groundwater quality.	Medium-Low (-)

Phase	Activity	Impact summary	Significance
		The possible potential impacts on surface water during the operational phases of the proposed project may be due to increased urban runoff from the infrastructure and roads.	Medium-Low (-)
		Leaks from the proposed pipelines may occur and result in contaminated run-off from the site.	Medium-Low (-)
		Heavy rainfall events and associated sheet run-off towards the Vaal River has potential for contamination of off-site surface water due to uncontained on-site surface water run-off.	Medium Low (-)
		Accidental fires and extinguishing of on-site fires results in potential contamination of soil, groundwater, and surface water run-off during a fire event if contact fire-fighting water is not contained	Low
		Improper rehabilitation during and post construction can result in proliferation of alien invasive plant species and continued loss of vegetation and habitats.	Low
		Run-off water from gardens typically contains seeds of exotic and garden-variety plants that pose a threat to indigenous vegetation and ecology.	Low (-)
		The operational phase of the project will require vehicular movement which may result in possible increase in dust generation, PM ₁₀ and PM _{2.5} .	Medium Low (-)
		Increase in carbon emissions and ambient air pollutants (CO ₂ , NO _x , HC, VOC and SO ₂) as a result of movement of vehicles and operation of machinery/equipment.	Medium Low (-)
		Cumulative Impacts: Cumulative air quality impacts are anticipated during the operational stage.	Low (-)
		Cumulative Impacts: Socio-economic impacts in terms of job creation and promotion of other related local businesses	High (+)
Waste Management		The operational phase of the project will result in increased generation of domestic waste that will need to be handled and disposed of by the Sol Plaatje Local Municipality, increasing pressure on the municipality	Low (-)

8.2.2 Potential Impacts Associated with the Decommissioning and Closure Phase

The proposed project entails the construction and operation of housing development and it is not expected that the project will be decommissioned in the near future.

At this point of the project planning process, the necessity for and timing of the decommissioning of the proposed project is unknown. Like construction phase impacts, decommissioning impacts are inherently temporary in duration. The DENC will be appropriately notified and consulted prior to decommissioning taking place. An application in terms of the prevailing EIA Regulations at the time when decommissioning will be required for the relevant Environmental Authorisation will be lodged if applicable.

Like the construction phase, it is expected that the decommissioning phase may result in:

- Impacts on flora and fauna;
- Increase in alien plant species;
- Deterioration in air quality, and
- Increase in ambient noise levels.

Although the impacts during the decommissioning phase are expected to be the same as for the construction phase, the significance of the impacts is expected to be lower than for the construction phase.

9 Environmental Management Programme

Objectives were set as part of the EMPr to ensure that the EMPr is measurable. The following tables form the core mitigation measures appropriate to the planning, construction and operational phases of the project. The tables present the objectives to be achieved and the management actions that need to be implemented to mitigate the negative impacts and enhance the benefits of the project.

The planning section of this EMPr, refers to the period leading up to and prior to commencement of construction activities, and is included to ensure pro-active environmental management measures with the goal of identifying avoidable environmental damage at the outset and sustain optimal environmental performance throughout the construction phase. Most impacts will occur during the construction phase and must be mitigated through the contingency plans identified in the pre-construction phase.

The bulk of environmental impacts will have immediate effect during construction (e.g. noise, dust, and water pollution). If the site is monitored on a continual basis during this phase, it is possible to identify these impacts as they occur. These impacts will then be mitigated through the measures outlined in this section, together with a commitment to sound environmental management from the project team.

Table 9-1: Environmental Programme for the Planning Phase

Objective	Mitigation and management measures and principles	Measurable Targets	Monitoring Frequency	Responsible Person
Project Contract and Programme				
<ul style="list-style-type: none"> Contingencies for minimizing negative impacts anticipated to occur during the construction phase 	<ul style="list-style-type: none"> This EMPr must be included as part of the tender documentation thereby making it part of the required scope of work. The mitigation measures as set out in this EMPr are enforceable under the general conditions of contract. The Contractor (s) must ensure that all the personnel on site are familiar with and understand the specifications contained in the EMPr. The Contractors contract must contain a clause to the effect that the disposal of all construction related waste, must be managed, in accordance with the relevant legislation, including: <ul style="list-style-type: none"> Waste Classification and Management Regulations, 2013 – GN R634/2013; NEMWA Section 19; National Norms and Standards for Disposal of Waste to Landfill – GN R636/2013; Regulations regarding Waste Disposal Sites – GN R1196/94; and Sol Plaatje Local Municipality Waste Management By-Laws. The Contractor shall ensure that all waste is disposed of to an authorized waste management facility and all agreements with the service providers shall be kept on file and made available on request. 	<ul style="list-style-type: none"> Records in environmental file. Signed declaration forms 	<ul style="list-style-type: none"> Prior to the commencement of construction activities 	<ul style="list-style-type: none"> Contractor (s) Site Manager
Appointments and duties of project team and awareness training				
<ul style="list-style-type: none"> Contingencies for avoiding or minimising negative impacts anticipated to occur during the construction phase. Ensure environmental awareness and formalise Environmental responsibilities and implementation 	<ul style="list-style-type: none"> Before construction activities commence, the roles of the team members in the implementation of this EMPr shall be communicated. All the relevant training and environmental induction must take place prior to the commencement of any construction activities. Environmental inductions must be undertaken to ensure that all staff are aware and have a basic level of environmental awareness training. Areas that must be covered by the inductions include: <ul style="list-style-type: none"> What is meant by the environment; Why environmental management is important; How day to day activities can be altered to ensure sound environmental management. Social environmental responsibilities including: <ul style="list-style-type: none"> ✓ No use of Alcohol and drugs; ✓ Reduce noise levels; ✓ No access to areas outside of the project footprint; and ✓ Use facilities (Toilets, eating areas, waste receptacles) that have been made available. 	<ul style="list-style-type: none"> Signed environmental training attendance registers in the environmental file. Signed declaration forms 	<ul style="list-style-type: none"> Prior to the commencement of construction activities As and when required 	<ul style="list-style-type: none"> Contractor (s) Site Manager
Method Statements				
<ul style="list-style-type: none"> Contingencies for minimising negative impacts anticipated to occur during the construction phase. 	<ul style="list-style-type: none"> Method Statements must be provided by the Contractor. All activities, which require method statements, may only commence once the method statements have been approved by the Site Manager. The Contractor will provide job-specific training on an ad hoc basis when workers are engaged in activities which require method statements. 	<ul style="list-style-type: none"> Approved method statements and relevant pro forma documents Training records 	<ul style="list-style-type: none"> Prior to the commencement of construction activities As and when required 	<ul style="list-style-type: none"> Contractor (s) Site Manager
Site Access and Demarcation				
<ul style="list-style-type: none"> Contingencies for minimising negative impacts anticipated to occur during construction 	<ul style="list-style-type: none"> The overall project area must be discussed with the team prior to the commencement of the construction activities. This will take place in the form of a toolbox talk. All site boundaries must be discussed and agreed upon before commencement of the construction phase. The Contractor shall make proposals as to the location of additional areas that may be required. Trespassing onto adjacent private properties is strictly prohibited. All environmentally sensitive features must be identified and indicated on a layout. These will be identified in the planning phase as part of the risk assessments. 	<ul style="list-style-type: none"> Demarcated areas kept to a minimal Signed attendance registers of toolbox talks. 	<ul style="list-style-type: none"> Prior to the commencement of maintenance works. As and when required 	<ul style="list-style-type: none"> Contractor (s) Site Manager
Emergencies, non-compliance and communication				

Objective	Mitigation and management measures and principles	Measurable Targets	Monitoring Frequency	Responsible Person
<ul style="list-style-type: none"> Contingencies for minimising negative impacts anticipated to occur during the construction phase 	<ul style="list-style-type: none"> Emergency preparedness is essential to ensure that incidents that may arise are adequately and timeously managed. The Site Manager and team must ensure that the workforce as well as appointed Contractors are aware of the procedures that are to be followed in the event of an emergency. This is to be done via the effective communication of method statements. It must be ensured that method statements on the protocols to be followed, and contingencies to be put in place, are available for the following potential incidents before maintenance works may commence: <ul style="list-style-type: none"> Where; contamination of soils from spills; and Fire occurs, reporting as required in Section 30 of NEMA and Section 20 of NWA must be conducted. Failure to adhere to the requirements of the EMPr by the Contractor will result in fines over and above the costs incurred for any remediation required because of the specific non-compliance. The NEMA stipulates fines incurred due to non-compliance may include a fine of up R10 Million and/or 10 years imprisonment. 	<ul style="list-style-type: none"> Method statements 	<ul style="list-style-type: none"> Prior to the commencement of maintenance works. As and when required 	<ul style="list-style-type: none"> Contractor (s) Site Manager
Lay down areas				
<ul style="list-style-type: none"> Minimise dust fallout Minimise unwarranted environmental damage outside the footprint Maintain a clean and healthy working environment Minimise impact to surrounding environment and properties 	<ul style="list-style-type: none"> Laydown areas shall be located outside sensitive environmental areas. All storage facilities must be located within the demarcated site boundaries. Staff may not be accommodated on site. No temporary accommodation must be erected on the site. 	<ul style="list-style-type: none"> No signs of soil pollution No complaints from surrounding landowners or I&APs No visible signs of litter Method statements 	<ul style="list-style-type: none"> Daily 	<ul style="list-style-type: none"> Contractor (s) Site Manager
Authorisations, Permits and Licences				
<ul style="list-style-type: none"> Ensure that all project activities are lawful in terms of all the applicable environmental legislation 	<ul style="list-style-type: none"> All necessary authorisations, permits and licences must be obtained by KRD prior to the commencement of construction. 	<ul style="list-style-type: none"> No litigation due to unlawful activities 	<ul style="list-style-type: none"> Once off 	<ul style="list-style-type: none"> Applicant

Table 9-2: Environmental Programme for the Construction Phase

Objective	Mitigation and management measures and principles	Measurable Targets	Monitoring Frequency	Responsible Person
Socio – Economic				
<ul style="list-style-type: none"> Increase Employment opportunities 	<ul style="list-style-type: none"> Encourage the local employment for the following: Employment opportunities for local contractors during site clearance including removal of mining debris from the site, and digging of foundations for the buildings and trenching for pipes, preparation, construction and decommissioning; <ul style="list-style-type: none"> Secondary service provision of food, toilet hires, transport, and equipment; and Appointment of contractors as drivers, cleaners and security personnel. 	<ul style="list-style-type: none"> Limited employment of personnel from outside the local area Procurement procedure that favors the use of locals 	<ul style="list-style-type: none"> As and when required 	<ul style="list-style-type: none"> Contractor Site Manager ECO
Stockpiles				
<ul style="list-style-type: none"> Minimise disturbance and loss of soil Avoid contamination of soils from hydrocarbons from vehicles and machinery Minimise construction footprint Maintain the integrity of topsoil for landscaping and rehabilitation Containment of invasive plant species growth Minimise contamination of storm water run-off 	<ul style="list-style-type: none"> All stockpiled material (this includes excavated material from the old dump area, fill material) must be easily accessible and shall be situated the outside sensitive environmental areas. Stockpiles must not obstruct public pathways. All temporarily stockpiling of material must be in such a way that the spread of materials and dust from stockpiles is minimised. This can be done by placing sandbags at the toe of the stockpile to curb the loss of topsoil. The stockpiles may only be placed within the demarcated areas. The location of the stockpiles must be approved prior to depositing the stockpiles. Storm water run-off from stockpile sites and other related areas must only be directed into the storm water system if the necessary pollution prevention measures such as silt traps are in place and may not run freely into the immediate and surrounding environments. An approved method statement on how storm water will be dealt with shall also be in place prior to commencement if construction activities. Stockpiles shall be stabilized if signs of erosion are visible. Topsoil stockpiles must be monitored for invasive exotic vegetation growth. Contractors must remediate as and when required in consultation with the Site Manager. Topsoil stockpiles must be clearly demarcated as no-go areas. Stockpiles shall be convex and shall not exceed 2m. 	<ul style="list-style-type: none"> The footprint has not exceeded the required size. No signs of erosion and soil contamination from hydrocarbons. Relevant method statements. Signed attendance registers in the environmental file for environmental inductions and toolbox talks. 	<ul style="list-style-type: none"> Daily Monitored during wet weather and immediate actions taken. 	<ul style="list-style-type: none"> Contractor (s) Site Manager ECO
Materials Handling, Use and Storage				
<ul style="list-style-type: none"> Ensure proposer use, handling and storage of materials Prevention of pollution of the environment 	<ul style="list-style-type: none"> The Contractor shall ensure that all delivery drivers are informed of all procedures and restrictions (including "no go" areas) required to comply with the EMPr. The Contractor shall ensure that the delivery drivers are supervised during off loading, by someone with an adequate understanding of the requirements of the EMPr. Materials shall be appropriately secured to ensure safe passage between destinations. Loads including, but not limited to sand, stone chip, fine vegetation, refuse, paper and cement, shall have appropriate cover to prevent them spilling from the vehicle during transit. The Contractor shall be responsible for any clean-up resulting from the failure by his employees or suppliers to properly secure transported materials. All manufactured and/ or imported material shall be stored within the Contractor's camp, and out of the rain. All lay down areas outside of the construction camp shall be subject to the ECO's approval. Imported gravel, fill, soil and sand materials shall be free of weeds, alien invasive seed matter, plant material, litter and contaminants and shall be obtained from sources approved by the ECO. 	<ul style="list-style-type: none"> No pollution of water resources including water course and drainage lines No complaints from I&APs Method statements 	<ul style="list-style-type: none"> Daily 	<ul style="list-style-type: none"> Contractor (s) Site Manager ECO
Cement and concrete batching				

Objective	Mitigation and management measures and principles	Measurable Targets	Monitoring Frequency	Responsible Person
<ul style="list-style-type: none"> Prevention of pollution of the environment Minimise chances of transgression of the acts controlling pollution 	<ul style="list-style-type: none"> The proposed location of batching areas (including the location of cement stores and sand and aggregate stockpiles) shall be indicated on the final site layout plan and approved by the ECO. Batching areas shall not be located within any "no go" areas, unless written approval has been granted by the ECO. All wastewater generated from the operation and cleaning of concrete batching equipment and other sources of concrete shall be passed through a concrete wastewater settlement system. The water from this system shall not be allowed to flow into any "no go" area but must permeate through the ground before it reaches any such water course. The accumulated sludge in the settlement system must be regularly cleaned out and appropriately disposed of as solid waste. The Contractor shall ensure that minimal water is used for washing of concrete batching equipment. Used cement bags shall be disposed of in weatherproof bins on site to prevent the generation of wind-blown cement dust and the bags from blowing away. During construction, the contractor must ensure that concrete is mixed on mortar boards, all visible remains of concrete are removed and disposed of as waste and that all surplus aggregate is removed. As part of the Pollution Control and Concrete Batching Method Statement, a plan detailing all actions to be taken to comply with the cement and batching requirements shall be submitted to the ECO. 	<ul style="list-style-type: none"> No pollution of water resources including water course and drainage lines No complaints from I&APs Method statements 	<ul style="list-style-type: none"> Daily 	<ul style="list-style-type: none"> Contractor (s) Site Manager ECO
Oil and chemicals				
<ul style="list-style-type: none"> Prevention of pollution of the environment Minimise chances of transgression of the acts controlling pollution 100 % compliance to national, provincial and local regulatory requirements. 	<ul style="list-style-type: none"> Method statements must be on file for the "handling and storage of oils and chemicals", "fire", and "emergency spills procedures". The chemicals must be confined to specific and secured areas, which must be imperviously banded with adequate containment (at least 1.5 times the volume of the fuel) for potential spills or leaks. Bund areas must have a facility such as a valve/sump to drain or remove clean stormwater. Contaminated water shall be pumped into a container for removal by an approved service provider. Regular inspections shall be carried out to ensure the integrity of the bund walls. All preventative servicing of earth moving equipment and construction vehicles shall be conducted off site. Emergency areas shall be demarcated and protected with an impermeable surface. The area shall be situated outside any sensitive environmental areas. Runoff from this area shall be contained. Drip trays (minimum of 10cm deep) must be placed under all vehicles that stand for more than 24 hours. Vehicles suspected of leaking must not be left unattended and drip trays must be utilised. The surface area of the drip trays will be dependent on the vehicle and must be large enough to contain any hydrocarbons that may leak from the vehicle while standing. Spill kits must be available on site and in all vehicles that transport hydrocarbons for dispensing to other vehicles at the construction site. All personnel shall be trained, and training records shall be made available on request All spilled hazardous substances must be contained in impermeable containers for removal to a licensed hazardous waste site, (this includes contaminated soils, and drenched spill kit material) Waste manifests and safe disposal certificates must be filed as proof of safe disposal of any hydrocarbons removed from site. 	<ul style="list-style-type: none"> No pollution of water resources including water course and drainage lines No litigation due to transgression of pollution control regulations No complaints from I&APs Method statements 	<ul style="list-style-type: none"> Daily 	<ul style="list-style-type: none"> Contractor Site Manager ECO
Use of hazardous materials				
<ul style="list-style-type: none"> Prevention of pollution of soil, ground water resources and surrounding environments Minimise chances of transgression of the legislation governing pollution 	<ul style="list-style-type: none"> No hazardous material shall be stored within sensitive environmental areas. A spill kit must be available on site to deal with spills/ fire of the materials present should they occur. This must be done in line with the approved Method statement dealing with chemicals and chemicals handling. The Contractor and Site Manager must be aware of drainage channels, gullies etc. to ensure that chemicals are stored in such a way that runoff residues can be stopped from entering these. 	<ul style="list-style-type: none"> No pollution of the environment No litigation due to transgression of pollution control acts 	<ul style="list-style-type: none"> As required 	<ul style="list-style-type: none"> Contractor (s) Site Manager ECO
Eating and camp areas				

Objective	Mitigation and management measures and principles	Measurable Targets	Monitoring Frequency	Responsible Person
<ul style="list-style-type: none"> Control potential influx of vermin and flies Neat workplace and hygienic environment Minimise negative social impacts to residents and businesses 	<ul style="list-style-type: none"> Staff shall not be accommodated on site. No temporary accommodation must be erected on the site. Designated restricted areas for eating during normal working hours must be set out at construction sites. Adequate closed refuse bins must be provided, no more than 50 m from construction sites. No lighting fires are to be allowed on site. The feeding, or leaving of food, for stray or other animals in the area are strictly prohibited. Camp followers/informal traders shall not be allowed to congregate on pavements around the construction site. Litter and concrete bags, etc. must be picked up daily and put into suitably closed bins. 	<ul style="list-style-type: none"> No visual sign of vermin and flies No complaints from I&APs 	<ul style="list-style-type: none"> Daily 	<ul style="list-style-type: none"> Contractor Site Manager ECO
Toilets facilities on site				
<ul style="list-style-type: none"> Ensure proper sanitation is achieved which will encourage the workforce to utilise toilets provided and not the surrounding habitat Minimise potential of diseases on site Minimise potential to pollute soils, water resources and natural habitats 	<ul style="list-style-type: none"> A minimum of one chemical toilet must be provided per 15 persons. The toilets must be kept in a clean, neat and hygienic condition. Toilet paper must be supplied at all toilets always. Toilet paper dispensers must be provided in all toilets. Toilets must be easily accessible and a maximum of 30m from the works area to ensure they are utilised. A reputable toilet-servicing company must be used. The company must issue proof that they are registered to handle the waste for transport to a licensed discharge facility. The necessary agreement between the Service Provider and the Contractor for the removal of the sewage must be in place and shall be made available on request. The necessary agreement between the Service Provider and the WWTW for the disposal of the sewage must be in place and made available on request. Ablution facilities shall be serviced on a regular basis by an approved service provider to keep them in good, functional working order and in an acceptable state of hygiene, Toilets must be secured to the ground to ensure they are not blown over during high winds or bumped over. The Contractor shall also make available provisions for workers to wash their hands after using the toilets. Where portable toilets are located within view of the public or neighboring residences or places of business, efforts should be taken to screen such facilities from view. The Contractor shall ensure that no spillage occurs when the toilets are cleaned or emptied and that the contents are properly stored and removed from Site. Discharge of waste from toilets into the environment and burial of waste is strictly prohibited and must be treated at a registered wastewater treatment works. Portable toilets shall be placed and maintained in such a way as to prevent the potential pollution of the ground and surface water resources. No toilets shall be located sensitive environmental areas. The contractor shall keep record, and provide such records upon request, of the location and volumes of waste disposed. The use of pit latrines and soak-a-ways is prohibited. Washing, whether of the person or of personal effects and acts of excretion and urination outside the facilities provided shall be strictly prohibited. The Contractor shall take disciplinary action and implement penalties against any staff member found in contravention of this requirement. 	<ul style="list-style-type: none"> Workforce use toilets provided No complaints received from I&APs as well as members of the workforce No visible or measurable signs of pollution of the environment (soils, ground and surface water) Appropriate ratio of toilets to the number of persons working on site (1 toilet to 15 persons) Documentation of any incidents that may have occurred and how the incident was managed 	<ul style="list-style-type: none"> As and when required Monitor daily 	<ul style="list-style-type: none"> Contractor Site Manager ECO
Community Relations				
<ul style="list-style-type: none"> Minimise conflict with affected and adjacent landowners and occupiers 	<ul style="list-style-type: none"> The Contractor shall erect and maintain information boards in the positions, quantities, designs and dimensions agreed to with the ECO. Such boards shall include contact details for complaints by members of the public in accordance with details provided by the ECO. The Contractor shall keep a "Complaints Register" on Site. The Register shall contain all contact details of the person who made the complaint, and information regarding the complaint itself and note the date and time that the complaint was resolved. The ECO shall be responsible for responding to queries and/or complaints and may request assistance from the Contractor's Management Staff. 	<ul style="list-style-type: none"> All complaints from the community are captured and addressed and kept on file. 	<ul style="list-style-type: none"> Daily 	<ul style="list-style-type: none"> Contractor Site Manager ECO
Excavation, hauling and placement				

Objective	Mitigation and management measures and principles	Measurable Targets	Monitoring Frequency	Responsible Person
<ul style="list-style-type: none"> • Ensure community safety • Minimise impacts on neighboring properties and landowners and occupiers. 	<ul style="list-style-type: none"> • The contractor shall provide the engineer with detailed plans of intended construction processes prior to starting any cut or fill or layer. The plans shall detail the number of personnel and plant to be used and the measures by which the impacts of pollution (noise, dust, litter, fuel, oil, sewage), erosion, vegetation destruction and deformation of landscape will be prevented, contained and rehabilitated. • Particular attention shall also be given to the impact that such activities will have on the adjacent built environment. • The contractor shall demonstrate his “good housekeeping”, particularly with respect to closure at the end of every day so that the site is left in a safe condition from rainfall overnight or over periods when there is no construction activity. 	<ul style="list-style-type: none"> • Method Statements • Plan of construction processes 	<ul style="list-style-type: none"> • Daily 	<ul style="list-style-type: none"> • Contractor • Site Manager • ECO
Waste Management				
<ul style="list-style-type: none"> • Sustainable management of waste by recycling • To keep the site neat and tidy • Minimise litigation and complaints by I&APs • Reduce visual impact • Control potential influx of vermin and flies thereby minimising the potential of diseases on site and the surrounding environment • Minimise potential to pollute soils, water resources and natural habitats 	<ul style="list-style-type: none"> • An integrated waste management approach that is based on waste minimisation must be used and should incorporate reduction, recycling, re-use and disposal where appropriate. Any solid waste shall be disposed of at a landfill licensed in terms of Section 20 (b) of the National Management Waste Act, 2008 (Act No. 59 of 2008). • A method statement for “solid waste management” shall be compiled and kept in the environmental file. The method statement must provide information on proposed licensed facility to be utilised and details of proposed record keeping for auditing purposes. • Handling of waste must include: <ul style="list-style-type: none"> <i>Separation of waste</i> • All waste shall be separated into general waste and hazardous waste; • Hazardous waste shall not be mixed with general waste and in doing so increase the quantities of hazardous waste to be managed; • General waste can further be separated in waste that can be recycled and or reused; • No littering shall be allowed in and around the site, a sufficient number of bins shall be provided for the disposal of waste; • Where necessary dedicate a storage area on site for collection of construction waste. <i>Storage of waste</i> • Where it is not possible to remove debris from the site immediately, it will be stockpiled outside environmental sensitive areas; • General waste will be collected in an adequate number of litter bins located throughout the construction site; • Bins shall be emptied regularly to prevent the bins from overflowing; • All work areas shall be kept clean and tidy always; • All waste management facilities will be maintained in good working order; • Waste shall be stored in demarcated areas according to type of waste; • Runoff from any area demarcated for waste will be contained, treated and reused; • Flammable substances must be kept away from sources of ignition and from oxidizing agents; • No builder’s rubble shall be disposed of to the riparian area; • If builder’s rubble is not removed immediately it shall be stockpiled outside sensitive environmental areas; • Demolition waste and surplus concrete shall be disposed of responsibly; • Waste shall not be buried or burned on site; and • The maximum retention time for temporary storage of waste generated shall not exceed 30 days, provided the waste does not present a health hazard or risk of odor. <i>Disposal of hazardous waste</i> • No dumping shall be allowed in or near the construction site; • Hazardous containers shall be disposed of at an appropriate licensed site; • Hazardous waste will be removed and managed by an approved service provider; • A safe disposal certificate will be provided by the approved service provider as proof of responsible disposal of hazardous waste; and • The safe disposal certificate shall be stored and provided on request. <i>Disposal of general waste</i> • No dumping shall take place in or near the construction site; 	<ul style="list-style-type: none"> • Waste Manifests • Evidence of separation of waste (separate waste storage bins) • No complaints from I&APs • No littering on the site • No contamination of water resources • No runoff from the waste management areas being released into water resources • Method statement on waste reduction and management 	<ul style="list-style-type: none"> • Daily 	<ul style="list-style-type: none"> • Contractor • Site Manager • ECO

Objective	Mitigation and management measures and principles	Measurable Targets	Monitoring Frequency	Responsible Person
	<ul style="list-style-type: none"> All general waste shall be disposed of to the nearest licensed landfill site; Demolition waste and builder's rubble shall be disposed of to an appropriate licensed landfill site; and The necessary permissions must be obtained to dispose of builders' rubble to the landfill site. 			
Noise				
<ul style="list-style-type: none"> Maintain noise levels below "disturbing" as defined in the National Noise Regulations Minimise the nuisance factor of the construction activity. 	<ul style="list-style-type: none"> Noise levels during construction must be kept within 7dB of the baseline data. All construction vehicles shall be in a good working order to reduce possible noise pollution. Public Notices should be given to inhabitants near inform them of the construction timeframes. Correct PPE must always be worn by the personnel on site. Vehicles with low noise levels to be used and the reverse signal to be replaced with a vibration type monitor. Machinery with low noise levels and maintained in a good order to be used and to comply with the IFC's Health and Safety Regulations. Machinery with low noise levels to be used and reverse siren to be replaced with a vibration type monitor. Measure the environmental noise levels during the construction phase of the project to ensure compliance to the recommended noise levels. Establish noise abatement measures for construction vehicles and activities. Construction staff working in areas where the 8-hour ambient noise levels exceed 85 Dba should wear ear protection equipment. Work hours of 8am to 5pm must be strictly enforced unless permission is given for extended hours. Permission must not be granted without consultation with the residents and businesses. Unnecessary noise such as loud talking, shouting or whistling, radios, sirens or hooters, motor revving, etc. shall be strictly controlled. Equipment must be operated with appropriate noise abatement accessories such as silencers and sound hoods, which must be correctly maintained; All equipment must be kept in good working order, with immediate attention being paid to defective silencers, slipping fan-belts, worn bearings and other sources of noise; Noisy activities must take place only during working hours. Residents of houses and businesses adjacent to the construction site must be informed by posting signage (informing of unusually noisy activities) prior to any planned activities that will be unusually noisy or any other activities that could reasonably have an impact on the adjacent sites this is also applicable if working hours will be exceeded. Equipment shall be switched off when not in operation. Equipment must be operated within specifications and capacity (e.g. no overloading of machines); Regular maintenance of equipment must be undertaken, particularly regarding lubrication. Appropriate directional and intensity settings must be maintained on all hooters and sirens. 	<ul style="list-style-type: none"> No complaints from surrounding landowners or I&APs Noise level within 7dB of the baseline levels Quarterly noise monitoring reports Method Statement 	<ul style="list-style-type: none"> Quarterly noise surveys 	<ul style="list-style-type: none"> Contractor Site Manager ECO
Fires				
<ul style="list-style-type: none"> Minimise risk of veld fires Minimise destruction of natural fauna and flora Maintain safety on site 	<ul style="list-style-type: none"> No fires shall be permitted on site. No wood shall to be collected, chopped or felled for fires from private or public property within the project area. 	<ul style="list-style-type: none"> No veld fires started by the contractor' s workforce No claims from landowners for damages due to veld fires Method statement 	<ul style="list-style-type: none"> Daily 	<ul style="list-style-type: none"> Contractor Site Manager ECO
Fauna				

Objective	Mitigation and management measures and principles	Measurable Targets	Monitoring Frequency	Responsible Person
<ul style="list-style-type: none"> Minimise disturbance to animals Minimise interruption of breeding patterns of birds. Minimise destruction of habitat. To minimise fragmentation of habitat for flora, fauna and avifauna. 	<ul style="list-style-type: none"> All activities on site must comply with the regulations of the: <ul style="list-style-type: none"> National Environmental Management Biodiversity Act 10 of 2004, and NEMA. Sensitive fauna habitats must be identified and demarcated if construction work is required to occur within or near such areas. Disturbance to fauna and their habitats must be minimized as far is possible. Any bird nests located within the construction sites shall be reported to the Site Manager and the necessary specialist advice on how to handle the nests sought from suitably qualified ecologist. Travelling at night should be avoided or limited as much as possible. No travelling at night should be allowed without approval by site manager; Lights should be positioned 5m from the roads or paved areas. A speed limit should be enforced (speed on site max 40 km/hour; Outside of the site 60 km/h. In Rain max 20 km/h). It can be considered to install speed bumps in sections where the speed limit tends to be disobeyed. (Speed limits will also lessen the probability of road accidents and their negative consequences). No hunting or trapping of animals shall be permitted. No informal fires near construction areas shall be permitted. A Method statement on how <i>Prosopis</i> stands will be controlled to prevent spreading to neighboring areas. An alien vegetation control plan must be developed and implemented to manage alien plant species occurring within the study area: 	<ul style="list-style-type: none"> No complaints from Nature Conservation No litigation concerning applicable animal protection acts No measurable or visible signs of habitat destruction 	<ul style="list-style-type: none"> Daily 	<ul style="list-style-type: none"> Contractor Site Manager ECO
Heritage Resources				
<ul style="list-style-type: none"> Limit the destruction of the heritage resources The preservation and appropriate management of new archaeological finds should these be discovered during maintenance work 	<ul style="list-style-type: none"> The Contractor's team must be alert and must inform their team leader and Site Manager should they come across any findings of heritage resources. The Site Manager must inform the local heritage agency within 24 hours should and findings be made. Approval for the destruction and/or relocation of heritage resources must be applied for and issued, in writing, by the relevant authority (the Northern Cape provincial heritage resource agency) as recommended by the Heritage specialist prior to commencement of construction activities. Under no circumstances must archaeological artefacts or graves be removed, destroyed or interfered with without permission from SAHRA. 	<ul style="list-style-type: none"> No destruction of or damage to known archaeological sites Permit from SAHRA Northern Cape prior to commencement of construction activities 	<ul style="list-style-type: none"> Daily 	<ul style="list-style-type: none"> Contractor Site Manager ECO
Flora				

Objective	Mitigation and management measures and principles	Measurable Targets	Monitoring Frequency	Responsible Person
<ul style="list-style-type: none"> Minimal disturbance to vegetation where such vegetation does not interfere with construction in terms of approvals from the relevant authority Prevent litigation concerning removal of vegetation Encourage natural habitat fauna Minimise scarring of the soil surface and land features Minimise disturbance and loss of topsoil Minimise risk of veldt fires Minimise risk of fauna and flora destruction 	<ul style="list-style-type: none"> No uncontrolled fires shall be allowed on-site. Careful consideration and prior approval must be sought where areas are cleared for use as laydown and/or storage areas. Construction footprints shall be demarcated prior to commencement of construction activities and no construction activities shall be permitted outside of the demarcated footprint. The construction footprint shall remain as small as possible. Indiscriminate movement within drainage lines shall be strictly forbidden. Access to the construction sites shall be limited to designated roadways to limit the ecological footprint of the proposed construction activities. Monitoring should be implemented during the construction phase of the development to ensure that minimal impact is caused to the flora of the area. The ECO should advise the construction team in all relevant matters to ensure minimum destruction and damage to the environment. The ECO should enforce any measures that he/she deem necessary. Regular environmental training should be provided to construction workers to ensure the protection of the habitat, fauna and flora and their sensitivity to conservation. Limit pesticide use to non-persistent, immobile pesticides and apply in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications. Where trenches pose a risk to animal safety, they should be adequately cordoned off to prevent animals falling in and getting trapped and/or injured. This could be prevented by the constant excavating and backfilling of trenches during pipeline construction. Poisons for the control of problem animals should rather be avoided since the wrong use thereof can have disastrous consequences. The use of poisons for the control of rats, mice or other vermin should only be used after approval from an ecologist. Should any floral or faunal SCC be located/observed, a suitably qualified specialist shall be consulted on a way forward. The contractor shall compile an Alien and Invasive Plant (AIP) management plan to guide the proponent on the correct removal and control techniques. Collection of plant material or medicinal purposes shall be strictly prohibited. Rehabilitation measures must be implemented in areas where the soil surface was disturbed to limit alien and invasive plant recruitment and further soil erosion, which will lead to further faunal and floral habitat loss. 	<ul style="list-style-type: none"> No litigation due to removal of vegetation without necessary permission No exotic plants on site The footprint has not exceeded the demarcated footprint All damaged areas successfully rehabilitated No veldt fires started by maintenance contractors work force No claims from landowners for damages due to veldt An alien invasive species management plan on file Method statement 	<ul style="list-style-type: none"> As and when required 	<ul style="list-style-type: none"> Contractor Site Manager ECO
Traffic and Pedestrian Safety				
<ul style="list-style-type: none"> To ensure road safety along the public roads and on-site and to increase awareness of slow-moving vehicles. Warn the public of construction traffic, and to manage traffic on site. 	<ul style="list-style-type: none"> The Contractor shall comply with the traffic regulations. Local speed limits and traffic laws shall apply always to minimise the occurrences of accidents on public roads. Where possible the transportation of debris from the old mine dump to the Roodepan Quarry, construction materials and rubbish shall be undertaken outside traffic peak hours to minimise inconveniencing residents. Where possible, KRD must institute intersection upgrades as per the Traffic Impact Assessment; During construction the site shall be fenced off to prevent access. Fencing shall be inspected weekly and maintained properly by the Contactor until construction is complete. The Contractor shall ensure that signage, which should be pictorial and, in the vernacular, is erected on all boundary fences warning against entering the construction area. 	<ul style="list-style-type: none"> Where existing public roads are used to access the construction areas, adequate construction signage is in place to inform the public of increased construction activities in the affected areas by placing adequate signage. Traffic signs should warn community road users of the presence of construction vehicles. 	<ul style="list-style-type: none"> Daily 	<ul style="list-style-type: none"> Contractor Site Manager ECO
Soil Erosion				

Objective	Mitigation and management measures and principles	Measurable Targets	Monitoring Frequency	Responsible Person
<ul style="list-style-type: none"> Minimise loss of soil through erosion 	<ul style="list-style-type: none"> Cover disturbed soils as completely as possible, using vegetation or other materials. Minimize the amount of land disturbance and develop and implement stringent erosion and dust control practices. Implement sediment trapping, erosion and stormwater control. Protect sloping areas that are susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and Work Areas. Repair all erosion damage as soon as possible to allow for sufficient rehabilitation growth; Gravel roads must be well drained to limit soil erosion; Minimize clearance of vegetation. Retain natural trees, shrubbery, and grass species wherever possible; Implement a rehabilitation plan for the site, especially the old mining dumps and areas where depressions have formed on site; Cover disturbed soils as completely as possible, using vegetation or other materials 	<ul style="list-style-type: none"> No visible evidence of soil erosion. 	<ul style="list-style-type: none"> Daily 	<ul style="list-style-type: none"> Contractor Site Manager ECO
Soil and Groundwater				

Objective	Mitigation and management measures and principles	Measurable Targets	Monitoring Frequency	Responsible Person
<ul style="list-style-type: none"> Minimise pollution of soil and ground water resources. 	<p><i>Spill prevention</i></p> <ul style="list-style-type: none"> All earthmoving vehicles and equipment shall be on a preventative maintenance schedule to ensure that the equipment is in a good working order to prevent oil and diesel leakages; An inspection programme shall be implemented to ensure that all the mechanical equipment is inspected daily to ensure the optimal functioning of the equipment, and all leaks will be repaired immediately; All containment areas shall be monitored for failures, leakages or overfilling of the bunded areas; All bunded areas shall be designed for sufficient capacity to prevent spillages into the environment should a tank fail; All oil and chemical drums shall be stored in an appropriately designed bunded area to contain any spillages from these drums; and Overfilling of equipment must be prevented and all personnel be made aware of this requirement. <p><i>Refueling</i></p> <ul style="list-style-type: none"> Refueling of equipment shall occur in a designated area by trained personnel; The only permitted method of fuel transfer, will be by means of a pump/controlled valve/tap/hose/funnel; Fuel dispensing hoses must be of approved non-electrically conductive types with automatic shut off nozzles; All fueling equipment will be inspected regularly and all leaks must be repaired immediately; Absorbent spill clean-up materials shall be available at fueling areas and should be disposed of properly after use; Fueling operations shall not be left unattended; No temporary refueling depot or point shall be located within sensitive environmental areas; Fuel required for the day to day activities shall be stored in a bunded area. This is to include an area adjacent to the tanks upon which vehicles must park during refueling. Soil contaminated by fuel spills must be cleaned up immediately and disposed of as hazardous waste; Fuel at long-term depots must be stored in a bunded area, underlain by a concrete slab, sloped toward a sump for spillage removal. The bund must be able to accommodate at least the full volume of one of the containers; and Spills inside the bunded area and the contents of the oil trap/sump are to be treated as hazardous waste and disposed of accordingly. <p><i>Spill containment and counter measures</i></p> <ul style="list-style-type: none"> Any effluent or hazardous spills will be contained to the smallest possible area and cleaned immediately, and the area rehabilitated, where necessary, as dictated by the type, size and severity of the spill; Contaminated soil shall be removed and disposed of to an appropriate licensed landfill site in terms of NEM: WA or can be removed by a service provider that is qualified to clean the soil. Contaminated soil following spills should be disposed of at an appropriate licensed landfill site; Spill kits or similar equipment will be made available at the point of use to contain any hydrocarbon and chemical spills to the smallest possible area; The Service Provider will train the employees to use the spill kits. A spill response plan will be implemented, and employees trained accordingly to react effectively to address any spillages; and Large spillages of hazardous substances such as oil will initially be controlled by on-site emergency response personnel, who may be aided by professional contractor 	<ul style="list-style-type: none"> No visible signs of hydrocarbon pillages No contamination of soil and groundwater resources. 	<ul style="list-style-type: none"> Daily 	<ul style="list-style-type: none"> Contractor Site Manager ECO

Air Quality

Objective	Mitigation and management measures and principles	Measurable Targets	Monitoring Frequency	Responsible Person
<ul style="list-style-type: none"> Reduce dust fall out thereby reducing nuisance factor of the construction site and potential for depleted air quality. Reduce visual impact Minimise loss of valuable soil material 	<ul style="list-style-type: none"> A method statement must be available for "dust control". The method statement must provide information on the proposed source of water to be utilised for dust suppression and the details of the licenses acquired for such usage. Point sources of dust must be controlled by regular watering of roads and works area, should the need arise. Appropriate dust suppression measures may include limiting the extent of open areas, reducing the frequency of disturbance and spraying with water. Concrete bags must not be allowed to blow around the site and spread cement dust. All vehicles transporting material that can be blown off (e.g. soil, rubble etc.) must be covered with a tarpaulin. The construction team must monitor the site for excessive dust conditions and apply the required remedial actions. All forms of dust pollution must be managed in terms of the: <ul style="list-style-type: none"> National Environmental Management Air Quality Act 39 of 2004. National Dust Control Regulations, 2013 GN R827/2013. Sol Plaatje Local Municipality Air Pollution Control By –laws. Putrescible waste must be handled, stored and disposed of before the probability of it generating odors. Chemical toilets must be emptied / serviced on a regular basis. Proof of this must be provided to the Engineer. A speed limit of 20 km/h shall apply to limit vehicle-entrained dust from the unpaved roads. Dust suppression measures shall be implemented on dry weather days and periods of high wind velocities and may include reducing the frequency of disturbance and spraying with water. All maintenance equipment must be scheduled for preventative maintenance to ensure the functioning of the exhaust systems to reduce excessive emissions and limit air pollution. 	<ul style="list-style-type: none"> No visible signs of dust. No complaints from interested and Affected parties No visible evidence of dust contamination on the surrounding environment Method statement on dust control. 	<ul style="list-style-type: none"> Daily 	<ul style="list-style-type: none"> Contractor Site Manager ECO

Alien and Invasive Plant (AIP) species management

<ul style="list-style-type: none"> To minimise invasion of alien plants within the project area Ensure that proliferation of Alien invasive weeds does not occur 	<ul style="list-style-type: none"> A Method statement on how <i>Prosopis</i> stands will be controlled to prevent spreading to neighboring areas. An Alien and Invasive Plant (AIP) management/eradication programme shall be developed as a guide on the correct removal and control techniques; <table border="1" data-bbox="685 1171 1641 1808"> <thead> <tr> <th>Species</th> <th>Common name</th> <th>NEMBA status</th> </tr> </thead> <tbody> <tr> <td><i>Agave sisalana</i></td> <td>Sisal</td> <td>2</td> </tr> <tr> <td><i>Argemone ochroleuca</i></td> <td>Mexican poppy</td> <td>1b</td> </tr> <tr> <td><i>Atriplex nummularia</i></td> <td>Old man salt bush</td> <td>2</td> </tr> <tr> <td><i>Cirsium vulgare</i></td> <td>Scotch thistle, spear thistle</td> <td>1b</td> </tr> <tr> <td><i>Datura stramonium</i></td> <td>Common thorn apple</td> <td>1b</td> </tr> <tr> <td><i>Flaveria bidentis</i></td> <td>Smelters bush</td> <td>1b</td> </tr> <tr> <td><i>Melia azedarach</i></td> <td>Seringa tree</td> <td>3 (in urban areas)</td> </tr> <tr> <td><i>Nicotiana glauca</i></td> <td>Tobacco tree</td> <td>1b</td> </tr> <tr> <td><i>Opuntia ficus-indica; Opuntia stricta</i></td> <td>Prickly pear</td> <td>1b</td> </tr> <tr> <td><i>Prosopis glandulosa</i></td> <td>Mesquite trees</td> <td>3</td> </tr> <tr> <td><i>Ricinus communis</i></td> <td>Castor oil plant</td> <td>2</td> </tr> <tr> <td><i>Salsola kali</i></td> <td>Common saltwort / tumbleweed</td> <td>1b</td> </tr> <tr> <td><i>Tipuana tipu</i></td> <td>Tipu tree</td> <td>3</td> </tr> <tr> <td><i>Xanthium strumarium</i></td> <td>Large cocklebur</td> <td>1b</td> </tr> </tbody> </table> <ul style="list-style-type: none"> Category 1a: Invasive species requiring compulsory control. Remove and destroy. Any specimens of Category 1a listed species need, by law, to be eradicated from the environment. No permits will be issued. Category 1b: Invasive species requiring compulsory control as part of an invasive species control programme. Remove and destroy. These plants are deemed to have such a high invasive potential that infestations can qualify to be placed under a government sponsored invasive species management 	Species	Common name	NEMBA status	<i>Agave sisalana</i>	Sisal	2	<i>Argemone ochroleuca</i>	Mexican poppy	1b	<i>Atriplex nummularia</i>	Old man salt bush	2	<i>Cirsium vulgare</i>	Scotch thistle, spear thistle	1b	<i>Datura stramonium</i>	Common thorn apple	1b	<i>Flaveria bidentis</i>	Smelters bush	1b	<i>Melia azedarach</i>	Seringa tree	3 (in urban areas)	<i>Nicotiana glauca</i>	Tobacco tree	1b	<i>Opuntia ficus-indica; Opuntia stricta</i>	Prickly pear	1b	<i>Prosopis glandulosa</i>	Mesquite trees	3	<i>Ricinus communis</i>	Castor oil plant	2	<i>Salsola kali</i>	Common saltwort / tumbleweed	1b	<i>Tipuana tipu</i>	Tipu tree	3	<i>Xanthium strumarium</i>	Large cocklebur	1b	<ul style="list-style-type: none"> No alien invasive species in the project area. 	<ul style="list-style-type: none"> Monthly 	<ul style="list-style-type: none"> Contractor Site Manager ECO
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Objective	Mitigation and management measures and principles	Measurable Targets	Monitoring Frequency	Responsible Person
	<p><i>programme. No permits will be issued.</i></p> <ul style="list-style-type: none"> • <i>Category 2: Invasive species regulated by area. A demarcation permit is required to import, possess, grow, breed, move, sell, buy or accept as a gift any plants listed as Category 2 plants. No permits will be issued for Category 2 plants to exist in riparian zones.</i> • <i>Category 3: Invasive species regulated by activity. An individual plant permit is required to undertake any of the following restricted activities (import, possess, grow, breed, move, sell, buy or accept as a gift) involving a Category 3 species. No permits will be issued for Cat 3 plants to exist in riparian zones.</i> • Where possible, the management of alien invasive plant species shall be conducted in tandem with the construction activities. • The least impact methods must be employed to remove vegetation. • Impacted sites shall be rehabilitated with suitable indigenous species in consultation with a suitably qualified ecologist. • Cleared sites will need to be closely monitored and maintained as disturbed areas become vulnerable to weed infestation due to dormant seed propagation due to suitable conditions. • Rehabilitate disturbed areas as quickly as possible to reduce the area where invasive species would be at a strong advantage and most easily able to establish. • The following legislation shall also be considered to ensure compliance: <ul style="list-style-type: none"> ○ Alien and Invasive Species Lists, 2014 ○ Alien and Invasive Species Regulations, 2014 ○ Conservation of Agricultural Resources Regulations GNR 1048/84 ○ National Environmental Management Biodiversity Act 10 of 2004 ○ National Forest Act • The use of herbicides must be limited and may only be used under strict control and when no other alternative exists. • Priority species shall be identified to control and develop protocols for the removal of all alien species e.g. mechanical removal, chemical treatment or an integrated approach etc. Mechanical methods must be favored to chemical methods where possible for the removal of alien invasive species. Chemical removal shall only be undertaken by a suitably qualified and approved person. 			
Hydrology and Stormwater Management				
<ul style="list-style-type: none"> • Minimise pollution of soil, ground water resources and surface water resources. • Minimise scarring of the soil surface and land features 	<ul style="list-style-type: none"> • Adequate stormwater management shall be conducted on site to ensure that dirty water is kept separate from clean water. • In the event of pollution caused because of construction activities, KRD, according to Section 20 of the National Water Act, 1998 (Act No. 36 of 1998) is to be responsible for all costs incurred by organizations called to assist in pollution control and/or to clean up polluted areas. • Run-off containing high sediment loads must not be released to drainage areas. • During construction, erosion protection berms shall be installed to prevent gully formation. Berms every 50 m should be installed where the track has a slope of less than 2%, every 25 m where the track slopes between 2% and 10%, every 20 m where the track slopes between 10% and 15% and every 10 m where the track slope is greater than 15%. • Exposed soils shall be protected by means of a suitable geotextile covering such as hessian sheeting. • Sediment control devices to be in place prior to the commencement of site preparation activities. • No construction activities shall be permitted outside the footprints of the construction sites. • All vehicles must remain on designated roads with no indiscriminate driving through the area. • All disturbed areas shall be re-vegetated with indigenous species. • Disturbance of the vegetation and stones/boulders shall be kept to the absolute minimum, ensuring that only the areas that are necessary for access purposes are disturbed. • All vehicles shall be regularly inspected for leaks. Re-fueling must take place outside the project area, on a sealed surface area to prevent ingress of hydrocarbons into topsoil. 	<ul style="list-style-type: none"> • No visible signs of pollution • Method statements for management of water contamination • No directives from the DWS due to unlicensed construction activities within regulated areas. • No signs of siltation of water courses and drainage lines • Minimum loss of topsoil • No complaints from I&APs 	<ul style="list-style-type: none"> • As and when required • Monitor daily 	<ul style="list-style-type: none"> • Contractor • Site Manager • ECO
Visual				
<ul style="list-style-type: none"> • To reduce visual disturbances and to minimise the loss in sense of place • To minimise visual intrusion because of the project 	<ul style="list-style-type: none"> • The number of construction vehicles and machinery to be used shall be kept to a minimum. • Movement of vehicles shall be kept to outside busy hours to minimise the visual impacts on the residents. • Clearance of the area shall be kept to a minimum possible footprint. • Where possible, rehabilitation of the work areas shall be undertaken in tandem with construction to ensure that areas stripped of vegetation are kept to a minimum. 	<ul style="list-style-type: none"> • No complaints from the I&APs 	<ul style="list-style-type: none"> • Daily 	<ul style="list-style-type: none"> • Contractor • Site Manager • ECO

Objective	Mitigation and management measures and principles	Measurable Targets	Monitoring Frequency	Responsible Person
Crime, safety and security				
<ul style="list-style-type: none"> Reduce the risk of potential incidences Minimise the potential impact on the environment 	<ul style="list-style-type: none"> PSIRA Registration of Security Personnel must be confirmed for legal operation on the site. Emergency Preparedness plans must be compiled in terms of Section 20 of National Water Act and Section 30 of NEMA. No site staff will be housed on site. The site and crew are to be managed in strict accordance with the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) and the National Building Regulations. It must be ensured that all emergency procedures are in place prior to commencing construction work. Emergency procedures must include (but not be limited to) fire, spills, contamination of the ground, accidents to employees, use of hazardous substances and materials, etc. A list of all emergency telephone numbers / contact persons must be kept up to date and all numbers and names shall be posted at relevant locations throughout the maintenance site. The nearest emergency service provider must be identified, as well as its capacity and the magnitude of accidents it will be able to handle. The contact details of this emergency center, as well as the police and ambulance services must be available on site. Personal Protective Equipment (PPE) will be issued by all persons entering the construction site. PPE includes safety shoes, goggles, earplugs, gloves, hard hats, masks, etc. The PPE required will be dependent on the area that the person is working in, as well as the activity he/she is undertaking 	<ul style="list-style-type: none"> No incidences reported No complaints from I&APs 	<ul style="list-style-type: none"> Daily 	<ul style="list-style-type: none"> Contractor Site Manager ECO
Rehabilitation				
<ul style="list-style-type: none"> To avoid the Potential Pollution of Storm water Minimise pollution of the water resources. 	<ul style="list-style-type: none"> KRD is responsible for compliance with the provisions for Duty of Care and Remediation of Damage in accordance with Section 28 of National Environmental Management Act (NEMA), Act No. 107 of 1998. As the Colville site contain mining debris, it will be necessary to rehabilitate the site in accordance with the outcome of a geotechnical assessment and a purpose designed environmental rehabilitation plan. Provisionally it is envisaged that approximately the top 1.5m will have to be dug out and backfilled with G5 compacted to 90 ModAshato. <p><i>Levelling</i></p> <p>Denuded areas (artificial wetlands) or elevated areas should be levelled. Levelling should ensure that surface water does not pond, and should also decrease the chance of erosion, decrease the flow velocity and the subsequent potential for sedimentation and vegetation loss. Additional levelling requirements:</p> <ul style="list-style-type: none"> Spoil piles may be levelled using a dozer operation or a truck and shovel operation; Progressive in fill of ramps and placing of waste rock can be considered where practically feasible. A capping of topsoil must be deployed over waste rock to fill the ramp prior to topsoil placement and seeding; Spoils are compacted during the shaping of the spoil piles. <p><i>Cover with topsoil</i></p> <ul style="list-style-type: none"> Topsoil must only be used for rehabilitation purposes and not for any other use example i.e. construction of roads. Previously excavated areas on the site should be backfilled with suitable fill material, top soiled, levelled to resemble the surrounding topography and slopes and scarified for re-vegetation/re-seeding. On steeper slopes rehabilitation measures may include systems such as soil terracing, berm creation, grass blocks, fascine work, gabion basket work, reno-mattresses, retaining block mechanisms, sandbags, boulder and rock placement, stone pitching, and grading. <p><i>Erosion control</i></p> <p>The soil on the site has a sandy nature and the permeation factor is high and therefore the surface runoff is low. Nevertheless, some mitigation is necessary to prevent possible erosion. The following management measures are proposed for the rehabilitation process:</p> <ul style="list-style-type: none"> Visual inspection of all exposed surfaces should be conducted for signs of erosion. If erosion channels are discovered, the environmental manager will compile and implement a plan to determine the cause of erosion, reducing erosion in the identified areas and preventing future erosion. Inspection of soil depth if erosion has taken place over a constant period is necessary. If the depth has deteriorated to less than 15cm it must be rectified. Erosion can be repaired or minimised using gabions, reno-mattresses and planting of indigenous grasses. Erosion control mechanisms must be established as soon as possible. Further financial provision should be continued over the subsequent years to allow for maintenance of the 	<ul style="list-style-type: none"> No visible signs of pollution Minimum loss of topsoil No erosion or siltation downstream 	<ul style="list-style-type: none"> As and when required Within a year of construction 	<ul style="list-style-type: none"> Contractor Site Manager

Objective	Mitigation and management measures and principles	Measurable Targets	Monitoring Frequency	Responsible Person
	<p>gabions, reno mattresses, and associated structures.</p> <ul style="list-style-type: none"> • A stormwater management plan must be developed with the aid of an engineer to ensure that water runoff is diverted off the site without pooling and stagnation or erosion. Financial provision for closure will include the estimated costs for erosion control post-mining. • If compaction occurs, rectification can be done by application and mixing of manure, vegetation mulch or any other organic material into the area. Use of well cured manure is preferable as it will not be associated with the nitrogen negative period associated with organic material that is not composted. <p><i>Alien and invader plant species rehabilitation</i></p> <p>The following basic principles apply to the control of AIS on the Coville site during the rehabilitation process:</p> <ul style="list-style-type: none"> • The Contractor is responsible for the control of weeds and invader plants within the construction site for the duration of the concurrent rehabilitation phase. Alien invasive tree species should be eradicated; • Control involves killing the plants present, killing the seedlings which emerge, and establishing and managing an alternative plant cover to limit re-growth and re-invasion; • Institute an eradication/control programme for early intervention if invasive species are detected, so that their spread to surrounding natural ecosystems can be prevented; • Rehabilitate disturbed areas as quickly as possible to reduce the area where invasive species would be at a strong advantage and most easily able to establish; • Institute a monitoring programme to detect alien invasive species early, before they become established and, in the case of weeds, before the release of seeds; <p>During the rehabilitation of the site, the eradication and control of alien invasive species should be an on-going action. An alien eradication plan should be implemented.</p> <p><i>Compaction rehabilitation measures</i></p> <p>Soil compaction is often an effect of high traffic areas on development sites. It can become a major problem and can be recognised by:</p> <ul style="list-style-type: none"> • Excess surface moisture and slow drying soils due to deeper compaction preventing the percolation of water through the soil profile. • Water runoff due to surface compaction preventing penetration and absorption (ponding of water), especially on banks and sloping surfaces. • Large clear or sparsely covered areas devoid of a good vegetative cover due to hardened topsoil layers. <p>Rip and/or scarify all disturbed areas, including roads that are no longer in use (preferably before the rainy season). Do not rip and/or scarify areas under wet conditions, as the soil will not loosen.</p> <p><i>Erosion and stormwater management objectives</i></p> <p>Remedial actions must be established to ensure that potential erosion on site is addressed with an erosion control strategy towards rehabilitation. The mitigation measures to prevent soil erosion include:</p> <ul style="list-style-type: none"> • Re-profiling of the banks of disturbed drainage areas to a maximum gradient of 1:3 to ensure bank stability; • Reinforce banks and drainage features where necessary with gabions, energy dissipaters reno mattresses and geotextiles. This is especially relevant for the stormwater outlet area; • A stormwater plan must be developed with the aid of an engineer to ensure that water runoff is diverted off the site without pooling and stagnation or erosion during the operational phase of the development; and • If compaction occurs, rectification can be done by application and mixing of manure, vegetation mulch or any other organic material into the area. Use of well cured manure is preferable as it will not be associated with the nitrogen negative period associated with organic material that is not composted. 			

Table 9-3: Environmental Programme for the Operational Phase

Management Objective	Mitigation Measures	Measurable Targets/Monitoring Outcome	Monitoring Frequency	Responsible Person
Monitoring and Maintenance				
<ul style="list-style-type: none"> Sustainable management of waste by recycling To keep the site neat and tidy Minimise litigation and complaints by I&APs Reduce visual impact Control potential influx of vermin and flies thereby minimising the potential of diseases on site and the surrounding environment Minimise potential to pollute soils, water resources and natural habitats 	<ul style="list-style-type: none"> The conditions of the development must be monitored for a period of one year after the development is complete to ensure that: <ul style="list-style-type: none"> Erosion is not taking place; The stormwater runoff measures are working; An Environmental Complaints Register should be kept detailing complaints received, date, response and action taken; Any maintenance where intrusive works are necessary should adhere to the mitigation measures put in place in the EMPr; and Where such measures are impractical due to the nature, duration and extent of the works, a maintenance method statement should be developed prior to maintenance works being undertaken. The conditions of the development must be monitored for a period of one year after the development is complete to ensure that: <ul style="list-style-type: none"> Erosion is not taking place; The stormwater runoff measures are working; An Environmental Complaints Register should be kept detailing complaints received, date, response and action taken; Any maintenance where intrusive works are necessary should adhere to the mitigation measures put in place in the EMPr; and Where such measures are impractical due to the nature, duration and extent of maintenance works, a maintenance method statement should be developed prior to maintenance works being undertaken. Final rehabilitation to be monitored by an ECO according to the stipulations of the EMPr 	<ul style="list-style-type: none"> No complaints from I&APs No littering on the site No contamination of water resources No runoff from the area being released into water resources Method statements 	<ul style="list-style-type: none"> Daily 	<ul style="list-style-type: none"> Contractor Site Manager ECO
Groundwater and Soil Resources				
<ul style="list-style-type: none"> Minimise contamination of soil and groundwater resources 	<ul style="list-style-type: none"> All oil spills will be remedied using approved methodologies. The contaminated soils will be removed and disposed of at a licensed waste disposal facility. All oil spills will be remedied using approved methodologies. The contaminated soils will be removed and disposed of at a licensed waste disposal facility. Monitor the groundwater environment for hydrochemistry and hydrocarbons No groundwater may be abstracted for use on site without approval from the DWS. 	<ul style="list-style-type: none"> No visible signs of hydrocarbon pillages No contamination of soil and groundwater resources. 	<ul style="list-style-type: none"> On an as and when required 	KRD
Hydrology and Stormwater				
<ul style="list-style-type: none"> Minimise pollution of soil, ground water resources and surface water resources. Minimise scarring of the soil surface and land features 	<ul style="list-style-type: none"> All oil spills will be remedied using approved methodologies. The contaminated soils will be removed and disposed of at a licensed waste disposal facility. All oil spills will be remedied using approved methodologies. The contaminated soils will be removed and disposed of at a licensed waste disposal facility. Storm water generated around the project site will be diverted away to the clean water environment. All hydrocarbons will be stored on protected storage areas away from the streams. Fire-fighting water- (sufficient storage, correct additives, impermeable storage containers), and contact water (run-off contained, remove or treat contained contact water) management. Design and construct (bundling, impervious storage base), and manage stormwater run-off. Ensure contaminated surface run-off is either treated or contained in leak-resistant structures. 	<ul style="list-style-type: none"> No visible signs of pollution No signs of siltation of water courses and drainage lines No complaints from I&APs 	<ul style="list-style-type: none"> On an as and when required 	<ul style="list-style-type: none"> KRD
Air Quality and Climate Change				
<ul style="list-style-type: none"> Reduce air quality impacts due to the project 	<ul style="list-style-type: none"> Dust suppression must be conducted during the operational phase of the project. Appropriate dust suppression measures may include limiting the extent of open areas, reducing the frequency of disturbance and spraying with water. Dust control suppression shall be implemented on dry weather days and periods of high wind velocities. Correct speed will be maintained at the proposed project site. Putrescible waste must be handled, stored and disposed of before the probability of it generating odors. 	<ul style="list-style-type: none"> No visible dust plumes in the area No complaints from the I&APs 	<ul style="list-style-type: none"> On an as and when required 	<ul style="list-style-type: none"> KRD
Noise				
<ul style="list-style-type: none"> Minimise noise impacts due to the project activities 	<ul style="list-style-type: none"> Noise levels shall be kept to within the requirements of the Noise Control Regulations of 1992 	<ul style="list-style-type: none"> No complaints from I&APs 	<ul style="list-style-type: none"> On an as and when required 	<ul style="list-style-type: none"> KRD
Visual				
<ul style="list-style-type: none"> Minimise visual impacts of the buildings 	<ul style="list-style-type: none"> Where possible, the buildings must be painted using colors that blend in with the existing structures in the area. 	<ul style="list-style-type: none"> No complaints from I&APs 	<ul style="list-style-type: none"> On an as and when required 	<ul style="list-style-type: none"> KRD

Management Objective	Mitigation Measures	Measurable Targets/Monitoring Outcome	Monitoring Frequency	Responsible Person
Biodiversity				
<ul style="list-style-type: none"> Minimum loss of biodiversity due to ineffective management and control of alien invasive plant species 	<ul style="list-style-type: none"> All disturbed areas must be rehabilitated in tandem with construction activities. Runoff water which typically contains seeds of exotic and garden variety plants should be diverted to storm water management services and infrastructures. Management and control of alien invasive plant species must be implemented even during the operational phase of the project. Landscaping of the gardens must include removal of weeds that pose a threat to indigenous vegetation. 	<ul style="list-style-type: none"> No alien invasive plant species on the site Use of indigenous species for landscaping Landscaping plan 	<ul style="list-style-type: none"> On an as and when required 	<ul style="list-style-type: none"> KRD
Traffic				
<ul style="list-style-type: none"> To minimise the numbers of traffic accidents in the area 	<ul style="list-style-type: none"> Local speed limits and traffic laws shall apply at all times to minimise the occurrences of accidents on public roads. Where possible, KRD must institute intersection upgrades as per the Traffic Impact Assessment; Traffic laws shall apply. 	<ul style="list-style-type: none"> Minimum traffic related incidents 	<ul style="list-style-type: none"> On an as and when required 	<ul style="list-style-type: none"> KRD
Waste Management				
<ul style="list-style-type: none"> Ensure proper and effective management of waste 	<ul style="list-style-type: none"> All waste generated from the project site will be collected in proper receptacles and removed by the Plaatje LM to a registered disposal facility e.g., sewage treatment plant, solid waste disposal site or hydrocarbon recycling or treatment facilities. <p><i>Storage of waste</i></p> <ul style="list-style-type: none"> General waste will be collected in an adequate number of litter bins; Bins must have lids in order to keep rainwater out; Bins shall be emptied regularly to prevent the bins from overflowing; Waste shall be stored in demarcated areas according to type of waste; Flammable substances must be kept away from sources of ignition and from oxidizing agents; Waste shall not be buried or burned on site; and The maximum retention time for temporary storage of waste generated shall not exceed 30 days, provided the waste does not present a health hazard or risk of odour. <p><i>Disposal of hazardous waste</i></p> <ul style="list-style-type: none"> No dumping shall be allowed on site; and Hazardous containers shall be disposed of at an appropriate licensed site. <p><i>Disposal of general waste</i></p> <ul style="list-style-type: none"> All general waste shall be disposed of to the nearest licensed landfill site. 	<ul style="list-style-type: none"> Evidence of separation of waste (separate waste storage bins) No complaints from I&APs No littering on the site No runoff from the waste management areas being released into water resources 	<ul style="list-style-type: none"> As per the municipal policy 	<ul style="list-style-type: none"> Soi Plaatje Local Municipality

10 Monitoring and compliance

10.1 Monitoring

The monitoring of compliance to the EA and EMPr will be as per the EMPr in Section 9.

10.2 Reporting Procedures

10.2.1 Documentation

The following documentation must be kept on site in order to record compliance with the EMPr:

- An Environmental Management File which includes:
 - Copy of the EMPr;
 - Copy of the Environmental Authorisation;
 - Copy of all other licences/permits;
 - Copy of all rehabilitation plans;
 - Copy of the Stormwater Management Plan;
 - Copy of relevant legislation;
 - Environmental Policy of the Main Contractor;
 - Environmental Method statements compiled by the Contractor;
 - Non-conformance Reports;
- Environmental register, which shall include:
 - Communications Register—including records of complaints, and, minutes and attendance registers of all environmental meetings.
 - Monitoring Results – including environmental monitoring reports, register of audits, Non-Conformance Reports (NCR).
 - Incident book – including copies of notification of Emergencies and Incidents, this must be accompanied by a photographic record.
 - Waste manifests.
- Waste Documentation such as Sewerage Disposal Receipts;
- Material Safety Data Sheets for all hazardous substances;
- Dust suppression register;
- Written Corrective Action Instructions; and
- Notification of Emergencies and Incidents.

10.2.2 Environmental Register

KRD will put in place an Environmental Register. The contractor will ensure that the following information is recorded for all complaints/incidents:

- Nature of complaint/incident.
- Causes of complaint/incident.
- Party/parties responsible for causing complaint/incident.
- Immediate actions undertaken to stop/reduce/contain the causes of the complaint/incident.
- Additional corrective or remedial action taken and/or to be taken to address and to prevent reoccurrence of the complaint/incident.
- Timeframes and the parties responsible for the implementation of the corrective or remedial actions.
- Procedures to be undertaken and/or penalties to be applied if corrective or remedial actions are not implemented.
- Copies of all correspondence received regarding complaints/incidents.

The above records will form an integral part of the Contractors' Records. These records will be kept with the EMPr and will be made available if so requested by KRD.

10.2.3 Non-Conformance Report

A Non-Conformance Report (NCR) will be issued to the Contractor as a final step towards rectifying a failure in complying with a requirement of the EMPr. This will be issued by the ECO to the Contractor in writing. Preceding the issuing of an NCR, the Contractor must be given an opportunity to rectify the issue.

Should the ECO assess an incident or issue and find it to be significant (e.g. non-repairable damage to the environment), it will be reported to the relevant authorities and immediately escalated to the level of an NCR. The following information should be recorded in the NCR:

- Details of non-conformance;
- Any plant or equipment involved;
- Any chemicals or hazardous substances involved;
- Work procedures not followed;
- Any other physical aspects.
- Nature of the risk.
- Actions agreed to by all parties following consultation to adequately address the non-conformance in terms of specific control measures and should take the hierarchy of controls into account.
- Agreed timeframe by which the actions documented in the NCR must be carried out. ECO should verify that the agreed actions have taken place by the agreed completion date, when completed satisfactorily; the ECO and Contractor should sign the Close-Out portion of the Non-Conformance Form and file it with the contract documentation.

10.2.4 Environmental Emergency Response

The Contractor's environmental emergency procedures must ensure appropriate responses to unexpected / accidental actions / incidents that could cause environmental impacts. Such incidents may include:

- Accidental discharges to land;
- Accidental spillage of hazardous substances (typically oil, petrol, and diesel);
- Accidental toxic emissions into the air; and
- Specific environmental and ecosystem effects from accidental releases or incidents.

The Environmental Emergency Response Plan is separate to the Health and Safety Plan as it is aimed at responding specifically to environmental incidents and must ensure and include the following:

- Construction employees shall be adequately trained in terms of incidents and emergency situations;
- Details of the organisation (i.e. manpower) and responsibilities, accountability and liability of personnel;
- A list of key personnel and contact numbers;
- Details of emergency services (e.g. the fire department / on-site fire detail, spill clean-up services) shall be listed;
- Internal and external communication plans, including prescribed reporting procedures;
- Actions to be taken in the event of different types of emergencies;
- Incident recording, progress reporting and remediation measures to be implemented; and
- Information on hazardous materials, including the potential impact associated with each, and measures to be taken in the event of accidental release.

The Contractor must comply with the environmental emergency preparedness and incident and accident-reporting requirements as per the relevant legal requirements.

10.2.5 Method Statements

It is a statutory requirement to ensure the wellbeing of employees and the environment. To allow the mitigation measures in this document to be implemented, task-specific method statements should be developed for each set of tasks.

A Method Statement details how and when a process will be carried out, detailing possible dangers/risks, and the methods of control required.

- Type of construction activity;
- Timing and location of the activity;
- Construction procedures;
- Materials and equipment to be used;
- Transportation of the equipment to / from site;
- How equipment/material will be moved while on site;
- Location and extent of construction site office and storage areas;
- Identification of impacts that might result from the construction activity;
- Methodology and/or specifications for impact prevention / containment;
- Methodology for environmental monitoring;
- Emergency/disaster incident and reaction procedures (required to be demonstrated); and
- Rehabilitation procedures and continued maintenance of the impacted environment.

The Contractor will be accountable for all actions taken in non-compliance of the approved Method Statements. The Contractor shall keep all the Method Statements and subsequent revisions on file, copies of which must be distributed to all relevant personnel for implementation.

As a minimum the following Method Statements will be required to be generated:

- Bunding;
- Construction site and office/yard establishment;
- Cement mixing / concrete batching/bentonite mixing;
- Contaminated water;
- Dust;
- Environmental awareness course(s);
- Environmental monitoring;
- Erosion control;
- Fire, hazardous and/or poisonous substances;
- Fuels and fuel spills (may form part of the item above);
- Storage, handling and decanting of diesel (may form part of the item above);
- Personnel, public and animal safety;
- Rehabilitation of modified environment(s);
- Solid and liquid waste management;
- Sources of materials (including MSDSs);
- Top-soil management;
- Stormwater Management; and
- Wash areas.

10.2.6 Public Communication and Liaison with I&APs

The Developer must ensure that the adjacent landowners are informed and updated throughout the construction phases.

Sufficient signage should be erected around the site (including at the entrance), informing the public of the construction activities taking place. The signboards should include the following information:

- The name of the Contractor.
- The name and contact details of the site representative to be contacted in the event of emergencies or complaint registration.

11 Awareness Training

The Contractor will be responsible for implementing an environmental awareness training programme to ensure that all the employees are acquainted with the requirements of this EMPr.

“Environmental awareness involves communication campaigns for reaching various audiences, developing messages and selecting and/or producing the appropriate resources and media to reach these audiences. The aim of environmental awareness is to make construction and operational staff aware of specific issues related to their surroundings, including living and non-living elements, e.g. land, soil, plants, animals, air, water and other humans, as well as awareness of their built, social and economic surroundings, and the impacts of their actions on these. Awareness is a necessary but not a sufficient element of social change.

“The aims of awareness raising activities are more limited in scope than environmental education and the processes should not be confused. While they cannot, on their own, achieve the required educational outcomes outlined above, awareness-raising can be a component of broader and more in-depth education processes”

As a minimum the contractor will conduct awareness training for all new employees and subcontractors prior to commencement with construction work. All employees must be made aware of what the potential impact can be due to their work activities on the project.

Regular and frequent training which may include daily toolbox talks and safety meetings will be used to provide any additional training as and when required. Toolbox talk topics should include, but are not limited to:

- Waste management (Hazardous waste and general waste management);
- Chemicals handling and storage;
- Site clearance after maintenance;
- General Environmental management/awareness; and
- Ad hoc talks based on the outcomes of Risk Assessments.

Anyone who obtains access to the site for the first time will have to undergo awareness training. This will include any sub -consultants or sub-contractors. A register of all training provided must be kept on site.

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