BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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FILE REFERENCE NUMBER SAMRAD:
FS 30/5/1/1/3/2/1 (10479) EM

SHANGONI
Management Services (Pty) Ltd

mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT

AND

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED).

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IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting or mining right if among others the mining "will not result in unacceptable pollution, ecological degradation or damage to the environment".

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme report in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of section 16(3)(b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17 (1) (c) the competent Authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the competent authority to the submission of applications.

It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore, please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

It is furthermore an instruction that the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

The objective of the basic assessment process is to, through a consultative process-

(a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;

(b) identify the alternatives considered, including the activity, location, and technology alternatives;

(c) describe the need and desirability of the proposed alternatives,

(d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on the these aspects to determine:

(i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and

(ii) the degree to which these impacts—

(aa) can be reversed;

(bb) may cause irreplaceable loss of resources; and

(cc) can be managed, avoided or mitigated;

(e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—

(i) identify and motivate a preferred site, activity and technology alternative;

(ii) identify suitable measures to manage, avoid or mitigate identified impacts; and

(iii) identify residual risks that need to be managed and monitored.

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Annexure I: Closure Plan

PART A

SCOPE OF ASSSSMENT AND BASIC ASSESSMENT REPORT

1. Contact Person and correspondence address

1.1 Details of the EAP

Name of The Practitioner: Shangoni Management Services (Pty) Ltd: Ashley Miller
Tel No.: (012) 807 7036
Fax No. : (012) 807 1014
e-mail address: ashley@shangoni.co.za

1.2 Expertise of the EAP

The qualifications of the EAP

NAME	QUALIFICATIONS
Ashley Miller	B.Sc. (Honours): Environmental Analysis and Management

Summary of the EAP's past experience

NAME	SUMMARY OF EXPERIENCE
Ashley Miller	Ashley obtained his B.Sc. (Honours) degree in Environmental Analysis and Management through the University of Pretoria. Ashley is part of the Mining Department at Shangoni Management Services (Pty) Ltd. and has three (3) years' experience in Environmental Management Programme Reports (EMP), Environmental Impact Assessments (EIA), Scoping Reports and Basic Assessments. He also has experience in Integrated Water and Waste Management Plans (IWWMP), Integrated Water Use Licence Applications (IWULA), Water Use Licence audits as well as Environmental Management Programme Performance Assessment audits.

Detailed CV of the EAP is attached in Annexure B.

2. Location of the overall Activity.

Farm Name:	The Farm Rooifontein 1722 (Refer to Figure 1).
Application area (Ha)	The application area of the proposed projects is approximately 2239.7404 ha in extent (refer to Figure 2).
Magisterial district:	Lejweleputswa District Municipality
Distance and direction from nearest town	Approximately 9 km to the south east of the town of Kimberley.
21-digit Surveyor General Code for each farm portion	F00400000000172200000

3. Locality map

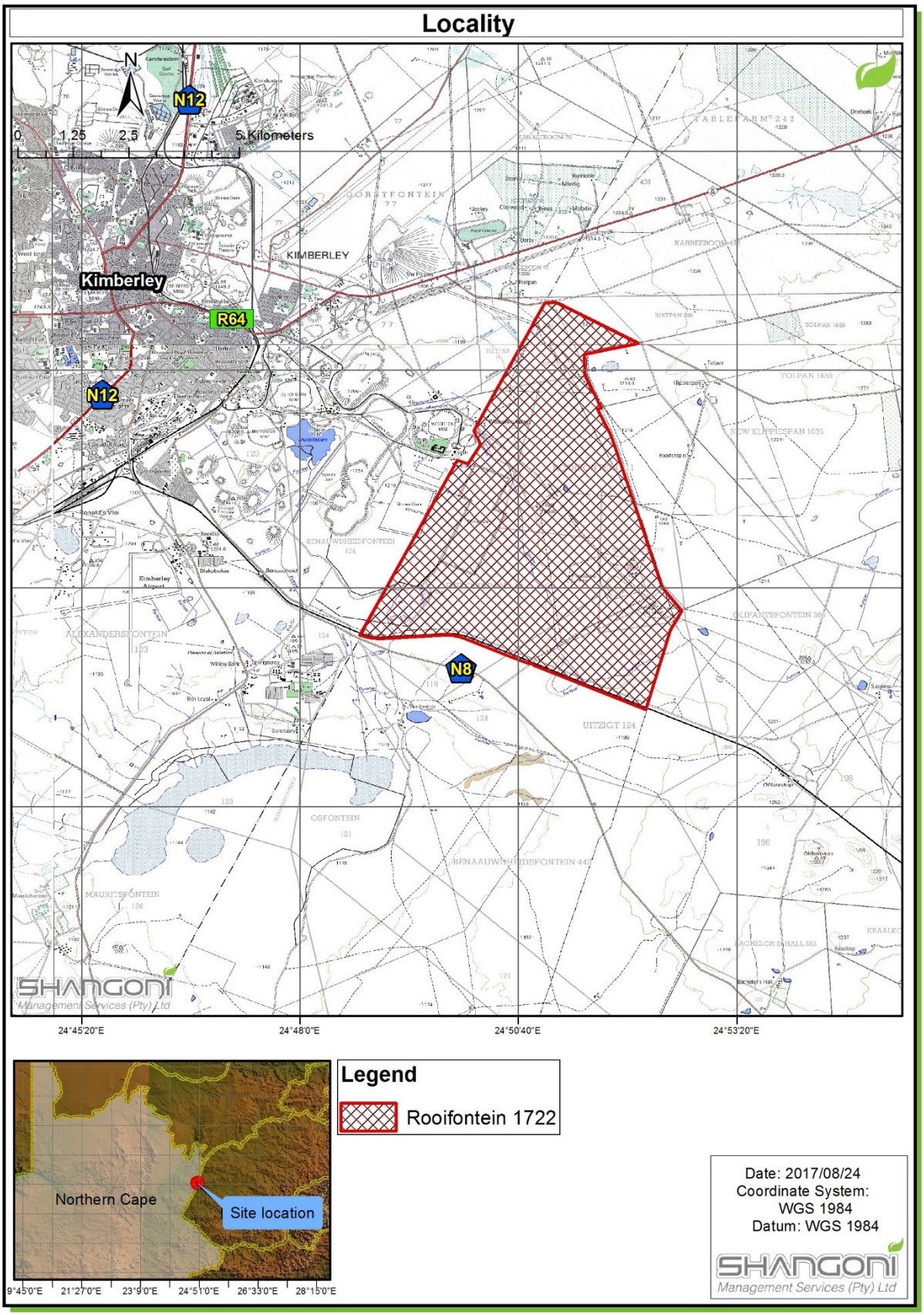


Figure 1: Locality Map of the Farm Rooifontein 1722 (refer also to Annexure A).

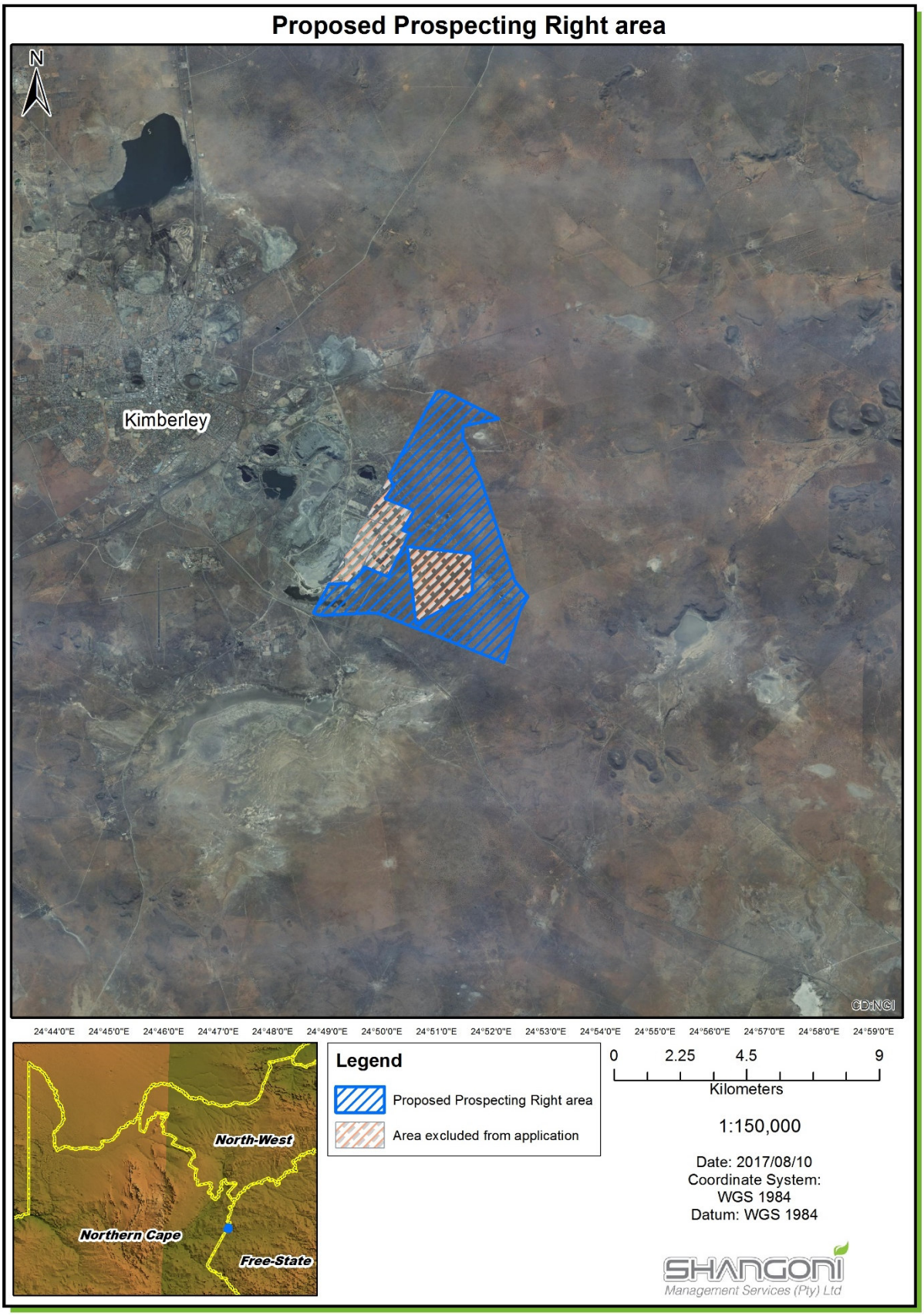


Figure 2: Proposed Prospecting Right area (refer also to Annexure A).

4. Description of the scope of the proposed overall activity.

4.1 Listed and specified activities

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY HA OR M²	LISTED ACTIVITY	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUTHORISATION
Phase 1: Data Acquisition and Desktop Study (from approval to end of 1 Year) A desktop study of all available data for the area will be performed in order to accumulate as much regional and historical data around the area as possible. This includes published geological reports, infrastructure mapping, satellite imagery and existing geophysical information if available. Both primary (Kimberlite or Lamproite) and secondary (alluvial) diamond deposits will be targeted.				
Acquire historical geological/exploration data over area applied for and surrounds.	2239.7404 Ha area	X	GNR 983 Activity 20	N/A
Phase 2: Target Generation and Ground Truthing (From year 2 to year 3) Should the initial results of the desktop study be encouraging, further data will be generated through airborne or ground geophysics. Targets generated by geophysics and/or historical information will be investigated on the ground and subject to more detailed target-specific ground geophysics and loam sampling for the presence of Kimberlite Indicator Minerals (KIM). If any of the exploration targets give a positive result, a drilling program will be undertaken to identify the causative body for the geophysical/geochemical targets. Eluvial and alluvial target areas will be tested by soil sampling for diamond content, with samples being processed at the existing KEM-JV plant located adjacent to the prospecting area.				
Airborne gradient magnetic survey. The area will be flown with an airborne gradient magnetic survey.	2239.7404 Ha area	X	GNR 983 Activity 20	N/A
Establishment of access tracks	Access track with minor to no clearance to prospecting site.	X	GNR 983 Activity 20	N/A
If the survey area is too small for a cost effective airborne survey, then ground magnetics will be carried out on parallel lines spaced	100m parallel lines over 2239.7404 Ha area	X	GNR 983 Activity 20	N/A

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY HA OR M²	LISTED ACTIVITY	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUTHORISATION
at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.				
Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.	Maximum 200 litres per sample	X	GNR 983 Activity 20	N/A
Haulage of loam/soil sample via road to Kimberley Ekapa Mining KEM-JV.	Use of the single tracks	X	GNR 983 Activity 20	N/A
Rehabilitation of site and decommissioning of prospecting activities: • Removal of magnetic lines (if any) • Re-spreading of stockpiled topsoil over cleared areas used for magnetic lines and soil sampling.	All areas disturbed over the 2239.7404 Ha area	X	GNR 983 Activity 22	N/A
Phase 3: Scout Drilling and Delineation drilling (**From year 4 to year 5)** Targets that have been prioritized through detailed anomaly-specific loam sampling and ground geophysics will be tested by initial diamond or percussion drilling. If kimberlite is intersected, one or more 10kg sample will be taken for HMA (Heavy Mineral Abundance) sampling to extract kimberlite indicator minerals (KIM) such as garnet, chromite, ilmenite and chrome diopside in representative quantities. These will be analyzed by electron microprobe for major and selected minor elements, and the results will be interpreted to assess diamond potential. Dependent on HMA results, further delineation drilling and micro-diamond (MiDA) sampling of drilled core material would be carried out to further define the deposit and give a better indication of grade.				

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY HA OR M²	LISTED ACTIVITY	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUTHORISATION
Positive results from MiDA would be followed by more detailed delineation diamond drilling and geological modelling to assess potential resource tonnage and diamond content. Information gathered during this phase would be used in the decision to embark on additional prospecting and evaluation activities not covered in the scope of this application. Additional work would only be carried out once the necessary environmental authorisation has been obtained. ***Note that no diamond removal and disposal will be undertaken during the invasive methods as described above: However, should additional prospecting activities require the removal and disposal of diamonds, the necessary environmental authorisation will be obtained prior to the commencement thereof.***				
Establishment of prospecting site which includes: • Erection of safety barrier, • Drill pad establishment and compaction. • Excavation and lining of drill water sump.	±200 m^2 per prospecting site	X	GNR 983 Activity 20	N/A
Establishment of access tracks	Single track with no clearance to prospecting site.	X	GNR 983 Activity 20	N/A
Site preparation: Clearance of topsoil and vegetation (prospecting site activities)	±10m^2 per prospecting site	X	GNR 983 Activity 20	N/A
Stockpiling of topsoil material (following excavation)	±5 m^2 per prospecting site	X	GNR 983 Activity 20	N/A
Scout and delineation drilling (exploration drilling)	±10 m^2 per drilling site	X	GNR 983 Activity 20	N/A
Haulage of sample via road	Use of the single tracks	X	GNR 983 Activity 20	N/A
Generation, storage and disposal of waste.	Less than 1 m^3/week	X	GNR 983 Activity 20	N/A
Use and maintenance of chemical toilets.	100 litres per week	X	GNR 983 Activity 20	N/A
Supply of water for domestic and drilling purposes.	50 litres per day for human consumption	X	GNR 983 Activity 20	N/A

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY HA OR M²	LISTED ACTIVITY	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUTHORISATION
	10 m^3/day for drilling operation.			
Rehabilitation of site and decommissioning of prospecting activities: • Removal of temporary infrastructure site office with shaded area, potable ablution faculties, water storage tank and core bay, dangerous goods area, waste storage area, drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	±200 m^2 per prospecting site	X	GNR 983 Activity 22	N/A

4.2 Description of the activities to be undertaken

4.2.1 Description of the holders of the surface and proposed prospecting right area

Ekapa Minerals (Pty) Ltd intends to apply, for a prospecting right in terms of Section 16 of the Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA), that excludes the activity of diamond removal and disposal, over an area of 2 239.7404 ha in extent on Portion 0 of the Farm Rooifontein 1722, a farm contractually owned by Ekapa Minerals (Pty) Ltd. The project area is situated adjacent to the existing Kimberley Ekapa Mining – Joint Venture operation (a joint venture between Ekapa Minerals (Pty) Ltd. and Petra Diamonds (Pty) Ltd.), approximately 9 km to the south east of the town of Kimberley (Northern Cape Province), in the Free State Province. Together with applying for a prospecting right, Ekapa Minerals (Pty) Ltd is also applying for an environmental authorisation. This notice pertains to the environmental authorisation application. See attached Annexure C for a copy of the acknowledgment of receipt of the Environmental Application.

Table 1: Proposed prospecting right holder

Farm Name	Proposed Holder's Details
Portion 0 of the Farm Rooifontein 1722	Ekapa Minerals (Pty) Ltd.

Table 2: Surface rights owners associated with the proposed prospecting right area

Farm Name	Owners Details
Portion 0 of the Farm Rooifontein 1722	Ekapa Minerals (Pty) Ltd. (contractually owned)

4.2.2 Prospecting method

Phase 1: Data Acquisition and Desktop Study (from approval to end of 1 Year)

A desktop study of all available data for the area will be performed in order to accumulate as much regional and historical data around the area as possible. This includes published geological reports, infrastructure mapping, satellite imagery and existing geophysical information if available. Both primary (Kimberlite or Lamproite) and secondary (alluvial) diamond deposits will be targeted.

Phase 2: Target Generation and Ground Truthing (From year 2 to year 3)

Should the initial results of the desktop study be encouraging, further data will be generated through grid loam sampling and ground or airborne geophysical work in order to determine if there are positive indications of the existence of either a primary or secondary diamondiferous deposit on the exploration area. Targets generated during the sampling and geophysical surveys will be ground-truthed and tested by drilling if deemed necessary.

Phase 3: Scout Drilling and Delineation drilling (From year 4 to year 5)

Targets that have been prioritized through detailed anomaly-specific loam sampling and ground geophysics will be tested by initial diamond or percussion drilling. If kimberlite is intersected, one or

more 10kg sample will be taken for HMA (Heavy Mineral Abundance) sampling to extract kimberlite indicator minerals (KIM) such as garnet, chromite, ilmenite and chrome diopside in representative quantities. These will be analyzed by electron microprobe for major and selected minor elements, and the results will be interpreted to assess diamond potential.

Dependent on HMA results, further delineation drilling and micro-diamond (MiDA) sampling of drilled core material would be carried out to further define the deposit and give a better indication of grade.

Positive results from MiDA would be followed by more detailed delineation diamond drilling and geological modelling to assess potential resource tonnage and diamond content. Information gathered during this phase would be used in the decision to embark on additional prospecting and evaluation activities not covered in the scope of this application. Additional work would only be carried out once the necessary environmental authorisation has been obtained.

Note: No diamond removal and disposal will be undertaken during the invasive methods as described above: However, should additional prospecting activities require the removal and disposal of diamonds, the necessary environmental authorisation will be obtained prior to the commencement thereof.

4.2.3 Prospecting related activities

Phase 1: Data Acquisition and Desktop Study (from approval to end of 1 Year)

- Acquire historical geological/exploration data over area applied for and surrounds.

Phase 2: Target Generation and Ground Truthing (From year 2 to year 3)

Activities as part of Phase 2 include:

- Airborne gradient magnetic survey. The area will be flown with an airborne gradient magnetic survey.
- Establishment of access tracks.
- If the survey area is too small for a cost effective airborne survey, then ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.
- Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.
- Haulage of loam/soil sample via road to the KEM-JV operation.
- Rehabilitation of site and decommissioning of prospecting activities:
    - Removal of magnetic lines (if any), and
    - Re-spreading of stockpiled topsoil over cleared areas used for magnetic lines and soil sampling.

Phase 3: Scout Drilling and Delineation drilling (From year 4 to year 5)

Activities as part of Phase 3 include:

- Establishment of prospecting site[1] which includes:
  - Erection of safety barrier,
  - Drill pad establishment and compaction, and
  - Excavation and lining of drill water sump.
- Establishment of access tracks.
- Site Preparation: Clearance of topsoil and vegetation (prospecting site activities).
- Stockpiling of topsoil material (following excavation).
- Scout and delineation drilling (exploration drilling).
- Haulage of sample via road.
- Generation, storage and disposal of waste.
- Use and maintenance of chemical toilets.
- Supply of water for domestic and drilling purposes.
- Rehabilitation of site and decommissioning of prospecting activities:
  - Removal of drill pad, drill water sump and safety barrier,
  - Borehole capping,
  - Ripping of prospecting site, tracks and access road,
  - Re-spreading of stockpiled topsoil over cleared areas, and
  - Re-vegetation of all disturbed areas.

[1] Note: Due to the proximity of the proposed Prospecting Right area to the existing KEM-JV operation, no temporary infrastructure (site office, storage areas, ablution facilities etc.) are planned to be constructed on site, but rather existing infrastructure at the adjacent existing operation will be utilised. Further, the Rooifontein Wildlife Club (as situated on the proposed Prospecting Right area) is operated and managed by KEM-JV and therefore potable water will be obtained from the Rooifontein Wildlife Club. The current ablution facilities as at the Rooifontein Wildlife Club will also be utilised.

5. Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT?
National Environmental Management Act 107 of 1998, as amended (NEMA).	This document.	The NEMA designates the Department of Mineral Resources (DMR) as the competent authority for this application (Chapter 3). Chapter 5 requires that environmental authorisation for activities published in terms of Sections 24(2), 24 (5), 24D, 44 and 47(A) (1)(b) of the NEMA needs to be obtained prior to commencement of such activities.
The Environmental Impact Assessment Regulation. Listing Notice 1. GN R. 983 dated 04 December 2014, as amended (07 April 2017.	Part A Section 4.1	A Basic Assessment (BA) process will be required in compliance with the NEMA for the authorisation of listed activity 20 and 22 as contained in GN R983 of 4 December 2014 (GN R983), as amended (07 April 2017), published in terms of Sections 24(2), 24 (5), 24D, 44 and 47(A) (1)(b) of the NEMA.
Mineral and Petroleum Resources Development Act 28 of 2002, as amended (MPRDA)	Part A Section 4.2	Together with applying for an environmental authorisation, Ekapa Minerals (Pty) Ltd is also applying for a prospecting right in terms of section 16 of the MPRDA to the DMR.
National Heritage Resources Act, 1999 (Act No. 25 Of 1999)	Part A. Section 7.4.1 and 7.5. Annexure D.	A Phase I Heritage Impact Assess was conducted on the Farm Rooifontein 1722 (Refer to Annexure G) during which heritage sites were identified and include: 1. Site 1. Rehabilitated Wesselton village 2. Site 2. General. 3. Site 3. Midden 1. 4. Site 4. Midden 2. 5. Site 5. Midden 3. 6. Site 6. 1. Rooifontein fountain, wells, stock pen and dwellings.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT?
		7. Site 6. 2. Pipeline feature. 8. Site 6. 3. Iron reservoir. However, please refer to Part A Section 7.4.1, 7.5 and Annexure D for the risk assessment which includes mitigations hereto. Consultation includes the competent authorities: Provincial Heritage Resources Agency (PHRA) of the Free-State Province as well as the South African Heritage Resources Agency (SAHRA).
National Water Act, 1998 (Act No. 36 Of 1998)	Part A. Section 7.4.1 and 7.5. Annexure D. Part B Section 1.3 and 1.4.	The prospecting activities will require 50 litres of water per day for human consumption and 10 m^3/day for drilling operations. This water will be obtained from the existing Kimberley Ekapa Mining – Joint Venture. Consideration was also given to the proximity of wetlands, rivers and other water bodies. Please refer to Part A Section 7.4.1 for a description of the water bodies, Part B Section 1.3 for a composite map indicating the sensitive areas and buffers that should be avoided and Part A Section 7.5 and Annexure D for the risk assessment which includes mitigations hereto. Part B Section 1.4 also discusses the water use activities.
The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).	Part A. Section 7.4.1 and 7.5. Annexure D. Part B Section 1.3.	The prospecting site falls within the Ecological Support Areas (ESA) 2. The requirement for ESA's is that they need to stay functional. It is not foreseen that the prospecting activities will interfere with the functionality of these ESA's. However, should

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT?
		any protected/endangered or threatened species be damaged or destroyed the necessary licences and or permits will be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Free State Department of Economic Development, Tourism and Environmental Affairs (DEDTEA). Refer to Part A. Section 7.4.1 for a description and map of these areas. Part A Section 7.5.and Annexure D for the mitigation measures associated with these potential impacts and Part B Section 1.3. for a composite map indicating the sensitive areas that should be avoided.
Guideline on Need and Desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2010. Government Notice 891 of 2014.	Part A Section 6.	The Need and Desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2010. Government Notice 891 of 2014 have been described in Part A Section 6.
National Forests Act of 1998	Part A. Section 7.4.1 and 7.5. Annexure D. Part B Section 1.3.	In terms of the National Forests Act of 1998, forest trees or protected tree species may not be cut, disturbed, damaged, destroyed and their products may not be possessed, collected, removed, transported, exported, donated, purchased or sold – except under license granted by the DAFF (or a delegated authority). Should any protected/endangered or threatened species be damaged or destroyed the necessary licences and or permits will be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Free State Department of

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT?
		Economic Development, Tourism and Environmental Affairs (DEDTEA). Refer to Part A. Section 7.4.1 for a description and map of these areas. Part A Section 7.5.and Annexure D for the mitigation measures associated with these potential impacts and Part B Section 1.3. for a composite map indicating the sensitive areas that should be avoided.

6. Need and desirability of the proposed activities.

On the 20th of October 2014, the Department of Environmental Affairs published a Guideline on Need and Desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2010, in Government Notice 891 of 2014. The following table indicates how the guideline requirement were considered in this document.

Table 3: Need and Desirability of the Proposed Project

Requirement	Part where requirement is addressed/response
1. How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?[2]	It has been identified that the proposed Prospecting Right boundary falls within the Ecological Support Areas (ESA) 2. The requirement for ESA's is that they need to stay functional. It is not foreseen that the prospecting activities will interfere with the functionality of these ESA's. However, should any protected/endangered or threatened species be damaged or destroyed the necessary licences and or permits will be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Free State Department of Economic Development, Tourism and Environmental Affairs (DEDTEA). Refer to Part A. Section 7.4.1 for a description and map of these areas. Part A Section 7.5.and Annexure D for the mitigation measures associated with these potential impacts and Part B Section 1.3. for a composite map indicating the sensitive areas that should be avoided. Refer background description as contained in Section 7 of Part A.
1.1 How were the following ecological integrity considerations taken into account?	
1.1.1 Threatened Ecosystems.[3]	
1.1.2 Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.[4]	
1.1.3 Critical Biodiversity Areas ("CBAs") and Ecological Support Areas ("ESAs").	
1.1.4 Conservation targets.	
1.1.5 Ecological drivers of the ecosystem.	
1.1.6 Environmental Management Framework.	No Environmental Management Framework exist for the area.
1.1.7 Spatial Development Framework.	According to the Tokologo Local Municipality IDP (2016), two bio-regions could be identified that can be distinguished in terms of the natural environment and economy as shown below: The two bio-regions are: • Tokologo Lowlands • Tokologo Highlands <u>Tokologo Lowlands:</u>

[2] Section 24 of the Constitution and section 2(4)(a)(vi) of NEMA refer.
[3] Must consider the latest information including the notice published on 9 December 2011 (Government Notice No. 1002 in Government Gazette No. 34809 of 9 December 2011 refers) listing threatened ecosystems in terms of Section 52 of National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).
[4] Section 2(4)(r) of NEMA refers.

Requirement	Part where requirement is addressed/response
	• Promote proper veld management using rotational grazing methods, e.g. Savory or Acocks, to improve bio-diversity and stock carrying capacity. • Discourage the conversion of agricultural land to urban uses, especially soils of high and intermediate suitability for arable agriculture. • Encourage CORE 2 River and Wetlands corridors along the Modder and Leeu rivers and the various pans prohibiting urban development including all buildings. • Ploughing within a minimum 32 metres of the banks unless an ecological set-back link or a 1:50 year floodline has been determined by the appropriate specialists. • Promote the establishing of conservancies with tourism opportunities especially to protect significant remaining fragments of Vaal-vet sandy grasslands. • Implement urban design and landscaping upgrades of settlements main streets and CBD. • Implement a multi-pronged water management strategy for water conservation, demand management, recycling and re-use which includes rainwater harvesting and the introduction of efficient and sustainable plumbing technologies in each building. • Mining rehabilitation plans should be prepared for all current and future mines and implemented on a phased basis as soon as possible after mining operations have commenced. <u>Tokologo Highlands:</u> • Promote proper veld management using rotational grazing methods, e.g. Savory or Acocks, to improve bio-diversity and stock carrying capacity.

Requirement	Part where requirement is addressed/response
	• Discourage the conversion of agricultural land to urban uses, especially soils of high and intermediate suitability for arable agriculture. • Encourage CORE 2 River and Wetlands corridors along the Modder and Leeu rivers and the various pans prohibiting urban development including all buildings. • Ploughing within a minimum 32 metres of the banks unless an ecological set-back link or a1:50 year floodline has been determined by the appropriate specialists. • Promote the establishment of conservancies with tourism opportunities especially to protect significant remaining fragments of Vaal-vet sandy grasslands. • Implement urban design and landscaping upgrades of settlements main streets and CBD. • Implementing a multi-pronged water management strategy for water conservation, demand management, recycling and re-use which includes rainwater harvesting and the introduction of efficient and sustainable plumbing technologies in each building. • Ensure proposed solar energy facilities(SEF) minimize impact on: I. Tourist sensitive scenic landscapes II. High value agricultural land, particularly land already in crop or pasture production.
1.1.8 Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.).[5]	Ekapa Minerals (Pty) Ltd. is committed to the development, implementation and maintenance of globally acceptable standards and procedures that are embedded in the supply chain process. Ekapa Minerals (Pty) Ltd. has developed Principles and Policy, an Environmental Management System (EMS) Standard, a number of Environmental Performance Standards that cover key management areas (e.g. water, air, biodiversity, etc.). These Standards are

[5] Section 2(4)(n) of NEMA refers.

Requirement		Part where requirement is addressed/response
		mandatory, high-level requirements set at corporate level. They support the SIOC Environmental Vision, Principles and Policy, and outline the required approach to avoiding or minimising the potential adverse environmental impacts associated with their activities. The Standards are supported by detailed procedures and guidelines. These standards will also apply to the prospecting activities that Ekapa Minerals (Pty) Ltd. propose to undertake.
1.2	How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?[6]	Refer to Part A Section 7, as well as Annexure D..
1.3	How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?[7]	Refer to Part A Section 7 as well as Annexure D.
1.4	What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?[8]	No mineralogical waste will be generated as no bulk sampling activities will be undertaken. The only waste to be generated does not pose an immediate hazard or threat to health or to the environment, and includes domestic waste generated at the prospecting sites. This waste will be stored in colour coded bins and removed to a licenced waste disposal site as part of KEM-JV's existing waste management procedure.

[6] Section 24 of the Constitution and Sections 2(4) (a) (i) and 2(4) (b) of NEMA refer.
[7] Section 24 of the Constitution and Sections 2(4)(a)(ii) and 2(4)(b) of NEMA refer.
[8] Section 24 of the Constitution and Sections 2(4)(a)(iv) and 2(4)(b) of NEMA refer.

Requirement		Part where requirement is addressed/response
1.5	How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?[9]	No landscapes and/or sites that constitute the nation's cultural heritage will be affected by the prospecting activities.
1.6	How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?[10]	No impact to non-renewable resources will occur as a result of the proposed prospecting activities.
1.7	How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?[11]	As discussed above refer to Part A Section 7.4.1 for a description and map of the resource areas. Also, refer to Part A Section 7.5. and Annexure D for the mitigation measures associated with these potential impacts and Part B Section 1.3. for a composite map indicating the sensitive areas that should be avoided.
1.7.1	*Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)? (note: sustainability requires that*	The proposed prospecting activities will not exacerbate the increased dependency on increased use of resources to maintain economic growth nor will it reduce resource dependency.

[9] Section 24 of the Constitution and Sections 2(4)(a)(iii) and 2(4)(b) of NEMA refer.
[10] Section 24 of the Constitution and Sections 2(4)(a)(v) and 2(4)(b) of NEMA refer.
[11] Section 24 of the Constitution and Sections 2(4)(a)(vi) and 2(4)(b) of NEMA refer.

Requirement		Part where requirement is addressed/response
	settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life)	
1.7.2	*Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources this the proposed development alternative?)*	As discussed above refer to Part A Section 7.4.1 for a description and map of the resource areas. Also, refer to Part A Section 7.5. and Annexure D for the mitigation measures associated with these potential impacts and Part B Section 1.3. for a composite map indicating the sensitive areas that should be avoided.
1.7.3	*Do the proposed location, type and scale of development promote a reduced dependency on resources?*	Yes, as the activities only entail prospecting activities which have a minimal impact on the resources. .
1.8	How were a risk-averse and cautious approach applied in terms of ecological impacts?[12]	Refer to Section 7 of Part A and Annexure D.
1.8.1	*What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?*	Refer to Section 14 of Part A
1.8.2	*What is the level of risk associated with the limits of current knowledge?*	The knowledge gaps and uncertainties have been identified during the process of the proposed project and are discussed in Refer to Section 14 of Part A..
1.8.3	*Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?*	Refer to Section 15 of Part A
1.9	How will the ecological impacts resulting from this development impact on people's environmental right in terms following:[13]	Section 7 of Part A
1.9.1	*Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative*	Refer to Section 7 of Part A

[12] Section 24 of the Constitution and Section 2(4)(a)(vii) of NEMA refer.
[13] Section 24 of the Constitution and Sections 2(4)(a)(viii) and 2(4)(b) of NEMA refer.

Requirement		Part where requirement is addressed/response
	impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	
1.9.2	*Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?*	Refer to Section 7 of Part A
1.10	Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?	No impacts on socio-economic is foreseen.
1.11	Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?	Refer to Part A. Section 7.4.1 for a description and map of the resource areas. Also, refer to Part A Section 7.5 and Annexure D for the mitigation measures associated with these potential impacts and Part B Section 1.3. for a composite map indicating the sensitive areas that should be avoided.
1.12	Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?[14]	No alternatives have been identified as the application is for a specific prospecting area applied for in terms of Section 16 of the MPRDA.
1.13	Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?[15]	Refer to Section 7 of Part A
2.1	What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?	Refer to Section 7 of Part A
2.1.1	*The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other*	Refer to Section 4, Section 7 of Part A.

[14] Section 2(4)(b) of NEMA refer.
[15] Regulations 22(2)(i)(i), 28(1)(g) and 31(2)(1) in Government Notice No. R. 543 refer.

Requirement		Part where requirement is addressed/response
	strategic plans, frameworks of policies applicable to the area,	
2.1.2	*Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.),*	Refer to Section 4, Section 7 of Part A.
2.1.3	*Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and*	Refer to Section 4, Section 7 of Part A.
2.1.4	*Municipal Economic Development Strategy ("LED Strategy").*	Refer to Section 4, Section 7 of Part A.
2.2	Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?	Refer to Section 4, Section 7 of Part A.
2.2.1	*Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?*	Refer to Section 4, Section 7 of Part A.
2.3	How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?[16]	Refer to Section 4, Section 7 of Part A.
2.4	Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and longterm?[17] Will the impact be socially and economically sustainable in the short- and long-term?	Refer to Section 4, Section 7 of Part A.
2.5	In terms of location, describe how the placement of the proposed development will:[18]	
2.5.1	*result in the creation of residential and employment opportunities in close proximity to or integrated with each other,*	Refer to Section 4, Section 7 of Part A.
2.5.2	*reduce the need for transport of people and goods,*	Refer to Section 4, Section 7 of Part A.

[16] Section 2(2) of NEMA refers.
[17] Sections 2(2) and 2(4)(c) of NEMA refers.
[18] Section 3 of the Development Facilitation Act, 1995 (Act No. 67 of 1995) ("DFA") and the National Development Plan refer.

Requirement	Part where requirement is addressed/response
2.5.3 *result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport),*	None
2.5.4 *compliment other uses in the area,*	Refer to Section 4, Section 7 of Part A.
2.5.5 *be in line with the planning for the area,*	Refer to Section 4, Section 7 of Part A.
2.5.6 *for urban related development, make use of underutilised land available with the urban edge,*	Refer to Section 4, Section 7 of Part A.
2.5.7 *optimise the use of existing resources and infrastructure,*	Refer to Section 4, Section 7 of Part A.
2.5.8 *opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement),*	
2.5.9 *discourage "urban sprawl" and contribute to compaction/densification,*	Refer to Section 4, Section 7 of Part A.
2.5.10 *contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs,*	Refer to Section 4, Section 7 of Part A.
2.5.11 *encourage environmentally sustainable land development practices and processes,*	Refer to Section 4, Section 7 of Part A.
2.5.12 *take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.),*	Refer to Section 4, Section 7 of Part A.
2.5.13 *the investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential),*	Refer to Section 4, Section 7 of Part A.
2.5.14 *impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and*	Refer to Section 4, Section 7 of Part A.
2.5.15 *in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?*	No impacts on socio-economic aspects is foreseen.

Requirement		Part where requirement is addressed/response
2.6	How were a risk-averse and cautious approach applied in terms of socio-economic impacts?	No impacts on socio-economic aspects is foreseen.
2.6.1	*What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?*[19]	No impacts on socio-economic aspects is foreseen.
2.6.2	*What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?*	No impacts on socio-economic aspects is foreseen.
2.6.3	*Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?*	No impacts on socio-economic aspects is foreseen.
2.7	How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following:	No impacts on socio-economic aspects is foreseen.
2.7.1	*Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?*	No impacts on socio-economic aspects is foreseen.
2.7.2	*Positive impacts. What measures were taken to enhance positive impacts?*	No impacts on socio-economic aspects is foreseen.
2.8	Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socioeconomic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	No impacts on socio-economic aspects is foreseen.
2.9	What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?[20]	No alternatives have been identified as the application is for a specific prospecting area applied for in terms of Section 16 of the MPRDA.
2.10	What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly	Refer to Section 4 and 7 of Part A.

[19] Section 24(4) of NEMA refers.
[20] Section 2(4)(b) of NEMA refers.

Requirement		Part where requirement is addressed/response
	discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)?[21] Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?	
2.11	What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?[22]	Refer to the socio-economic impacts in Section 7 of Part A.
2.12	What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?[23]	Recommendations, risk assessments and proposed mitigation measures
2.13	What measures were taken to:	Refer to Section 7.2 of Part A and Annexure E.
2.13.1	*ensure the participation of all interested and affected parties,*	
2.13.2	*provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation,*[24]	
2.13.3	*ensure participation by vulnerable and disadvantaged persons,*[25]	
2.13.4	*promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means,*[26]	
2.13.5	*ensure openness and transparency, and access to information in terms of the process,*[27]	

[21] Section 2(4)(c) of NEMA refers.
[22] Section 2(4)(d) of NEMA refers.
[23] Section 2(4)(e) of NEMA refers.
[24] Section 2(4)(f) of NEMA refers.
[25] Section 2(4)(f) of NEMA refers.
[26] Section 2(4)(h) of NEMA refers.
[27] Section 2(4)(k) of NEMA refers.

Requirement	Part where requirement is addressed/response
2.13.6 ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge[28], and	
2.13.7 ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein were be promoted?[29]	Refer to Annexure A
2.14 Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?[30]	Refer to the socio-economic impacts in Section 7 of Part A.
2.15 What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?[31]	Refer to awareness programme in Section 1.10 of Part B.
2.16 Describe how the development will impact on job creation in terms of, amongst other aspects:	No impacts on socio-economic is foreseen.
2.16.1 the number of temporary versus permanent jobs that will be created,	
2.16.2 whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area),	
2.16.3 the distance from where labourers will have to travel,	
2.16.4 the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits), and	

[28] Section 2(4)(g) of NEMA refers.
[29] Section 2(4)(q) of NEMA refers.
[30] Section 2(4)(g) of NEMA refers.
[31] Section 2(4)(j) of NEMA refers.

Requirement	Part where requirement is addressed/response
2.16.5 the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).	
2.17 What measures were taken to ensure:	
2.17.1 that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment, and	Continued consultation with all relevant departments, covering DMR, DEDTEA, DWS, SAHRA, DAFF, and PHRA through authorities meetings, site visits and providing draft and final copies of documents to the public. All registered as stakeholders and informed as per public participation chapter.
2.17.2 that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?	No known conflict
2.18 What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?[32]	Refer to Section 7 of Part A.
2.19 Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?[33]	Mitigation measures are realistic and will result in reversible impacts and impacts of low significance. Rehabilitation strategies aimed at site rehabilitation and closure have been proposed. Refer to Annexure D.
2.20 What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?[34]	The scale and significance of impacts arising from activities are low. As far as possible, existing management systems as already implemented by KEM-JV are proposed.
2.21 Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the	No alternatives have been identified as the application is for a specific prospecting area applied for in terms of Section 16 of the MPRDA.

[32] Section 2(4)(o) of NEMA refers.
[33] Section 240(1)(b)(iii) of NEMA and the National Development Plan refer.
[34] Section 2(4)(p) of NEMA refers.

Requirement		Part where requirement is addressed/response
	different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?[35]	
2.22	Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?[36]	Refer to cumulative assessment in Section 7.5 of Part A

6.2 Motivation for the project

Ekapa Minerals (Pty) Ltd. has extensive experience in the diamond industry, and is the operator of the old dumps in the Northern Cape Province, where it currently has approximately 1 600 employees. The Prospecting Right will further allow for the identification of additional ore reserves and ensure continued mining and job security of current employees. Exploration will be facilitated by the use of a variety of in-house exploration support capabilities such as geophysical data acquisition and interpretation, a kimberlite indicator mineral preparation and sorting laboratory.

The considerable mining, and technical experience, exploration capabilities and company resources gained in these ventures will be put to full use in evaluating the potential of this exploration area.

7. Motivation for the overall preferred site, activities and technology alternative including a full description of the process followed to reach the proposed preferred alternatives within the site.

7.1 Details of the development footprint alternatives considered.

No alternatives have been identified as the application is for a specific prospecting area and method applied for in terms of Section 16 of the MPRDA.

[35] Section 2(4)(b) of NEMA refers.
[36] Regulations 22(2)(i)(i), 28(1)(g) and 31(2)(1) in Government Notice No. R. 543 refer.

7.2 Details of the Public Participation Process Followed

Key stakeholders have been identified and directly informed of the proposed development by means of registered post, faxes and/or email, site notices and newspaper advertisements.

The stakeholder included:

- The owners and occupiers of the land adjacent to the area subject to the project;
- The Municipal Councillor of the Wards;
- The Local Municipality which has jurisdiction in the area;
- The Lejweleputswa District Municipality; and
- Various organs of state having jurisdiction in respect of the activity (including the DMR, DETEA, DWS, SAHRA, DAFF, and PHRA).

The consultation process with I&APs is an ongoing process and includes a notice to all I&APs, as well as a Background Information Document (BID) notifying I&APs of the proposed application and providing an overview of the proposed project and associated activities. The BIDs have been distributed by means of registered post and email, and by fax to all identified I&APs.

In addition to the above, the following notification and consultation methods have been used during the Basic Assessment:

- A newspaper advertisement has been placed in the Diamond Fields Advertiser on 07 September 2017.
- Site Notice Boards have been placed at visible locations at the proposed site on 08 September 2017.
- The draft BAR and EMPr have been available to the public for review for a period of thirty (30) days, from 08 September 2017 to 08 October 2017 on the Shangoni's website (www.shangoni.co.za).
- Consultation with stakeholders during finalisation of the public participation entails the updating of the Issues and Response Report with comments on the draft BAR.
- Once DMR has issued a decision, registered stakeholders will be notified of the decision.

Once the Public Participation Process has been completed, the Public Participation Report will be compiled and appended to the final report (to be submitted to the DMR) as Annexure E.

7.3 Summary of issues raised by I&APs

The table below provides a summary of the comments and issues raised and reaction to those responses.

Interested and Affected Parties	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
No comments have yet been received on the draft BAR and EMPr. The comments from I&AP will be included in the final BAR and EMPr for submission to DMR.				

7.4 The Environmental attributes associated with the alternatives. A baseline environment.

7.4.1 Type of environment affected by the proposed activity.

Chapter A: Geology

The following Geological information was obtained from the Prospecting Works Programme dated 2017 and attached hereto as Annexure F.

1. Regional Geology

The western region of the Northern Cape Province is characterised by flat lying terrainconsiting of tertiary surface soils. The surface soil horizons are underlain by a dolerite sill of Karoo age (180my), up to 40m thick; the sill has acted as a barrier to kimberlite intrusion, with the resultant formation of kimberlite sills at or near the base of the dolerite sill. The sill in turn is underlain by Dwyka shale and Dwyka tillite. The Dwyka shales and tillites are also of Karoo age (~300my), with varying thickness of between 0m and 150m. The shales and tillites are underlain by the Allanridge Group andesites and quartzites of the Ventersdorp Supergroup, dated at 2 600my. There is thus a 2 300my undulating unconformity between the Karoo shales and the Ventersdorp andesites and quartzites. The undulating unconformity between the Karoo shales and the Ventersdorp is caused by continental scale glacial action at the start of the Karoo. The hard Ventersdorp rock was scoured into broad deep glacial valleys that were then filled with glacial deposits – tillites and shales. The Ventersdorp sequence increases in thickness from Dutoitspan Mine to Wesselton Mine, and is underlain by Basement granitoids and rarer schists dated at ~2 900my.

Southern African kimberlites intrusions are divided into Group I (basaltic) and Group II (micaceous) kimberlites. This division was originally made along mineralogical grounds. However, the Group I/Group II distinction is better defined by isotopic ratios. Group I kimberlites have lower 87Sr/86Sr and higher 143Nd/144Nd ratios than Group II kimberlites. Mineralogically the Group I kimberlites have olivine, monticellite, serpentine-rich groundmass, while the Group II kimberlites have a phlogopite, tetraferriphlogopite, olivine groundmass.

Spatially, the occurrence of Group I and Group II kimberlites overlap, though Group II kimberlites (110Ma – 200 Ma.) are older than the majority of Group 1 kimberlites (generally less than 90 Ma.). Economically viable Group II kimberlites occur as both pipes and dykes (fissures), while the only economically viable Group I kimberlites to date are pipes.

2. Local geology

The area applied for is situated approximately 4km–south east of the Wesselton Kimberlite, Kimberley and approximately 100 km north-west of Koffiefontein, on the provincial border between the Free State Province and the Northern Cape Province.

There are 16 known kimberlite pipes within a 10km radius of Kimberley. Excluding Kimberley mine, De Beers Mine, Du Toitspan Mine, Wesselton Mine, Bultfontein Mine and to a lesser extent Kamfersdam Mine, none of the others have been able to support economically viable operations.[37]

The detail of the geology of this area is generally understood and economic potential of the area under application is currently unknown, though the area is perceived to have good potential for hosting economically viable kimberlites due to the proximity of current or historically producing, hard-rock diamond mines.

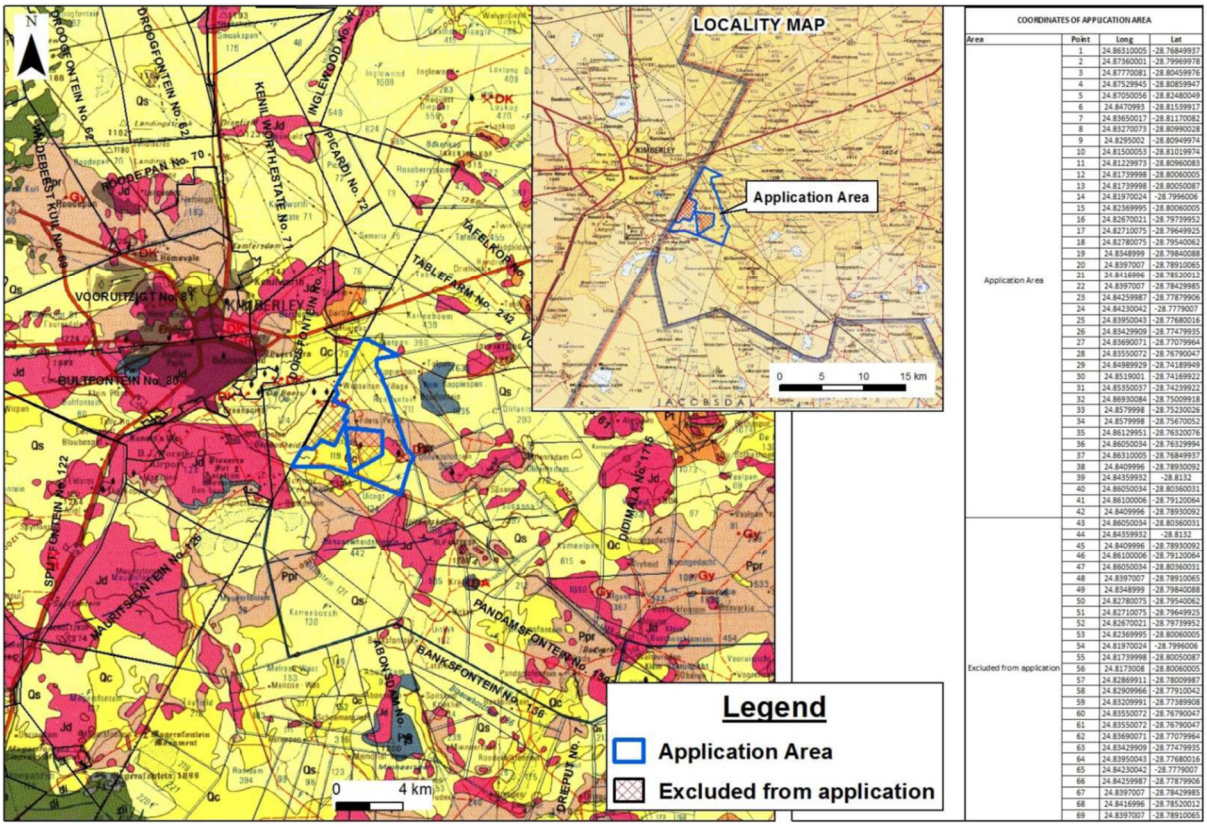


Figure 3: Local geology (Prospecting works programme, 2017)

Chapter B: Climate

1. Regional climate

The town of Kimberley is in an arid climatic region and is characterised by relatively low rainfall. In addition, rainfall in the Kimberley area is highly unpredictable, both temporally and spatially. However, precipitation is strongly seasonal with most of the rain falling between September and February. Extreme temperature ranges between summer and winter. The maximum historical recorded temperature is 40°C, measured in the months of December, January and February. The prevailing wind

[37] Information hereto has been sourced from the Ekapa Minerals (Pty) Ltd. Prospecting Works Programme.

direction for the region is pre-dominantly north-westerly and the average monthly wind speeds range between 1.1 and 4.8 ms^{-1}.

2. Rainfall

Refer to Table 4 below for the monthly rainfall data as obtained from weather station C5E007 (B.J. Vorster Airport @ Kimberley).

Table 4: Monthly rainfall data from weather station C5E007

Month	Mean Rainfall (mm)
January	68.5
February	72.5
March	62.3
April	46.7
May	16.2
June	9.3
July	7.3
August	7.1
September	12.4
October	35.1
November	43.4
December	48.9
Annual	422.0

3. Evaporation

Refer to Table 5 below for the monthly evaporation data for a S Class Pan as obtained from weather station C5E007 (B.J. Vorster Airport @ Kimberley).

Table 5: Monthly evaporation data (S Class Pan) from weather station CE007

Month	Mean Evaporation (mm)
January	280.9
February	213.6
March	182.8
April	131.9
May	105.3
June	83.2
July	96.3
August	134.6
September	180.0

Month	Mean Evaporation (mm)
October	230.5
November	259.6
December	287.1
Annual	2201.4

Chapter C: Topography

Kimberley is located approximately 1 200m above sea level on a generally flat plain. The Kimberley area is considered to be permanently altered by mining activities. Man-made tailing heaps rise up to 80m above the original ground surface in some places and are visible from the main public roads to Bloemfontein, Barkley West, Warrenton, Griekwastad, Magersfontein and Paardeburg passing alongside the mining areas.

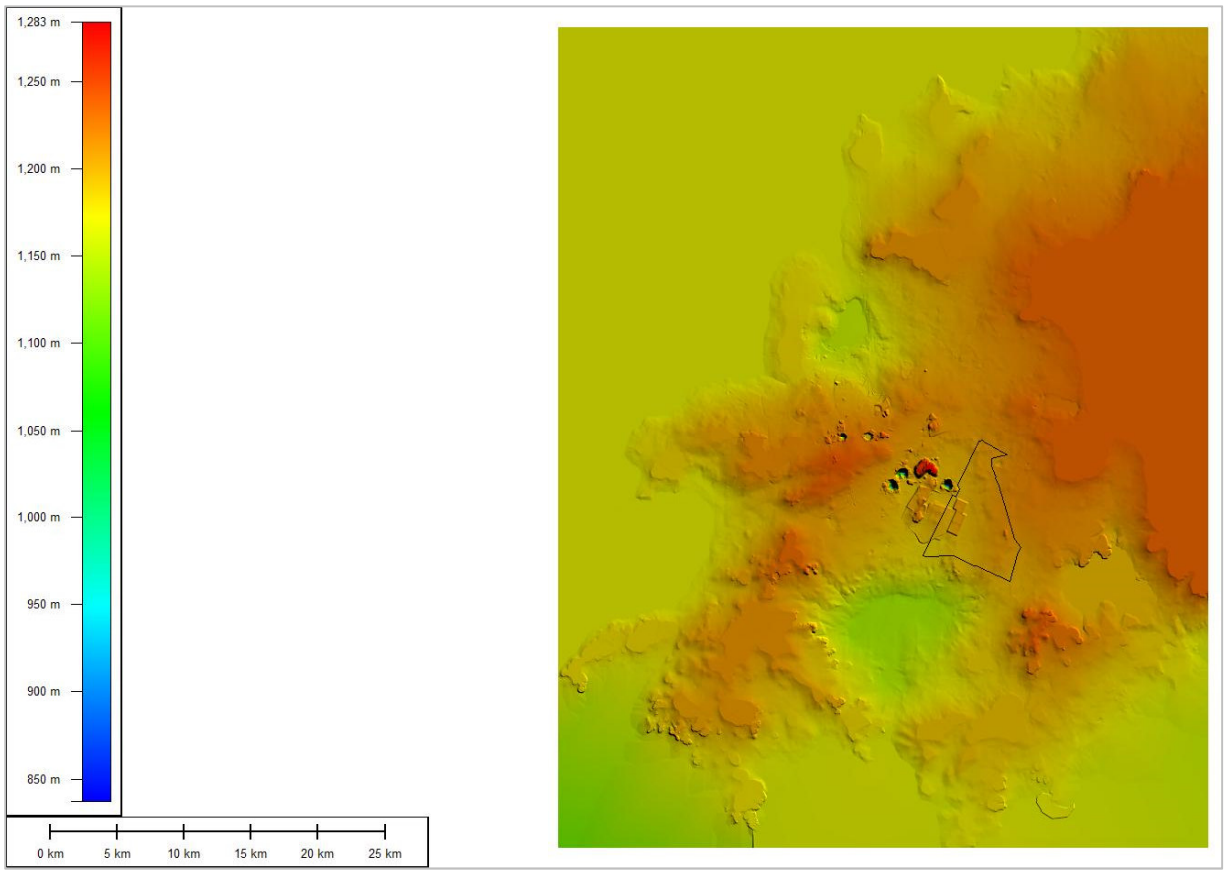


Figure 4: Digital Elevation Model of the local to regional topography of the Farm Rooifontein 1722

Topographical disturbances due to the existing mining and related activities include the following:

- Tailings resources and deposits.
- Slimes dams.
- Tailings resource material stockpiles at the Combined Treatment Plant.
- Water management measures such as trenches, pollution control dams etc.
- Infrastructure associated with the Plants, workshops, offices, haul roads, conveyors etc.

Chapter D: Soil

The soils encountered in and around Kimberley fall into the following land types:

- Ae15.
- Ae45.
- Fb1.

The Ae15 land type is comprised of topography with an A3 grading. This means that more than 80 % of the land type has a slope less than 8 % and the altitude difference between the highest and the lowest point ranges from 90 – 150 m. The soils are predominantly rocky and shallow on the higher lying areas (mainly dolerite outcrops) and moderately deep to deep in the lower lying areas (mainly derived from wind transported sands). Due to a relatively low rainfall the soils are mainly eutrophic with occasional occurrences of free lime and lime nodules in deeper soil horizons. The soils are not suited to intensive dryland agricultural practices mainly due to climatic constraints (rainfall).

The Ae45 land type is very similar to the Ae15 land type with the difference that the soils are generally shallower with a wider occurrence of lime containing soils in the lower lying areas. The shallow nature of the soils is linked mainly to the dominant geology – tillite, shale and mudstone partially covered by surface limestone and red wind-blown sands.

The Fb1 land type is comprised of topography with an A2 grading. This means that more than 80 % of the land type has a slope less than 8 % and the altitude difference between the highest and the lowest point ranges from 30 – 90 m. This land type is dominated by rock outcrops and rocky areas and with the occasional occurrence of moderately deep to deep soils that range from apedal to structured. Due to a relatively low rainfall the soils are mainly eutrophic with wide spread occurrences of free lime and lime nodules in deeper soil horizons. The soils are not suited to intensive dryland agricultural practices mainly due to climatic constraints (rainfall).

Chapter E: Natural Vegetation

A desktop assessment of the biodiversity of Rooifontein Wildlife Club (situated on the Portion 0 of the Farm Rooifontein 1722) was undertaken in 2016. As per the report *A biodiversity study of Rooifontein Game Farm*, dated November 2016 and compiled by Tania Anderson, the Farm Rooifontein 1722 falls within the Savanna Biome and Eastern Kalahari Bushveld Bioregion and the major vegetation type is Kimberley Thornveld.

1. Broad scale vegetation

The Rooifontein Wildlife Club falls within the Savanna Biome and Eastern Kalahari Bushveld Bioregion and the major vegetation type is Kimberley Thornveld. According to the literature, the vegetation of the Kimberley Thornveld is found on deep, predominantly sandy to loamy sands, underlain by calcrete (Mucina & Rutherford 2006). The sandy to loamy sands are of the Glenrosa and Mispah forms (Land

type series 1:250 000, 2824 Kimberley) with < 15% clay content. Calcrete is present on the surface in certain areas. The geology comprises clay-rich shales of the Dwka Group (Karoo sequence), which form an impervious layer, and on top of these a dolerite sill is present. Kimberlite pipes intrude through this sequence in places (J. Robey, De Beers Geologist, pers. comm.).

Table 6 provides detail on the ecosystem and conservation status of the vegetation types on Rooifontein Wildlife Club (after Rouget et al. 2005). Ecosystem status is based on the percentage of original area remaining untransformed (by for example croplands, mining, urban development & roads) in relation to the biodiversity target and a threshold for ecosystem functioning.

Table 6: The ecosystem status, biodiversity target and protection level of the vegetation (adapted from Anderson, 2016)

Vegetation type	Extent (sq. km)	% area remaining	Biodiversity target (%)	Ecosystem status	Protection level
Kimberley Thornveld	19512.4	82%	16%	Least Threatened	Hardly protected (2%) in Mokala National Park, Sandveld, Bloemhof Dam and William Pretorius Nature Reserve.

2. Fine scale vegetation

Generally, the vegetation on the Rooifontein Wildlife Club is a mix of open to closed savanna and karoo shrublands, with either karoo shrubs or grasses dominant. Some of the vegetation units are fairly small, and because they have similar soils, floristic compositions, physiognomies and ecological status, they can be grouped together as ecological units or habitat types. There are five basic habitat types:

- The *Vachellia tortilis* savanna unit (940 ha),
- The combined mixed grassland and grassy shrubland units (620 ha),
- The dwarf shrubland unit (900 ha),
- The *Eragrostis lehmanniana* grassland unit (580 ha), and
- The combined pan shrubland and Paardeberg vlei units (230 ha).

The 2002 vegetation survey delineated seven vegetation units on Rooifontein Wildlife Club and are mapped and illustrated in the figure below. These vegetation units can be described as follows:

1. Dwarf Shrubland (DS):

   This vegetation unit is present on very shallow soils overlying calcrete. Due to the shallow depth of the soils few larger shrub and tree species occur, and where they occur they are restricted to deeper pockets of soil, soil mounds and along the furrow walls. In the northern section of the property there is evidence of severe disturbance due to past mining activities (sorting 'floors'). These areas are densely covered by unpalatable, poisonous karoo shrub species that encroach in disturbed areas, namely bitterbos *Chrysocoma ciliata* and *januariebos Gnidia polycephala*. The

fact that these species are still dominant after several decades indicates how slowly vegetation in semi-arid areas recovers after disturbance, and it will probably not return to its pre-disturbance state. The canopy cover of the dwarf shrubland is estimated to be 50 - 60%. It is approximately 900 ha in extent.

2. Mixed Grassland (MG):
   This vegetation unit comprises a mix of dwarf shrubs and grasses on slightly deeper sandy soils with little surface calcrete. The grass component dominates the vegetation and larger shrubs and trees are very sparse in this vegetation unit and grow together in clumps. The canopy cover of the mixed grassland is estimated to be 60%, and covers an area of approximately 480 ha.
3. *Vachellia tortilis* Savanna (ATS):
   This vegetation unit has a well-developed tree and large shrub layer and fairly good grass layer, which forms an open savanna on deeper sandy soils. The canopy cover is estimated to be 40%, with tree canopy cover less than 5%. Dense thickets of the *suurkaree Searsia ciliate* and *driedoring Rhigozum trichotomum* indicate overgrazing of the rocky area in the past, and the herbaceous cover is low at 20%. The *Vachellia* (Acacia) *tortilis* savanna in general is being heavily utilised and as a result the unpalatable plant species are increasing. A dry pan is situated to the south of the rocky outcrop, which is possibly overgrazed as it has a very low canopy cover (10%) and low plant species diversity. However, there are very few weeds present on this pan. The *Vachellia tortilis* savanna is approximately 940 ha in extent.
4. Grassy Shrubland (GS):
   The grassy shrubland vegetation unit covers the south-eastern corner of Rooifontein, on fairly deep sandy soil. The grass and small shrub layers are well developed and at present the grass and shrub component are equally dominant. The canopy cover is estimated to be 40 – 50%. It is approximately 140 ha in extent.
5. *Eragrostis lehmanniana* Grassland (ELG):
   This vegetation unit is similar to the mixed grassland and present on similar soils. However, *Eragrostis lehmanniana* is the dominant species and there are very few larger shrubs or trees in this section of grassland. The canopy cover is estimated to be 60%. This grassland appears to be in a sub-climax state and is not well utilised by grazers. There was evidence of other animals using the area – ground squirrel burrows, aardvark holes, mongoose activity, *termitaria*, ground agamas and bird activity. This vegetation unit covers approximately 580 ha.
6. Pan Shrubland (PS):
   The vegetation unit around Paardeberg vlei is highly disturbed. The soils are shallow and calcareous and there are calcrete stones on the surface. Few large shrubs are present. The invasive sponge fruit saltbush *Atriplex lindleyii* subsp. inflata and weeds such as *Salsola kali* and *Bidens pilosa* are abundant. The common reed Phragmites australis dominates wet patches and areas where slimes have leaked/overflowed from the slimes dams nearby. There are young mesquite Prosopis saplings present and mesquite stumps were producing shoots. The canopy cover is estimated to be approximately 30 - 40%. The Pan Shrubland covers approximately 190 ha.

7. Paardeberg Vlei (PV):

   This non-perennial pan has been transformed into an artificial wetland predominantly surrounded by common reed *Phragmites australis*. When inundated, it supports a number of waterbirds including Greater and Lesser Flamingo. The furrow wall running along the southern side of the pan supports tree and shrub species, mostly exotic. The wetland area is approximately 40 ha in size.

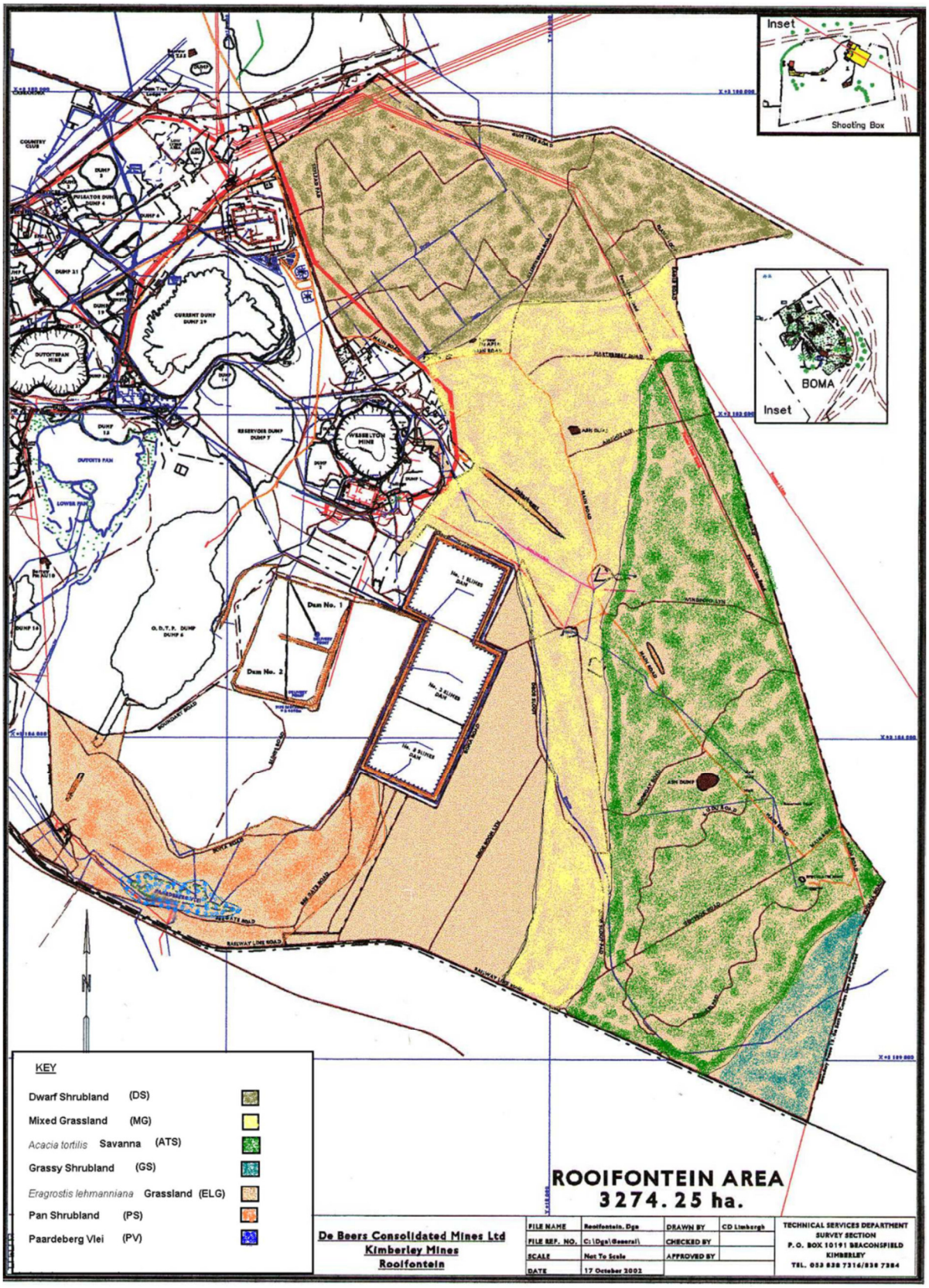


Figure 5: Map of the vegetation units on Rooifontein Wildlife Club (extracted from Anderson, 2016)

Chapter F: Fauna

1. Mammals

The mammalian community at Rooifontein Wildlife Club is estimated to be of a moderate diversity, totalling 41 species. Besides the 11-ungulate species, 16 mammal species have been recorded on Rooifontein, with a high probability of 14 more species being present. The probability of occurrence on Rooifontein is based on habitat preference and suitability. The paucity of habitats and the less than optimal vegetation condition implies that a significant proportion of the potential mammalian species listed for the QDS 2824DD and 2824DB are not likely to occur there. The site has no koppies, which reduces the likelihood that species such as the Dassie, Smith's Red Rock Rabbit and several rodents are present on Rooifontein Wildlife Club.

In terms of Red Data listed mammalian species, the Black-footed cat *Felis nigripes* (Vulnerable IUCN status) has been observed at Rooifontein Wildlife Club. However, it is not known how frequently and whether it is resident or was just passing through. There is a general suspected continuing decline of numbers of Black-footed Cat from a loss of prey base due to bushmeat poaching (especially Springhare *Pedetes capensis*), persecution (direct or incidental), road collisions and predation by domestic animals. An emerging threat may be increasing interspecific competition by overabundant mesopredators (for example, Black-backed Jackals *Canis mesomelas*).

The Endangered White-tailed Rat *Mystromys albicaudatus* may occur on Rooifontein Wildlife Club, but this species has a wide distribution and it is not likely that this farm is an important area for this species which usually prefers areas with deeper soils. Although this species currently occurs across a relatively wide area, its habitat is fragmented and it is declining as a result of grazing and agricultural pressures. It is estimated that 51-80% of suitable habitat for the species has been lost over the last 40 years, and over 50% of the remaining habitat is expected to be lost over the next ten years if current agricultural practices continue.

The South African hedgehog *Atelerix frontalis* is listed as Least Concern on the IUCN Red List of Threatened Species. It is listed as Near threatened in South Africa's Mammal Red List (2004), but this may change in the new national Mammal Red List to be released before the end of 2016. It is listed as Least Concern in view of its wide distribution, presumed large population, it probably occurs in a number of protected areas, has a tolerance of a degree of habitat modification, and because it is unlikely to be declining fast enough to qualify for listing in a more threatened category.

The ADU virtual museum records for the QDS 2824DD list the African Straw-coloured Fruit Bat as present. It is listed as Near Threatened in the IUCN Red List of Threatened species. It is not known whether this bat occurs at Rooifontein Wildlife Club. The Plains zebra is also listed as a Near Threatened species.

2. Reptiles and amphibians

Rooifontein Wildlife Club falls within the distribution range of at least 23 reptiles. This is a comparatively low total suggesting that the site has a relatively depauperate reptile assemblage. There are also no significant koppie habitats on the farm which are usually significant from a reptile perspective as they are the favoured habitat for many lizards, geckos and snakes. None of the listed reptile species have a threatened status.

Rooifontein Wildlife Club lies within or near the range of seven different amphibian species. Although there are no natural drainage lines on site, the presence of dams and small pans and the historic water furrows means that many amphibians may occasionally use the site for habitat or for dispersal. Only the Giant Bullfrog *Pyxicephalus adspersus* is of conservation concern and is listed as Near Threatened nationally and Least Concern globally. It is listed as a protected species in the NEMA:BA ToPS list.

There is some breeding habitat for the Giant Bullfrog on Rooifontein at the non-perennial pans. The areas near to the furrow, dam and pans would be the most important for amphibians.

3. Birds

The datasets used to compile the list are the Rooifontein Wildlife Club checklist of birds and the Southern African Bird Atlas Project (SABAP2) data available online from the Animal Demography Unit (ADU) website. For the SABAP2, species are recorded at a finer scale within pentads instead of at the QDS level. A pentad is approximately 9 x 9 km in size (or 5' x 5'), and there are nine pentads in a QDS.

Two pentads cover more than 90% of Rooifontein. Pentad 2845_2445 covers the western half of Rooifontein, as well as Dutoitspan, Kimberley airport and the northern section of Benfontein Game Farm. These surrounding areas have different habitats and larger, permanent wetlands with many waterbirds which are not present on Rooifontein. The SABAP2 has received 31 atlas cards for this pentad.

Pentad 2845_2450 covers the eastern half of Rooifontein Wildlife Club and has a total of 6 cards. This pentad only adds three more species to the list. The total number of bird species recorded in the two pentads which include Rooifontein is 264.

There is a very small northern portion of Rooifontein Wildlife Club (<10%) in pentad 2840_2445, which also covers Dronfield Nature Reserve and half of Kamfers Dam, and has a total of 30 cards (268 species). These data were excluded as the small homogenous habitat that this pentad covers on Rooifontein is well represented in pentad 2845_2450.

The outdated Rooifontein bird list contains 77 bird species. Besides these species, there is a moderate to high probability that 59 of the 264 species recorded during the SABAP2 may utilise Rooifontein

Wildlife Club, and therefore the total for Rooifontein Wildlife Club is estimated to be approximately 136 bird species. The probability ranking is based on bird habitat preferences and reporting rates.

Within the two pentads that include Rooifontein, 10 globally threatened species, 15 regionally threatened species, no restricted-range species and four Biome restricted species have been recorded.

4. Invertebrates

The online ADU citizen science project and checklists for invertebrates include SpiderMap (for spiders), ScorpionMAP (for scorpions), LepiMAP (for butterflies) and OdonataMAP (for dragonflies). Data for the QDS 2824DD that covers Rooifontein has no records of spiders or scorpions yet. A species of the Harpactirella genus of lesser baboon spiders has been recorded in the neighbouring QDS (2824DB) to the north of Rooifontein Wildlife Club. Therefore, the possibility exists that this baboon spider species may occur on Rooifontein. This genus has not yet been assessed for listing by the IUCN Red List of Threatened species. All baboon spiders are however listed as protected under the Free State Nature Conservation Act of 2008.

The LepiMAP dataset lists 24 butterfly and moth species for the QDS 2824DD and none of these are listed as threatened. Only two species of dragonfly have been recorded in QDS 2824DD in the OdonataMAP dataset.

There is a paucity of data on invertebrates at Rooifontein and invertebrate surveys are needed to determine the invertebrate richness present on Rooifontein.

Chapter G: Surface Water Resources

1. Catchment

Portion 0 of the Farm Rooifontein 1722 lies in the primary catchment of the Vaal River and the quaternary catchment referred to as the C52L draining region as defined by the DWS. The applicable water management area is the Lower Vaal management area and the responsibility of the Northern Cape regional DWS. Refer to Figure 6 for an illustration of the quaternary catchments and the location of Portion 0 of the Farm Rooifontein 1722.

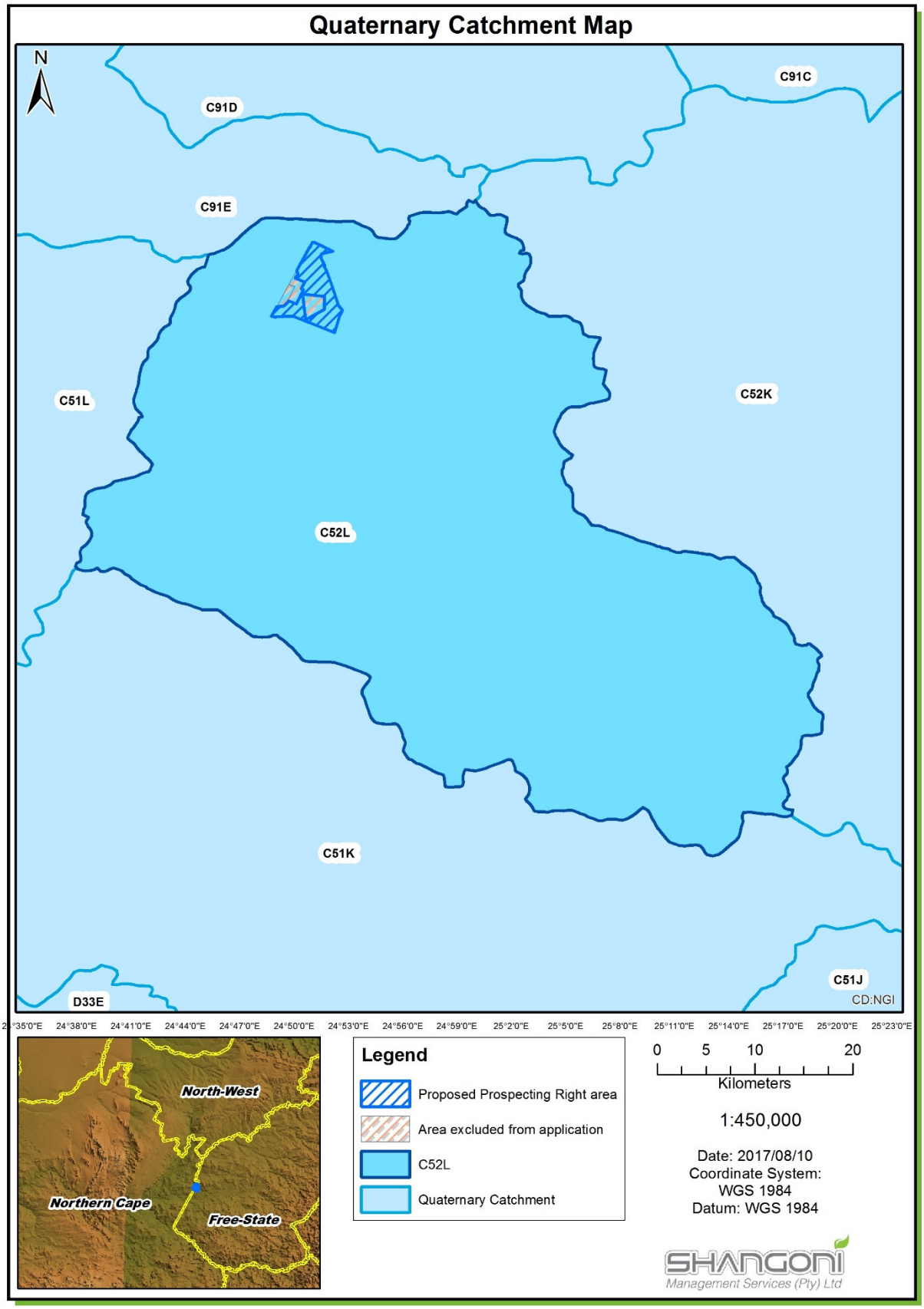


Figure 6: Quaternary catchment map

2. Average dry weather flow

No natural drainage lines are present in the vicinity of the project area or traverse the project area. According to historical information, the adjacent Du Toitspan Pan was once a seasonal system. Due to contaminated water that is being diverted to the Du Toitspan Pan via storm water channels as well as contaominated water from the Green Point sewage system, this pan is currently perennial. Both the Benfontein Pan and the Paardebergvlei are seasonal pans and usually dry, except for one or two months of the year during the rainy season.

3. Flood peaks and volume

Although there are no major watercourses within the vicinity project area, water has in the past overflowed from the Du Toitspan Pan to the Paardebergvlei and the Benfontein Pan during high rainfall events during the months of November – December and February – March. However, a borrow pit has been excavated downslope of the Du Toitspan Pan, upslope of the Paardebergvlei, and due to its location captures overflow from the Du Toitspan Pan. The Paardebergvlei has thus returned to displaying seasonal wetland characteristics, rather than permanently containing water.

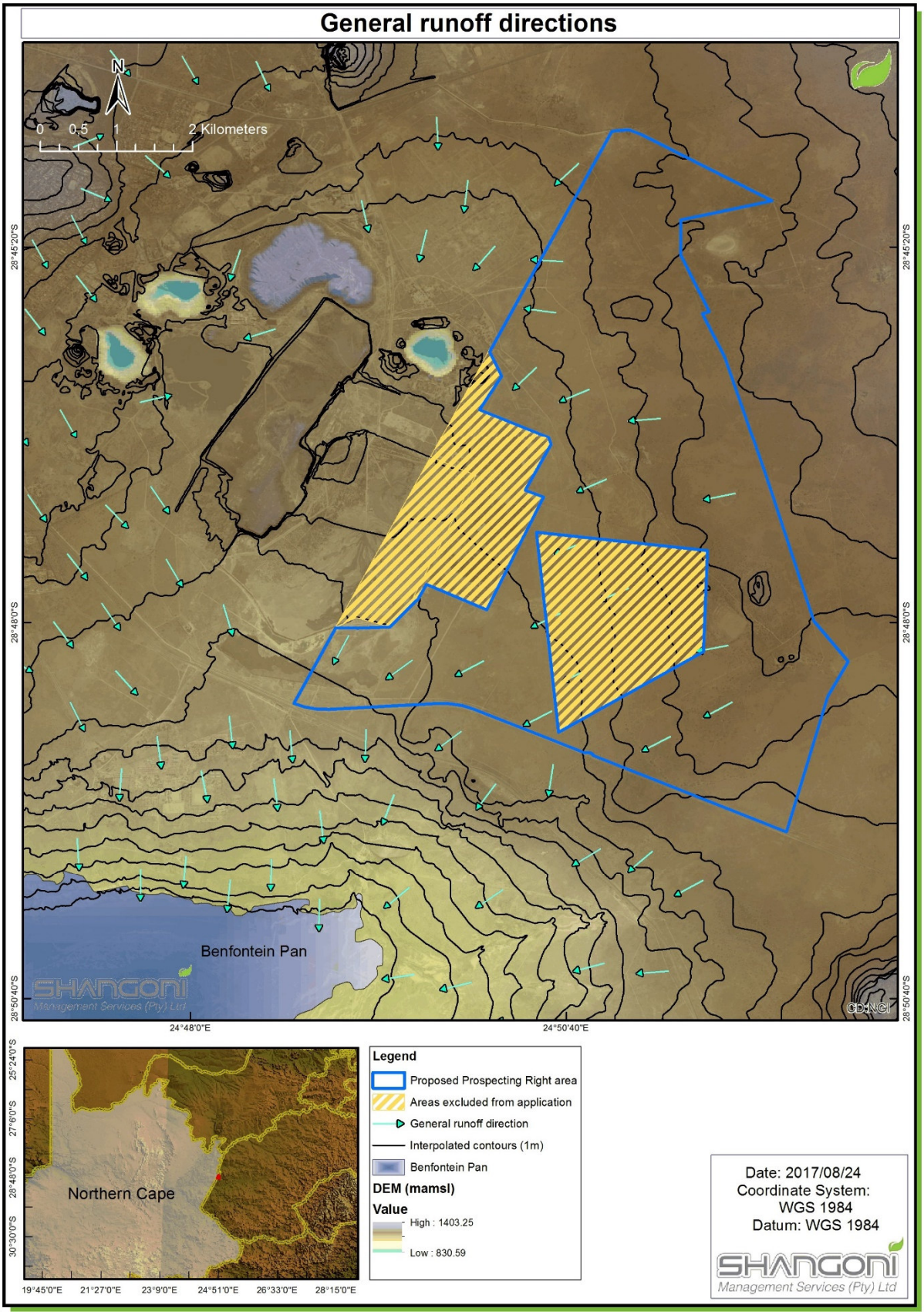


Figure 7: General runoff direction

4. Flood lines

Data on flood-lines are not available since no clearly defined natural watercourses are present on the property. Due to the local area's flat topography almost no runoff from this local drainage region contributes to the Modder River.

5. Wetlands

A review of the National Freshwater Ecosystem Priority Areas (NFEPA) wetlands data, it was identified that a seep wetland (centre) as well as a channelled valley bottom wetland (south west corner) are present on site. Refer also to Figure 39 for the Environmental sensitivities map that includes the NFEPA wetland data.

Chapter H: Groundwater Resources

The following information was extracted from the document titled: "*Kimberley Mines & Kimberley Underground Mines JV Groundwater Impact Studies - Phase III - Report*" prepared by Golder Associates and dated June 2012.

1. Aquifer Characterisation

Three aquifers are situated at various depths and are controlled by the geology. Table 7 below presents the aquifers and their characteristics.

Table 7: Summary of aquifer characteristics

Aquifer	Depth (m)	Hydraulic Conductivity (m/d)	Transmissivity (m^2/d)
Shallow	3 – 18	0.4	300
Intermediate	23 – 45	0.2	100
Deep	>50	0.09	1

- Shallow aquifer:
  The shallow aquifer is hosted in the top level of the dolerite sill. It is a secondary aquifer. That is, the dolerite has negligible porosity and the water bearing voids are derived from weathering and fracturing of the dolerite. Nevertheless, the shallow aquifer is unconfined, water table driven, and in hydraulic connection with the Du Toitspan Pan. The aquifer is vulnerable to release of contaminants at surface and very little buffer capacity is available to retard any impacts caused by surface activities. Two distinct contaminant plumes are present in the shallow aquifer. These are related to the mining and tailings storage activities in the north west of the study area towards the Big Hole and Colville and the other is related to the larger operations around the Bultfontein, Du Toitspan and Wesselton pits and the slimes and tailings disposal facilities.
- Intermediate aquifer:
  The intermediate aquifer is hosted in the shale beneath the dolerite sill. The water-bearing voids are derived from fracturing and the intermediate aquifer is also considered to have secondary

porosity. It is semi-confined in places although it does display unconfined water table aquifer characteristics near boreholes BH 03 (south east of the slimes dam), BH 05 (at the western boundary of the slimes dam) and BH 21 (directly south of the slimes dam). This aquifer varies laterally in thickness, depth below surface and permeability. Like the shallow aquifer, the intermediate aquifer is linked hydraulically to the Du Toitspan Pan. Contamination in the intermediate aquifer is limited to the immediate vicinity of mining, tailings and slimes disposal facilities. The low permeability (K of average 0.2 m/d) and

- Deep aquifer

  Groundwater hosted in the relatively few permeable fractures in the melanophyre is termed the deep aquifer in this conceptual model. Few boreholes intersect this aquifer. However, available groundwater level data suggest low permeability compared to the shallow and intermediate aquifers. There appear to be no drivers of groundwater flow in this aquifer.

2. Groundwater quality monitoring

Groundwater quality monitoring is undertaken, by KEM-JV, on the Farm Rooifontein 1722 at three (3) monitoring localities, namely DBK-BH03M, DBK-BH-03S and DBK-BH04M. The monitoring data for the three localities for the month of June 2016 is provided in the table below.

Table 8: Groundwater monitoring data (June 2016).

Site Name	DBK-BH03M	DBK-BH03S	DBK-BH04M
Date	June 2016	June 2016	June 2016
pH	8.04	8.18	8.63
EC mS/m	12.6	76.3	146
TDS mg/l	62	436	889
Ca mg/l	10.2	53.3	8.79
Mg mg/l	1.7	70.2	3.49
Na mg/l	9.28	14.6	372
K mg/l	3.3	2.16	1.67
MALK $CaCO_3$/L	52.9	257	762
Cl mg/l	2.303	46	29.2
SO_4 mg/l	0.54	70.3	1.12
Cations	1.19	9.13	16.99
NO_3-N mg/l	0.865	5.01	0.805
F mg/l	0.472	0.472	3.45
Al mg/l	0.005	0.005	0.005
Fe mg/l	0.009	0.009	0.009
Mn mg/l	0.001	0.001	0.001

Site Name	DBK-BH03M	DBK-BH03S	DBK-BH04M
N_Amonia mg/l	0.704	0.102	0.601
Total Hardness mg/l	32	422	36
Ca Hardness mg/l	25	133	22
Mg Hardness mg/l	7	289	14
PO_4 mg/l	0.024	0.038	0.025
COD µg/l	11.88	11.88	11.88

Chapter H: Air Quality

Atmospheric pollution associated with diamond mining and the treatment process is relatively low compared to other opencast mining operations. The quartz content of Kimberlite ground is low and average air quality index figures obtained from mining and treatment operations over a two-year period range below the maximum level of 1mg/m^3.

In addition to the low atmospheric pollution associated with diamond mining, dust pollution from the current and old slimes dams as well as the tailings resources at the existing KEM-JV operation is relatively low due to the following influences:

- The high coagulation quality of the clay minerals (kaolin etc.) in Kimberlite ground binds the ground particles and absorbs and retains water for long periods.
- The large particle size of tailings material.
- Natural vegetation.

In arid areas such as Kimberley, particulate matter (e.g. dust) generated by exposed soils due to disturbance and sparse vegetation and the movement of vehicles contribute to elevated dust levels. Air quality surrounding the existing mines in the region is affected by wind-blown dust from resource stockpiles and traffic along gravel and haul roads, while dust from the surrounding farms can also have a significant impact.

Mining and related activities, of the existing mining operations, causing dust pollution includes the movement of heavy vehicles, transporting of Kimberlite to the plants, loading and tipping of kimberlite, and traffic on the dirt roads also contribute to dust generation.

Chapter I: Noise

The proposed site is located in an undeveloped area adjacent to the current operations. The current land use is that of Game farming and operated and managed by Kimberly Ekapa Mining – Joint Venture, a Joint venture between Petra Diamonds (Pty) Ltd and Ekapa Minerals (Pty) Ltd. The existing major noise generators in and around the proposed site is the vehicle noise from the R64 to the north, vehicle noise from the N8 to the south and the existing operation to the east. It is not foreseen that the prospecting activities will generate significant noise.

Chapter J: Sites of archaeological and cultural interest

The information contained within section has been abstracted from the report *1st phase heritage assessment of Rooifontein 1722, Kimberley district Northern Cape*, dated August 2017 and compiled by Sidney Miller (refer also to Annexure G)

1. Archaeological and Historical Background

1.1 Stone Age

Early human presence in the region is captured at Taung to the north but no major Early Stone Age site is present around Kimberly itself. Along the Vaal River numbers of Early Stone Age artefacts may be found in numerous sites, but seldom in stratified deposits that assist archaeologists in adding to dated data. In the direct Kimberly area there are no recorded major sites of significance.

From a geological point of view there exist numerous pans around Kimberly. The farm names given by the European settlers also reflect the situation regarding water sources in the area during the near distant past. Dorstfontein, Alexandersfontein, Benaauwheidsfontein, Rooifontein Osfontein and Olifantsfontein are but a few that illustrates the presence of water in this relatively dry area. This would have brought animals to the area, on which the Later Stone Age peoples could prey and exist. The rock-art sites of Driekopseiland and Wildebeestfontein show places of ceremony associated with Later Stone Age people. This reality is then also reflected in the presence of numbers of stone tools from that period in the general region. Owing to the vigorous mining and other related activities associated with the Kimberly industry none of this survives in disturbed areas. Rooifontein is relatively undisturbed and may yield small windows of opportunity to record.

It is expected that some Later Stone Age remains may be encountered on the Farm Rooifontein 1722.

1.2 Iron Age

The nature of Iron Age settlement in southern Africa is well understood and well documented. Iron Age settlers were not only users of the natural environment's resources, but they were essentially farmers. They raised stock and also planted crops that needed specific environmental conditions such as summer rainfall and soils suited for cultivation. Owing to the large tracts of "suitable environmental conditions" land available to the north, northeast and southeast of this region during their migrations, they seldom utilized this region. No sites of importance are known in the Kimberly area.

It is expected that no Iron Age remains may be encountered on the Farm Rooifontein 1722.

1.3 Historical Period

The arrival of Europeans in the region was possibly heralded by the notorious Coenraad Buis early in the nineteenth century amongst the Basotho and Batswana to the east and the Northeast. This was soon followed up by missionaries such as Burchell in 1811, Campbell in the 1820's and a little later and

the explorer Smith in 1834. Soon the Great Trek followed in 1836 to 1838 and Natal, the Freestate and the Transvaal were settled in with various levels of success for the Europeans from the Cape Colony.

In 1866 the Hopetown Diamond was found by one Schalk Van Niekerk on the farm of the Boer family named Jacobs, a prospective buyer for Van Niekerks farm, De Kalk. In March 1869 Van Niekerk had acquired an 83.5 carats stone from a man named Swartbooi that became the Star of South Africa. These events set in motion the first “Diamond Rush” of 1870 in search of alluvial diamonds in the region with attention being focussed on the drainage lines of the major rivers.

Regarding the property under investigation the impact of the Premier mine (the Wesselton mine) is the one to consider. The discovery of the fifth big mine on Benaauwheidsfontein came some 21 years after Dutoitspan Mine saw diggers rush to the dry diggings; and two years after the great amalgamation of the Kimberly mines under Rhodes’ newly formed De Beers Consolidated Mines.

Then in 1899 came the Second South African War. The hotly disputed Uitlander issue on voting rights on the Johannesburg Goldfields spilled over in declaration of war by the Boer Republic on England. This resulted in the sieges of Laydysmith, Kimberly and Mafeking, as these towns were key-pins in the movement of war material to the Transvaal by the British. Kimberley soon came under shell-fire from the Boers, with no effective reply from the inhabitants. Apart from the ongoing disputes between Rhodes and colonel Kekewich, that raised many problems, an American engineer George Labram managed to build an 28-pounder cannon in the Kimberly workshops. This took the Boers by surprise at first, but they soon increased the shelling of Kimberly.

As a result, many women and children were lowered into the De Beers mineshaft for safety each day, which caused much confusion and disorder. Ironically very few of Kimberly’s inhabitants were killed in this bombardment. The strange exception being Labram, that was killed by a Boer shell in his room in the top floor of the Grand Hotel on Market square. After four months, on the 14th of February 1900, the siege came to an end.

The mining continued in Kimberly until the late twentieth century when actual mining ceased and the recycling of the old dumps became vogue. Today the diamond industry has declined, possibly owing over supply of diamonds and modern mining problems including staff.

Figure 8: Women and children were being evacuated down the de Beers mine shaft and the cheque that changed the profile of diamond mining in South Africa. (De beers Archives 2006.)

It is expected that historical period remains may be encountered on the Farm Rooifontein 1722.

2. Site assessment results

2.1 Methodology

The Farm Rooifontein 1722 was visited on the 26th of August 2017. The routes taken during the vehicle and on-foot inspection was recorded in the Google Earth Image. The site was traversed in a manner to collect appropriate data for the evaluation of the heritage remains on the farm. It was clear that the farm was impacted upon during the mining operations at Wesselton mine, but not seriously. Finds were recorded by GPS readings and photography. The above information was recorded and collated. Background information concerning the geology, vegetation archaeology and historical milieu of the region was collected from reliable resources.

2.2 Findings

2.2.1 Old Wesselton mine village.

At present, it is assumed that the rehabilitation of the Wesselton village was documented during the process. As such it will then be clear for new impact as described by Ekapa's exploration application.

Figure 9: Looking north over the rehabilitated area where the old Wesselton village used to exist. ***It is however important to note that this site is outside of the proposed Prospecting Right Boundary.***

2.2.2 General

As the pepper tree and meerkat scrape sites indicate there are still other small historical remains present on the farm. These are of low heritage value.

Figure 10: This large pepper tree marks the spot of an old borehole and mounting block for engine and possibly fuel tank. (Photos S.M. Miller 2017.)

Figure 11: Meerkat scrapes occur in places where geology allows it.

Figure 12: This iron tripod for cooking was but one on a number of such abandoned artefacts found. It is on such a scrape that it is rumoured that Gerhardus Fabricius discovered the diamond that led to the founding of Wesselton mine.

2.2.3 Midden 1

Midden 1 at the Ecco centre is indicative of the presence of important stone tool remains on the farm. Even though it occurs in a disturbed area it is advised that it is sampled in a second phase survey through selective excavation methods.

Figure 13: The pepper and eucalyptus trees at the Ecco centre suggest that this site was a farmyard before the development of the Ecco centre. (Possibly the original Rooifontein farmyard?) An ox-drawn plough is also exhibited at the entrance to the Ecco centre, but it is unknown if it was found on site. (Photos S.M. Miller 2017.)

Figure 14: Directly north of the Ecco centre there exist the remains of an old pit with mixed weathered Kimberlite and midden material. A large number of LSA stone tools occur here (Photo S.M. Miller 2017.)

2.2.4 Midden 2.

Midden two is in fact a dam wall made up of decomposed Kimberlite. As numbers of stone tools were observed it is advised that it is sampled in a second phase survey through selective excavation methods.

Figure 15: To the east of the Ecco centre there is a lookout point over a small dam. The material the wall was built from appears to be weathered Kimberlite. Numbers of LSA stone tools occur here. (Photos S.M. Miller 2017.)

Figure 16: Along the road from the Ecco centre to the Olifantsfontein hotel there occurs a feature in the landscape. From other observations, it was a support structure for a water pipeline from the region where the steel reservoir is situated on the hill to the Wesselton mine. Culverts were built from dressed stone and period tools occur along the feature. (Photos S.M. Miller 2017.)

2.2.5 Midden 3

Midden 3 is a recent dump site that contains large numbers of cultural remains that is related to the early days of Kimberley straddling 1900 AD. It is advised that it is sampled in a second phase survey through selective excavation methods.

Figure 17: A Midden three appears to be a recent dump from a locality unknown. The large number of historical artefacts that it contains show a variety of electrical ware, glass, ceramics and De Beers Con. Mines bricks amongst others. The reason for its existence is cloudy, as the early miners would not have moved such an amount of material so far from the mining areas. Roughly 25 000 cubic

meters of material make up the midden. However, this midden may contain valuable information and should be sampled in a second phase study. (Photo S.M. Miller 2017.)

Figure 18: One of the interesting finds in midden 3 was this Keating Powder tin. In 1895 it was advertised in England as good for killing all insects and bugs. (Photo S.M. Miller 2017.)

2.2.6 The Hill.

2.2.6.1 Rooifontein fountain.

The depression (not excavated) hollow associated with the “stock-pen” and dwellings may well be the original Rooifontein. This is in need of further investigation.

Figure 19: Location of the hill on Google Earth. On and around this hill several historical features exist. As most of these are water related the possibility exists that this may be the original location of the spring named Rooifontein. (See the iron-rich soils surrounding the hill.)

Figure 20: A section of the stone foundation, slab and lintel of a dwelling to the left and what appears to be a well near the assumed old fountain-bed. (Photos S.M. Miller 2017.)

Figure 21: This natural hollow is suspected to be the original Rooifontein fountain. Look at the pioneer specie encroachment to the right on the open savannah which may be the footprint of a stock-pen. Also see fig (Photo S.M. Miller 2017.)

2.2.6.2 Pipeline feature

The water supply to Wesselton mine through this feature and the associated iron reservoir on the hill is in need of documentation in a second phase investigation.

Figure 22: A section of the pipeline that survived in the veld that was exposed in the road to the stock-pen. (Photo S.M. Miller 2017.)

2.2.6.3 Iron Reservoir.

The reservoir appears to be still in use in modern days. Its origin, old use and modern use should be established in a second phase investigation.

Figure 23: The iron reservoir on the south side of the hill that is presumably linked to the pipe-line that runs to the northwest. (Photo S.M. Miller 2017.)

6.4. Second South African War Fortification.

This is the most important heritage remains found on the Rooifontein. It is known that Boer forces laid siege to Kimberly over a period of four months during the Second South African War. Exactly where they were located during the siege is not well documented according to the author's knowledge. It should be documented in a second phase study.

Figure 24: The walls and platforms of the fortification can best be seen near the survey beacon on the hill. (Photos S.M. Miller 2017.)

Figure 25: Near the beacon a name is engraved that appears to be V.Bill gn and the date 1899. This gives weight to the argument that the stone walls were used as a fortification. (Photos S.M. Miller 2017.)

2.2.6.5 Stockpen, wells and dwellings.

Figure 26: To the northeast of the reservoir cleared areas and "living floors" was observed. In one of these a piece of shrapnel was found. This needs to be examined by an explosives expert. (Photos S.M. Miller 2017.)

2.2.7 Pit and Dump.

This pit and dump appears to be a modern feature, but it origin should be established in a second phase study.

Figure 27: Old pit and dump that will need second phase investigation. (Photos S.M. Miller 2017.)

2.2.8 Trenches

Apart from the 10 kilometre trench that appears to have been associated with water supply, others also exist. There functions and dates must be established in a second phase survey.

Figure 28: The collapsed nature of the trench indicates a period of no-use. At present it appears to be a death-trap for the game on the farm as the bones of this eland testifies. (Photos S.M. Miller 2017.)

3. Field Rating. (SAHRA minimum standards May 2007.)

The table below presents the field rating as per the SAHRA minimum standards, May 2017:

Table 9: Field rating (SAHRA minimum standards, May 2017)

No.	Description	Rating according to minimum standards May 07
1	Old Wesselton mine village (outside of proposed Prospecting Right area).	**'General' Protection C. (Field Rating IV C): This site has sufficiently been recorded. (During the**

No.	Description	Rating according to minimum standards May 07
		rehabilitation process.) It requires no further recording before exploration.
2	General.	**'General' Protection B. (Field Rating IV B): These sites should be recorded before exploration. (Medium significance.)**
3	Midden 1.	**'General' Protection A. (Field Rating IV A): This site should be mitigated before exploration. (High/Medium significance.).**
4	Midden 2.	**'General' Protection A. (Field Rating IV A): This site should be mitigated before exploration. (High/Medium significance.).**
5	Midden 3.	**'General' Protection A. (Field Rating IV A): This site should be mitigated before exploration. (High/Medium significance.).**
6.1	Rooifontein fountain, wells, stock pen and dwellings.	**'General' Protection A. (Field Rating IV A): This site should be mitigated before exploration. (High/Medium significance.).**
6.2	Pipeline feature.	**'General' Protection A. (Field Rating IV A): This site should be mitigated before exploration. (High/Medium significance.).**
6.3	Iron reservoir.	**Field Rating Grade IIIA. This site should be retained as a heritage register site and so mitigation is not advised.**
6.4	Second South African War Fortification.	**Field Rating Grade II and should be nominated as such.**
7	Pit and Dump.	**'General' Protection A. (Field Rating IV A): This site should be mitigated before exploration. (High/Medium significance.).**
8	Trenches.	**'General' Protection A. (Field Rating IV A): These sites should be mitigated before exploration. (High/Medium significance.).**

4. Statements of Significance. (SAHRA minimum standards May 2007.)

The table below presents the statement of significance as per the SAHRA minimum standards, May 2017:

Table 10: Field rating (SAHRA minimum standards, May 2017)

No.	Description	Rating according to minimum standards May 07
1	Old Wesselton mine village.	**a. its importance in the community, or pattern of South African History;** **d. its importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects;**
2	General.	**a. its importance in the community, or pattern of South African History;** **c. its importance to yield information that will contribute to an understanding of South Africa's natural or cultural heritage:** **d. its importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects;**
3	Midden 1.	**a. its importance in the community, or pattern of South African History;**

No.	Description	Rating according to minimum standards May 07
		c. its importance to yield information that will contribute to an understanding of South Africa's natural or cultural heritage: **d. its importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects;**
4	Midden 2.	**a. its importance in the community, or pattern of South African History;** **c. its importance to yield information that will contribute to an understanding of South Africa's natural or cultural heritage:** **d. its importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects;**
5	Midden 3.	**a. its importance in the community, or pattern of South African History;** **c. its importance to yield information that will contribute to an understanding of South Africa's natural or cultural heritage:** **d. its importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects;**
6.1	Rooifontein fountain, wells, stock pen and dwellings.	**a. its importance in the community, or pattern of South African History;** **c. its importance to yield information that will contribute to an understanding of South Africa's natural or cultural heritage:** **d. its importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects;**
6.2	Pipeline feature.	**a. its importance in the community, or pattern of South African History;** **c. its importance to yield information that will contribute to an understanding of South Africa's natural or cultural heritage:** **d. its importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects;**
6.3	Iron Reservoir.	**a. its importance in the community, or pattern of South African History;** **c. its importance to yield information that will contribute to an understanding of South Africa's natural or cultural heritage:** **d. its importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects;**
6.4	Second South African War Fortification.	**a. its importance in the community, or pattern of South African History;** **c. its importance to yield information that will contribute to an understanding of South Africa's natural or cultural heritage:** **d. its importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects;**
7	Pit and Dump.	**a. its importance in the community, or pattern of South African History;**

No.	Description	Rating according to minimum standards May 07
		c. its importance to yield information that will contribute to an understanding of South Africa's natural or cultural heritage: **d. its importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects;**
8	Trenches.	**a. its importance in the community, or pattern of South African History;** **c. its importance to yield information that will contribute to an understanding of South Africa's natural or cultural heritage:** **d. its importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects;**

5. Findings and recommendations

The archaeological remains encountered appear to be frugal and scattered in the landscape. From the general aspect of the farm the expectancy to encounter any major sites is low. The historical remains encountered, such as the military fortification, the stock and farming post and the water related features are of medium importance as much of Kimberly's mines own history has been destroyed purely in the 'development process' of mining dynamics.

It is advised that the historical features are documented in a second phase study as soon as possible. It is advised that once the scout drilling sites are determined that these sites are inspected by a heritage specialist.

Chapter K: Regional socio-economic structures - Tokologo Local Municipality

1. Demographics

Tokologo Local Municipality is located within the Lejweleputswa District Municipality's area of jurisdiction. Tokologo Local Municipality area covers 9326 sq km and consists of three former Transitional Local Councils namely, Boshof, Dealesville and Hertzogville, as well as a portion of a former Transitional Rural Council (Modderval) which contained approximately 1480 farms (*IDP, 2016*).

Boshof is the capital town of the local municipality and is situated in the centre whilst Dealesville is further east of Boshof, and Hertzogville is situated in the north of the municipal area. Dealesville is the smallest town within Tokologo Local Municipality.

The total population in the 2007 was 32 457.

2. Population structure

The figure below shows that the largest proportion for both males and females was for people aged between 0-4 years. From age 15 years and above for females and 20 years and above for males, as the age increases, the population decreases with the exception from age 15-19 the female numbers increase whereas at age 20-24 males increases.

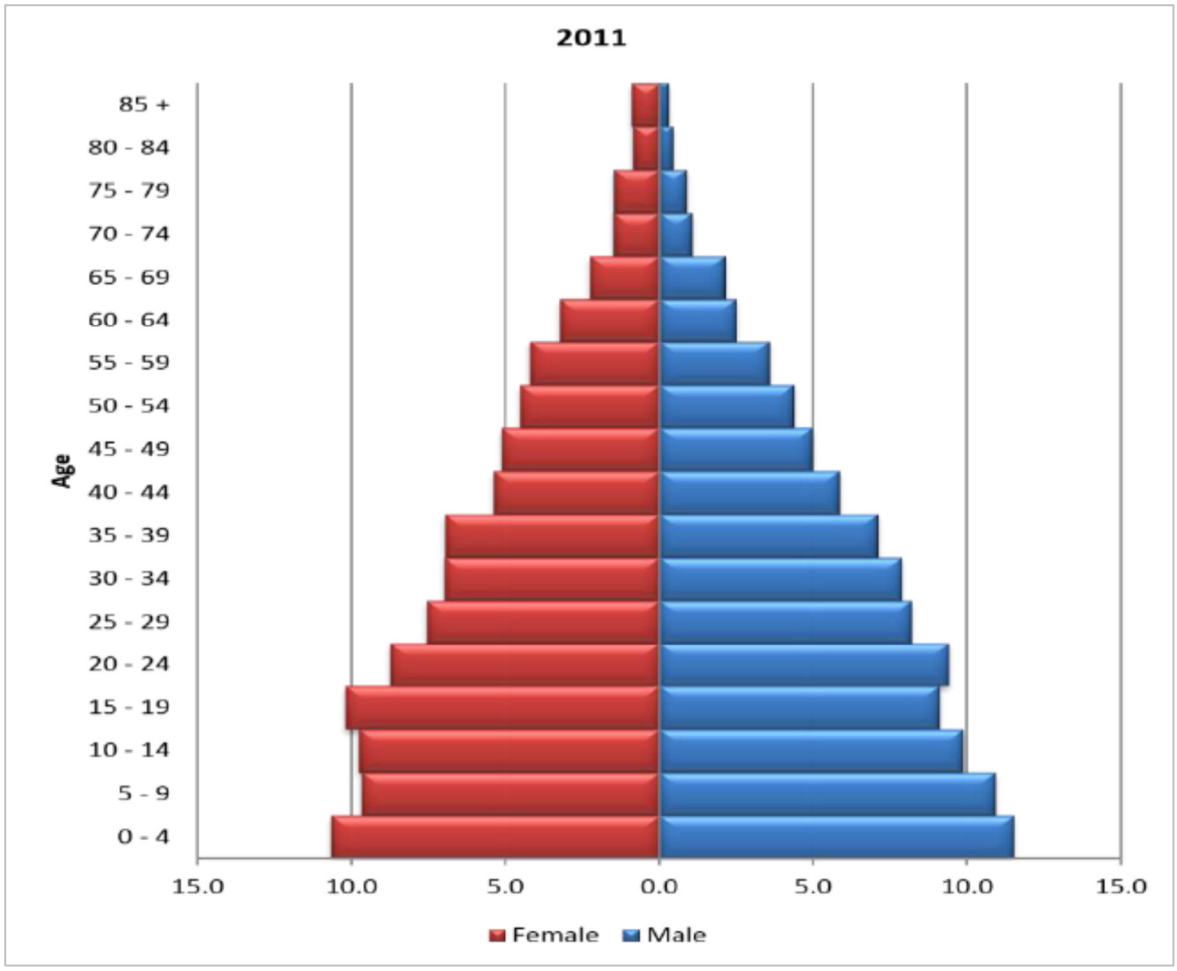


Figure 29: 2011 Population structure (IDP, 2016)

The figure below shows percentage distribution of Tokologo local municipality by gender over the years 1996, 2001 and 2011. Since 1996 to 2011, Tokologo population had more females than males with percentage contribution of 50.8%, 51.0% and 50.3%. Even though the female population has been more than the male population since 1996, there was a slight decrease of 0.7% between 2001 and 2011.

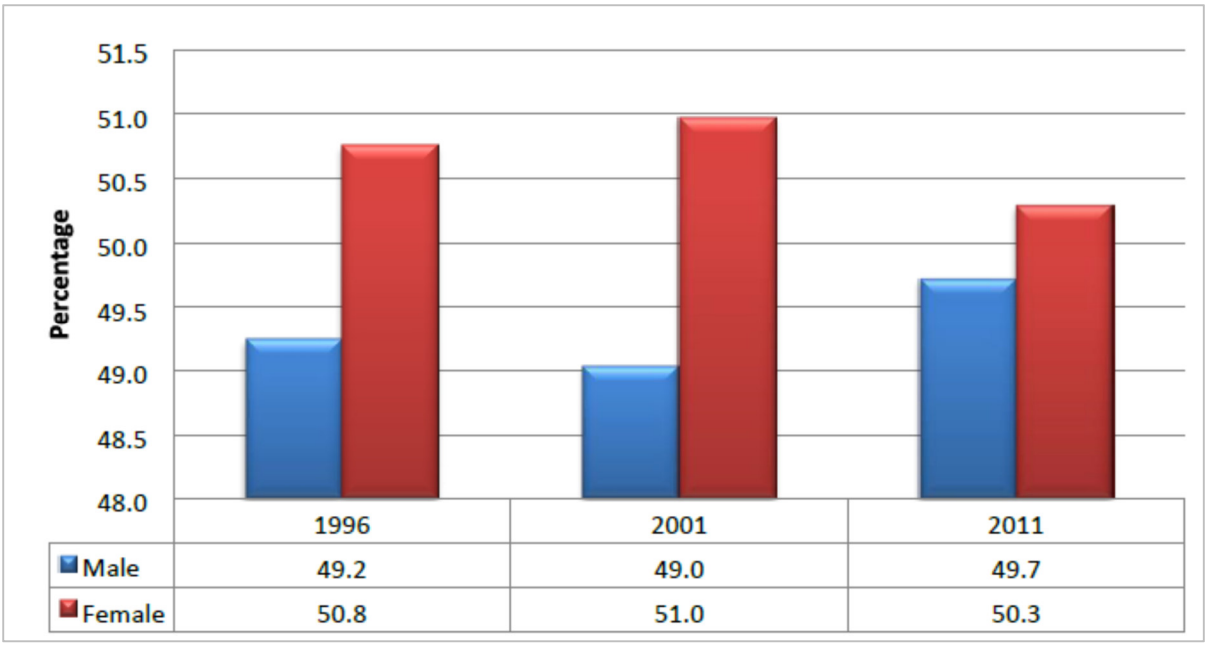


Figure 30: Percentage distribution by gender (IDP, 2016)

The figure below presents the population distribution of Tokologo Local Municipality by racial groups. Since 1996 to 2011, the black and Indian population increased gradually from 81.2% to 84.5% and 0.0% to 0.7% respectively whereas the coloured population decreased from 7.5% to 4.6%.

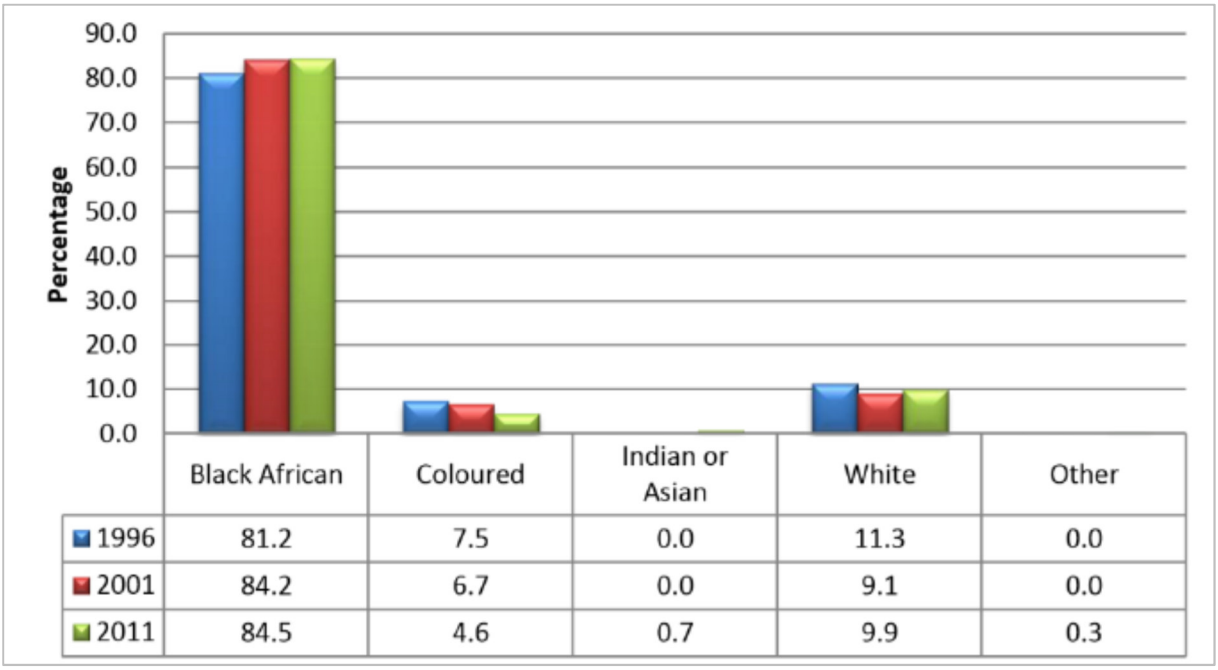
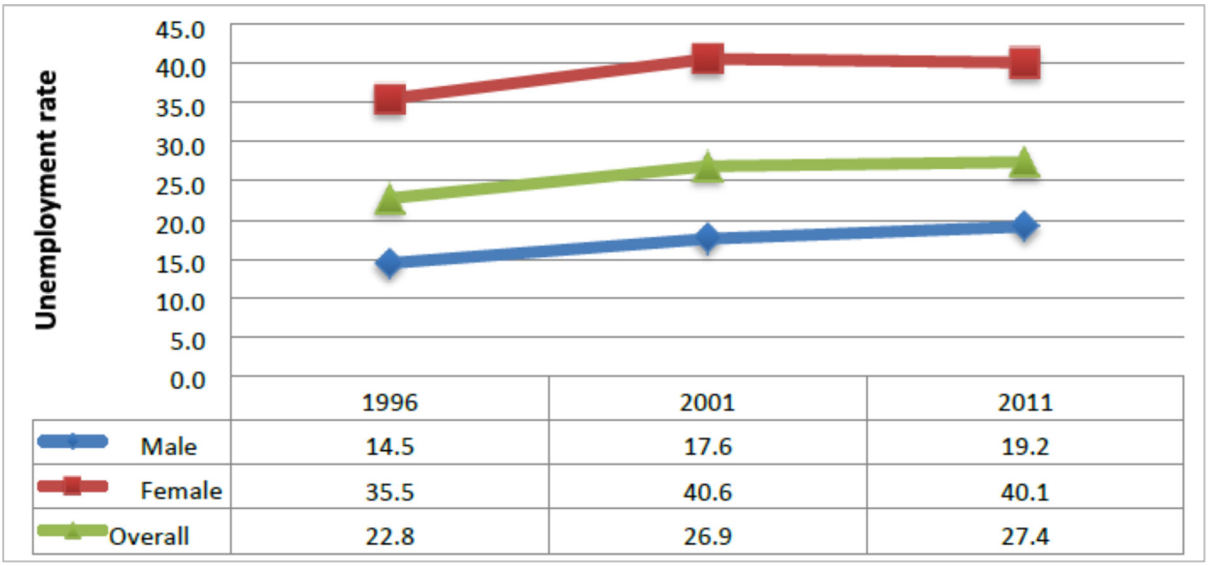


Figure 31: Percentage distribution by race (IDP, 2016)

3. Unemployment rate

The overall unemployment rate for Tokologo Local Municipality increased steadily from 22.8% in 1996 to 27.4% in 2011 whereas in 2001 it was 16.9% (refer to the figure below). Female unemployment rate over the years 1996, 2001 and 2011, is greater than that of males.

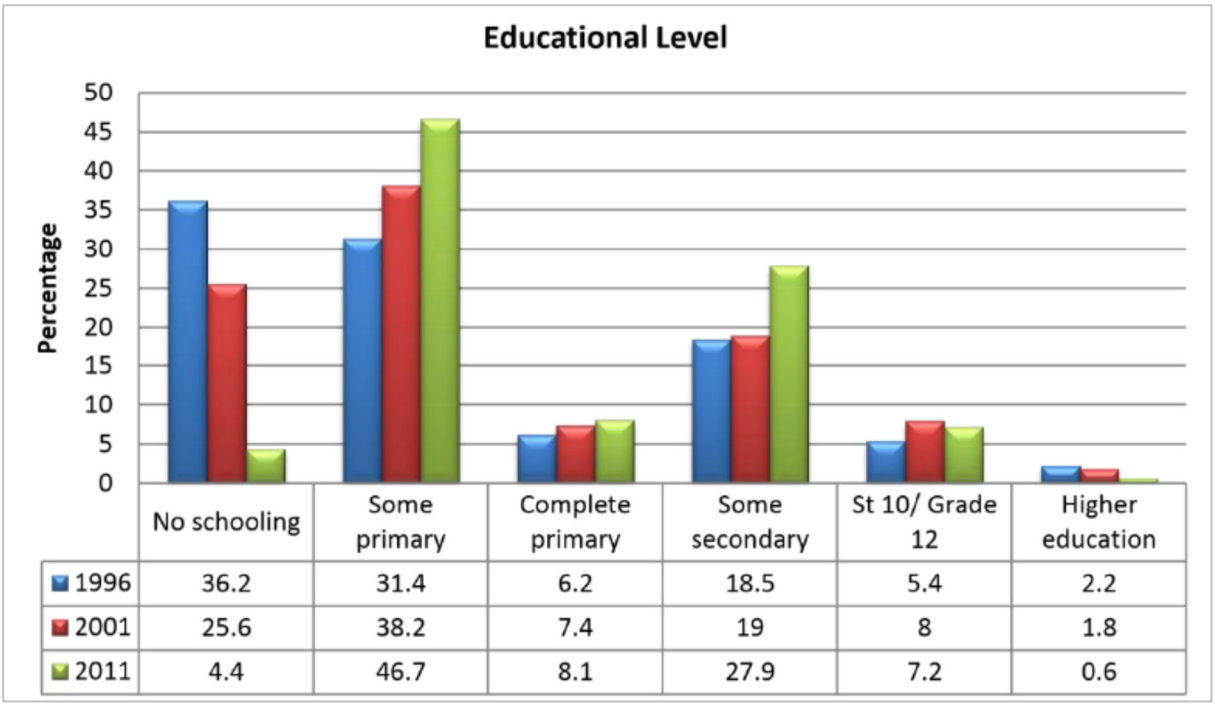


	1996	2001	2011
Male	14.5	17.6	19.2
Female	35.5	40.6	40.1
Overall	22.8	26.9	27.4

Figure 32: Unemployment rate by gender (IDP, 2016)

4. Education

The figure below presents the education levels of population aged 5 years and above in Tokologo Local Municipality. Since 1996 to 2011, people attaining matric certificates increased from 5.4% in 1996 to 12.6% in 2011. As for higher education levels, there was a decrease in number of people who attained higher education level certificates from 1996 to 2001 from 2.2% to 1.8% whereas there was an increase from 1.8% to 3.4% in 2001 and 2011 respective

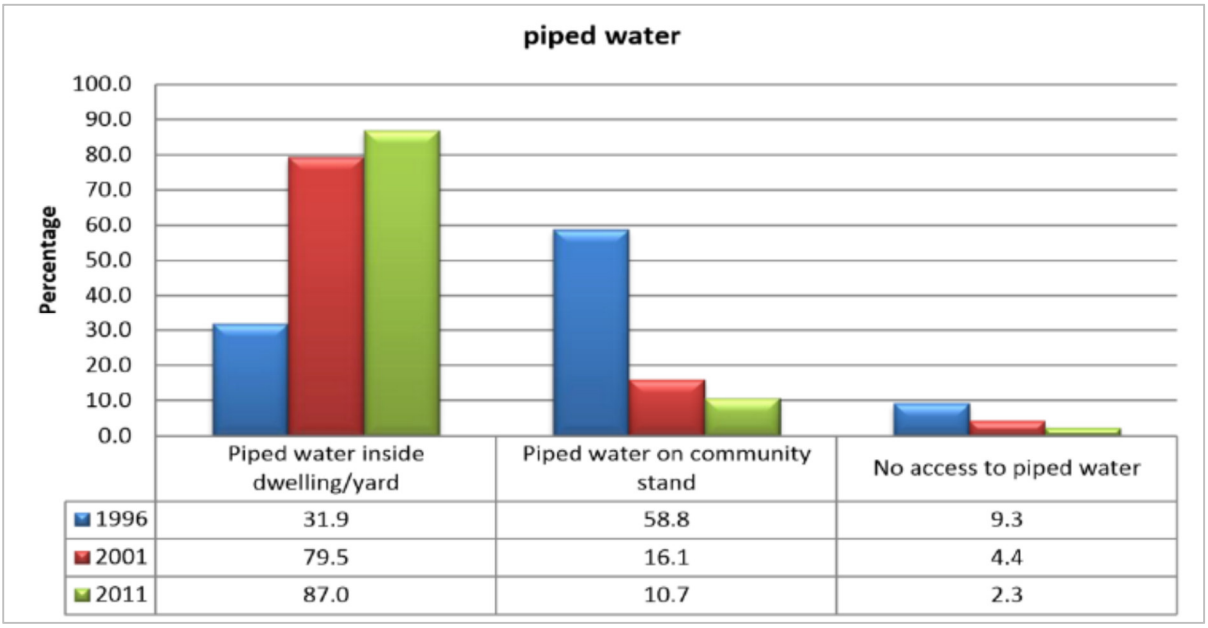


	No schooling	Some primary	Complete primary	Some secondary	St 10/ Grade 12	Higher education
1996	36.2	31.4	6.2	18.5	5.4	2.2
2001	25.6	38.2	7.4	19	8	1.8
2011	4.4	46.7	8.1	27.9	7.2	0.6

Figure 33: Education level (IDP, 2016)

5. Access to water

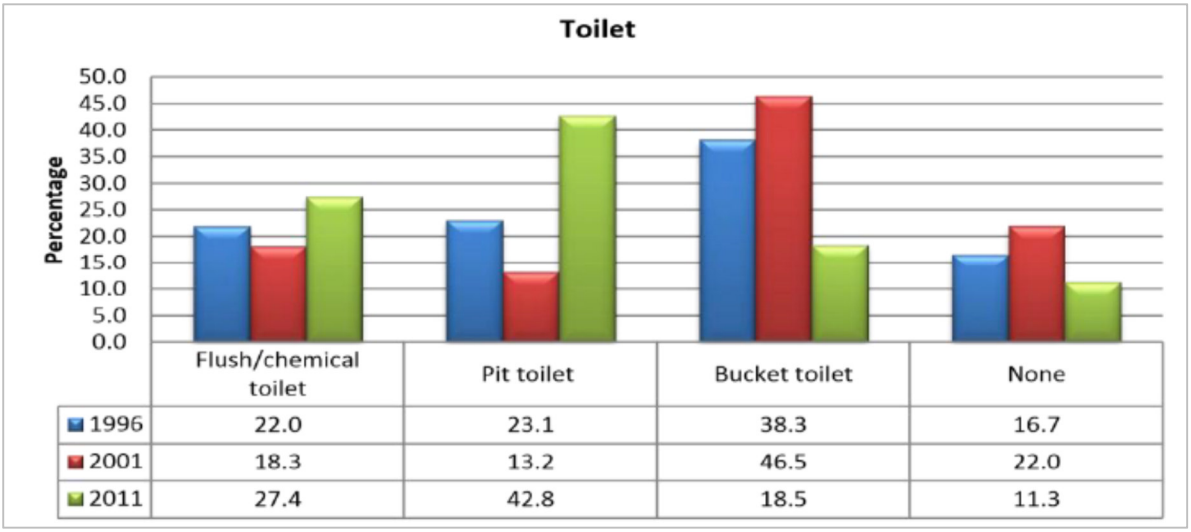
The figure below presents the distribution of households in Tokologo Local Municipality with access to piped water. Accesses to piped water in dwelling/yard increased from 31.9% in 1996 to 87.0% whereas access to piped water on community stands decreased from 58.8% in 1996 to 10.7% in 2011. As for households without water access decreased from 9.3% in 1996 to 2.3%.



	Piped water inside dwelling/yard	Piped water on community stand	No access to piped water
1996	31.9	58.8	9.3
2001	79.5	16.1	4.4
2011	87.0	10.7	2.3

Figure 34: Access to piped water (IDP, 2016)

The below figure presents the distribution of households with type of toilet facilities in Tokologo Local Municipality. In 1996 and 2001 most of households in the municipality were found to be using bucket toilets with 38.3% and 46.5% and the number decreased to 18.5% in 2011.



	Flush/chemical toilet	Pit toilet	Bucket toilet	None
1996	22.0	23.1	38.3	16.7
2001	18.3	13.2	46.5	22.0
2011	27.4	42.8	18.5	11.3

Figure 35: Distribution of type of toilet facilities (IDP, 2016)

Chapter L: Regional socio-economic structures - Sol Plaatjie Municipality

The socio-economic structure of the study area within which Kimberley Underground Mining Joint Venture is situated, was discussed in the Integrated Development Plan (IDP), titled "Sol Plaatje Municipality Integrated Development Plan (IDP) 2013/14 – 2016/17", dated May 2014, specifically developed for the Sol Plaatjie Municipality. The relevant information from the above-mentioned report is included in this part of this document.

1. Person Statistics

Sol Plaatje Municipality has a total population of 248 042 people living in its jurisdiction area according to the 2011 Census, growing at an average rate of 2.04% per annum since 2001 (growth rate in 2001 was -0.65%). More than 61% (54% in 2001) of the population belongs to the African population group, 27% (32% in 2001) to the Coloured population group, 1% (1% in 2001) to the Indian population group, 8% (13% in 2001) to the White population group and 3% (0% in 2001) to other population groups. In 2011 there were approximately 60 299 households (50 529 in 2001) in Sol Plaatje Municipality, with an average household size of 3.9 (3.98 in 2001) people.

Table 11: Population 2011 Census by Gender and Population Group compared to 2001 Census

	Black African		Coloured		Indian or Asian		White		Other		Total	
	2001	2011	2001	2011	2001	2011	2001	2011	2001	2011	2001	2011
Male	52351	73273	30525	33048	780	1608	12662	8913	0	3370	96318	120212
Female	57364	78646	33393	34875	832	1340	13559	9749	0	3220	105148	127830
Total	109715	151919	63918	67923	1612	2948	26221	18662	0	6590	201466	248042

It is clear from Table 12 that the Sol Plaatjie Municipality experienced a positive growth in employment and persons attaining a higher education which exceeded the population growth rate of 2.04%.

Table 12: Labour Market and Education Statistics 2011 compared to 2001

Labour market				Education (aged 20+)					
Unemployment Rate (official)		Youth Unemployment Rate (official) 15-34 years		No Schooling		Matric		Higher Education	
2001	2011	2001	2011	2001	2011	2001	2011	2001	2011
41.3%	31.9%	51.5%	41.7%	11.3%	7.1%	21.9%	29.2%	8.7%	10.4%

2. Household Statistics

SPM was able to provide more households with a higher standard of service in terms of water and electricity during the period 2001 to 2011 which was however not the case with sanitation and refuse removal. In the case of sanitation, the main reason is that until 2009/10 Sol Plaatjie Municipality's bulk sewer treatment works ran out of capacity which led to a moratorium on development as new development – also housing development – could not be connected to the sewer network. The capacity problems have since been resolved and the moratorium has been lifted and enough capacity has been created for the next 20 years. Refuse removal also lagged behind mainly due to the increase of informal settlements – which is not accessible to deliver a waste removal service. This is still the case today.

Table 13: Access to Household Services (higher level) 2011 compared to 2001

Level of Service	2001 %	2011 %
Piped water inside dwelling	51.2	61.9
Flush toilet connected to sewer	83.4	82.8
Electricity for lighting	82.4	84.9
Weekly refuse removal	90.8	84.3

Table 14 below indicates the present backlogs/need for basic household services according to Census 2011, the provision of services since the 2012/13 financial year as well as the planned provision for the current financial year 2013/14. According to the information tabled below, it would take the Municipality

at least another 10 years to eradicate the household services backlog at the present rate of providing services.

Table 14: Basic Household Services Backlog/2011 and Provision 2012/13 and 2013/14

Service	Backlog Census 2011	2012/13 Provision	2013/14 Revised Targets	Total
New Houses (Subsidised)	7846	777	787	1564
New Erven Planned and Surveyed	7846	1150	1272	2422
Houses connected to Water	8743	0	1356	1356
Houses connected to Sanitation	9343	787	1356	2143
Houses connected to Electricity	9127	521	1700	2221
Houses provided with Waste Removal	9490	0	600	600
Roads Rehabilitation	297 km	5 km	20 km	20 km

3. Other Contextual Issues to Consider during this Review

It is crucial for Sol Plaatjie Municipality to have reliable information on its economic status and potential for effective planning.

Information is needed that will empower the municipality to plan and implement policies and plans that will encourage the social development and economic growth of the people as well as business (informal and semi-formal) and industries in the municipality respectively. At present this information is not readily available this is one of the main reasons for embarking on the GDS process. Without growth in the economy the municipality cannot fulfil its constitutional mandate as the resources for providing its core functions will not be available.

However, from available information the following contextual issues can be derived.

Sol Plaatje Municipality is a “small player” in the national economy but a “big player” in the provincial and regional economy. Sol Plaatje contributed almost 30% to the total GDP of the Province. However, in terms of the national economy, SPM contributed only 0.7% and the NC Province 2.4%. Sol Plaatje Municipality has a very narrow economic base as the tertiary sector is the largest economic sector, contributing more than 80% towards the GVA while the primary sector only contributes 9.7% and the secondary sector 7.9%.

Sol Plaatjie Municipality therefore has a narrow economic structure and relies heavily on the tertiary sector which is consumptive and not productive and job creative. Should one then relate this to the education level of persons in the area where only 10% have post-matric and 90% matric or less with an unemployment rate of 33% which is mainly in the category of persons with matric or less a need exists for innovative ways to diversify the economy. The main job creating sectors are the primary and secondary sectors which employ the most unskilled workers.

7.4.2 Description of the current land uses.

As previously described above, the Ekapa Minerals (Pty) Ltd. is the surface right owner (contractually) of Portion 0 of the Farm Rooifontein 1722 and further operates and manages a game farm on the property, known as the Rooifontein Wildlife Club.

7.4.3 Description of specific environmental features and infrastructure on the site.

KEM-JV currently operates the Rooifontein Wildlife Club of the Farm Rooifontein 1722. The landcover on the farm mainly consists of low shrublands with grassland to the east of the site. Woodlands and open bush further occupy the north of the site. The environmental features on site include NFEPA listed valley seep wetland towards the centre of the site.

7.4.4 Environmental and current land use map.

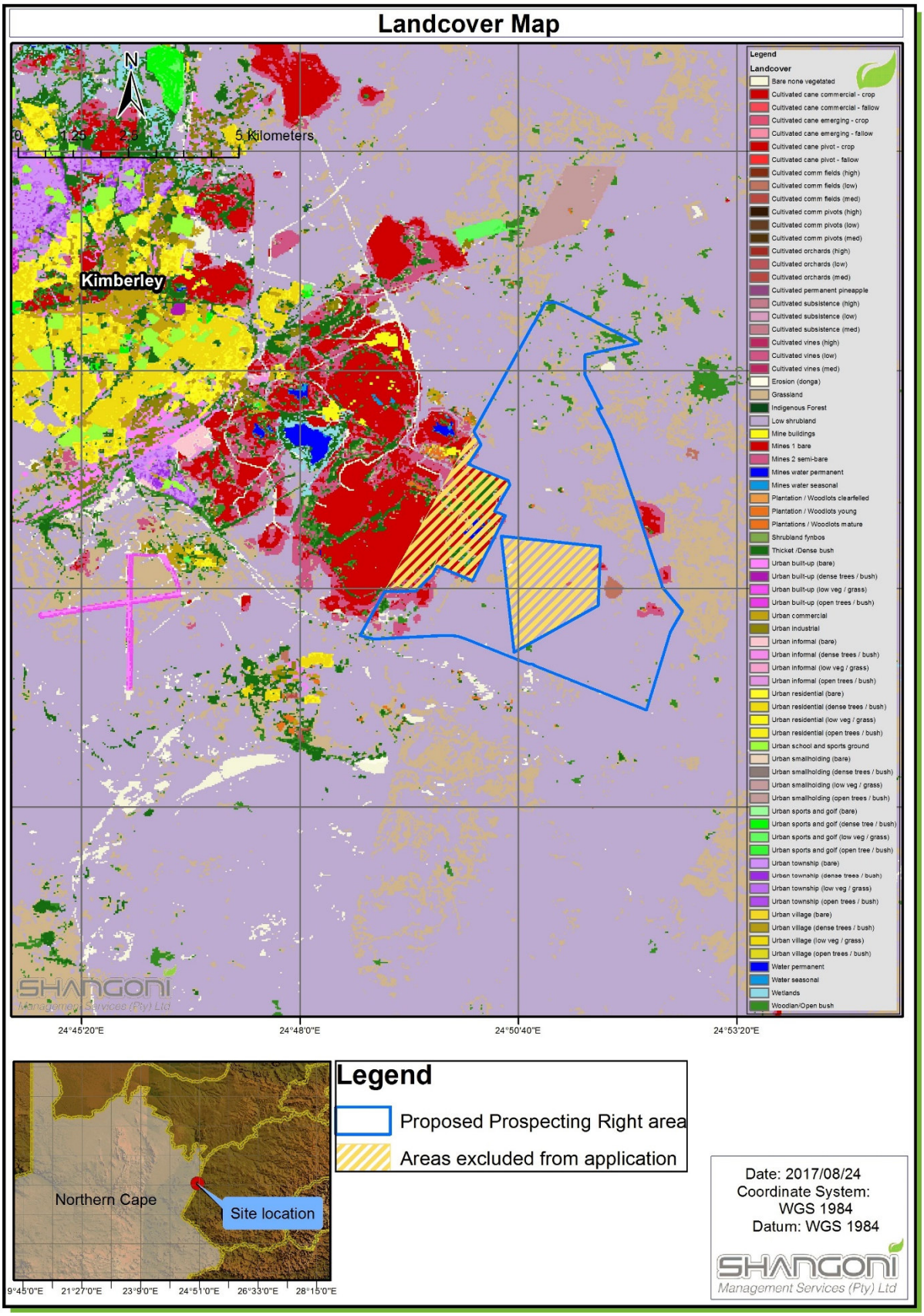


Figure 36: Current land use map for the prospecting site area

7.5 Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts

A detailed risk assessment has been undertaken, as contained in Appendix D. The following table contains all the potential impacts identified for the activities described in the initial site layout.

NO.	ASPECTS AFFECTED	ACTIVITY whether listed or not listed	POTENTIAL IMPACT			Duration	SIZE AND SCALE of disturbance	SIGNIFICANCE if not mitigated			MITIGATION TYPE (modify, remedy, control, or stop)
			Impact description	Reversibility	Irreplaceable loss			Probability	Magnitude	Significance	
1	Noise	**Phase 2 activities** Airborne gradient magnetic survey. The area will be flown with an airborne gradient magnetic survey.	Disturbance to surrounding landowners by noise of low flying aircraft.	Y	N	Planning and design of Phase 2	2 239.7404 ha	2	1	L	Control
2	Fauna	**Phase 2 activities** Airborne gradient magnetic survey. The area will be flown with an airborne gradient magnetic survey.	Disturbance to fauna by low flying aircraft.	Y	N	Planning and design of Phase 2	2 239.7404 ha	2	1	L	Control
3	Fauna &Flora	**Phase 2 activities** Establishment and utilisation of access tracks.	Destruction and damage to flora and fauna by establishment of access tracks and driving off the existing access tracks.	Y	N	Construction of Phase 2	Single track.	2	1	L	Control
4	Surface water and sensitive areas	**Phase 2 activities** Establishment and utilisation of access tracks	Impacts on sensitive landscapes as a result of the establishment of access tracks and driving off the existing access tracks.	Y	Y	Construction of Phase 2	Single track.	2	3	M	Control
5	Heritage	**Phase 2 activities** Establishment and utilisation of access tracks.	Destruction and / or disturbance of on-site heritage resources as a result of the establishment of access tracks. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 1. Site 1. Rehabilitated Wesselton village 2. Site 2. General. 3. Site 3. Midden 1. 4. Site 4. Midden 2. 5. Site 5. Midden 3. 6. Site 6. 1. Rooifontein fountain, wells, stock pen and dwellings. 7. Site 6. 2. Pipeline feature. 8. Site 6. 3. Iron reservoir. 9. Site 6.4. Second South African War fortification. 10. Site 7. Pit and dump. 11. Site 8. Trenches.	N	Y	Construction of Phase 2	Single track.	2	1	L	Control
6	Fauna & Flora	**Phase 2 activities**	Destruction and / or disturbance of on-site fauna and flora by vehicle movements on the veld and laying of magnetic lines.	Y	N	Construction of Phase 2	100m parallel lines over parts of the 2 239.7404 ha area.	2	1	L	Control

NO.	ASPECTS AFFECTED	ACTIVITY whether listed or not listed	POTENTIAL IMPACT			Duration	SIZE AND SCALE of disturbance	SIGNIFICANCE if not mitigated			MITIGATION TYPE (modify, remedy, control, or stop)
			Impact description	Reversibility	Irreplaceable loss			Probability	Magnitude	Significance	
		Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.									
7	Surface water and sensitive areas	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.	Impacts on sensitive landscapes as a result of the vehicle movements and laying of magnetic lines.	Y	Y	Construction of Phase 2	100m parallel lines over parts of the 2 239.7404 ha area.	2	3	M	Control
8	Noise	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.	Noise impacts resulting from ground geophysical surveys, nuisance noise impacts on communities and landowners and other persons.	Y	N	Construction of Phase 2	100m parallel lines over parts of the 2 239.7404 ha area.	2	1	L	Control
9	Heritage	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.	Destruction and / or disturbance of on-site heritage resources as a result of the movement of vehicles and laying of magnetic tracks. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 1. **As per Reference No. 5 above.**	N	Y	Construction of Phase 2	100m parallel lines over parts of the 2 239.7404 ha area.	2	1	L	Control
10	Soil	**Phase 2 activities** Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken	Removal of topsoil	Y	N	Construction of Phase 2	Maximum 200 litres	2	1	L	Remedy

NO.	ASPECTS AFFECTED	ACTIVITY whether listed or not listed	POTENTIAL IMPACT			Duration	SIZE AND SCALE of disturbance	SIGNIFICANCE if not mitigated			MITIGATION TYPE (modify, remedy, control, or stop)
			Impact description	Reversibility	Irreplaceable loss			Probability	Magnitude	Significance	
		in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.									
11	Surface water and sensitive areas	**Phase 2 activities** Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.	Impacts on sensitive landscapes as a result of the removal of topsoil	Y	Y	Construction of Phase 2	Maximum 200 litres	2	1	L	Control
12	Heritage	**Phase 2 activities** Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.	Disturbance of heritage resources due to the removal of topsoil. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 1. **As per Reference No. 5 above.**	N	Y	Construction of Phase 2	Maximum 200 litres	2	1	L	Control
13	Traffic	**Phase 2 activities** Haulage of loam/soil sample via road to adjacent KEM-JV operation	Additional volume of traffic added to road to KEM-JV.	Y	N	Operational of Phase 2	Provincial road and single access tracks	2	1	L	Control
14	Fauna & Flora	**Phase 2 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of magnetic lines (if any) • Re-spreading of stockpiled topsoil over cleared areas used for magnetic lines and soil sampling.	Destruction and / or disturbance of on-site fauna and flora by vehicle movements on the veld and removal of magnetic lines.	Y	N	Decommissioning and Closure of Phase 2	All areas disturbed over the 2 239.7404 ha	2	1	L	Control
15	Soil, Surface water & Groundwater	**Phase 3 activities:** Establishment of prospecting site (safety barrier, drilling pad)	Compaction and possible contamination of soil, surface water and groundwater from spillages of dangerous goods.	Y	N	Construction of Phase 3	±200 m^2 per prospecting site	2	3	M	Remedy
16	Noise	**Phase 3 activities:** Establishment of prospecting site.	Site establishment causing nuisance noise, impacts on communities and surrounding landowners and other persons.	Y	N	Construction of Phase 3	±200 m^2 per prospecting site	2	1	L	
17	Fauna & Flora	**Phase 3 activities:** Establishment and utilisation of prospecting site.	Destruction and damage to flora as a result of open fires and other disturbances.	Y	N	Construction of Phase 3	±200 m^2 per prospecting site	2	1	L	Control
18	Heritage	**Phase 3 activities:** Establishment of prospecting site (safety barrier, drilling pad)	Disturbance of heritage resources due to the establishment of prospecting sites. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 1. **As per Reference No. 5 above.**	N	Y	Construction of Phase 3	±200 m^2 per prospecting site	2	1	L	Control

NO.	ASPECTS AFFECTED	ACTIVITY whether listed or not listed	POTENTIAL IMPACT			Duration	SIZE AND SCALE of disturbance	SIGNIFICANCE if not mitigated			MITIGATION TYPE (modify, remedy, control, or stop)
			Impact description	Reversibility	Irreplaceable loss			Probability	Magnitude	Significance	
19	Fauna & Flora	**Phase 3 activities:** Establishment of access tracks	Impact on fauna and flora resources as a result of the establishment of the access tracks.	Y	N	Construction of Phase 3	Single track with no clearance to prospecting site.	2	1	L	Control
20	Surface water and sensitive landscapes	**Phase 3 activities:** Establishment of access tracks	Impacts on sensitive landscapes as a result of the establishment of the access tracks.	Y	Y	Construction of Phase 3	Single track with no clearance to prospecting site.	2	1	L	Control
21	Heritage	**Phase 3 activities:** Establishment of access tracks	Destruction and / or disturbance of on-site heritage resources as a result of the establishment of access tracks. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 1. **As per Reference No. 5 above.**	N	Y	Construction of Phase 3	Single track with no clearance to prospecting site.	2	1	L	Control
22	Fauna & Flora	**Phase 3 activities:** Site Preparation: Clearance of topsoil and vegetation (prospecting site activities)	Loss of fauna and flora as a result of clearance of vegetation.	Y	N	Construction of Phase 3	±10m^2 per prospecting site	2	3	M	Control
23	Surface water and sensitive landscapes	**Phase 3 activities:** Site Preparation: Clearance of topsoil and vegetation (prospecting site activities)	Impacts on sensitive landscapes as a result of the clearance of topsoils and vegetation.	Y	N	Construction of Phase 3	±10m^2 per prospecting site	2	3	M	Control
24	Heritage	**Phase 3 activities:** Site Preparation: Clearance of topsoil and vegetation (prospecting site activities)	Disturbance of heritage resources due to the clearance of vegetation and topsoil. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 1. **As per Reference No. 5 above.**	N	Y	Construction of Phase 3	±10m^2 per prospecting site	2	1	L	Control
25	Soil	**Phase 3 activities:** Stockpiling of topsoil material (following excavation)	Loss of topsoil resource.	Y	N	Construction of Phase 3	±5 m^2 per prospecting site	2	1	L	Control
26	Surface water and sensitive landscapes	**Phase 3 activities:** Stockpiling of topsoil material (following excavation)	Impacts on sensitive landscapes as a result of the stockpiling of soils	Y	N	Construction of Phase 3	±5 m^2 per prospecting site	2	1	L	Control
27	Surface water and sensitive landscapes	**Phase 3 activities:** Scout and delineation drilling (exploration drilling)	Oil leakage may impact on sensitive landscapes.	Y	N	Operational Phase of Phase 3	±10 m^2 per drilling site	2	1	L	Control
28	Groundwater	**Phase 3 activities:** Scout and delineation drilling (exploration drilling)	Oil leakage may impact on groundwater resources.	Y	N	Operational Phase of Phase 3	±10 m^2 per drilling site	2	1	L	Control
29	Traffic	**Phase 3 activities:** Haulage of sample via road	Additional volume of traffic added to road to existing KEM-JV operation.	Y	N	Operational Phase of Phase 3	Provincial road and single access tracks	2	1	L	Control

NO.	ASPECTS AFFECTED	ACTIVITY whether listed or not listed	POTENTIAL IMPACT			Duration	SIZE AND SCALE of disturbance	SIGNIFICANCE if not mitigated			MITIGATION TYPE (modify, remedy, control, or stop)
			Impact description	Reversibility	Irreplaceable loss			Probability	Magnitude	Significance	
30	Soil, Surface water & Groundwater	**Phase 3 activities:** Generation, storage and disposal of waste.	Contamination of soil, surface water and groundwater as a result of improper disposal of waste.	Y	N	Operational Phase of Phase 3	Less than 1 m^3/week	2	1	L	Control
32	Surface water & Groundwater	**Phase 3 activities:** Supply of water for domestic and drilling purposes.	Depletion of natural water resources for use in prospecting activities.	Y	N	Operational Phase of Phase 3	50 litres per day for human consumption 10 m^3/day for drilling operation.	2	1	L	Control
33	Fauna & Flora	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Destruction and / or disturbance of on-site fauna.	Y	N	Decommissioning and Closure Phase of Phase 3	±200 m^2 per prospecting site	2	3	M	Remedy
34	Fauna	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Poor access control resulting in impacts on game breeding and grazing practices.	Y	N	Decommissioning and Closure Phase of Phase 3g	±200 m^2 per prospecting site	2	1	L	Control
35	Flora	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Establishment of alien vegetation	Y	N	Decommissioning and Closure Phase of Phase 3	±200 m^2 per prospecting site	3	3	M	Control & remedy

NO.	ASPECTS AFFECTED	ACTIVITY whether listed or not listed	POTENTIAL IMPACT			Duration	SIZE AND SCALE of disturbance	SIGNIFICANCE if not mitigated			MITIGATION TYPE (modify, remedy, control, or stop)
			Impact description	Reversibility	Irreplaceable loss			Probability	Magnitude	Significance	
36	Soil, Surface water & Groundwater	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Potential water and soil pollution resulting from hydrocarbon spills, open boreholes and waste disposal practices	Y	N	Decommissioning and Closure Phase of Phase 3	±200 m^2 per prospecting site	3	3	M	Control & remedy
37	Soil, Surface water & Groundwater	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Soil erosion resulting from the re-spreading of topsoil before vegetation is re-established.	Y	N	Decommissioning and Closure Phase of Phase 3	±200 m^2 per prospecting site	3	2	M	Control &Remedy
38	Air quality	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Dust emissions from decommissioning activities (including vehicle entrained dust).	Y	N	Decommissioning and Closure Phase of Phase 3	±200 m^2 per prospecting site	2	1	L	Control
34	Noise	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road.	Inconvenience to neighbours / disturbance of fauna due to noise	Y	N	Decommissioning and Closure Phase of Phase 3	±200 m^2 per prospecting site	2	1	L	Control

NO.	ASPECTS AFFECTED	ACTIVITY whether listed or not listed	POTENTIAL IMPACT			Duration	SIZE AND SCALE of disturbance	SIGNIFICANCE if not mitigated			MITIGATION TYPE (modify, remedy, control, or stop)
			Impact description	Reversibility	Irreplaceable loss			Probability	Magnitude	Significance	
		• Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.									

7.6 Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks.

The environmental risk of any aspect is determined by a combination of parameters associated with the impact. Each parameter connects the physical characteristics of an impact to a quantifiable value to rate the environmental risk.

Impact assessments should be conducted based on a methodology that includes the following:

- Clear processes for impact identification, predication and evaluation;
- Specification of the impact identification techniques;
- Criteria to evaluate the significance of impacts;
- Design of mitigation measures to lessen impacts;
- Definition of the different types of impacts (indirect, direct or cumulative); and
- Specification of uncertainties.

After all impacts have been identified, the nature and scale of each impact can be predicted. The impact prediction will take into account physical, biological, socio-economic and cultural information and will then estimate the likely parameters and characteristics of the impacts. The impact prediction will aim to provide a basis from which the significance of each impact can be determined and appropriate mitigation measures can be developed.

The risk assessment methodology is based on defining and understanding the three basic components of the risk, i.e. the source of the risk, the pathway and the target that experiences the risk (receptor). Refer to Figure 37 below for a model representing the above principle (as contained in the DWA's Best Practice Guideline: G4 – *Impact Prediction*).

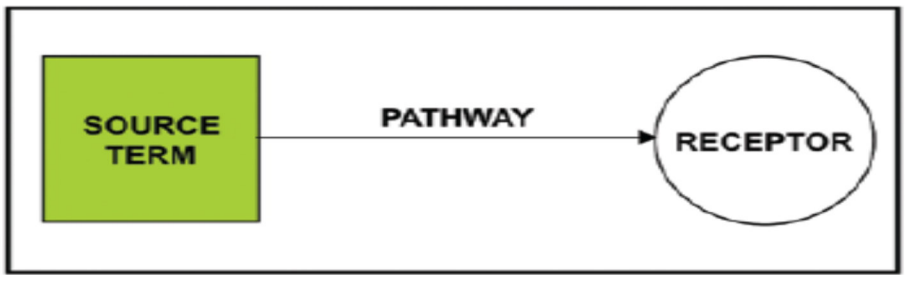


Figure 37: Impact prediction model

Table 15 and Table 16 below indicate the methodology to be used in order to assess the Probability and Magnitude of the impact, respectively, and Table 17 provides the Risk Matrix that will be used to plot the Probability against the Magnitude in order to determine the Severity of the impact.

Table 15: Determination of Probability of impact

FREQUENCY OF ASPECT / UNWANTED EVENT	SCORE	AVAILABILITY OF PATHWAY FROM THE SOURCE TO THE RECEPTOR	SCORE	AVAILABILITY OF RECEPTOR	SCORE
Never known to have happened, but may happen	1	A pathway to allow for the impact to occur is never available	1	The receptor is never available	1
Known to happen in industry	2	A pathway to allow for the impact to occur is almost never available	2	The receptor is almost never available	2
< once a year	3	A pathway to allow for the impact to occur is sometimes available	3	The receptor is sometimes available	3
Once per year to up to once per month	4	A pathway to allow for the impact to occur is almost always available	4	The receptor is almost always available	4
Once a month - Continuous	5	A pathway to allow for the impact to occur is always available	5	The receptor is always available	5

Step 1: Determine the **PROBABILITY** of the impact by calculating the average between the Frequency of the Aspect, the Availability of a pathway to the receptor and the availability of the receptor.

Table 16: Determination of Magnitude of impact

SOURCE								RECEPTOR			
Duration of impact	**Score**	**Extent**	**Score**	**Volume / Quantity / Intensity**	**Score**	**Toxicity / Destruction Effect**	**Score**	**Reversibility**	**Score**	**Sensitivity of environmental component**	**Score**
Lasting days to a month	1	Effect limited to the site. (metres);	1	Very small quantities / volumes / intensity (e.g. < 50L or < 1Ha)	1	Non-toxic (e.g. water) / Very low potential to create damage or destruction to the environment	1	Bio-physical and/or social functions and/or processes will remain unaltered.	1	Current environmental component(s) are largely disturbed from the natural state. Receptor of low significance / sensitivity	1
Lasting 1 month to 1 year	2	Effect limited to the activity and its immediate surroundings. (tens of metres)	2	Small quantities / volumes / intensity (e.g. 50L to 210L or 1Ha to 5Ha)	2	Slightly toxic / Harmful (e.g. diluted brine) / Low potential to create damage or destruction to the environment	2	Bio-physical and/or social functions and/or processes might be negligibly altered or enhanced / Still reversible	2	Current environmental component(s) are moderately disturbed from the natural state. No environmentally sensitive components.	2
Lasting 1 – 5 years	3	Impacts on extended area beyond site boundary (hundreds of metres)	3	Moderate quantities / volumes / intensity (e.g. > 210 L < 5000L or 5 – 8Ha)	3	Moderately toxic (e.g. slimes) Potential to create damage or destruction to the environment	3	Bio-physical and/or social functions and/or processes might be notably altered or enhanced / Partially reversible	3	Current environmental component(s) are a mix of disturbed and undisturbed areas. Area with some environmental sensitivity (scarce / valuable environment etc.).	3

SOURCE								RECEPTOR			
Duration of impact	**Score**	**Extent**	**Score**	**Volume / Quantity / Intensity**	**Score**	**Toxicity / Destruction Effect**	**Score**	**Reversibility**	**Score**	**Sensitivity of environmental component**	**Score**
Lasting 5 years to Life of Organisation	4	Impact on local scale / adjacent sites (km's)	4	Very large quantities / volumes / intensity (e.g. 5000 L – 10 000L or 8Ha– 12Ha)	4	Toxic (e.g. diesel & Sodium Hydroxide)	4	Bio-physical and/or social functions and/or processes might be considerably altered or enhanced / potentially irreversible	4	Current environmental component(s) are in a natural state. Environmentally sensitive environment / receptor (endangered species / habitats etc.).	4
Beyond life of Organisation / Permanent impacts	5	Extends widely (nationally or globally)	5	Very large quantities / volumes / intensity (e.g. > 10 000 L or > 12Ha)	5	Highly toxic (e.g. arsenic or TCE)	5	Bio-physical and/or social functions and/or processes might be severely/substantially altered or enhanced / Irreversible	5	Current environmental component(s) are in a pristine natural state. Highly Sensitive area (endangered species, protected habitats etc.)	5

Step 2: Determine the **MAGNITUDE** of the impact by calculating the average of the factors above.

Table 17: Determination of Severity of impact

ENVIRONMENTAL IMPACT RATING / PRIORITY					
	MAGNITUDE				
PROBABILITY	**1 Minor**	**2 Low**	**3 Medium**	**4 High**	**5 Major**
5 Almost Certain	Low	Medium	High	High	High
4 Likely	Low	Medium	High	High	High
3 Possible	Low	Medium	Medium	High	High
2 Unlikely	Low	Low	Medium	Medium	High
1 Rare	Low	Low	Low	Medium	Medium

Step 3: Determine the **SEVERITY** of the impact by plotting the averages that were obtained above for Probability and Magnitude

7.7 The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected.

No alternatives have been identified as the application is for a specific prospecting area and method applied for in terms of Section 16 of the MPRDA. The impact associated with the proposed prospecting application have been identified and are attached hereto in the Consolidated Risk Assessment in Annexure D.

7.8 The possible mitigation measures that could be applied and the level of risk.

The impacts associated with the proposed prospecting application and possible mitigation measures that could be applied have been identified and are attached hereto in the Consolidated Risk Assessment in Annexure D.

7.9 Motivation where no alternative sites were considered.

No alternatives have been identified as the application is for a specific prospecting area and method applied for in terms of Section 16 of the MPRDA.

7.10 Statement motivating the alternative development location within the overall site.

No alternatives have been identified as the application is for a specific prospecting area and method applied for in terms of Section 16 of the MPRDA. The impacts associated with the proposed prospecting application have been identified and are attached hereto in the Consolidated Risk Assessment in Annexure D.

8. Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity.

All impacts and risks as identified are contained within Section 7.5. As further provided is an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures. The methodology applied in assessing and ranking the impacts and risks on the preferred site is described in Section 7.6. The results of this assessments are provided below, with the detailed impact assessment contained in Appendix D.

9. Assessment of each identified potentially significant impact and risk

NO.	Environmental component (Aspects affected)	ACTIVITY whether listed or not listed	Impact description	Phase (Construction/ Commissioning/ Operational/ Decommissioning/ Closure/Post-Closure)	Pre-mitigation significance	MITIGATION TYPE (modify, remedy, control, or stop)	Post-mitigation Significance
1	Noise	**Phase 2 activities** Airborne gradient magnetic survey. The area will be flown with an airborne gradient magnetic survey.	Disturbance to surrounding landowners by noise of low flying aircraft.	Planning and design of Phase 2	L	Control	L
2	Fauna	**Phase 2 activities** Airborne gradient magnetic survey. The area will be flown with an airborne gradient magnetic survey.	Disturbance to fauna by low flying aircraft.	Planning and design of Phase 2	L	Control	L
3	Fauna &Flora	**Phase 2 activities** Establishment and utilisation of access tracks.	Destruction and damage to flora and fauna by establishment of access tracks and driving off the existing access tracks.	Construction of Phase 2	L	Control	L
4	Surface water and sensitive areas	**Phase 2 activities** Establishment and utilisation of access tracks	Impacts on sensitive landscapes as a result of the establishment of access tracks and driving off the existing access tracks.	Construction of Phase 2	M	Control	L
5	Heritage	**Phase 2 activities** Establishment and utilisation of access tracks.	Destruction and / or disturbance of on-site heritage resources as a result of the establishment of access tracks. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 1. Site 1. Rehabilitated Wesselton village 2. Site 2. General. 3. Site 3. Midden 1. 4. Site 4. Midden 2. 5. Site 5. Midden 3. 6. Site 6. 1. Rooifontein fountain, wells, stock pen and dwellings. 7. Site 6. 2. Pipeline feature. 8. Site 6. 3. Iron reservoir. 9. Site 6.4. Second South African War fortification. 10. Site 7. Pit and dump. 11. Site 8. Trenches.	Construction of Phase 2	L	Control	L
6	Fauna & Flora	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.	Destruction and / or disturbance of on-site fauna and flora by vehicle movements on the veld and laying of magnetic lines.	Construction of Phase 2	L	Control	L
7	Surface water and sensitive areas	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics).	Impacts on sensitive landscapes as a result of the vehicle movements and laying of magnetic lines.	Construction of Phase 2	M	Control	L

NO.	Environmental component (Aspects affected)	ACTIVITY whether listed or not listed	Impact description	Phase (Construction/ Commissioning/ Operational/ Decommissioning/ Closure/Post-Closure)	Pre-mitigation significance	MITIGATION TYPE (modify, remedy, control, or stop)	Post-mitigation Significance
		This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.					
8	Noise	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.	Noise impacts resulting from ground geophysical surveys, nuisance noise impacts on communities and landowners and other persons.	Construction of Phase 2	L	Control	L
9	Heritage	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.	Destruction and / or disturbance of on-site heritage resources as a result of the movement of vehicles and laying of magnetic tracks. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 1. **As per Reference No. 5 above.**	Construction of Phase 2	L	Control	L
10	Soil	**Phase 2 activities** Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.	Removal of topsoil	Construction of Phase 2	L	Remedy	L
11	Surface water and sensitive areas	**Phase 2 activities** Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.	Impacts on sensitive landscapes as a result of the removal of topsoil	Construction of Phase 2	L	Control	L
12	Heritage	**Phase 2 activities** Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.	Disturbance of heritage resources due to the removal of topsoil. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 1. **As per Reference No. 5 above.**	Construction of Phase 2	L	Control	L
13	Traffic	**Phase 2 activities** Haulage of loam/soil sample via road to adjacent KEM-JV operation	Additional volume of traffic added to road to KEM-JV.	Operational of Phase 2	L	Control	L
14	Fauna & Flora	**Phase 2 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of magnetic lines (if any) • Re-spreading of stockpiled topsoil over cleared areas used for magnetic lines and soil sampling.	Destruction and / or disturbance of on-site fauna and flora by vehicle movements on the veld and removal of magnetic lines.	Decommissioning and Closure of Phase 2	L	Control	L
15	Soil, Surface water & Groundwater	**Phase 3 activities:** Establishment of prospecting site (safety barrier, drilling pad)	Compaction and possible contamination of soil, surface water and groundwater from spillages of dangerous goods.	Construction of Phase 3	M	Remedy	L
16	Noise	**Phase 3 activities:** Establishment of prospecting site.	Site establishment causing nuisance noise, impacts on communities and surrounding landowners and other persons.	Construction of Phase 3	L		L

NO.	Environmental component (Aspects affected)	ACTIVITY whether listed or not listed	Impact description	Phase (Construction/ Commissioning/ Operational/ Decommissioning/ Closure/Post-Closure)	Pre-mitigation significance	MITIGATION TYPE (modify, remedy, control, or stop)	Post-mitigation Significance
17	Fauna & Flora	**Phase 3 activities:** Establishment and utilisation of prospecting site.	Destruction and damage to flora as a result of open fires and other disturbances.	Construction of Phase 3	L	Control	L
18	Heritage	**Phase 3 activities:** Establishment of prospecting site (safety barrier, drilling pad)	Disturbance of heritage resources due to the establishment of prospecting sites. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 1. **As per Reference No. 5 above.**	Construction of Phase 3	L	Control	L
19	Fauna & Flora	**Phase 3 activities:** Establishment of access tracks	Impact on fauna and flora resources as a result of the establishment of the access tracks.	Construction of Phase 3	L	Control	L
20	Surface water and sensitive landscapes	**Phase 3 activities:** Establishment of access tracks	Impacts on sensitive landscapes as a result of the establishment of the access tracks.	Construction of Phase 3	L	Control	L
21	Heritage	**Phase 3 activities:** Establishment of access tracks	Destruction and / or disturbance of on-site heritage resources as a result of the establishment of access tracks. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 1. **As per Reference No. 5 above.**	Construction of Phase 3	L	Control	L
22	Fauna & Flora	**Phase 3 activities:** Site Preparation: Clearance of topsoil and vegetation (prospecting site activities)	Loss of fauna and flora as a result of clearance of vegetation.	Construction of Phase 3	M	Control	L
23	Surface water and sensitive landscapes	**Phase 3 activities:** Site Preparation: Clearance of topsoil and vegetation (prospecting site activities)	Impacts on sensitive landscapes as a result of the clearance of topsoils and vegetation.	Construction of Phase 3	M	Control	L
24	Heritage	**Phase 3 activities:** Site Preparation: Clearance of topsoil and vegetation (prospecting site activities)	Disturbance of heritage resources due to the clearance of vegetation and topsoil. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): **1. As per Reference No. 5 above.**	Construction of Phase 3	L	Control	L
25	Soil	**Phase 3 activities:** Stockpiling of topsoil material (following excavation)	Loss of topsoil resource.	Construction of Phase 3	L	Control	L
26	Surface water and sensitive landscapes	**Phase 3 activities:** Stockpiling of topsoil material (following excavation)	Impacts on sensitive landscapes as a result of the stockpiling of soils	Construction of Phase 3	L	Control	L
27	Surface water and sensitive landscapes	**Phase 3 activities:** Scout and delineation drilling (exploration drilling)	Oil leakage may impact on sensitive landscapes.	Operational Phase of Phase 3	L	Control	L
28	Groundwater	**Phase 3 activities:** Scout and delineation drilling (exploration drilling)	Oil leakage may impact on groundwater resources.	Operational Phase of Phase 3	L	Control	L
29	Traffic	**Phase 3 activities:** Haulage of sample via road	Additional volume of traffic added to road to existing KEM-JV operation.	Operational Phase of Phase 3	L	Control	L
30	Soil, Surface water & Groundwater	**Phase 3 activities:** Generation, storage and disposal of waste.	Contamination of soil, surface water and groundwater as a result of improper disposal of waste.	Operational Phase of Phase 3	L	Control	L

NO.	Environmental component (Aspects affected)	ACTIVITY whether listed or not listed	Impact description	Phase (Construction/ Commissioning/ Operational/ Decommissioning/ Closure/Post-Closure)	Pre-mitigation significance	MITIGATION TYPE (modify, remedy, control, or stop)	Post-mitigation Significance
32	Surface water & Groundwater	**Phase 3 activities:** Supply of water for domestic and drilling purposes.	Depletion of natural water resources for use in prospecting activities.	Operational Phase of Phase 3	L	Control	L
33	Fauna & Flora	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Destruction and / or disturbance of on-site fauna.	Decommissioning and Closure Phase of Phase 3	M	Remedy	L
34	Fauna	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Poor access control resulting in impacts on game breeding and grazing practices.	Decommissioning and Closure Phase of Phase 3g	L	Control	L
35	Flora	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Establishment of alien vegetation	Decommissioning and Closure Phase of Phase 3	M	Control & remedy	L
36	Soil, Surface water & Groundwater	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Potential water and soil pollution resulting from hydrocarbon spills, open boreholes and waste disposal practices	Decommissioning and Closure Phase of Phase 3	M	Control & remedy	L
37	Soil, Surface water & Groundwater	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Soil erosion resulting from the re-spreading of topsoil before vegetation is re-established.	Decommissioning and Closure Phase of Phase 3	M	Control &Remedy	L
38	Air quality	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas.	Dust emissions from decommissioning activities (including vehicle entrained dust).	Decommissioning and Closure Phase of Phase 3	L	Control	L

NO.	Environmental component (Aspects affected)	ACTIVITY whether listed or not listed	Impact description	Phase (Construction/ Commissioning/ Operational/ Decommissioning/ Closure/Post-Closure)	Pre-mitigation significance	MITIGATION TYPE (modify, remedy, control, or stop)	Post-mitigation Significance
		• Re-vegetation of all disturbed areas.					
34	Noise	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Inconvenience to neighbours / disturbance of fauna due to noise	Decommissioning and Closure Phase of Phase 3	L	Control	L

10. Summary of specialist reports.

Provided in Table 18, is a summary of recommendations made in the specialist reports as undertaken for the Project. Recommendations as provided have been included in this BAR report.

Table 18: Summary of recommendations in specialist reports

List of specialist studies	Recommendations of specialist reports	Specialist recommendations that have been included in the EIA report (Mark with an X where applicable)	Reference to applicable section of report where specialist recommendations have been included
Closure and Rehabilitation Plan	• The success in achieving the objectives set out in the closure plan relies mainly on fulfilling the responsibilities allocated in the rehabilitation plan. The rehabilitation plan focuses on achieving the closure objectives set out in this document. By not complying with the actions identified in the rehabilitation plan the closure objectives cannot be achieved, making the implementation of the closure plan unsuccessful. • This closure plan will be reviewed annually and updated subject to major changes to the Prospecting Works Programme.	X	Refer to the Risk Assessment Report attached hereto as Appendix D and Section 7.5 of Part A above.
Phase 1 Heritage Impact Assessment	• It is advised that the historical features are documented in a second phase study as soon as possible. • It is advised that once the scout drilling sites are determined that these sites are inspected by a heritage specialist.	X	Refer to the Risk Assessment Report attached hereto as Appendix D and Section 7.5 of Part A above.

Note that should additional prospecting activities be required for the removal and disposal of diamonds, the necessary environmental authorisation will be obtained prior to the commencement thereof and the necessary specialist studies conducted.

11. Environmental impact statement

11.1 Summary of the key findings of the environmental impact assessment

An impact assessment has been undertaken which will incorporate extensive consultation with and participation of interested and affected parties. Applying the hierarchical approach to impact management were firstly considered to avoid negative impacts, but where avoidance was not possible, to better mitigate and manage negative impacts. Where impacts were found to be potentially significant, various mitigation measures to manage and monitor the impacts of the project have been proposed. Furthermore, the environmental impact statement (Part A Section 7.5) summarises the key findings of the environmental impact assessment and negative implications of the project.

The entire extent of the area will not be impacted upon by the prospecting activities, as drilling areas will be identified during the desktop study and ground truthing phases. Disturbances will thus be limited to the prospecting site and access roads. Several potential medium impacts have been identified associated with the construction and operation of the Project. Risks of mention relate to the impacts on fauna and flora as well as soil, surface water and groundwater. However, after applying the mitigation measures as proposed it is not foreseen that any long term high or medium impacts will occur.

11.2 Final Site Map

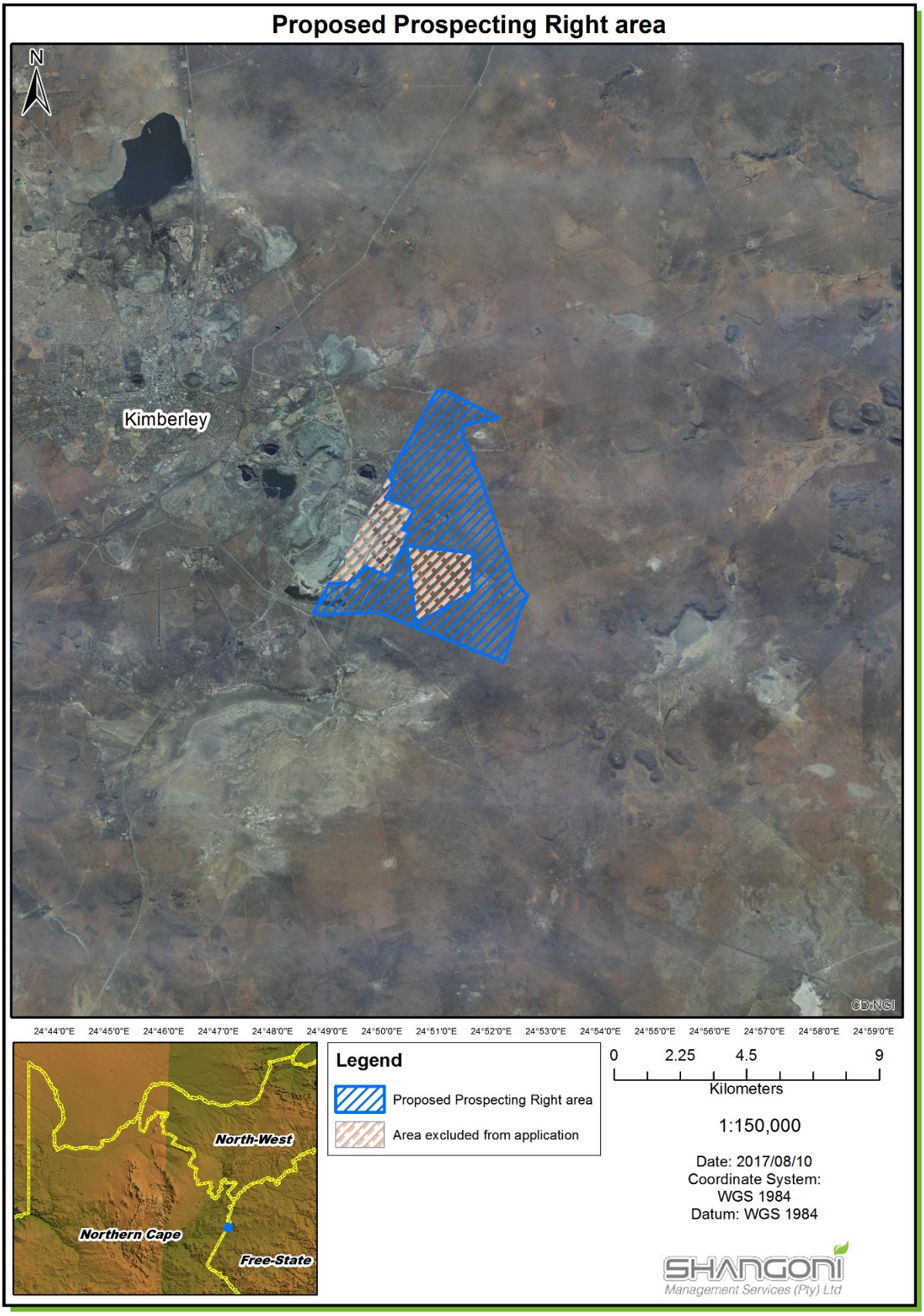


Figure 38: Final site map

11.3 Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives

Table 19: Summary of significant environmental impacts (negative), after mitigation.

NO.	ACTIVITY	Impact description	Post-mitigation Significance
1	**Phase 2 activities** Airborne gradient magnetic survey. The area will be flown with an airborne gradient magnetic survey.	Disturbance to surrounding landowners by noise of low flying aircraft.	L
2	**Phase 2 activities** Airborne gradient magnetic survey. The area will be flown with an airborne gradient magnetic survey.	Disturbance to fauna by low flying aircraft.	L
3	**Phase 2 activities** Establishment and utilisation of access tracks.	Destruction and damage to flora and fauna by establishment of access tracks and driving off the existing access tracks.	L
4	**Phase 2 activities** Establishment and utilisation of access tracks	Impacts on sensitive landscapes as a result of the establishment of access tracks and driving off the existing access tracks.	L
5	**Phase 2 activities** Establishment and utilisation of access tracks.	Destruction and / or disturbance of on-site heritage resources as a result of the establishment of access tracks. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 12. Site 1. Rehabilitated Wesselton village 13. Site 2. General. 14. Site 3. Midden 1. 15. Site 4. Midden 2. 16. Site 5. Midden 3. 17. Site 6. 1. Rooifontein fountain, wells, stock pen and dwellings. 18. Site 6. 2. Pipeline feature. 19. Site 6. 3. Iron reservoir. 20. Site 6.4. Second South African War fortification. 21. Site 7. Pit and dump. 22. Site 8. Trenches.	L

NO.	ACTIVITY	Impact description	Post-mitigation Significance
6	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.	Destruction and / or disturbance of on-site fauna and flora by vehicle movements on the veld and laying of magnetic lines.	L
7	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.	Impacts on sensitive landscapes as a result of the vehicle movements and laying of magnetic lines.	L
8	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.	Noise impacts resulting from ground geophysical surveys, nuisance noise impacts on communities and landowners and other persons.	L
9	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.	Destruction and / or disturbance of on-site heritage resources as a result of the movement of vehicles and laying of magnetic tracks. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 2. **As per Reference No. 5 above.**	L
10	**Phase 2 activities** Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.	Removal of topsoil	L
11	**Phase 2 activities**	Impacts on sensitive landscapes as a result of the removal of topsoil	L

NO.	ACTIVITY	Impact description	Post-mitigation Significance
	Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.		
12	**Phase 2 activities** Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.	Disturbance of heritage resources due to the removal of topsoil. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 2. **As per Reference No. 5 above.**	L
13	**Phase 2 activities** Haulage of loam/soil sample via road to adjacent KEM-JV operation	Additional volume of traffic added to road to KEM-JV.	L
14	**Phase 2 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of magnetic lines (if any) • Re-spreading of stockpiled topsoil over cleared areas used for magnetic lines and soil sampling.	Destruction and / or disturbance of on-site fauna and flora by vehicle movements on the veld and removal of magnetic lines.	L
15	**Phase 3 activities:** Establishment of prospecting site (safety barrier, drilling pad)	Compaction and possible contamination of soil, surface water and groundwater from spillages of dangerous goods.	L
16	**Phase 3 activities:** Establishment of prospecting site.	Site establishment causing nuisance noise, impacts on communities and surrounding landowners and other persons.	L
17	**Phase 3 activities:** Establishment and utilisation of prospecting site.	Destruction and damage to flora as a result of open fires and other disturbances.	L
18	**Phase 3 activities:** Establishment of prospecting site (safety barrier, drilling pad)	Disturbance of heritage resources due to the establishment of prospecting sites. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 2. **As per Reference No. 5 above.**	L
19	**Phase 3 activities:** Establishment of access tracks	Impact on fauna and flora resources as a result of the establishment of the access tracks.	L

NO.	ACTIVITY	Impact description	Post-mitigation Significance
20	**Phase 3 activities:** Establishment of access tracks	Impacts on sensitive landscapes as a result of the establishment of the access tracks.	L
21	**Phase 3 activities:** Establishment of access tracks	Destruction and / or disturbance of on-site heritage resources as a result of the establishment of access tracks. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 2. **As per Reference No. 5 above.**	L
22	**Phase 3 activities:** Site Preparation: Clearance of topsoil and vegetation (prospecting site activities)	Loss of fauna and flora as a result of clearance of vegetation.	L
23	**Phase 3 activities:** Site Preparation: Clearance of topsoil and vegetation (prospecting site activities)	Impacts on sensitive landscapes as a result of the clearance of topsoils and vegetation.	L
24	**Phase 3 activities:** Site Preparation: Clearance of topsoil and vegetation (prospecting site activities)	Disturbance of heritage resources due to the clearance of vegetation and topsoil. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): **1. As per Reference No. 5 above.**	L
25	**Phase 3 activities:** Stockpiling of topsoil material (following excavation)	Loss of topsoil resource.	L
26	**Phase 3 activities:** Stockpiling of topsoil material (following excavation)	Impacts on sensitive landscapes as a result of the stockpiling of soils	L
27	**Phase 3 activities:** Scout and delineation drilling (exploration drilling)	Oil leakage may impact on sensitive landscapes.	L
28	**Phase 3 activities:** Scout and delineation drilling (exploration drilling)	Oil leakage may impact on groundwater resources.	L
29	**Phase 3 activities:** Haulage of sample via road	Additional volume of traffic added to road to existing KEM-JV operation.	L
30	**Phase 3 activities:** Generation, storage and disposal of waste.	Contamination of soil, surface water and groundwater as a result of improper disposal of waste.	L
32	**Phase 3 activities:** Supply of water for domestic and drilling purposes.	Depletion of natural water resources for use in prospecting activities.	L

NO.	ACTIVITY	Impact description	Post-mitigation Significance
33	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Destruction and / or disturbance of on-site fauna.	L
34	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Poor access control resulting in impacts on game breeding and grazing practices.	L
35	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Establishment of alien vegetation	L
36	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Potential water and soil pollution resulting from hydrocarbon spills, open boreholes and waste disposal practices	L
37	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas.	Soil erosion resulting from the re-spreading of topsoil before vegetation is re-established.	L

NO.	ACTIVITY	Impact description	Post-mitigation Significance
	• Re-vegetation of all disturbed areas.		
38	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Dust emissions from decommissioning activities (including vehicle entrained dust).	L
34	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Inconvenience to neighbours / disturbance of fauna due to noise	L

12. Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr

Table 20: Impact management objectives and the impact management outcomes

ENVIRONMENTAL ASPECT	OBJECTIVE	SUMMARY OF IMPACT MANAGEMENT OUTCOME
Fauna &Flora	Minimise the impact on protected and endangered fauna and flora species.	Appoint a suitable qualified specialist prior to removal of any fauna or flora species. Should any protected/endangered or threatened species be damaged or destroyed the necessary licences and or permits will be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Free State Department of Economic Development, Tourism and Environmental Affairs (DEDTEA).

ENVIRONMENTAL ASPECT	OBJECTIVE	SUMMARY OF IMPACT MANAGEMENT OUTCOME
		General implementation of activities taking Mining and Biodiversity Guidelines into account Rehabilitation in terms of MPRDA and NEMA principles. Adherence to Closure and Rehabilitation Plan
Noise	Minimise noise levels.	Maintain and Implement Complaint register. Obtain landowner consent. Rehabilitation in terms of MPRDA and NEMA principles. Adherence to Closure and Rehabilitation Plan
Soil	Minimise impact on soil	Comply to the method as stipulated in the Prospecting Works Programme. Rehabilitation in terms of MPRDA and NEMA principles. Water management measures in compliance with NWA, 1998 and GN 704, 1999. Compliance with DWS's Best Practice Guideline Series in terms of integrated water and waste management and monitoring. Biodiversity and alien invasive management in accordance with NEMBA, 2004.
Heritage Resources	Minimise the impact on heritage resources.	Comply to the National Heritage Resources Act, 1999 (Act No. 25 Of 1999)
Soil, Surface water, sensitive landscapes & Groundwater	Avoid contamination of soil and water resources Avoid disturbance to sensitive landscapes.	System and Operational Procedures and training programme in compliance with ISO14001. Water management measures in compliance with NWA, 1998 and GN 704, 1999. Compliance with DWS's Best Practice Guideline Series in terms of integrated water and waste management and monitoring.
Surface & Groundwater	Minimise the impact on water consumption.	Operational control procedures and monitoring: E.g. spill / leak handling; Incident Reporting System; Environmental Inspections; Planned Maintenance System; water quantity (abstraction) monitoring;

ENVIRONMENTAL ASPECT	OBJECTIVE	SUMMARY OF IMPACT MANAGEMENT OUTCOME
		continued communication with surrounding landowners. Rehabilitation in terms of MPRDA and NEMA principles. Adherence to Closure and Rehabilitation Plan
Traffic	Minimise traffic levels.	Comply to provincial road regulations.

13. Aspects for inclusion as conditions of Authorisation.

Should the DMR grant authorisation for the proposed Prospecting activities, it should be subject to the following conditions:

- The project should remain in full compliance with the requirements of the EMPr and with all regulatory requirements;
- The EMPr should be implemented by qualified environmental personnel who have the competence and credibility to interpret the requirements of the BAR and the EMPr. Such persons must be issued with a written mandate by mine management to provide guidance and instructions to employees and contractors;
- Stakeholder engagement must be maintained during the construction, operational and closure/rehabilitation phases of the project; and
- The propecting activities may only commence on approvel of the propspecting right (as per the submitted propspecting right application[38]).

14. Description of any assumptions, uncertainties and gaps in knowledge.

In terms of the EIA Regulations GN R543 31(2)(m), the Environmental Impact Assessment Practitioner (EAP) must provide a description of any assumptions, uncertainties and gaps in knowledge upon which the impact assessment has been based. The table below provides the assumptions and limitations applicable to the various specialist assessments.

[38] Prospecting Right in terms of section 16 of the Mineral and Petroleum Resources Development Act 2002 (No.28 of 2002) (MPRDA)

Table 21: Specialist assumptions and limitations

Specialist	Assumptions and limitations
Closure Plan	The following biophysical assumptions have been made: • Costing was determined with the assumption that there will be four (4) drilling sites. This may change after completion of the first two phases of the project. • Existing farm roads will be utilised where possible to minimise the disturbance. • No bulk sampling will be done.

15. Reasoned opinion as to whether the proposed activity should or should not be authorised

15.1 Reasons why the activity should be authorized or not.

In accordance with Appendix 1(3) (p) of the 2014 EIA Regulations GN R.982, as amended, the Environmental Impact Assessment Practitioner (EAP) must provide an opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation must be stated.

An impact assessment has been undertaken which has incorporated extensive consultation with and participation of interested and affected parties. Applying the hierarchical approach to impact management, alternatives were firstly considered to avoid negative impacts, but where avoidance was not possible, to better mitigate and manage negative impacts. Where impacts were found to be potentially significant, various mitigation measures to manage and monitor the impacts of the project have been proposed.

In terms of collectively considering ecological, social and economic impacts it is important to remember that while there might be some trade-offs between the considerations, in South Africa all development must in terms of Section 24 of the Constitution be ecologically sustainable, while economic and social development must be justifiable. There are therefore specific "trade-off" rules that apply. Environmental integrity may never be compromised and the social and economic development must take a certain form and meet certain specific objectives in order for it to be considered justifiable.39

No medium or high impacts after mitigation have been identified associated with the project. It is the EAP's opinion that these impacts can be mitigated to prevent the environmental integrity from being compromised. Should the prospecting right not be approved the opportunity to identify future mining operations and to potentially prolong the life of mine will be negatively influenced, and so the opportunity for further economic growth with positive economic impact.

[39] Guideline on need and desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2010 (GN 891 of 20 October 2014);

In terms of collectively considering ecological, social and economic impacts the economic development is justifiable, and also considering the social benefit, the EAP is of opinion that this project should be authorised.

15.2 Conditions that must be included in the authorisation

15.2.1 Specific conditions to be included into the compilation and approval of the EMPr

Should the DMR grant authorisation for this project, it should be subject to the following conditions:

- The project should remain in full compliance with the requirements of the EMPr and with all regulatory requirements;
- The EMPr should be implemented by qualified environmental personnel who have the competence and credibility to interpret the requirements of the EMPr. Such persons must be issued with a written mandate by management to provide guidance and instructions to employees and contractors;
- Stakeholder engagement must be maintained during the construction, operational and closure/rehabilitation phases of the project, with the emphasis on the continuing provision of information; and
- The propecting activities may only commence on approvel of the propspecting right (as per the submitted propspecting right application[40]).

15.2.2 Rehabilitation requirements

- Soil contaminated with oil shall be dug up to 30cm below the saturated oil mark and disposed at a permitted landfill site.
- Access tracks will be rehabilitated, should such be required (with recognition of potential mining activities).
- All prospecting equipment will be removed off-site, taking recognition of potential mining activities to be undertaken within this area.
- Boreholes will be appropriately capped (cementing below surface and covered).
- Areas of disturbance e.g. drill rig activities will be appropriately topsoiled/overburden will be backfilled, and ripped if necessary and monitored for further revegetation requirements.
- Areas where erosion could occur will be minimised by appropriate surface shaping.

[40] Prospecting Right in terms of section 16 of the Mineral and Petroleum Resources Development Act 2002 (No.28 of 2002) (MPRDA)

16. Period for which the Environmental Authorisation is required.

The life of the project will span over five (5) years, with drilling activities commencing in year four (4). Rehabilitation will be conducted concurrently where possible. Rehabilitation activities such as sealing boreholes and cleaning potential polluted areas will be conducted by the prospecting team, employed by Ekapa Minerals (Pty) Ltd. Equipment that will be used will also be provided by KEM-JV.

17. Undertaking

The undertaking required to meet the requirements of the Basic Assessment and Environmental Management Programme Report is included in the EMPR portion of this document (See Part B Section. 2) and conforms to Section. 24N of the National Environmental Management Act (107 of 1998) as amended and all applicable Regulations.

18. Financial Provision

A total of R 16,904.42 is required to both manage and rehabilitate the environment in respect of rehabilitation.

18.1 Explain how the aforesaid amount was derived.

The personnel within the Department of Mineral Resources (DMR) Regional Offices are required to review and approve the quantum, that is, the monetary value of the financial provision that has been computed by the holder of a prospecting right, mining right or mining permit during the annual review as being sufficient to cover the environmental liability at that time and at closure of the prospecting activities. This guideline document entitled “Guideline document for the evaluation of financial provision made by the mining industry” has been developed to address this need, and is for use by the DMR personnel in the Regional Offices.

The guideline for the calculation of closure cost issued by DMR in 2005 was used to support the calculation of the closure cost quanta.

The tariffs used in the guideline document have been increased to support inflation increases since 2005. Tariffs were increase by 6% per annum to 2022, based on the inflation levels as documented by the Reserve Bank of South Africa. The tariff for borehole sealing was obtained from various contractor quotes in 2016 and was subsequently also escalated per CPI to 2022.

Table 22: Closure cost tariffs used

List reference	Unit	Rates (2022)	Rate used
Borehole sealing	no	R 1,702.22	North West
General surface rehabilitation	ha	R 161,522.22	DMR rate (escalated)
2 to 3 years of maintenance and aftercare	ha	R 19 204,25	DMR rate (escalated)

18.2 Confirm that this amount can be provided for from operating expenditure.

The financial provision will be made available to the DMR on the date of the execution of the Prospecting Right.

19. Specific Information required by the competent Authority

19.1 Compliance with the provisions of sections 24(4)(a) and (b) read with section 24 (3) (a) and (7) of the National Environmental Management Act (Act 107 of 1998). the EIA report must include the: -

19.1.1 Impact on the socio-economic conditions of any directly affected person.

No impacts on socio-economic conditions of any directly affected persons are foreseen as a result of the prospecting activities.

19.1.2 Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.

As described under Part 7.4.1 above, sites of heritage resources have been identified on the Farm Rooifontein 1722 and include:

1. Site 1. Rehabilitated Wesselton village
2. Site 2. General.
3. Site 3. Midden 1.
4. Site 4. Midden 2.
5. Site 5. Midden 3.
6. Site 6. 1. Rooifontein fountain, wells, stock pen and dwellings.
7. Site 6. 2. Pipeline feature.
8. Site 6. 3. Iron reservoir.

However, should such sites be avoided during the prospecting activities, it is not anticipated that any impacts on any national estate referred to in section 3(2) of the National Heritage Resources Act are foreseen as a result of the prospecting activities.

20. Other matters required in terms of sections 24(4)(a) and (b) of the Act.

An impact assessment for the proposed Prospecting Project has been undertaken and will incorporate extensive consultation with and participation of interested and affected parties. Applying the hierarchical approach to impact management were firstly considered to avoid negative impacts, but where avoidance was not possible, to better mitigate and manage negative impacts. Where impacts were found to be potentially significant, various mitigation measures to manage and monitor the impacts of the project have been proposed. Furthermore, the environmental impact statement (Part A Section 7.5) summarises the key findings of the environmental impact assessment and negative implications of the project

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. Draft environmental management programme.

1.1 Details of the EAP

The requirements for the provision of the detail and expertise of the EAP are included in PART A, Section 1.1.

1.2 Description of the Aspects of the Activity

The requirement to describe the aspects of the activity that are covered by the draft environmental management programme is included in PART A, Section 8.

1.3 Composite Map

Refer to the map below that superimposes the proposed activity, its associated structures and infrastructures on the environmental sensitivities of the preferred sites, also indicating any areas that should be avoided, including buffers.

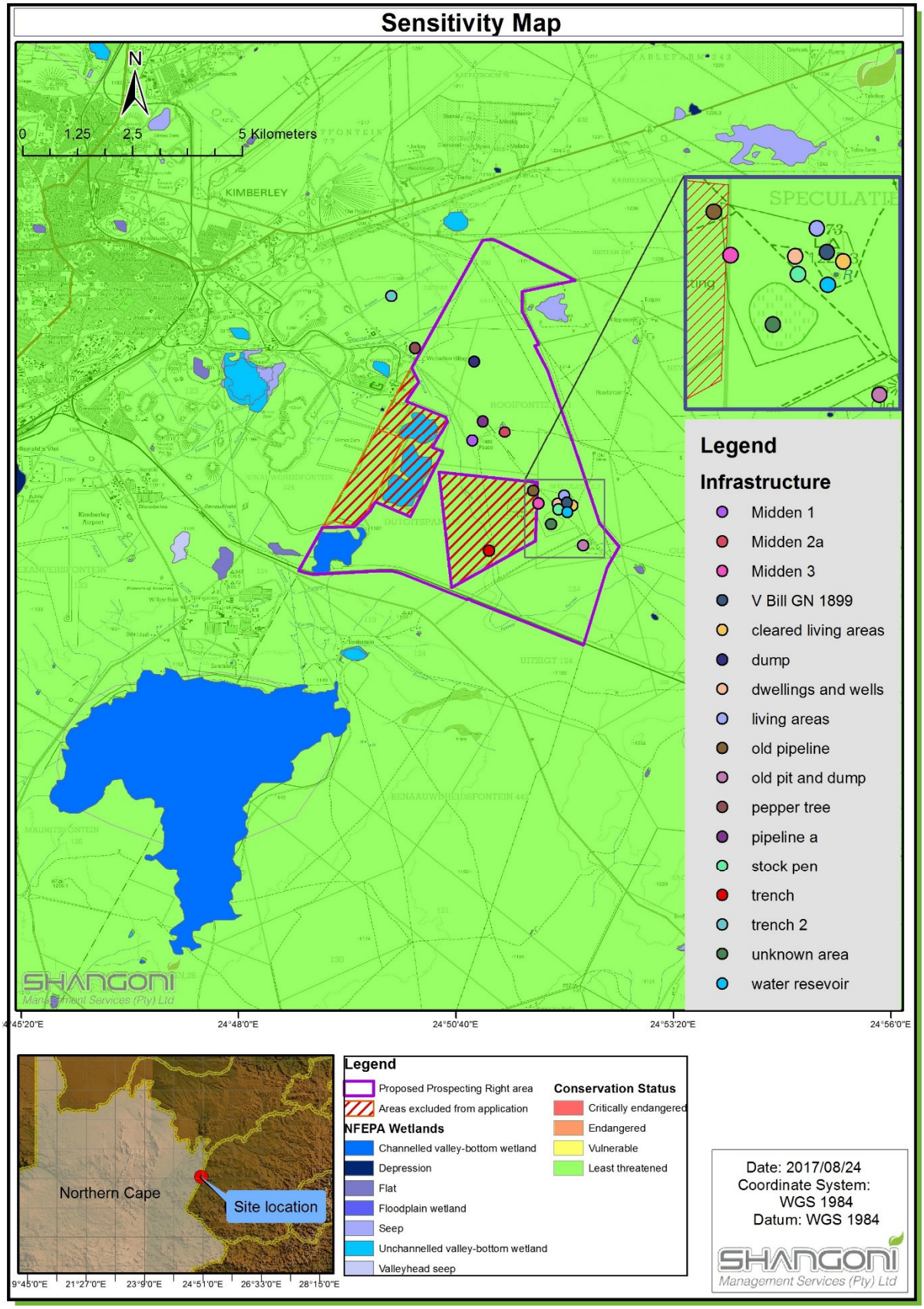


Figure 39: Environmental sensitivities of the site

1.4 Description of Impact management objectives including management statements

1.4.1 Determination of closure objectives.

The closure vision for the prospecting site is to keep environmental disturbance to a minimum and rehabilitate disturbed areas to ensure a safe and environmentally stable post-prospecting land use.

1.4.2 Volumes and rate of water use required for the operation.

The prospecting activities will require 50 litres of water per day for human consumption and 10 m^3/day for drilling operations. This water will be obtained from the existing KEM-JV operation.

Consideration was also given to the of proximity of wetlands and other water bodies. Please refer to Part A Section 7.4.1 for a description of the water bodies, Part B Section 1.3 for a composite map indicating the sensitive areas and buffers that should be avoided and Part A Section 7.5 and Annexure D for the risk assessment which includes mitigations hereto.

1.4.3 Has a water use licence has been applied for?

No water use licence will be required as potable water will be obtained from the Rooifontein Wildlife Club as operated and managed by KEM-JV. All activities will be kept 500m away from watercourses as per the sensitivity map.

1.4.4 Impacts to be mitigated in their respective phases

Table 23: Measures to rehabilitate the environment affected by the undertaking of any listed activity

NO.	ACTIVITY whether listed or not listed	PHASE in which impact is anticipated	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
1	**Phase 2 activities** Airborne gradient magnetic survey. The area will be flown with an airborne gradient magnetic survey.	Planning and design of Phase 2	2 239.7404 ha	1. Site activities will be conducted during daytime hours 07h00 – 17h30 during weekdays to avoid night time and weekend noise disturbances. 2. Notify affected landowners of how and where they can lodge a noise compliant prior to commencement of the airborne activities.	Maintain and Implement Compliant register.	Planning and design phase. of Phase 2
2	**Phase 2 activities** Airborne gradient magnetic survey. The area will be flown with an airborne gradient magnetic survey.	Planning and design of Phase 2	2 239.7404 ha	1. Site activities will be conducted during daytime hours 07h00 – 17h30 during weekdays to avoid night time and weekend noise disturbances. 2. Notify affected landowners of how and where they can lodge a noise compliant prior to commencement of the airborne activities.	Maintain and Implement Compliant register.	Planning and design phase. of Phase 2
3	**Phase 2 activities** Establishment and utilisation of access tracks.	Construction of Phase 2	Single track.	1. Low traffic (track use of approximately twice per day) 2. Vehicle speed will be reduced (limited to 40 km/hr), particularly in highly vegetated areas to avoid deaths by vehicle impacts 3. No vegetation clearance or tree removal should take place prior to a suitable qualified specialist have identified the species and the necessary permits and licences have been obtained for removal of protected or endangered species. 4. Planning of track route to avoid sensitive areas. 5. Keep out of the sensitive areas as indicated in the Sensitivity map.	Appoint a suitable qualified specialist prior to removal of any fauna or flora species. Should any protected/endangered or threatened species be damaged or destroyed the necessary licences and or permits will be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Free State Department of Economic Development, Tourism and Environmental Affairs (DEDTEA). General implementation of activities taking Mining and Biodiversity Guidelines into account	Construction Phase of Phase 2
4	**Phase 2 activities** Establishment and utilisation of access tracks	Construction of Phase 2	Single track.	1. Keep out of the sensitive areas as indicated in the Sensitivity map. 2. No activities (including establishment of access tracks) to be undertaken within 500m of the sensitive areas. This includes within 500 m of the possible origin of the Rooifontein Spring identified on site (refer to Annexure G for details). 3. Planning of track route to avoid sensitive areas. 4. Should activities be undertaken within 500 meters of wetland areas, the requirements for a WULA must be investigated.	Water management measures in compliance with NWA, 1998 and GN 704, 1999.	Construction Phase of Phase 2
5	**Phase 2 activities** Establishment and utilisation of access tracks.	Construction of Phase 2	Single track.	1. Planning of track route to avoid identified sites of heritage resources. 2. Should any heritage resources and artefacts be identified during the construction of the access tracks, activities should cease in said area and the suitably qualified archaeologist appointed to assess the find.	Comply to the National Heritage Resources Act, 1999 (Act No. 25 Of 1999)	Construction Phase of Phase 2
6	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an	Construction of Phase 2	100m parallel lines over parts of the 2 239.7404 ha area.	1. Low traffic (track use of approximately twice per day) 2. Vehicle speed will be reduced (limited to 40 km/hr), particularly in highly vegetated areas to avoid deaths by vehicle impacts 3. No vegetation clearance or tree removal should take place prior to a suitable qualified specialist have identified the species and the necessary permits and licences have been obtained for removal of protected or endangered species. 4. Planning of track route to avoid sensitive areas.	Appoint a suitable qualifies specialist prior to removal of any fauna or flora species. Should any protected/endangered or threatened species be damaged or destroyed the necessary licences and or permits will be obtained from the	Construction Phase of Phase 2

NO.	ACTIVITY whether listed or not listed	PHASE in which impact is anticipated	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
	appropriate interval based on the dimensions of the target being investigated.			5. Keep out of the sensitive areas as indicated in the Sensitivity map.	Department of Agriculture, Forestry and Fisheries (DAFF) and the Free State Department of Economic Development, Tourism and Environmental Affairs (DEDTEA). General implementation of activities taking Mining and Biodiversity Guidelines into account	
7	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.	Construction of Phase 2	100m parallel lines over parts of the 2 239.7404 ha area.	1. Keep out of the sensitive areas as indicated in the Sensitivity map. 2. No activities (including establishment of access tracks) to be undertaken within 500m of the sensitive areas. This includes within 500 m of the possible origin of the Rooifontein Spring identified on site (refer to Annexure G for details). 3. Planning of track route to avoid sensitive areas. 4. No vegetation clearance or tree removal should take place prior to a suitable qualified specialist have identified the species and the necessary permits and licences have been obtained for removal of protected or endangered species. 5. Should activities be undertaken within 500 meters of wetland areas, the requirements for a WULA must be investigated.	Water management measures in compliance with NWA, 1998 and GN 704, 1999. Should any protected/endangered or threatened species be damaged or destroyed the necessary licences and or permits will be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Free State Department of Economic Development, Tourism and Environmental Affairs (DEDTEA).	Construction Phase of Phase 2
8	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.	Construction of Phase 2	100m parallel lines over parts of the 2 239.7404 ha area.	1. Site activities will be conducted during daytime hours 07h00 – 17h30 during weekdays to avoid night time and weekend noise disturbances. 2. Notify surrounding landowners of how and where they can lodge a noise compliant prior to commencement of the ground magnetic survey activities.	Maintain and Implement Complaint register.	Construction of Phase 2
9	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.	Construction of Phase 2	100m parallel lines over parts of the 2 239.7404 ha area.	1. Planning of routes and magnetic lines to avoid identified sites of heritage resources. 2. Should any heritage resources and artefacts be identified during the laying of magnetic tracks, activities should cease in said area and the suitably qualified archaeologist appointed to assess the find.	Comply to the National Heritage Resources Act, 1999 (Act No. 25 Of 1999)	Construction Phase of Phase 2
10	**Phase 2 activities** Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.	Construction of Phase 2	Maximum 200 litres	1. Only remove a maximum of 200 litres of soil per sample. 2. After the soil is sieved place the soil back into the ground.	Comply to the method as stipulated in the Prospecting Works Programme.	Construction of Phase 2

NO.	ACTIVITY whether listed or not listed	PHASE in which impact is anticipated	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
11	**Phase 2 activities** Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.	Construction of Phase 2	Maximum 200 litres	1. Keep out of the sensitive areas as indicated in the Sensitivity map. 2. No activities to be undertaken within 500m of the sensitive areas. 3. Only remove a maximum of 200 litres of soil per sample. 4. After the soil is sieved place the soil back into the ground.	Water management measures in compliance with NWA, 1998 and GN 704, 1999. Should any protected/endangered or threatened species be damaged or destroyed the necessary licences and or permits will be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Free State Department of Economic Development, Tourism and Environmental Affairs (DEDTEA). Comply to the method as stipulated in the Prospecting Works Programme.	Construction Phase of Phase 2
12	**Phase 2 activities** Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.	Construction of Phase 2	Maximum 200 litres	1. Planning of loam/soil sampling sites to avoid identified sites of heritage resources. 2. Should any heritage resources and artefacts be identified during the removal of topsoil, activities should cease in said area and the suitably qualified archaeologist appointed to assess the find.	Comply to the National Heritage Resources Act, 1999 (Act No. 25 Of 1999)	Construction Phase of Phase 2
13	**Phase 2 activities** Haulage of loam/soil sample via road to adjacent KEM-JV operation	Operational of Phase 2	Provincial road and single access tracks	1. Low traffic (track use of approximately twice per day) 2. Vehicle speed will be reduced (limited to 40 km/hr), particularly in highly vegetated areas to avoid deaths by vehicle impacts 3. Use existing tracks and provincial road. 4. Keep within the designated road and comply to the provincial road regulations. 5. Vehicle maintenance programmes and obey speed limits on both private and public roads.	Comply to provincial road regulations.	Operational of Phase 2
14	**Phase 2 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of magnetic lines (if any) • Re-spreading of stockpiled topsoil over cleared areas used for magnetic lines and soil sampling.	Decommissioning and Closure of Phase 2	All areas disturbed over the 2 239.7404 ha	1. Magnetic lines will be collected using the same vehicle access route used for site preparation 2. Use existing track and roads in all instances as far as is practicable 3. Avoid significant vegetation such as trees and large shrubs if driving through the veld is required. 4. Site activities will be conducted during daytime hours 07h00 – 17h30 to avoid night time noise disturbances. 5. Vehicle speed will be reduced (limited to 40 km/hr), particularly in highly vegetated areas to avoid injury/death by vehicle impacts	Rehabilitation in terms of MPRDA and NEMA principles. Adherence to Closure and Rehabilitation Plan	Decommissioning and Closure of Phase 2
15	**Phase 3 activities:** Establishment of prospecting site (safety barrier, drilling pad)	Construction of Phase 3	±200 m^2 per prospecting site	1. Ensure that, while on site, all dangerous goods are stored within containers and drip trays 2. Any spillages should be cleaned up immediately and the contaminated soil removed to a licenced hazardous disposal site. 3. Train staff and employees on how to manage spills. 4. Keep out of the sensitive areas as indicated in the Sensitivity map. 5. No activities to be undertaken within 500m of the sensitive areas.	System and Operational Procedures and training programme in compliance with ISO14001. Water management measures in compliance with NWA, 1998 and GN 704, 1999.	Construction of Phase 3
16	**Phase 3 activities:** Establishment of prospecting site.	Construction of Phase 3	±200 m^2 per prospecting site	1. Unnecessary noise such as revving or hooting must be restricted.	Maintain and Implement Compliant register.	Construction of Phase 3

NO.	ACTIVITY whether listed or not listed	PHASE in which impact is anticipated	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
				2. Regular maintenance of vehicles and equipment is required. Repair and attend to lose or rattling covers, worn bearings and broken equipment. 3. Noise generating activities should be carried out during the day for least disturbance. 4. Generators must be switched off when not used. 5. Site activities will be conducted during daytime hours 07h00 – 17h30 during weekdays to avoid night time and weekend noise disturbances. 6. Notify adjacent landowners of how and where they can lodge a noise compliant prior to commencement of the activities.		
17	**Phase 3 activities:** Establishment and utilisation of prospecting site.	Construction of Phase 3	±200 m^2 per prospecting site	1. Minimal disturbance with very limited bush clearance. 2. No hunting or poaching is allowed on the proposed prospecting area. 3. No open fires will be allowed and/or harvesting of firewood. 4. Training of staff on responsible practises and emergency response requirements (e.g. preventing and combating veld fires). 5. Rehabilitation of prospecting sites on completion of prospecting activities with follow-up inspections to assess effectiveness of rehabilitation undertaken.	Rehabilitation in terms of MPRDA and NEMA principles. Permits to Department of Agriculture, Forestry and Fisheries (DAFF) for removal of species in terms of NEMBA General implementation of activities taking Mining and Biodiversity Guidelines into account	Construction of Phase 3
18	**Phase 3 activities:** Establishment of prospecting site (safety barrier, drilling pad)	Construction of Phase 3	±200 m^2 per prospecting site	1. Planning of prospecting sites to avoid identified sites of heritage resources. 2. Should any heritage resources and artefacts be identified during the construction of the access tracks, activities should cease in said area and the suitably qualified archaeologist appointed to assess the find.	Comply to the National Heritage Resources Act, 1999 (Act No. 25 Of 1999)	Construction Phase of Phase 3
19	**Phase 3 activities:** Establishment of access tracks	Construction of Phase 3	Single track with no clearance to prospecting site.	1. Low traffic (track use of approximately twice per day) 2. Vehicle speed will be reduced (limited to 40 km/hr), particularly in highly vegetated areas to avoid deaths by vehicle impacts 3. No vegetation clearance or tree removal should take place prior to a suitable qualified specialist have identified the species and the necessary permits and licences have been obtained for removal of protected or endangered species. 4. Planning of track route to avoid sensitive areas. 5. Keep out of the sensitive areas as indicated in the Sensitivity map.	Appoint a suitable qualifies specialist prior to removal of any fauna or flora species. Should any protected/endangered or threatened species be damaged or destroyed the necessary licences and or permits will be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Free State Department of Economic Development, Tourism and Environmental Affairs (DEDTEA). General implementation of activities taking Mining and Biodiversity Guidelines into account	Construction of Phase 3
20	**Phase 3 activities:** Establishment of access tracks	Construction of Phase 3	Single track with no clearance to prospecting site.	1. Keep out of the sensitive areas as indicated in the Sensitivity map. 2. No activities (including establishment of access tracks) to be undertaken within 500m of the sensitive areas. 3. Planning of track route to avoid sensitive areas. 4. No vegetation clearance or tree removal should take place prior to a suitable qualified specialist have identified the species and the	Water management measures in compliance with NWA, 1998 and GN 704, 1999. Should any protected/endangered or threatened species be damaged or	Construction of Phase 3

NO.	ACTIVITY whether listed or not listed	PHASE in which impact is anticipated	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
				necessary permits and licences have been obtained for removal of protected or endangered species.	destroyed the necessary licences and or permits will be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Free State Department of Economic Development, Tourism and Environmental Affairs (DEDTEA).	
21	**Phase 3 activities:** Establishment of access tracks	Construction of Phase 3	Single track with no clearance to prospecting site.	1. Planning of track route to avoid identified sites of heritage resources. 2. Should any heritage resources and artefacts be identified during the construction of the access tracks, activities should cease in said area and the suitably qualified archaeologist appointed to assess the find.	Comply to the National Heritage Resources Act, 1999 (Act No. 25 Of 1999)	Construction Phase of Phase 3
22	**Phase 3 activities:** Site Preparation: Clearance of topsoil and vegetation (prospecting site activities)	Construction of Phase 3	±10m^2 per prospecting site	1. Site clearance will be limited to only areas where invasive prospecting activities will be undertaken. 2. Topsoil and vegetation as stripped will be stockpiled and will be used during rehabilitation. 3. Should any vegetation clearance require a permit thereto, such will be obtained prior to removal. 4. Staff training on responsible practices 5. Dust suppression, but only if dust becomes a visible concern. (caution not to use waste water). 6. No vegetation clearance or tree removal should take place prior to a suitable qualified specialist have identified the species and the necessary permits and licences have been obtained for removal of protected or endangered species. 7. Keep out of the sensitive areas as indicated in the Sensitivity map	Rehabilitation in terms of MPRDA and NEMA principles. Permits to Department of Agriculture, Forestry and Fisheries (DAFF) for removal of species in terms of NEMBA General implementation of activities taking Mining and Biodiversity Guidelines into account	Construction of Phase 3
23	**Phase 3 activities:** Site Preparation: Clearance of topsoil and vegetation (prospecting site activities)	Construction of Phase 3	±10m^2 per prospecting site	1. Site clearance will be limited to only areas where invasive prospecting activities will be undertaken. 2. Topsoil and vegetation as stripped will be stockpiled and will be used during rehabilitation. 3. Should any vegetation clearance require a permit thereto, such will be obtained prior to removal. 4. Staff training on responsible practices 5. Dust suppression, but only if dust becomes a visible concern. (caution not to use waste water). 6. No vegetation clearance or tree removal should take place prior to a suitable qualified specialist have identified the species and the necessary permits and licences have been obtained for removal of protected or endangered species. 7. Keep out of the sensitive areas as indicated in the Sensitivity map 8. No activities to be undertaken within 500m of the sensitive areas.	Rehabilitation in terms of MPRDA and NEMA principles. Permits to Department of Agriculture, Forestry and Fisheries (DAFF) for removal of species in terms of NEMBA General implementation of activities taking Mining and Biodiversity Guidelines into account Water management measures in compliance with NWA, 1998 and GN 704, 1999. Should any protected/endangered or threatened species be damaged or destroyed the necessary licences and or permits will be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Free State Department of Economic Development,	Construction of Phase 3

NO.	ACTIVITY whether listed or not listed	PHASE in which impact is anticipated	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
					Tourism and Environmental Affairs (DEDTEA).	
24	**Phase 3 activities:** Site Preparation: Clearance of topsoil and vegetation (prospecting site activities)	Construction of Phase 3	±10m^2 per prospecting site	1. Planning of prospecting sites to avoid identified sites of heritage resources. 2. Should any heritage resources and artefacts be identified during the construction of the access tracks, activities should cease in said area and the suitably qualified archaeologist appointed to assess the find.	Comply to the National Heritage Resources Act, 1999 (Act No. 25 Of 1999)	Construction Phase of Phase 3
25	**Phase 3 activities:** Stockpiling of topsoil material (following excavation)	Construction of Phase 3	±5 m^2 per prospecting site	1. Topsoil material will be protected (and not used for any other purposes) and returned for rehabilitation as soon as possible. Good stockpiling practice to avoid erosion, and through stormwater control. Alien invasive vegetation eradication programme, should such become a problem	Rehabilitation in terms of MPRDA and NEMA principles. Water management measures in compliance with NWA, 1998 and GN 704, 1999. Compliance with DWS's Best Practice Guideline Series in terms of integrated water and waste management and monitoring. Biodiversity and alien invasive management in accordance with NEMBA, 2004.	Construction of Phase 3
26	**Phase 3 activities:** Stockpiling of topsoil material (following excavation)	Construction of Phase 3	±5 m^2 per prospecting site	1. Topsoil material will be protected (and not used for any other purposes) and returned for rehabilitation as soon as possible. Good stockpiling practice to avoid erosion, and through stormwater control. Alien invasive vegetation eradication programme, should such become a problem. 2. Keep out of the sensitive areas as indicated in the Sensitivity map 3. No activities to be undertaken within 500m of the sensitive areas.	Rehabilitation in terms of MPRDA and NEMA principles. Water management measures in compliance with NWA, 1998 and GN 704, 1999. Compliance with DWS's Best Practice Guideline Series in terms of integrated water and waste management and monitoring. Biodiversity and alien invasive management in accordance with NEMBA, 2004.	Construction of Phase 3
27	**Phase 3 activities:** Scout and delineation drilling (exploration drilling)	Operational Phase of Phase 3	±10 m^2 per drilling site	1. Keep out of the sensitive areas as indicated in the Sensitivity map 2. No activities to be undertaken within 500m of the sensitive areas. 3. Regular maintenance of drill to limit noise levels, prevent oil leakages etc. Provide drip trays and no equipment maintenance to be undertaken on site. 4. All oil contaminated soil will be removed to a depth of 30cm below the saturation mark and the area rehabilitated. Hydrocarbon contaminated soil will be disposed of as hazardous waste.	Water management measures in compliance with NWA, 1998 and GN 704, 1999. System and Operational Procedures and training programme in compliance with ISO14001.	Operational Phase of Phase 3

NO.	ACTIVITY whether listed or not listed	PHASE in which impact is anticipated	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
28	**Phase 3 activities:** Scout and delineation drilling (exploration drilling)	Operational Phase of Phase 3	±10 m^2 per drilling site	1. Regular maintenance of drill to limit noise levels, prevent oil leakages etc. Provide drip trays and no equipment maintenance to be undertaken on site. 2. All oil contaminated soil will be removed to a depth of 30cm below the saturation mark and the area rehabilitated. Hydrocarbon contaminated soil will be disposed of as hazardous waste.	System and Operational Procedures and training programme in compliance with ISO14001.	Operational Phase of Phase 3
29	**Phase 3 activities:** Haulage of sample via road	Operational Phase of Phase 3	Provincial road and single access tracks	1. Low traffic (track use of approximately twice per day) 2. Vehicle speed will be reduced (limited to 40 km/hr), particularly in highly vegetated areas to avoid deaths by vehicle impacts 3. Use existing tracks and provincial road. 4. Keep within the designated road and comply to the provincial road regulations. 5. Vehicle maintenance programmes and obey speed limits on both private and public roads.	Comply to provincial road regulations.	Operational Phase of Phase 3
30	**Phase 3 activities:** Generation, storage and disposal of waste.	Operational Phase of Phase 3	Less than 1 m^3/week	1. Comply with company waste management requirements (separation, storage and disposal) 2. Provide water proof waste receptacles for general and hazardous waste at the camp/prospecting site. 3. Disposal of hazardous and general waste at registered waste site. 4. Keep out of the sensitive areas as indicated in the Sensitivity map 5. No activities to be undertaken within 500m of the sensitive areas.	System and Operational Procedures and training programme in compliance with ISO14001. Water management measures in compliance with NWA, 1998 and GN 704, 1999. Compliance with DWS's Best Practice Guideline Series in terms of integrated water and waste management and monitoring.	Operational Phase of Phase 3
32	**Phase 3 activities:** Supply of water for domestic and drilling purposes.	Operational Phase of Phase 3	50 litres per day for human consumption 10 m^3/day for drilling operation.	1. Water supply for drilling operation should be obtained from the Rooitfontein Game Farm or the existing KEM-JV operation.	Operational control procedures (e.g. spill / leak handling). Incident Reporting System; Environmental Inspections; Planned Maintenance System; water quantity (abstraction) monitoring; continued communication with surrounding landowners.	Operational Phase of Phase 3
33	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Decommissioning and Closure Phase of Phase 3	±200 m^2 per prospecting site	1. Minimal disturbance with very limited bush clearance. Rehabilitation of prospecting area on completion of prospecting activities with follow-up inspections to assess effectiveness of rehabilitation undertaken. 2. Drill holes must be temporarily plugged immediately after drilling is completed and remain plugged until they are permanently plugged below ground to eliminate the risk posed to fauna by open drill holes. 3. Drill holes must be permanently capped as soon as is practicable. 4. Use existing track and roads in all instances as far as is practicable 5. Avoid significant vegetation such as trees and large shrubs if driving through the veld is required when removing prospecting area.	Rehabilitation in terms of MPRDA and NEMA principles. Adherence to Closure and Rehabilitation Plan	Decommissioning and Closure Phase of Phase 3
34	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities:	Decommissioning and Closure Phase of Phase 3g	±200 m^2 per prospecting site	1. Access control procedures must be maintained, implemented and all staff trained.	Rehabilitation in terms of MPRDA and NEMA principles. Adherence to Closure and Rehabilitation Plan	Decommissioning and Closure Phase of Phase 3

NO.	ACTIVITY whether listed or not listed	PHASE in which impact is anticipated	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
	• Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.					
35	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Decommissioning and Closure Phase of Phase 3	±200 m^2 per prospecting site	1. Eradicate alien vegetation during the life of the project and monitor post-rehabilitation.	Rehabilitation in terms of MPRDA and NEMA principles. Adherence to Closure and Rehabilitation Plan	Decommissioning and Closure Phase of Phase 3
36	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Decommissioning and Closure Phase of Phase 3	±200 m^2 per prospecting site	1. All fuel storage tanks will be emptied prior to removal. 2. Drill holes must be permanently capped as soon as is practicable to eliminate the risk of groundwater contamination. 3. Wastes will be removed and disposed of at an appropriately licensed landfill (facility disposal licenses will be verified) and recyclables will be taken to a licensed recycling facility. 4. Keep out of the sensitive areas as indicated in the Sensitivity map 5. No activities to be undertaken within 500m of the sensitive areas.	Rehabilitation in terms of MPRDA and NEMA principles. Adherence to Closure and Rehabilitation Plan Water management measures in compliance with NWA, 1998 and GN 704, 1999. Compliance with DWS's Best Practice Guideline Series in terms of integrated water and waste management and monitoring.	Decommissioning and Closure Phase of Phase 3
37	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Decommissioning and Closure Phase of Phase 3	±200 m^2 per prospecting site	1. Mechanical erosion control methods will be implemented if required. This may include the use of geotextiles. 2. Re-vegetation will be conducted through hand seeding exposed areas using indigenous grass species. 3. Re-vegetation efforts will be monitored every second month for a period of six months after initial seeding. 4. An effective vegetation cover of 45% must be achieved. Re-seeding will be undertaken if this cover has not been achieved after six months.	Rehabilitation in terms of MPRDA and NEMA principles. Adherence to Closure and Rehabilitation Plan	Decommissioning and Closure Phase of Phase 3
38	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier.	Decommissioning and Closure Phase of Phase 3	±200 m^2 per prospecting site	1. Wet dust suppression will be undertaken to manage dust emissions from vehicle movement as necessary.	Rehabilitation in terms of MPRDA and NEMA principles. Adherence to Closure and Rehabilitation Plan	Decommissioning and Closure Phase of Phase 3

NO.	ACTIVITY whether listed or not listed	PHASE in which impact is anticipated	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
	• Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.					
34	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Decommissioning and Closure Phase of Phase 3	±200 m^2 per prospecting site	1. Site activities will be conducted during daytime hours 07h00 – 17h30 to avoid night time noise disturbances.	Rehabilitation in terms of MPRDA and NEMA principles. Adherence to Closure and Rehabilitation Plan	Decommissioning and Closure Phase of Phase 3

1.5 Impact Management Outcomes

Table 24: Impact management outcomes, identifying the stand of impact management required for the identified aspects

NO.	ASPECTS AFFECTED	ACTIVITY whether listed or not listed	POTENTIAL IMPACT Impact description	PHASE in which impact is anticipated	MITIGATION TYPE (modify, remedy, control, or stop)	STANDARD TO BE ACHIEVED
1	Noise	**Phase 2 activities** Airborne gradient magnetic survey. The area will be flown with an airborne gradient magnetic survey.	Disturbance to surrounding landowners by noise of low flying aircraft.	Planning and design of Phase 2	Control	Minimise noise levels.
2	Fauna	**Phase 2 activities** Airborne gradient magnetic survey. The area will be flown with an airborne gradient magnetic survey.	Disturbance to fauna by low flying aircraft.	Planning and design of Phase 2	Control	Minimise impact on fauna.
3	Fauna &Flora	**Phase 2 activities** Establishment and utilisation of access tracks.	Destruction and damage to flora and fauna by establishment of access tracks and driving off the existing access tracks.	Construction of Phase 2	Control	Minimise the impact on protected and endangered fauna and flora species.
4	Surface water and sensitive areas	**Phase 2 activities** Establishment and utilisation of access tracks	Impacts on sensitive landscapes as a result of the establishment of access tracks and driving off the existing access tracks.	Construction of Phase 2	Control	Minimise the impact on sensitive landscapes.
5	Heritage	**Phase 2 activities** Establishment and utilisation of access tracks.	Destruction and / or disturbance of on-site heritage resources as a result of the establishment of access tracks. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 1. Site 1. Rehabilitated Wesselton village 2. Site 2. General. 3. Site 3. Midden 1. 4. Site 4. Midden 2. 5. Site 5. Midden 3. 6. Site 6. 1. Rooifontein fountain, wells, stock pen and dwellings. 7. Site 6. 2. Pipeline feature. 8. Site 6. 3. Iron reservoir. 9. Site 6.4. Second South African War fortification. 10. Site 7. Pit and dump. 11. Site 8. Trenches.	Construction of Phase 2	Control	Prevent disturbance and loss of heritage resources
6	Fauna & Flora	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.	Destruction and / or disturbance of on-site fauna and flora by vehicle movements on the veld and laying of magnetic lines.	Construction of Phase 2	Control	Minimise the impact on protected and endangered fauna and flora species.
7	Surface water and sensitive areas	**Phase 2 activities**	Impacts on sensitive landscapes as a result of the vehicle movements and laying of magnetic lines.	Construction of Phase 2	Control	Minimise the impact on sensitive landscapes.

NO.	ASPECTS AFFECTED	ACTIVITY whether listed or not listed	POTENTIAL IMPACT Impact description	PHASE in which impact is anticipated	MITIGATION TYPE (modify, remedy, control, or stop)	STANDARD TO BE ACHIEVED
		Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.				
8	Noise	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.	Noise impacts resulting from ground geophysical surveys, nuisance noise impacts on communities and landowners and other persons.	Construction of Phase 2	Control	Minimise noise levels.
9	Heritage	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.	Destruction and / or disturbance of on-site heritage resources as a result of the movement of vehicles and laying of magnetic tracks. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 2. **As per Reference No. 5 above.**	Construction of Phase 2	Control	Prevent disturbance and loss of heritage resources
10	Soil	**Phase 2 activities** Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.	Removal of topsoil	Construction of Phase 2	Remedy	Minimise impact on soil
11	Surface water and sensitive areas	**Phase 2 activities** Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.	Impacts on sensitive landscapes as a result of the removal of topsoil	Construction of Phase 2	Control	Minimise the impact on sensitive landscapes.
12	Heritage	**Phase 2 activities** Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.	Disturbance of heritage resources due to the removal of topsoil. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 2. **As per Reference No. 5 above.**	Construction of Phase 2	Control	Prevent disturbance and loss of heritage resources
13	Traffic	**Phase 2 activities**	Additional volume of traffic added to road to KEM-JV.	Operational of Phase 2	Control	Minimise traffic levels.

NO.	ASPECTS AFFECTED	ACTIVITY whether listed or not listed	POTENTIAL IMPACT Impact description	PHASE in which impact is anticipated	MITIGATION TYPE (modify, remedy, control, or stop)	STANDARD TO BE ACHIEVED
		Haulage of loam/soil sample via road to adjacent KEM-JV operation				
14	Fauna & Flora	**Phase 2 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of magnetic lines (if any) • Re-spreading of stockpiled topsoil over cleared areas used for magnetic lines and soil sampling.	Destruction and / or disturbance of on-site fauna and flora by vehicle movements on the veld and removal of magnetic lines.	Decommissioning and Closure of Phase 2	Control	Minimise impact on Fauna and Flora.
15	Soil, Surface water & Groundwater	**Phase 3 activities:** Establishment of prospecting site (safety barrier, drilling pad)	Compaction and possible contamination of soil, surface water and groundwater from spillages of dangerous goods.	Construction of Phase 3	Remedy	Minimise impact on soil
16	Noise	**Phase 3 activities:** Establishment of prospecting site.	Site establishment causing nuisance noise, impacts on communities and surrounding landowners and other persons.	Construction of Phase 3		Prevent and mitigate against the effects of noise on sensitive receptors.
17	Fauna & Flora	**Phase 3 activities:** Establishment and utilisation of prospecting site.	Destruction and damage to flora as a result of open fires and other disturbances.	Construction of Phase 3	Control	Minimise the impact on protected and endangered fauna and flora species.
18	Heritage	**Phase 3 activities:** Establishment of prospecting site (safety barrier, drilling pad)	Disturbance of heritage resources due to the establishment of prospecting sites. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 2. **As per Reference No. 5 above.**	Construction of Phase 3	Control	Prevent disturbance and loss of heritage resources
19	Fauna & Flora	**Phase 3 activities:** Establishment of access tracks	Impact on fauna and flora resources as a result of the establishment of the access tracks.	Construction of Phase 3	Control	Minimise the impact on protected and endangered fauna and flora species.
20	Surface water and sensitive landscapes	**Phase 3 activities:** Establishment of access tracks	Impacts on sensitive landscapes as a result of the establishment of the access tracks.	Construction of Phase 3	Control	Minimise the impact on sensitive landscapes.
21	Heritage	**Phase 3 activities:** Establishment of access tracks	Destruction and / or disturbance of on-site heritage resources as a result of the establishment of access tracks. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 2. **As per Reference No. 5 above.**	Construction of Phase 3	Control	Prevent disturbance and loss of heritage resources
22	Fauna & Flora	**Phase 3 activities:** Site Preparation: Clearance of topsoil and vegetation (prospecting site activities)	Loss of fauna and flora as a result of clearance of vegetation.	Construction of Phase 3	Control	Minimise impact on fauna and flora
23	Surface water and sensitive landscapes	**Phase 3 activities:** Site Preparation: Clearance of topsoil and vegetation (prospecting site activities)	Impacts on sensitive landscapes as a result of the clearance of topsoils and vegetation.	Construction of Phase 3	Control	Minimise impact on sensitive landscapes
24	Heritage	**Phase 3 activities:** Site Preparation: Clearance of topsoil and vegetation (prospecting site activities)	Disturbance of heritage resources due to the clearance of vegetation and topsoil.	Construction of Phase 3	Control	Prevent disturbance and loss of heritage resources

NO.	ASPECTS AFFECTED	ACTIVITY whether listed or not listed	POTENTIAL IMPACT Impact description	PHASE in which impact is anticipated	MITIGATION TYPE (modify, remedy, control, or stop)	STANDARD TO BE ACHIEVED
			The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): **1. As per Reference No. 5 above.**			
25	Soil	**Phase 3 activities:** Stockpiling of topsoil material (following excavation)	Loss of topsoil resource.	Construction of Phase 3	Control	Minimise impact on soil resources
26	Surface water and sensitive landscapes	**Phase 3 activities:** Stockpiling of topsoil material (following excavation)	Impacts on sensitive landscapes as a result of the stockpiling of soils	Construction of Phase 3	Control	Minimise impact on sensitive landscapes
27	Surface water and sensitive landscapes	**Phase 3 activities:** Scout and delineation drilling (exploration drilling)	Oil leakage may impact on sensitive landscapes.	Operational Phase of Phase 3	Control	Minimise impact on sensitive landscapes.
28	Groundwater	**Phase 3 activities:** Scout and delineation drilling (exploration drilling)	Oil leakage may impact on groundwater resources.	Operational Phase of Phase 3	Control	Minimise impact on groundwater resource.
29	Traffic	**Phase 3 activities:** Haulage of sample via road	Additional volume of traffic added to road to existing KEM-JV operation.	Operational Phase of Phase 3	Control	Minimise traffic levels.
30	Soil, Surface water & Groundwater	**Phase 3 activities:** Generation, storage and disposal of waste.	Contamination of soil, surface water and groundwater as a result of improper disposal of waste.	Operational Phase of Phase 3	Control	Avoid contamination of soil and water resources
32	Surface water & Groundwater	**Phase 3 activities:** Supply of water for domestic and drilling purposes.	Depletion of natural water resources for use in prospecting activities.	Operational Phase of Phase 3	Control	Minimise the impact on water consumption.
33	Fauna & Flora	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Destruction and / or disturbance of on-site fauna.	Decommissioning and Closure Phase of Phase 3	Remedy	Minimise the impact on Fauna &Flora
34	Fauna	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Poor access control resulting in impacts on game breeding and grazing practices.	Decommissioning and Closure Phase of Phase 3g	Control	Minimise the impact on fauna
35	Flora	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Establishment of alien vegetation	Decommissioning and Closure Phase of Phase 3	Control & remedy	Minimise the impact on flora

NO.	ASPECTS AFFECTED	ACTIVITY whether listed or not listed	POTENTIAL IMPACT Impact description	PHASE in which impact is anticipated	MITIGATION TYPE (modify, remedy, control, or stop)	STANDARD TO BE ACHIEVED
36	Soil, Surface water & Groundwater	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Potential water and soil pollution resulting from hydrocarbon spills, open boreholes and waste disposal practices	Decommissioning and Closure Phase of Phase 3	Control & remedy	Minimise the impact on soil and water resources.
37	Soil, Surface water & Groundwater	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Soil erosion resulting from the re-spreading of topsoil before vegetation is re-established.	Decommissioning and Closure Phase of Phase 3	Control &Remedy	Minimise the impact on soil and water resources.
38	Air quality	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Dust emissions from decommissioning activities (including vehicle entrained dust).	Decommissioning and Closure Phase of Phase 3	Control	Reduce the impact on Air Quality
34	Noise	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Inconvenience to neighbours / disturbance of fauna due to noise	Decommissioning and Closure Phase of Phase 3	Control	Minimise the impact on sensitive noise receptors.

1.6 Impact Management Actions

Table 25: Impact management actions, identifying the manner in which the impact management objectives and outcomes will be achieved.

NO.	ACTIVITY whether listed or not listed	POTENTIAL IMPACT Impact description	MITIGATION TYPE (modify, remedy, control, or stop)	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
1	**Phase 2 activities** Airborne gradient magnetic survey. The area will be flown with an airborne gradient magnetic survey.	Disturbance to surrounding landowners by noise of low flying aircraft.	Control	Planning and design phase. of Phase 2	Maintain and Implement Compliant register.
2	**Phase 2 activities** Airborne gradient magnetic survey. The area will be flown with an airborne gradient magnetic survey.	Disturbance to fauna by low flying aircraft.	Control	Planning and design phase. of Phase 2	Maintain and Implement Compliant register.
3	**Phase 2 activities** Establishment and utilisation of access tracks.	Destruction and damage to flora and fauna by establishment of access tracks and driving off the existing access tracks.	Control	Construction Phase of Phase 2	Appoint a suitable qualified specialist prior to removal of any fauna or flora species. Should any protected/endangered or threatened species be damaged or destroyed the necessary licences and or permits will be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Free State Department of Economic Development, Tourism and Environmental Affairs (DEDTEA). General implementation of activities taking Mining and Biodiversity Guidelines into account
4	**Phase 2 activities** Establishment and utilisation of access tracks	Impacts on sensitive landscapes as a result of the establishment of access tracks and driving off the existing access tracks.	Control	Construction Phase of Phase 2	Water management measures in compliance with NWA, 1998 and GN 704, 1999.
5	**Phase 2 activities** Establishment and utilisation of access tracks.	Destruction and / or disturbance of on-site heritage resources as a result of the establishment of access tracks. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 1. Site 1. Rehabilitated Wesselton village 2. Site 2. General. 3. Site 3. Midden 1. 4. Site 4. Midden 2. 5. Site 5. Midden 3. 6. Site 6. 1. Rooifontein fountain, wells, stock pen and dwellings. 7. Site 6. 2. Pipeline feature. 8. Site 6. 3. Iron reservoir. 9. Site 6.4. Second South African War fortification. 10. Site 7. Pit and dump. 11. Site 8. Trenches.	Control	Construction Phase of Phase 2	Comply to the National Heritage Resources Act, 1999 (Act No. 25 Of 1999)
6	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics).	Destruction and / or disturbance of on-site fauna and flora by vehicle movements on the veld and laying of magnetic lines.	Control	Construction Phase of Phase 2	Appoint a suitable qualifies specialist prior to removal of any fauna or flora species. Should any protected/endangered or threatened species be damaged or destroyed the necessary licences and or

NO.	ACTIVITY whether listed or not listed	POTENTIAL IMPACT Impact description	MITIGATION TYPE (modify, remedy, control, or stop)	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
	This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.				permits will be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Free State Department of Economic Development, Tourism and Environmental Affairs (DEDTEA). General implementation of activities taking Mining and Biodiversity Guidelines into account
7	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.	Impacts on sensitive landscapes as a result of the vehicle movements and laying of magnetic lines.	Control	Construction Phase of Phase 2	Water management measures in compliance with NWA, 1998 and GN 704, 1999. Should any protected/endangered or threatened species be damaged or destroyed the necessary licences and or permits will be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Free State Department of Economic Development, Tourism and Environmental Affairs (DEDTEA).
8	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.	Noise impacts resulting from ground geophysical surveys, nuisance noise impacts on communities and landowners and other persons.	Control	Construction of Phase 2	Maintain and Implement Complaint register.
9	**Phase 2 activities** Ground magnetics will be carried out on parallel lines spaced at 100m across the prospecting area. (Anomaly-specific ground geophysics). This will entail detailed ground geophysical surveys being carried out using hand held equipment on parallel lines spaced at an appropriate interval based on the dimensions of the target being investigated.	Destruction and / or disturbance of on-site heritage resources as a result of the movement of vehicles and laying of magnetic tracks. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 3. **As per Reference No. 5 above.**	Control	Construction Phase of Phase 2	Comply to the National Heritage Resources Act, 1999 (Act No. 25 Of 1999)
10	**Phase 2 activities** Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.	Removal of topsoil	Remedy	Construction of Phase 2	Comply to the method as stipulated in the Prospecting Works Programme.
11	**Phase 2 activities** Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.	Impacts on sensitive landscapes as a result of the removal of topsoil	Control	Construction Phase of Phase 2	Water management measures in compliance with NWA, 1998 and GN 704, 1999. Should any protected/endangered or threatened species be damaged or destroyed the necessary licences and or permits will be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Free State

NO.	ACTIVITY whether listed or not listed	POTENTIAL IMPACT Impact description	MITIGATION TYPE (modify, remedy, control, or stop)	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
					Department of Economic Development, Tourism and Environmental Affairs (DEDTEA). Comply to the method as stipulated in the Prospecting Works Programme.
12	**Phase 2 activities** Target specific loam/soil sampling and storage. Soil samples of up to 200 litres in volume will be taken in the topmost soil layer (up to 20cm deep) and sieved on site to remove very fine (<425 micron) material.	Disturbance of heritage resources due to the removal of topsoil. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 3. **As per Reference No. 5 above.**	Control	Construction Phase of Phase 2	Comply to the National Heritage Resources Act, 1999 (Act No. 25 Of 1999)
13	**Phase 2 activities** Haulage of loam/soil sample via road to adjacent KEM-JV operation	Additional volume of traffic added to road to KEM-JV.	Control	Operational of Phase 2	Comply to provincial road regulations.
14	**Phase 2 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of magnetic lines (if any) • Re-spreading of stockpiled topsoil over cleared areas used for magnetic lines and soil sampling.	Destruction and / or disturbance of on-site fauna and flora by vehicle movements on the veld and removal of magnetic lines.	Control	Decommissioning and Closure of Phase 2	Rehabilitation in terms of MPRDA and NEMA principles. Adherence to Closure and Rehabilitation Plan
15	**Phase 3 activities:** Establishment of prospecting site (safety barrier, drilling pad)	Compaction and possible contamination of soil, surface water and groundwater from spillages of dangerous goods.	Remedy	Construction of Phase 3	System and Operational Procedures and training programme in compliance with ISO14001. Water management measures in compliance with NWA, 1998 and GN 704, 1999.
16	**Phase 3 activities:** Establishment of prospecting site.	Site establishment causing nuisance noise, impacts on communities and surrounding landowners and other persons.		Construction of Phase 3	Maintain and Implement Compliant register.
17	**Phase 3 activities:** Establishment and utilisation of prospecting site.	Destruction and damage to flora as a result of open fires and other disturbances.	Control	Construction of Phase 3	Rehabilitation in terms of MPRDA and NEMA principles. Permits to Department of Agriculture, Forestry and Fisheries (DAFF) for removal of species in terms of NEMBA General implementation of activities taking Mining and Biodiversity Guidelines into account
18	**Phase 3 activities:** Establishment of prospecting site (safety barrier, drilling pad)	Disturbance of heritage resources due to the establishment of prospecting sites. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 3. **As per Reference No. 5 above.**	Control	Construction Phase of Phase 3	Comply to the National Heritage Resources Act, 1999 (Act No. 25 Of 1999)
19	**Phase 3 activities:** Establishment of access tracks	Impact on fauna and flora resources as a result of the establishment of the access tracks.	Control	Construction of Phase 3	Appoint a suitable qualifies specialist prior to removal of any fauna or flora species. Should any protected/endangered or threatened species be damaged or destroyed the necessary licences and or permits will be obtained from the Department of Agriculture,

NO.	ACTIVITY whether listed or not listed	POTENTIAL IMPACT Impact description	MITIGATION TYPE (modify, remedy, control, or stop)	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
					Forestry and Fisheries (DAFF) and the Free State Department of Economic Development, Tourism and Environmental Affairs (DEDTEA). General implementation of activities taking Mining and Biodiversity Guidelines into account
20	**Phase 3 activities:** Establishment of access tracks	Impacts on sensitive landscapes as a result of the establishment of the access tracks.	Control	Construction of Phase 3	Water management measures in compliance with NWA, 1998 and GN 704, 1999. Should any protected/endangered or threatened species be damaged or destroyed the necessary licences and or permits will be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Free State Department of Economic Development, Tourism and Environmental Affairs (DEDTEA).
21	**Phase 3 activities:** Establishment of access tracks	Destruction and / or disturbance of on-site heritage resources as a result of the establishment of access tracks. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): 3. **As per Reference No. 5 above.**	Control	Construction Phase of Phase 3	Comply to the National Heritage Resources Act, 1999 (Act No. 25 Of 1999)
22	**Phase 3 activities:** Site Preparation: Clearance of topsoil and vegetation (prospecting site activities)	Loss of fauna and flora as a result of clearance of vegetation.	Control	Construction of Phase 3	Rehabilitation in terms of MPRDA and NEMA principles. Permits to Department of Agriculture, Forestry and Fisheries (DAFF) for removal of species in terms of NEMBA General implementation of activities taking Mining and Biodiversity Guidelines into account
23	**Phase 3 activities:** Site Preparation: Clearance of topsoil and vegetation (prospecting site activities)	Impacts on sensitive landscapes as a result of the clearance of topsoils and vegetation.	Control	Construction of Phase 3	Rehabilitation in terms of MPRDA and NEMA principles. Permits to Department of Agriculture, Forestry and Fisheries (DAFF) for removal of species in terms of NEMBA General implementation of activities taking Mining and Biodiversity Guidelines into account Water management measures in compliance with NWA, 1998 and GN 704, 1999. Should any protected/endangered or threatened species be damaged or destroyed the necessary licences and or permits will be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Free State Department of Economic Development, Tourism and Environmental Affairs (DEDTEA).

NO.	ACTIVITY whether listed or not listed	POTENTIAL IMPACT Impact description	MITIGATION TYPE (modify, remedy, control, or stop)	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
24	**Phase 3 activities:** Site Preparation: Clearance of topsoil and vegetation (prospecting site activities)	Disturbance of heritage resources due to the clearance of vegetation and topsoil. The identified sites of heritage resources and artefacts include (refer to Annexure G of the BAR and EMPr Report for the field ratings and significance): **1. As per Reference No. 5 above.**	Control	Construction Phase of Phase 3	Comply to the National Heritage Resources Act, 1999 (Act No. 25 Of 1999)
25	**Phase 3 activities:** Stockpiling of topsoil material (following excavation)	Loss of topsoil resource.	Control	Construction of Phase 3	Rehabilitation in terms of MPRDA and NEMA principles. Water management measures in compliance with NWA, 1998 and GN 704, 1999. Compliance with DWS's Best Practice Guideline Series in terms of integrated water and waste management and monitoring. Biodiversity and alien invasive management in accordance with NEMBA, 2004.
26	**Phase 3 activities:** Stockpiling of topsoil material (following excavation)	Impacts on sensitive landscapes as a result of the stockpiling of soils	Control	Construction of Phase 3	Rehabilitation in terms of MPRDA and NEMA principles. Water management measures in compliance with NWA, 1998 and GN 704, 1999. Compliance with DWS's Best Practice Guideline Series in terms of integrated water and waste management and monitoring. Biodiversity and alien invasive management in accordance with NEMBA, 2004.
27	**Phase 3 activities:** Scout and delineation drilling (exploration drilling)	Oil leakage may impact on sensitive landscapes.	Control	Operational Phase of Phase 3	Water management measures in compliance with NWA, 1998 and GN 704, 1999. System and Operational Procedures and training programme in compliance with ISO14001.
28	**Phase 3 activities:** Scout and delineation drilling (exploration drilling)	Oil leakage may impact on groundwater resources.	Control	Operational Phase of Phase 3	System and Operational Procedures and training programme in compliance with ISO14001.
29	**Phase 3 activities:** Haulage of sample via road	Additional volume of traffic added to road to existing KEM-JV operation.	Control	Operational Phase of Phase 3	Comply to provincial road regulations.
30	**Phase 3 activities:** Generation, storage and disposal of waste.	Contamination of soil, surface water and groundwater as a result of improper disposal of waste.	Control	Operational Phase of Phase 3	System and Operational Procedures and training programme in compliance with ISO14001. Water management measures in compliance with NWA, 1998 and GN 704, 1999.

NO.	ACTIVITY whether listed or not listed	POTENTIAL IMPACT Impact description	MITIGATION TYPE (modify, remedy, control, or stop)	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
					Compliance with DWS's Best Practice Guideline Series in terms of integrated water and waste management and monitoring.
32	**Phase 3 activities:** Supply of water for domestic and drilling purposes.	Depletion of natural water resources for use in prospecting activities.	Control	Operational Phase of Phase 3	Operational control procedures (e.g. spill / leak handling). Incident Reporting System; Environmental Inspections; Planned Maintenance System; water quantity (abstraction) monitoring; continued communication with surrounding landowners.
33	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Destruction and / or disturbance of on-site fauna.	Remedy	Decommissioning and Closure Phase of Phase 3	Rehabilitation in terms of MPRDA and NEMA principles. Adherence to Closure and Rehabilitation Plan
34	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Poor access control resulting in impacts on game breeding and grazing practices.	Control	Decommissioning and Closure Phase of Phase 3	Rehabilitation in terms of MPRDA and NEMA principles. Adherence to Closure and Rehabilitation Plan
35	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Establishment of alien vegetation	Control & remedy	Decommissioning and Closure Phase of Phase 3	Rehabilitation in terms of MPRDA and NEMA principles. Adherence to Closure and Rehabilitation Plan
36	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Potential water and soil pollution resulting from hydrocarbon spills, open boreholes and waste disposal practices	Control & remedy	Decommissioning and Closure Phase of Phase 3	Rehabilitation in terms of MPRDA and NEMA principles. Adherence to Closure and Rehabilitation Plan Water management measures in compliance with NWA, 1998 and GN 704, 1999. Compliance with DWS's Best Practice Guideline Series in terms of integrated water and waste management and monitoring.
37	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road.	Soil erosion resulting from the re-spreading of topsoil before vegetation is re-established.	Control &Remedy	Decommissioning and Closure Phase of Phase 3	Rehabilitation in terms of MPRDA and NEMA principles. Adherence to Closure and Rehabilitation Plan

NO.	ACTIVITY whether listed or not listed	POTENTIAL IMPACT Impact description	MITIGATION TYPE (modify, remedy, control, or stop)	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
	• Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.				
38	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Dust emissions from decommissioning activities (including vehicle entrained dust).	Control	Decommissioning and Closure Phase of Phase 3	Rehabilitation in terms of MPRDA and NEMA principles. Adherence to Closure and Rehabilitation Plan
34	**Phase 3 activities:** Rehabilitation of site and decommissioning of prospecting activities: • Removal of drill pad, drill water sump and safety barrier. • Borehole capping. • Ripping of prospecting site, tracks and access road. • Re-spreading of stockpiled topsoil over cleared areas. • Re-vegetation of all disturbed areas.	Inconvenience to neighbours / disturbance of fauna due to noise	Control	Decommissioning and Closure Phase of Phase 3	Rehabilitation in terms of MPRDA and NEMA principles. Adherence to Closure and Rehabilitation Plan

1.7 Financial Provision

1.7.1 Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation.

The following overarching closure objectives have been identified:

a) Eliminate any safety risk associated with drill holes and sumps though adequate drill hole capping and backfilling.
b) Remove and / or rehabilitate all pollution and pollution sources such as waste materials and spills;
c) To establish rehabilitated area which is not subject to soil erosion which may result in the loss of soil, degradation of the environment and cause pollution of surface water resources; and
d) Restore disturbed area and re-vegetate these areas with grass species naturally occurring in the area to restore the ecological function of such areas as far as is practicable.

To achieve the above-mentioned, the following specific targets have been set:

1. Soil Erosion
    a. Storm water management control measures shall be implemented if required.
    b. To minimise the loss or contamination of topsoil during stripping, stockpiling, handling and placement on rehabilitated areas and to retain or improve soil fertility
    c. Ensure effective topsoil management practices.
2. Establishment of alien invasive
    a. Eradication programme shall be implemented.
    b. Prevent the rehabilitated site from being overgrown by alien and weed species.
3. Vegetation destruction
    a. Land capability of disturbed / affected areas shall be maximised through effective rehabilitation and remediation practices.

1.7.2 Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and interested and affected parties.

The Closure and Rehabilitation plan was made available to the public for review together with the draft BAR and EMPr.

1.7.3 Provide a rehabilitation plan that describes and shows the scale and aerial extent of the main mining activities, including the anticipated mining area at the time of closure.

The rehabilitation plan has been compiled and contained as Annexure H.

1.7.4 Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives.

The Final Decommissioning and Closure Plan attached hereto in Annexure I contains closure criteria which is aligned with the rehabilitation initiatives. The initiatives are focussed on ensuring that the closure objectives can be met i.e. sloping, revegetation, and socio-economic development programmes. The plan was compiled in compliance with the requirements of Regulation 60 of the MPRDA and the NEMA EIA Regulations of 2014. The main aim of the closure plan is to rehabilitate the land as practicably and economically possible, to a land use which conforms generally to the principles of sustainable development.

The main aspects of the closure plan include:

- Analysis of the baseline environment and the prospecting activities' impact thereon,
- Identification of a closure vision, objectives, principles and criteria,
- Assessment of the prospecting components (physical, biophysical and social) and identification of the closure criteria for each component;
- A closure risk assessment, including identification of mitigation measures;
- A closure management plan that sets out the closure organisational structure, equipment to be used as part of decommissioning and rehabilitation, and relinquishment / success criteria to measure the implementation of the decommissioning and closure plan;
- A profile of residual risks that could potentially be expected,
- Monitoring criteria,
- Closure costing (financial provisioning);
- A summary of the regulatory engagement conducted as part of the closure process; and
- Identification of knowledge gaps that may have an impact on the closure process.

Section 7 of the closure plan, containing the closure management (implementation) plan, is essentially the current rehabilitation plan, as it sets out all steps to be taken to mitigate the identified risks, criteria to measure the success of the implementation plan, and the schedule for the implementation of the steps identified.

1.7.5 Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline.

The life of the project will span over five (5) years, with drilling activities commencing in year four (4). Rehabilitation will be conducted concurrently where possible. Rehabilitation activities such as sealing boreholes and cleaning potential polluted areas will be conducted by the prospecting team, employed by Ekapa Minerals (Pty) Ltd. Equipment that will be used will also be provided by the existing KEM-JV operation.

The following table contains a summary of the calculations made for the prospecting life closure cost.

Table 26: Decommissioning and rehabilitation costs for the proposed prospecting activities

No	Description	Unit	A Quantity	B Master rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rand)
		Step 4.5	Step 4.3	Step 4.3	Step 4.4		
7	Sealing of shafts, adits and inclines (Borehole sealing rate used	no	4,00	R 1 702,22	1	1	R 6 808,89
10	General surface rehabilitation	ha	0,02	R 161 522,22	1	1	R 3 230,44
14	2 to 3 years of maintenance and aftercare	ha	0,08	R 19 204,25	1	1	R 1 536,34
	Weighting factor 2	**Peri urban**	**1,05**			**Sub-total 1**	**R 12 154,46**
	Preliminary and General	12% of Subtotal 1					R 1 458,54
	Contingency	10.0% of Subtotal 1					R 1 215,45
Sub-total 2							**R 14 828,44**
VAT (14%)							R 2 075,98
Grand total							**R 16 904,42**

1.7.6 Confirm that the financial provision will be provided as determined.

A signed undertaking as proof of funds and/or financial guarantees by the mine, that financial provision will be provided as determined, will be submitted within 14 days of acceptance of this document.

1.8 Mechanisms for monitoring compliance with and performance assessment against the environmental management programme

Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including

- Monitoring of Impact Management Actions
- Monitoring and reporting frequency
- Responsible persons
- Time period for implementing impact management actions
- Mechanism for monitoring compliance

NO	SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY
1	Environmental audit (external)	Auditing of environmental authorisation, environmental management programme and closure plan must be done in accordance to the Regulation 34 and Appendix 7 of the EIA Regulations (2014) under the NEMA (1998).	A formal Audit Report will be submitted to the DMR year	Environmental Department	Annually
2	EMPr performance assessment (internal)	Compliance with the approved EMPr will be audited internally by the Environmental Manager every 2 years. Ad-hoc audits will be undertaken by the Environmental Department.	Records of internal audits will be retained.	Environmental Department	Biennially (every 2 years)
3	EMPr performance assessment (external)	The MPRDA Regulations (Regulation 55) states that the frequency of performance assessment reporting shall be in accordance with the period specified in the approved EMPr, every 2 years or as agreed in writing by the Minister. This performance assessment will be undertaken by an independent third party	A formal EMPr Performance Evaluation Report will be submitted to	Environmental Department	Biennially (every 2 years)

NO	SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY
			the DMR every 2 years		
	Rehabilitation progress monitoring	Rehabilitation will be undertaken in accordance with the mine's 1 Year Rehabilitation Plan	Progress made with the implementation of the 1-Year Rehabilitation Plan will be reported to DMR on an annual basis	Environmental Department	Annually

1.9 Indicate the frequency of the submission of the performance assessment/ environmental audit report.

Performance assessment reports will be undertaken once every two years.

1.10 Environmental Awareness Plan

1.10.1 Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work.

The following Environmental Awareness Training will be implemented by Ekapa Minerals (Pty) Ltd in order to inform employees and contractors of the environmental risk that may result from their work, or the risk of their interaction with the sensitive environment. The training will be conducted as part of the induction process for all new employees (including contractors) that will perform work in terms of the proposed activities. Proof of all training provided must be kept on-site.

The Environmental Awareness Training will, as a minimum cover the following topics:

- Air Quality
  - Activities that may result or mitigate impact on air quality; speeding on roads, the requirements for dust suppression, etc.
  - Negative impacts on the receiving environment if mitigation measures are not implemented.

- Surface and groundwater
  - Risks to surface and groundwater, e.g. fuel and chemical handling and further risks of erosion or damage to riparian vegetation.
  - How incidents should be reported, and emergency requirements.
  - The importance of storm water control, maintenance of pollution control infrastructure.
  - The importance to reuse water and to prevent spillages.

- Cultural Heritage
  - The cultural significance of the area.
  - To respect all cultures and believes.
  - To remain within working areas and not to enter or interfere with any cultural heritage.
  - How to report any sightings as identified during operation activities (e.g. fossils).

- Fauna
  - Overview of the fauna found on site and the uniqueness thereof.
  - Mitigation measures that all contractors and employees need to abide by.
  - No contractor or personnel allowed to catch or kill any species, and how any sightings should be reported if further actions are required (e.g. to catch and release).

- Flora
  - Overview of the flora diversity on site, and the rare and endangered nature thereof.
  - Measures taken by the mine to protect species.
  - No contractor or personnel allowed to remove, harvest or destroy any flora species unless clearly instructed based on the construction and operational plans.

- Waste management
  - The correct segregation of general and hazardous waste.
  - Do's and don'ts with respect to waste disposal.
  - Measures to avoid waste generation and to participate in waste minimisation/reduction strategies.

- Traffic
  - Abide by traffic rules, no speeding allowed.
  - To stay on designated roads (and not to drive on areas that are not fit and designed for this purpose).
  - To be aware of the fauna species and to be on the lookout and avoid collisions.

- Natural Resource Consumption
  - Optimise utilisation of mining and plant equipment, travelling routes etc.

- Emergency Preparedness and Response
  - Designated smoking areas.
  - How to report any emergency or incident.
  - Incident and emergency reporting requirements

- General rules and conduct
  - Respect for the sensitive environment.
  - Do not litter.
  - HIV/AIDS awareness.
  - Respect for each other and for different cultures.
  - Safety and health requirements.

1.10.2 Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment.

Identification of Environmental Aspects

Environmental aspects for the operation are identified through the following process:

The following structure forms the basis for the aspect register and organises all environmental information relevant to the Environmental Management Programmes of the System:

- Department;
- Section;
- Area;
- Activity Description;
- Aspect; and
- Impact.

Each aspect is described in detail adding information regarding volumes, current mitigation and potential emergency conditions. The relevant Section Head / Mine Overseer is present when the aspects are described to ensure accuracy and reliability.

The environmental aspects are identified or updated based on:

- The description of the activities in each area;
- The known impacts of the activities;
- Information contained in the EMP(r);
- EIA's and risk assessments conducted for a new process;
- Legal requirements obtained from the legal register;
- Re-occurrence of incidents or non-conformances relating to an area, activity or product; and
- Known environmental factors such as neighbouring environmental hotspots.

The environmental aspects associated with activities, products and services are documented in the aspect register. The potential impacts arising from the environmental aspect are also captured in the aspect register. An aspect may lead to more than one impact.

Prioritisation of Environmental Aspects

In order to determine the significance rating of the environmental aspects, the following criteria are used:

Assessment criteria

Likelihood (Negative Impacts)

DESCRIPTION	DEFINITION
Definite	It is certain that the impact will materialize regardless of any preventive measure
Probable	The likelihood that the impact will materialize exceeds 10%
Possible	The likelihood of the impact materializing < 10%
Low	Possibility of impact materializing is very low either because of design or historic experience (likelihood < 1%)

Likelihood (Positive Impacts)

DESCRIPTION	DEFINITION
Definite	It is certain that the impact will materialize under current practise and controls
Probable	The likelihood that the impact will materialize exceeds 10%
Possible	The likelihood of the impact materializing < 10%
Low	Possibility of impact materializing is very low due to the circumstances occurring on an ADHOC basis.

Extent (Negative Impacts)

DESCRIPTION	DEFINITION
International	Impact on a scale beyond country boundaries
National	Impact on a scale within country boundaries
Regional	Impact on a regional scale
Local	Impact extends locally: the site and its surroundings
Site	Impact is confined to the site only
Immediate	Impact is confined to the immediate vicinity of the activity itself

Extent (Positive Impacts)

DESCRIPTION	DEFINITION
International	Impact on a scale beyond country boundaries
National	Impact on a scale within country boundaries
Regional	Impact on a regional scale
Local	Impact extends locally: the site and its surroundings
Site	Impact is confined to the site only
Immediate	Impact is confined to the immediate vicinity of the activity itself

Severity (Negative Impacts)

DESCRIPTION	DEFINITION
Very High	Environment: There is a total disruption of natural, social and cultural functions or processes to the extent that these functions would permanently cease. Risk: Workforce fatality, Complete disruption of operational integrity, Loss of company credibility, with key stakeholders, Non-compliance with likelihood of prosecution, Premature close of operations
High	Environment: There is a total disruption of natural, social and cultural functions or processes to the extent that these cease functioning for the duration of the activity but resume functioning after the operation has been terminated. Risk: Workforce reportable or disabling injury or illness, Substantial disruption of operational integrity, Negative public perception, Non-compliance with low likelihood of prosecution,

DESCRIPTION	DEFINITION
	required to position operation for imminent closure, could have wider corporate implications
Moderate	Environment: The natural, social and cultural functions or processes are notably altered but continue (albeit in a modified way). The effect is reversible within the lifetime of the operation. Risk: Minor injury, required to position the operation for closure, required to position the operation for impending legislation
Low	Environment: The natural, social and cultural functions or processes are minimally affected (often only just measurable). Such effects are felt only during the life of the operation. Risk: Incident
No Effect	No effect e.g. a small oil spill in a bund wall

Severity (Positive Impacts)

DESCRIPTION	DEFINITION
Very High	All Products; Services and Activities will function independently with long-term sustainability.
High	All Products; Services and Activities will function with sustainability after closure of the mine with limited company controls.
Moderate	All Products; Services and Activities is sustainable during the life of the mine under controlled conditions with increased resource investment.
Low	The natural, social and cultural functions or processes are minimally improved (only just measurable). Such effects are felt only during the life of the operation. Risk: Limited investment of resources.
No Effect	No positive effect.

Compliance (Negative Impact)

DESCRIPTION	DEFINITION
Not Compliant	Operation is currently not compliant under normal operating conditions
Occasionally Not Compliant	Operation is generally compliant but there is occasional non-compliance under normal operating conditions
Potentially Not Compliant	Operation is generally compliant but there is potential non-compliance under abnormal operating conditions
Compliant / n/a	Operation is compliant under normal AND abnormal operating conditions OR Compliance is NOT APPLICABLE to this impact
Positive	The Operation adds value by leading by example

Compliance (Positive Impact)

DESCRIPTION	DEFINITION
Not Compliant	Operation is currently not compliant under normal operating conditions
Occasionally Not Compliant	Operation is generally compliant but there is occasional non-compliance under normal operating conditions

DESCRIPTION	DEFINITION
Potentially Not Compliant	Operation is generally compliant but there is potential non-compliance under abnormal operating conditions
Compliant / n/a	Operation is compliant under normal AND abnormal operating conditions OR Compliance is NOT APPLICABLE to this impact
Positive	The Operation adds value by leading by example

Improvement (Negative Impact)

DESCRIPTION	DEFINITION
High	Strong opportunity to improve management to reduce or eliminate impact.
Medium	Management measures are in place to manage impact. Improved management could further reduce or eliminate impact.
Low	The activity/ aspect is currently well managed. There is little or no scope for improving current management to further reduce impact.
Not Required	No management is required

Improvement (Positive Impact)

DESCRIPTION	DEFINITION
High	Strong opportunity to improve management to enhance the positive impact.
Medium	Management measures are in place to sustain the positive the positive improvement. Improved management could enhance the positive impact.
Low	The Activity, Products and Services are currently well managed. There is little or no scope for father improvement.
Not Required	No management is required

Training Required (Negative Impact)

DESCRIPTION	DEFINITION
Yes	Training is required for the aspect under review. Training will mitigate the severity of the Impact.
No	Training is not required for the aspect.

Training Required (Positive Impact)

DESCRIPTION	DEFINITION
Yes	Training is required for further improvement
No	Training is not required for the aspect.

Potential Emergency (Negative Impact)

DESCRIPTION	DEFINITION
Yes	The activity and related aspects could lead to an environmental emergency taking place.
No	The activity and aspect cannot lead to an environmental emergency situation.

Potential Emergency (Positive Impact)

DESCRIPTION	DEFINITION
Yes	The activity and related aspects could lead to an environmental emergency taking place.
No	The activity and aspect cannot lead to an environmental emergency situation.

Every aspect is evaluated according to the criteria listed above. Only the most suitable class of each criterion will be selected taking note of normal, abnormal and emergency situations. All aspects are rated taking into consideration current mitigation in place in the area under investigation i.e. the residual risk will be determined.

The type and effectiveness of mitigation that should be considered are, amongst others:

- Suitably competent personnel;
- Monitoring and management process and procedures in place;
- Physical barriers and controls to prevent or minimize the impacts;
- Emergency procedures and systems in place where applicable. The rating of aspects will be done in conjunction with the responsible person of the area under investigation.

After all seven criteria had been selected on IsoMetrix, the calculation button will be used to reveal the calculated risk class as well as recommended management priority. The calculation is done automatically by the electronic system.

The responsible person of the area, taking note of both the risk class as well as the recommended management priority, allocates final priority to the aspect under investigation. The responsible person may choose to agree with recommended priority or to override the recommendation to a higher class.

The responsible person will not be allowed to override the recommendation to a lower priority.

For all HIGH Final Management Priorities, the mine will implement, either individually or in combination, any of the following controls:

a) Monitoring and measurement (including inspections);
b) Engineering controls with the development of Environmental Management Programmes (EMPs); and
c) Administrative control (including operational procedures and training)

MEDIUM rated aspects will as a minimum have operational procedures in place to prevent the impact from becoming worse.

ALARP aspects will be so indicated in the User Defined Fields of IsoMetrix. These aspects must contain detailed descriptions of the control measures already implemented. When an aspect is indicated as ALARP, no further control will be implemented unless new technological options became available that is practicable for the mine to implement.

It is not mandatory for the POSITIVE IMPACTS to be assigned with Objectives (EMP's).

The Aspects register of each area must be communicated to all employees working in that specific area. They must be aware of the significant impacts caused by their activities. Record of this communication must be kept as prove of training.

Revision

The aspects register will be reviewed during December and January before budget review to ensure that adequate budget is allocated to management plans:

- At least annually;
- After significant changes; and
- After the completion of Environmental Management Programmes that would change an aspect's significance rating.

In terms of minerals and labour legislation, contractors performing work on a mine are regarded as employees. Therefore, the mine has the same legal responsibility in respect of contractors as to its own employees.

No Contractor will be allowed to commence any work on the mine unless the agreement between the mine and the contractor has been finalised.

Contractors working on the mine's premises for longer than 5 (consecutive) days are required to undergo the mine's full medical, safety, environmental, fire and security induction programme.

Contractors working on the mine's premises for less than 5 days shall receive general SHE Induction from the Security Reception Clerk.

Contractors working for more than 5 days will be issued with a temporary card for five days (window period) to enable them to enter the mine in order to undergo all the relevant induction programmes.

Should the contract term be longer than one year, the contract holders will ensure that their employees go for medical surveillance (to make appropriate arrangements) exactly one year after commencing work.

The Security official capturing the data to open a contractor's access card will ensure that the card is valid for 12 (twelve) months.

Should the contract term be less than one year, the Security official capturing the data to open a contractor's access card will ensure that it is only valid for the duration of the contract. Should it be required that the contract be extended, the contract holder must liaise with the relevant company official in that regard.

Contractors working on mine for a period of more than 5 consecutive days must be appointed under the applicable Legal Appointment indicated in the Mine Health and Safety Act 29 of 1996. **NO CONTRACTOR MAY COMMENCE WORKING ON THE MINE BEFORE THE LEGAL APPOINTMENT HAS BEEN SIGNED**.

Legal Appointments are not required for contractors who are on the mine for less than 5 days.

The responsibility for the legal appointment of contractors lies with the company official, who is also responsible for the day to day monitoring of the contractor.

The relevant appointed mine official to whom the contractor reports will ensure that the contract holder or his duly appointed representative receive a copy of the SHE Contractors Manual.

The relevant appointed mine official to whom the contractor reports will ensure that the relevant training prior to the appointment has been done.

In addition to the requirements set out in the General Conditions of Contract, Contractors will be required to perform their work in accordance with the Mine policies and procedures as set out in the contractors Manual, which will be included with the Contract documentation and is obtainable from the Mine Store.

All Contractors shall submit a monthly report to the Chief Safety Officer to enable him/her to report on the current strength of all contractor workers per contractor and per department.

Should a Contractor be required to work over weekends, they must attend the weekly Weekend Labour Planning meeting. The appropriate weekend overtime labour lists must be authorised by the weekend overtime duty manager and a copy forwarded to the Security Control Room.

The Contractor's site supervisor shall attend all relevant departmental safety, health and environmental meetings convened by mine management.

The Contractor shall furthermore hold monthly safety, health and environmental meetings for its own employees and keep record of such meetings. Alternatively, the Contractor shall arrange that its employees attend safety, health and environmental meetings convened by the relevant department, and will be required to maintain record of attendance by its employees.

1.11 Specific information required by the Competent Authority

The following information will be required by the competent authority.

Information	Frequency of submission
Quantum of Financial Provision	Annually
Environmental Performance Assessment	Biennially (every 2 years)
Environmental Audit	Annually

2. UNDERTAKING

The EAP herewith confirms

(a) the correctness of the information provided in the reports ☒

(b) the inclusion of comments and inputs from stakeholders and I&APs; ☒

(c) the inclusion of inputs and recommendations from the specialist reports where relevant; ☒and

(d) the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein. ☒

Signature of the environmental assessment practitioner:

Shangoni Management Services (Pty) Ltd

Name of company:

05 September 2017

Date:

I CERTIFY that the Deponent acknowledged that she knows and understands the contents of this affidavit which was signed and sworn to before me at PRETORIA on this the ___ day of _____ 2017, by the Deponent who admitted and declared that she understands the content of this declaration, the content thereof is true and correct, that she has no objection to taking the oath and that she considers the oath binding on her conscience, the Regulations contained in Government Notice No R1258 dated 21 July 1972, as amended, having been complied with.

_____

Commissioner of Oaths

-END-