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# ENVIRONMENTAL IMPACT ASSESSMENT REPORT & ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT FOR:

THE PROSPECTING RIGHT APPLICATION COMBINED WITH A WASTE LICENCE APPLICATION OF AAA MINING CC FOR THE PROSPECTING OF DIAMONDS ALLUVIAL (DA), DIAMONDS IN KIMBERLITE (DK), DIAMONDS GENERAL (D) & DIAMONDS (DIA) ON THE REMAINING EXTENT OF THE FARM KAMEELDRIFT 285, REGISTRATION DIVISION: HOPETOWN; NORTHERN CAPE PROVINCE.

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**Table of Contents**

PROJECT INFORMATION..... 1

IMPORTANT NOTICE ..... 2

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS ..... 1

OBJECTIVE OF THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS ..... 1

SCOPE OF ASSESSMENT AND CONTENT OF ENVIRONMENTAL IMPACT ASSESSMENT REPORTS ..... 2

A. CONTACT PERSON AND CORRESPONDENCE ADDRESS..... 2

B. DESCRIPTION OF THE PROPERTY ..... 3

C. LOCALITY MAP ..... 3

D. DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY. .... 5

E. POLICY AND LEGISLATIVE CONTEXT ..... 13

F. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES. .... 18

G. A MOTIVATION FOR THE PREFERRED DEVELOPMENT FOOTPRINT ..... 18

H. A FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED DEVELOPMENT FOOTPRINT ..... 19

    i) Details of the development footprint alternatives considered; ..... 19

    ii) Details of the Public Participation Process Followed ..... 22

    iii) Summary of Issues Raised by I&APs ..... 25

    iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; ..... 32

    v) The impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts— ..... 56

    vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks; ..... 56

    vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; ..... 59

    viii) the possible mitigation measures that could be applied and level of residual risk; ..... 59

    ix) if no alternative development [location] footprints for the activity were investigated, the motivation for not considering such; and ..... 60

    x) a concluding statement indicating the location of the preferred alternative development [location] footprint within the approved site as contemplated in the accepted scoping report; ..... 60

I. A FULL DESCRIPTION OF THE PROCESS UNDERTAKEN TO IDENTIFY, ASSESS AND RANK THE IMPACTS THE ACTIVITY AND ASSOCIATED STRUCTURES AND INFRASTRUCTURE WILL IMPOSE ON THE PREFERRED [LOCATION] DEVELOPMENT FOOTPRINT ON THE APPROVED SITE ..... 60

J. AN ASSESSMENT OF EACH IDENTIFIED POTENTIALLY SIGNIFICANT IMPACT AND RISK, INCLUDING— ..... 67

K. SUMMARY OF THE FINDINGS AND RECOMMENDATIONS OF ANY SPECIALIST REPORT 79

L. AN ENVIRONMENTAL IMPACT STATEMENT WHICH CONTAINS— ..... 85

M.	PROPOSED IMPACT MANAGEMENT OBJECTIVES AND THE IMPACT MANAGEMENT OUTCOMES FOR INCLUSION IN THE EMPR .....	86
N.	FINAL PROPOSED ALTERNATIVES .....	87
O.	ASPECTS FOR INCLUSION AS CONDITIONS OF AUTHORISATION. ....	87
P.	DESCRIPTION OF ANY ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE....	87
Q.	REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORISED .....	87
R.	PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED. ....	88
S.	AN UNDERTAKING UNDER OATH OR AFFIRMATION BY THE EAP IN RELATION TO: .....	88
T.	FINANCIAL PROVISION .....	89
U.	DEVIATIONS FROM THE APPROVED SCOPING REPORT AND PLAN OF STUDY. ....	90
V.	ANY SPECIFIC INFORMATION THAT MAY BE REQUIRED BY THE COMPETENT AUTHORITY; AND .....	90
W.	COMPLIANCE WITH THE PROVISIONS OF SECTIONS 24(4)(A) AND (B) OF THE ACT .....	90
	ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT .....	92
A.	DETAILS OF- .....	92
B.	DESCRIPTION OF THE ASPECTS OF THE ACTIVITY .....	92
C.	COMPOSITE MAP .....	92
D.	A DESCRIPTION OF THE IMPACT MANAGEMENT [OBJECTIVES] OUTCOMES, INCLUDING MANAGEMENT STATEMENTS, IDENTIFYING THE IMPACTS AND RISKS THAT NEED TO BE AVOIDED, MANAGED AND MITIGATED AS IDENTIFIED THROUGH THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS FOR ALL PHASES OF THE DEVELOPMENT INCLUDING—.....	92
E.	A DESCRIPTION AND IDENTIFICATION OF IMPACT MANAGEMENT OUTCOMES REQUIRED FOR THE ASPECTS CONTEMPLATED IN PARAGRAPH (D);].....	93
F.	A DESCRIPTION OF PROPOSED IMPACT MANAGEMENT ACTIONS, IDENTIFYING THE MANNER IN WHICH THE IMPACT MANAGEMENT [OBJECTIVES AND] OUTCOMES CONTEMPLATED IN PARAGRAPH (D) [AND (E)] WILL BE ACHIEVED, AND MUST, WHERE APPLICABLE, INCLUDE ACTIONS TO — .....	94
G.	MONITORING OF IMPACT MANAGEMENT ACTIONS .....	133
H.	MONITORING AND REPORTING FREQUENCY .....	133
I.	RESPONSIBLE PERSONS .....	133
J.	TIME PERIOD FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS .....	133
K.	MECHANISM FOR MONITORING COMPLIANCE.....	133
L.	A PROGRAM FOR REPORTING ON COMPLIANCE, TAKING INTO ACCOUNT THE REQUIREMENTS AS BY THE REGULATIONS;.....	135
M.	AN ENVIRONMENTAL AWARENESS PLAN DESCRIBING THE MANNER IN WHICH— .....	135
N.	SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY .....	135

PROJECT INFORMATION

**Project Name:** Application for an Environmental Authorisation for the proposed Prospecting Right Application combined with a Waste Licence Application of AAA Mining CC for the Prospecting of Diamonds Alluvial (DA), Diamonds in Kimberlite (DK), Diamonds General (D) & Diamonds (DIA) on the remaining extent of the farm Kameeldrift 285, Registration Division: Hopetown; Northern Cape Province.

**Report Title:** EIR & EMPr


**Prepared By:** Milnex CC Environmental Consultants

**Date:** May 2021

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**QUALITY CONTROL:**

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	<b>Report Author:</b>	<b>Report Reviewer:</b>
<b>Name:</b>	Christiaan Baron	N/A
<b>Signature:</b>		

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**DISCLAIMER:**

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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 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.

## **ENVIRONMENTAL IMPACT ASSESSMENT PROCESS**

- (1) The environmental impact assessment process must be undertaken in line with the approved plan of study for environmental impact assessment.
- (2) The environmental impacts, mitigation and closure outcomes as well as the residual risks of the proposed activity must be set out in the environmental impact assessment report.

## **OBJECTIVE OF THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS**

2. The objective of the environmental impact assessment process is to, through a consultative process-
  - a) determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
  - b) describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
  - c) identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
  - d) determine the--
    - (i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
    - (ii) degree to which these impacts-
      - (aa) can be reversed;
      - (bb) may cause irreplaceable loss of resources, and
      - (cc) can be avoided, managed or mitigated;
  - e) identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;
  - f) identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;
  - g) identify suitable measures to avoid, manage or mitigate identified impacts; and
  - h) identify residual risks that need to be managed and monitored.

## SCOPE OF ASSESSMENT AND CONTENT OF ENVIRONMENTAL IMPACT ASSESSMENT REPORTS

### A. CONTACT PERSON AND CORRESPONDENCE ADDRESS

#### a) Details of:

- i) The EAP who prepared the report
- ii) Expertise of the EAP

Name of Practitioner	Qualifications	Contact details
Ms. Percy Sehaole Pr. Sci. Nat. EAPASA (2019/959)	Master's Degree in Environmental Science Master's Degree in Environmental Management (refer to <b>Appendix 1</b> )	Tel No.: (018) 011 1925 Fax No.: (053) 963 2009 e-mail address: <a href="mailto:percy@milnex-sa.co.za">percy@milnex-sa.co.za</a>
Mr. Christiaan Baron	Master's Degree in Environmental Management (M.ENV.MAN) (refer to <b>Appendix 1</b> )	Tel No.: (018) 011 1925 Fax No.: (053) 963 2009 e-mail address: <a href="mailto:christiaan@milnex-sa.co.za">christiaan@milnex-sa.co.za</a>
Ms. Lizanne Esterhuizen	Honours Degree in Environmental Science (refer to <b>Appendix 1</b> )	Tel No.: (018) 011 1925 Fax No.: (053) 963 2009 e-mail address: <a href="mailto:lizanne@milnex-sa.co.za">lizanne@milnex-sa.co.za</a>

#### Summary of the EAP's past experience. (Attach the EAP's curriculum vitae as **Appendix 2**)

Milnex CC was contracted by **AAA Mining CC** as the independent environmental consultant to undertake the Scoping and EIA process for a Prospecting Right application combined with a Waste Licence application for the prospecting of Diamonds Alluvial (DA), Diamonds in Kimberlite (DK), Diamonds General (D) & Diamonds (DIA) on the remaining extent of the farm Kameeldrift 285, Registration Division: Hopetown; Northern Cape Province. The property is located approximately 30km from Douglas, towards Hopetown in the Northern Cape Province. The Orange River is flowing north and east of the area. Milnex CC does not have any interest in secondary developments that may arise out of the authorisation of the proposed project.

Milnex CC is a specialist environmental consultancy with extensive experience in the mining industry which provides a holistic environmental management service, including environmental assessment and planning to ensure compliance with relevant environmental legislation. Milnex CC benefits from the pooled resources, diverse skills and experience in the environmental and mining field held by its team that has been actively involved in undertaking environmental studies for a wide variety of mining related projects throughout South Africa. The Milnex CC team has considerable experience in environmental impact assessment and environmental management, especially in the mining industry.

Percy Sehaole, Christiaan Baron & Lizanne Esterhuizen have experience consulting in the environmental field. Their key focus is on environmental assessment, advice and management and ensuring compliance to legislation and guidelines. They are currently involved in undertaking EIAs for several projects across the country (refer to **Appendix 2** for CV).

## B. DESCRIPTION OF THE PROPERTY

<b>Farm Name:</b>	1) Remaining Extent of the farm Kameeldrift 285 Title deed: T18762/2002CTN
<b>Application area (Ha)</b>	3749.6090ha
<b>Magisterial district:</b>	Pixley ka Seme District Municipality
<b>Local Municipality</b>	Thembelihle local Municipality
<b>Registration Division</b>	Hopetown RD
<b>Distance and direction from nearest town</b>	The property is located approximately 30km from Douglas, towards Hopetown in the Northern Cape Province. The Orange River is flowing north and east of the area.
<b>21 digit Surveyor General Code for each farm portion</b>	1. C0330000000002850000
<b>Minerals Applied for</b>	1. Diamonds Alluvial (DA) 2. Diamonds in Kimberlite (DK) 3. Diamonds in General (D) & 4. Diamonds (DIA)

### iii. Farm co-ordinates

Farms		Longitude	Latitude
Remaining Extent of the farm Kameeldrift 285	0	23° 52' 54.148" E	29° 18' 1.599" S
	1	23° 53' 1.291" E	29° 18' 17.018" S
	2	23° 53' 7.771" E	29° 18' 33.023" S
	3	23° 52' 58.187" E	29° 19' 24.601" S
	4	23° 53' 11.743" E	29° 19' 58.465" S
	5	23° 53' 26.148" E	29° 20' 22.818" S
	6	23° 51' 14.676" E	29° 22' 46.195" S
	7	23° 50' 40.594" E	29° 22' 37.428" S
	8	23° 49' 18.776" E	29° 24' 13.063" S
	9	23° 48' 3.097" E	29° 22' 42.919" S
	10	23° 47' 36.723" E	29° 22' 29.747" S
11	23° 51' 51.058" E	29° 18' 28.522" S	

## C. LOCALITY MAP

(show nearest town, scale not smaller than 1:250000 attached as **Appendix 3**).

A Locality map is attached in **Appendix 3** and on figure 1 below.





**D. DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY.**

**i) LISTED AND SPECIFIED ACTIVITIES**

<p><b>Description of the overall activity. (Indicate Mining Right, Mining Permit, Prospecting right, Bulk Sampling, Production Right, Exploration Right, Reconnaissance permit, Technical co-operation permit, Additional listed activity)</b></p>	<p><b>1) Listing notice 1 GNR327: Activity 9:</b> "The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water— (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more;"</p> <p><b>2) Listing notice 1 GNR 327: Activity 10:</b> "The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes – (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more;"</p> <p><b>3) Listing Notice 1: GNR 327, Activity 19:</b> The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from: (i) a watercourse;</p> <p><b>4) Listing Notice 1, GNR 327, Activity 20:</b> "Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including— (a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource; or [including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)] (b) the primary processing of a petroleum resource including winning, extraction, classifying, concentrating or water removal; –</p> <p><b>5) Listing Notice 2, GNR 325, Activity 15:</b>"The clearance of an area of 20 hectares or more, of indigenous vegetation."</p> <p><b>6) Listing Notice 2, GNR 325, Activity 19:</b> "The removal and disposal of minerals contemplated in terms of section 20 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including— (a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource or (b) [including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)] the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing;</p> <p><b>7) Listing Notice 3: GNR 324, Activity 12 (g):</b> Northern Cape; The clearance of an area of 300 square metres or more of indigenous vegetation; ii) Within critical biodiversity areas identified in bioregional plans;</p> <p><b>8) NEM:WA 59 of 2008: Residue stockpiles or residue deposits, Category A: (15)</b> The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a prospecting right or mining permit, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).</p>
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	Prospecting right with bulk samples for the prospecting of <b>Diamonds Alluvial, Diamonds in Kimberlite, Diamonds (General) and Diamonds</b> including associated infrastructure, structure and earthworks.
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<b>NAME OF ACTIVITY</b>  (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc E.g. for mining,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	<b>Aerial extent of the Activity</b> Ha or m <sup>2</sup>	<b>LISTED ACTIVITY</b>  (Mark with an X where applicable or affected).	<b>APPLICABLE LISTING NOTICE</b>  (GNR 324, GNR 325 or GNR 326)	<b>WASTE MANAGEMENT AUTHORISATION</b>  (Indicate whether an authorisation is required in terms of the Waste Management Act) (Mark with an X)
<b>Bulk transportation of water or storm water:</b> <b>BULK SAMPLING:</b> 3749.6090 Ha – 5m x 5m x 5m (100 pits), 60m x 50m x 5m (50 trenches)  <b>Listing notice 1 GNR327: Activity 9:</b> The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water— (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more;	Random indigenous vegetation clearance of over a 3749.6090 hectares area.	X	Listing notice 1 GNR327: Activity 9	
<b>Bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes:</b> <b>BULK SAMPLING:</b> 3749.6090 Ha – 5m x 5m x 5m (100 pits), 60m x 50m x 5m (50 trenches)  <b>Listing notice 1 GNR 327: Activity 10:</b> The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes – (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more;	Random indigenous vegetation clearance of over a 3749.6090 hectares area.	X	Listing notice 1 GNR 327: Activity 10	
<b>Prospecting Right:</b> <b>BULK SAMPLING:</b> 3749.6090 Ha – 5m x 5m x 5m (100 pits), 60m x 50m x 5m (50 trenches)  <b>Listing Notice 1: GNR 327, Activity 19:</b> The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from:	3749.6090 Ha - Total hectares to be disturbed Concurrent backfilling will take place in order to rehabilitate.	X	Listing Notice 1: GNR 327, Activity 19	

(i) a watercourse;				
<p><b>Prospecting Right:</b>  <b>BULK SAMPLING:</b></p> <p>3749.6090 Ha – 5m x 5m x 5m (100 pits),          60m x 50m x 5m (50 trenches)</p> <p><b>2 x 16 feet washing pan</b> with 660 000 tons to be washed, conveyors, screens, etc</p> <p><b>Listing Notice 1, GNR 325, Activity 20:</b> “Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including—          (a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource; or [including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)]          (b) the primary processing of a petroleum resource including winning, extraction, classifying, concentrating or water removal</p>	<p>3749.6090 Ha Total hectares to be disturbed</p>	<p>X</p>	<p>Listing Notice 1, GNR 327, Activity 20:</p>	
<p><b>Clearance of indigenous vegetation:</b>  <b>BULK SAMPLING:</b></p> <p>3749.6090 Ha – 5m x 5m x 5m (100 pits),          60m x 50m x 5m (50 trenches)</p> <p><b>Listing Notice GNR 325, Activity 15:</b>          "The clearance of an area of 20 hectares or more, of indigenous vegetation." – Random indigenous vegetation clearance of over a 3749.6090 hectares area.</p>	<p>3749.6090 Ha Total hectares to be disturbed Concurrent backfilling will take place in order to rehabilitate.</p>		<p>Listing Notice 2, GNR 325, Activity 15</p>	
<p><b>Prospecting Right:</b>  <b>BULK SAMPLING:</b></p> <p>3749.6090 Ha – 5m x 5m x 5m (100 pits),          60m x 50m x 5m (50 trenches)</p> <p><b>Listing Notice GNR 325, Activity 19:</b></p>	<p>3749.6090 Ha Total hectares to be disturbed</p>	<p>X</p>	<p>Listing Notice 2, GNR 325, Activity 19:</p>	

<p>“The removal and disposal of minerals contemplated in terms of section 20 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including—                  (a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource [,]; or                  (b) [including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)] the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing</p>				
<p><b>Clearance of indigenous vegetation:</b>  <b>BULK SAMPLING:</b>                  3749.6090 Ha – 5m x 5m x 5m (100 pits),                  60m x 50m x 5m (50 trenches)  <b>Listing Notice 3: GNR 324, Activity 12 (g):</b> Northern Cape; The clearance of an area of 300 square metres or more of indigenous vegetation; ii) Within critical biodiversity areas identified in bioregional plans;</p>	<p>Random indigenous vegetation clearance of over a 3749.6090 hectares area.</p>	<p>X</p>	<p>Listing Notice 3:                  GNR 324, Activity 12 (g):</p>	
<p><b>Residue stockpiles or residue deposits:</b> The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a prospecting right or mining permit, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).</p>		<p>X</p>	<p>NEM:WA 59 of 2008 Category A: (15)</p>	

## ii) **DESCRIPTION OF THE ASSOCIATED STRUCTURES AND INFRASTRUCTURE RELATED TO THE DEVELOPMENT**

(Describe Methodology or technology to be employed, and for a linear activity, a description of the route of the activity)

**AAA Mining CC** has embarked on a process for applying for a Prospecting Right combined with a Waste Licence to prospect for Diamonds (Alluvial, Kimberlite, General) & Diamonds on the remaining extent of the farm Kameeldrift 285, Registration Division: Hopetown due to the sites expected mineral resources. **AAA Mining CC** requires a prospecting right in terms of NEMA and the Mineral and Petroleum Resources Development Act to mine Diamonds (Alluvial, Kimberlite, General) & Diamonds within the Thembelihle Local Municipality, Northern Cape Province (refer to a locality map attached in **Appendix 3**).

### **A DESCRIPTION OF HOW THE MINERAL RESOURCE AND MINERAL DISTRIBUTION OF THE PROSPECTING AREA WILL BE DETERMINED**

#### **Phase 1 - Site Visit**

The applicant will appoint Pierre de Jager as the project geologist to conduct the site visit. A formal site visit will be done within 60 days after the prospecting right has been executed. It is foreseen that more than one site visit will be conducted on the farms.

The purpose of the site visit is to assist the applicant to be familiar with the environment and with the assessment of the topography and the general geology before invasive prospecting activities. During this process the applicant will also review all documentation that has been received in relation to the geology of the area.

#### **Phase 2 - Desktop Studies**

Desktop studies will be undertaken after a site investigation is done to determine the target areas including the identification of any infrastructure to be build and any potential problems that may need to be addressed.

This phase involves reviewing the literature surveys, interpretation of aerial photographs, satellite images and ground validation of targets. A preliminary analysis of the environment will be obtained which will improve the project's efficiency and cost by providing a clearer understanding of the challenges may be encountered. Compilation of the results of analysis will be done by the geologist after the finalization of the desktop studies.

#### **Phase 3 – Pitting**

A trial pit / test pit or inspection pit investigation is a highly effective way of obtaining data on the sub surface soil and rock conditions which underlie a prospecting sight. It allows for the various soils and rock types to be locked, the soil to be sampled and a preliminary assessment to be made. Pits will be dug, locked, sampled and backfilled. To dig the pits the applicant will make use of the systems of Pierre de Jager, the appointed project geologist. The applicant will at the end of the pitting process have locked the pits with the following information:

- A description of the soil and rock types from ground level to the base of the pits;
- Record of rock head depth and refusal depth, a list of where the samples will be taken, a record of where ground water seepage will be recorded;
- A general note of the geology and conditions in the vicinity of the test pits
- Pitting will be done within the period of 24 months once the prospecting right has been granted.

#### **Calculations**

It is planned that 100 pits will be dug (it may be less depending on the results) at an extent of 5m (length) x 5m (breath) x 5m (depth).

- $(100 \text{ pits} / 24 \text{ months}) \times 12 \text{ months} = 50 \text{ pits dug per year}$
- $\text{Total area to be disturbed per year} = 50 \text{ pits} \times (5\text{m} \times 5\text{m}) / 10\,000 = 0.125 \text{ Ha disturbed per year}$
- $\text{Total area disturbed for 24 months} = 100 \text{ pits} \times (5\text{m} \times 5\text{m}) / 10\,000 = 0.25 \text{ Ha disturbed}$

#### **Phase 4 - Trenches**

Due to nature of the alluvial diamond deposit, samples are not taken for assay as would be normal practice to evaluate hard rock precious or base-metal prospects. The diamond distribution pattern grade of alluvial diamonds is also of such a nature that there is no repeatability of sample results, even from adjacent samples.

Bulk samples will have to be taken to determine the average sample grade. By taking of the bulk samples, the applicant foresees to determine the grade of the diamond deposits as the number of carats contained in 100 tons (cpht) of gravel and to determine the average diamond sizes.

During these activities the applicant will then find out the size and value distribution of trenches. Diamond distribution patterns of alluvial deposits varies to such a nature that there is no repeatability of sample results even from adjacent samples.

Alluvial diamond deposits can only be sampled through bulk sampling comprising thousands of cubic meters of gravel. Given the extent of the area and the grades expected to be very low, the applicant will have to process bulk samples of approximately 660 000 tonnes.

The appointed geologist will advise where the samples will be taken. Bulk samples will not be taken along a systematic grid as in the case of drilling. As the anticipated mining plan for the properties will be based on high volumes (low grades), the bulk samples will have to address average recovery.

As indicated, the bulk sampling exercise has to be conducted to determine the grades (cpht), the diamond size distribution and thereafter to sell the diamonds to determine the diamond values.

The plant/ bulk sampling technique will be that of a typical South African alluvial diamond mining operation. The method is a strip mining process with oversize material and tailings recovered from the plant will be used as backfill material prior to final rehabilitation. Gravels are excavated, loaded and transported to the treatment facility using dump trucks.

The bulk sampling operation will be conducted using a fleet of conventional open pit mining equipment comprising of dump trucks supported by appropriate excavators and frontend- loaders. All equipment is planned to be diesel driven.

Before excavation commences vegetation will be cleared from the proposed bulk sampling block. These will be done as per environmental regulations. Top soil will then be removed and stored separately for later used for rehabilitation.

The bulk samples will be made in the form of box cuts the dimensions of these individual box cuts will on average be 60m long x 50m wide. It is estimated that the bulk samples will be 5 m in depth.

Gravel will be removed by excavators and will be loaded directly into dump trucks. Ore will be hauled to the screening plant. The material will be screened where after the screened material will be moved to the processing plant where the gravel will be processed. Concentrate will be moved to the sorting plant where the concentrate will be sorted.

It is estimated that pitting and trenching will take approximately 48 months.

#### Calculations

It is planned that 50 trenches will be dug (it may be less depending on the results) at an extent of 60m (length) x 50m (breadth) x 5m (depth).

- $(50 \text{ trenches} / 24 \text{ months}) \times 12 \text{ months} = 25 \text{ trenches dug per year}$
- $\text{Total area to be disturbed per year} = 25 \text{ trenches} \times (60\text{m} \times 50\text{m}) / 10\,000 = 7.5 \text{ Ha disturbed per year}$
- $\text{Total area disturbed for 24 months} = 50 \text{ trenches} \times (60\text{m} \times 50\text{m}) / 10\,000 = 15 \text{ Ha disturbed}$

#### **Phase 5 - Consolidation and Interpretation of Results Data**

The prospecting activities will be conducted to determine an inferred diamond resource and an indicated diamond resource. An inferred diamond resource has a lower level of confidence than that applying to an indicated diamond resource. The inferred



resource indication will be where the geological and or grade continuity could not be confidently interpreted. It cannot be assumed that an inferred resource will necessarily be upgraded to an indicated resource. Such a resource is normally also not sufficient to enable an evaluation of economic viability.

To obtain an indicated resource the confidence level of information obtained from the prospecting will have to be sufficient for the information to be applied to mine design, mine planning to enable an evaluation of economic viability.

The project geologist, Pierre de Jager, will monitor the program and consolidate and process the data and amend the program depending on the results received after each phase of prospecting. The DMR will be updated of any amendments made. This will be a continuous process throughout the prospecting work program.

Each physical phase of prospecting will be followed by desktop studies involving interpretation and modeling of all data gathered. These studies will determine the manner in which the work programme is to be proceeded with in terms of the activity, quantity, resources, expenditure and duration.

A GIS data base will be constructed capturing all the exploration data. All data will be consolidated and processed to determine the diamond bearing resource on the property.

**Water uses:**

Water uses under section 21 a-k of the NWA may be triggered, thus a Water Use Licence Application (WULA) will be needed in cases there will be encroachment on any watercourses. When needed WULA must be lodged with the department of Water & Sanitation (DWS).

**Table 1:** Water Use Pan Size specifications for Alluvial Diamond Mining (DWS NC & FS, 2001).

Pan size	Water/hour (m <sup>3</sup> )	Water/day(m <sup>3</sup> )	Gravel/hour (tons)	Gravel/day (ton)
16	17	170	60	600

Since 2 x 16 feet washing pans will be used, the amount of water for the pans will be 34 000 L/hour from which 30% is re-used.

**Ablution**

Chemical toilets shall be used, no french drains and pits shall be permitted.

**Storage of dangerous goods**

During the prospecting activities, limited quantities of diesel and fuel, oil and lubricants will be stored on site. These goods should be placed in a bunded area one and a half times the volume of the total amount of goods to be stored. It is anticipated that no more that 80m<sup>3</sup> of fuel will be stored on site during any time of the prospecting operation.

**Prospecting activities and phases**

Please find the Prospecting Work Programme attached as **Appendix 8**.

#### E. POLICY AND LEGISLATIVE CONTEXT

(a description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;)

<b>Title of legislation, policy or guideline:</b>	<b>Administering authority:</b>	<b>Promulgation Date:</b>
National Environmental Management Act No. 107 of 1998 as amended.	Department of Environmental Affairs	27 November 1998
Constitution of South Africa Act 108 of 1996	National	18 December 1996
The National Heritage Resources Act (Act No. 25 of 1999)	SAHRA	1999
Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)	Department of Mineral Resources & Energy (DMRE)	2002
National Infrastructure Plan	National	
National Environmental Management: Biodiversity Act No. 10 of 2004	Department of Environmental Affairs	7 June 2004
National Environmental Management Waste Act, 2008 (Act No. 59 of 2008)	National & Provincial	1 July 2009
EIA regulations under NEMA	Department of Environmental Affairs	14 December 2014
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	Department of Agriculture Forestry and Fisheries	1 June 1984
National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004).	National and Provincial	11 September 2004
National Water Act, 1998 (Act No. 36 of 1998).	National	20 August 1998
Northern Cape Province Growth and Development Strategy	Provincial	11 August 2013
Pixley Ka Seme District Municipality Integrated Development Plan (IDP)	Municipal	Term 2017 - 2022
Thembelihle Local Municipality Integrated Development Plan (IDP)	Municipal	Term 2016/2017
National Forest Act (Act 84 of 1998) (NFA)	National	30 October 1998
National Veld & Forest Fires Act (Act 101 of 1998)	National	27 November 1998

### Policy and Legislative Context

<b>APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT</b> (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	<b>REFERENCE WHERE APPLIED</b>	<b>HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.</b>  (E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)
<b>The Constitution of South Africa</b> <b>(Act No. 108 of 1996)</b>		The Constitution is the supreme law of the Republic and all law and conduct must be consistent with the Constitution. The Chapter on the Bill of Rights contains a number of provisions, which are relevant to securing the protection of the environment. Section 24 states that “everyone has the right to (a) an environment that is not harmful to their health or well-being and (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that – (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. The Constitution therefore, compels government to give effect to the people’s environmental right and places government under a legal duty to act as a responsible custodian of the countries environment. It compels government to pass legislation and use other measures to protect the environment, to prevent pollution and ecological degradation, promote conservation and secure sustainable development.
<b>The National Environmental Management Act</b> <b>(Act No. 107 of 1998)</b>	S24(1) of NEMA S28(1) of NEMA	NEMA provides for co-operative governance by establishing principles and procedures for decision-makers on matters affecting the environment. An important function of the Act is to serve as an enabling Act for the promulgation of legislation to effectively address integrated environmental management. Some of the principles in the Act are accountability; affordability; cradle to grave management; equity; integration; open information; polluter pays; subsidiary; waste avoidance and minimisation; co-operative governance; sustainable development; and environmental protection and justice.  The mandate for EIA lays with the National Environmental Management Act (107 of 1998) and the EIA Regulations No. 324, 325, 326, 327, promulgated in terms of Section 24 of NEMA. The EIA Regulations determine that an Environmental Authorisation is required for certain listed activities, which might have a detrimental effect on the environment. This EIA was triggered by activity 9, 10, 19, 20, 15, 19 which requires a ‘basic assessment process.’ & activity 12(g) which also requires a basic assessment process due to the proposed development’s location in the Norther Cape Province. In terms of the National Environmental Management: Waste Act the proposed prospecting activities trigger activity 15 in Category A.

<p><b>The National Water Act (Act No. 36 of 1998)</b></p>	<p>S21</p>	<p>Sustainability and equity are identified as central guiding principles in the protection, use, development, conservation, management and control of water resources. The intention of the Act is to promote the equitable access to water and the sustainable use of water, redress past racial and gender discrimination, and facilitate economic and social development. The Act provides the rights of access to basic water supply and sanitation, and environmentally, it provides for the protection of aquatic and associated ecosystems, the reduction and prevention of pollution and degradation of water resources.</p> <p>As this Act is founded on the principle that National Government has overall responsibility for and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest, a person can only be entitled to use water if the use is permissible under the Act. Chapter 4 of the Act lays the basis for regulating water use.</p>
<p><b>Management: Air Quality Act (Act No. 39 of 2004)</b></p>	<p>S21</p>	<p>The object of this Act is to protect the environment by providing reasonable measures for the protection and enhancement of the quality of air in the Republic; the prevention of air pollution and ecological degradation; and securing ecologically sustainable development while promoting justifiable economic and social development.</p> <p>Regulations No. R248 (of 31 March 2010) promulgated in terms of Section 21(1) (a) of the National Environmental Management Act: Air Quality Act (39 of 2004) determine that an Atmospheric Emission License (AEL) is required for certain listed activities, which result in atmospheric emissions which have or may have a detrimental effect on the environment. The Regulation also sets out the minimum emission standards for the listed activities. It is not envisaged that an Atmospheric Emission License will be required for the proposed development.</p>
<p><b>The National Heritage Resources Act (Act No. 25 of 1999)</b></p>		<p>The Act aims to introduce an integrated and interactive system for the management of the heritage resources, to promote good government at all levels, and empower civil society to nurture and conserve heritage resources so that they may be bequeathed to future generations and to lay down principles for governing heritage resources management throughout the Republic. It also aims to establish the South African Heritage Resources Agency together with its Council to co-ordinate and promote the management of heritage resources, to set norms and maintain essential national standards and to protect heritage resources, to provide for the protection and management of conservation-worthy places and areas by local authorities, and to provide for matters connected therewith.</p> <p>The Act protects and manages certain categories of heritage resources in South Africa. For the purposes of the Heritage Resources Act, a "heritage resource" includes any place or object of cultural significance. In this regard the Act makes provision for a person undertaking an activity listed in Section 28 of the Act to notify the resources</p>

		authority. The resources authority may request that a heritage impact assessment be conducted if there is reason to believe that heritage resources will be affected.
<b>Conservation of Agricultural Resources Act (Act No. 85 of 1983)</b>		<p>The objective of the Act is to provide for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.</p> <p>Consent may be required from the Department of Agriculture in order to confirm that the proposed development is not located on high potential agricultural land.</p>
<b>Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)</b>		The Minerals and Petroleum Resources Development Act identifies the state as the official custodian of South Africa's Mineral and Petroleum Resources. Therefore all activities relating to the reconnaissance, prospecting rights, mining rights, mining permits and retention permits are regulated by the State.
<b>National Infrastructure Plan</b>		<p>The National Government adopted a National Infrastructure Plan in 2012. With the plan they aim to transform the South African economic landscape while simultaneously creating significant numbers of new jobs, and strengthening the delivery of basic services.</p> <p>Government will over the three years from 2013/14 invest R827 billion in building and upgrading existing infrastructure.</p> <p>These investments will improve access by South Africans to healthcare facilities, schools, water, sanitation, housing and electrification. On the other hand, investments in the construction of ports, roads, railway systems, electricity plants, hospitals, schools and dams will contribute to faster economic growth.</p> <p>This mining activity will indirectly contribute to the growing of the South African economy by supplying SANRAL with material to build and upgrade road infrastructure.</p>
<b>National Forest Act 84 of 1998</b>		<p>The protection, sustainable management and use of forests and trees within South Africa are provided for under the National Forests Act (Act 84 of 1998).</p> <p><b>Prohibition on destruction of trees in natural forests</b></p> <p>(1) No person may -</p> <p>(a) cut, disturb, damage or destroy any indigenous tree in a natural forest; or</p>

		<p>(b) possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any tree, or any forest product derived from a tree contemplated in paragraph (a), except in terms of-</p> <p>(i) a licence issued under subsection (4) or section 23; or</p> <p>(ii) an exemption from the provisions of this subsection published by the Minister in the <i>Gazette</i> on the advice of the Council.</p>
<b>National Environmental Management: Protected Areas Act 57 of 2003</b>		<p>This Act provides for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes. It also seeks to provide for the sustainable utilization of protected areas and to promote participation of local communities in the management of protected areas.</p>
<b>National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)</b>		<p>Section 24S of NEMA deals with the management of residue stockpiles and residue deposits and provides that Residue stockpiles and residue deposits must be deposited and managed in accordance with the provisions of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), on any site demarcated for that purpose in the environmental management plan or environmental management programme in question</p> <p>The management of residue stockpiles and residue deposits must be done in accordance with any conditions set out and any identified measures in the environmental authorisation issued in terms of NEMA, an environmental management programme and a waste management licence issued in terms of NEMA (Regulation 3(2)).</p>
<b>National Environmental Management: Waste Act, 2008 (Act No. 59 Of 2008) Regulations regarding the Planning &amp; Management of Residue Stockpiles &amp; Residue Deposits from a Prospecting, Mining, Exploration or Production Operation</b>		<p>The purpose of these Regulations is to regulate the planning and management of residue stockpiles and residue deposits from a prospecting, mining, exploration or production operation.</p>

#### **F. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES.**

(a motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred [location] development footprint within the approved site as contemplated in the accepted scoping report;).

Mining has played a vital role in the economy of South Africa for over 100 years. In 2015 the mining industry contributed R286 billion towards South African Gross Domestic Product (GDP) representing 7.1% of overall GDP. Mining is a significant contributor to employment in the nation, with 457 698 individuals directly employed by the sector in 2015. This represents just over 3% of all employed nationally. Diamond mining has 17 885 direct employees.

Diamonds, arguably the ultimate luxury mineral, comprise an intricate lattice of carbon atoms, a crystalline structure that makes them harder than any other form in nature. This characteristic makes diamonds not only popular in jewellery, but also desirable in high-tech cutting, grinding and polishing tools (Chamber of Mines, South Africa, 12:2016).

According to the Chamber of Mines the country's diamond sector is far from reaching the end of its life even though diamond mining has been taking place in South Africa for almost a century and a half. The primary sources of all of South Africa's diamonds are kimberlites in ancient, vertically dipping volcanic pipes most of which were located in the vicinity of the city of Kimberley and which were initially amenable to open-cast.

Economic growth - South Africa's total reserves remain some of the world's most valuable, with an estimated worth of R20.3-trillion. Overall, the country is estimated to have the world's fifth-largest mining sector in terms of GDP value.

It has the world's largest reserves of manganese and platinum group metals (PGMs), according to the [US Geological Survey](#), and among the largest reserves of gold, diamonds, chromite ore and vanadium.

With South Africa's economy built on gold and diamond mining, the sector is an important foreign exchange earner, with gold accounting for more than one-third of exports. In 2009, the country's diamond industry was the fourth largest in the world.

Mining is a cornerstone of the economy, making a significant contribution to economic activity, job creation and foreign exchange earnings. Mining and its related industries are critical to South Africa's socio-economic development.

#### **G. A MOTIVATION FOR THE PREFERRED DEVELOPMENT FOOTPRINT**

(-within the approved site as contemplated in the accepted scoping report;)

NB!! – This section is about the determination of the specific site layout and the location of infrastructure and activities on site, having taken into consideration the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout.

##### **Location of the site**

The location of the site is preferred due to the presence of shallow Diamonds (Alluvial & in Kimberlite). Access will be obtained from a nearby tar road adjacent to the property. Access will be gained to the property through a gravel road linked to the nearby tar road.

As discussed in the previous section, based on outcomes of previous studies in the vicinity of the proposed site, the possibility to encounter high volumes of Diamonds (Alluvial, in Kimberlite, General) & Diamonds on the remaining extent of the farm Kameeldrift 285, Registration Division: Hopetown; Northern Cape Province.

The site is largely covered by low shrubland & grassland units together with bare non vegetated areas.

### **Preferred activity**

The prospecting of Diamonds (Alluvial, in Kimberlite, General) & Diamonds is the optimum preferred activity for the site. The shallow diamond deposits makes the site ideal for Diamonds (Alluvial, in Kimberlite, General) & Diamonds mining. The mine will provide significantly more job opportunities than what is providing currently.

## **H. A FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED DEVELOPMENT FOOTPRINT**

(-within the approved site as contemplated in the accepted scoping report, including:)

### **i) Details of the development footprint alternatives considered;**

- **Consideration of alternatives**

The DEAT 2006 guidelines on 'assessment of alternatives and impacts' proposes the consideration of four types of alternatives namely, the no-go, site, activity, and technology alternatives. It is however, important to note that the regulation and guidelines specifically state that only 'feasible' and 'reasonable' alternatives should be explored. It also recognizes that the consideration of alternatives is an iterative process of feedback between the developer, the EAP and Interested and affected parties, which in some instances culminates in a single preferred project proposal. The following sections explore each type of alternative in relation to the proposed activity.

- **Location alternatives**

This alternative asks the question, if there is not, from an environmental perspective, a more suitable location for the proposed activity. No other properties have been secured by **AAA Mining CC** near the Kameeldrift area to potentially mine diamonds (Alluvial, in Kimberlite, General) & Diamonds. Also, it is expected that the Diamonds (Alluvial, in Kimberlite, General) & Diamonds been deposited on this farm and therefore the applicant would like to commence with their prospecting activities.

Land capability is the combination of soil suitability and climate factors. The proposed development falls within **Land in Class 7**; which has very severe limitations that makes it unsuited to cultivation and that restrict its use largely to grazing, woodland or wildlife.

- Restrictions are more severe than those for Class 6 because of one or more continuing limitations that cannot be corrected, such as:
  - Very steep slopes.
  - Erosion.
  - Shallow soil.
  - Stones.
  - Wet soil.
  - Salts or sodicity.
  - Unfavourable climate.
- Physical conditions are such that it is impractical to apply such pasture or range improvements as seeding, liming and fertilizing.
- Depending on soil characteristics and climate, land in Class 7 may be well or poorly suited to woodland.
- In unusual instances some occurrences may be used for special crops under unusual management practices. (AGIS, 2016)..

Refer to Land capability map attached as **Appendix 5 & figure 3 below**.



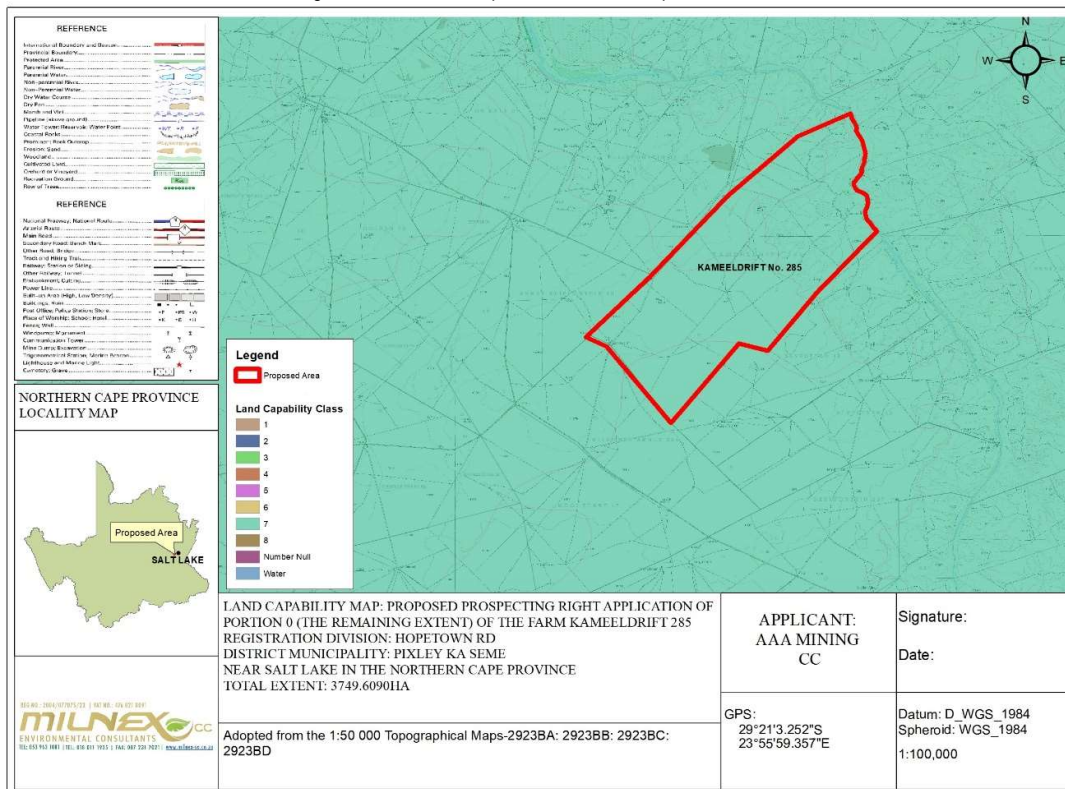


Figure 3: Land capability

- Activity alternatives**

The environmental impact assessment process also needs to consider if the development of an Diamonds (Alluvial, in Kimberlite, General) & Diamonds mine would be the most appropriate land use for the particular site.

Prospecting of other commodities –from the surface and desktop assessment indicates that there are no indications that there are other commodities to be mined on the site, except Diamonds (Alluvial, in Kimberlite, General) & Diamonds.

- Design and layout alternatives**

Design alternatives were considered throughout the planning and design phase (i.e. where is the diamond bearing gravel located?). In this regard discussions on the design were held between the EAP and the developer. The layout follows the limitations of the site and aspects such as, roads, site offices and workshop area.

The proposed area consists of low schrubland, grassland, cultivated commercial lands, bare non vegetated lands & other mines. A water use licence will be lodged for submission to the Department of Water and Sanitation.

- Operational alternatives**

Due to the nature of the prospecting activities, no permanent services in terms of water supply, electricity, or sewerage services are required.

The activities will commence with a site investigation and desktop studies, which will comprise of non-invasive techniques. This manner of survey will ensure that the applicant can clearly delineate areas which are suitable for further investigation and no unnecessary surface disturbance will be undertaken.

Based on the outcome of the desktop studies and site investigation, pits will be dug by an excavator for the purpose of soil sampling. If gravel is found, the applicant will determine the the composition and quality of the gravel.

The applicant will proceed with this way of prospecting by means of the open cast/trenching method, simultaneously or after pitting depending on the information obtained from the earlier work done. The trenches will be dug to remove and wash the gravel. It will be washed by 2x16 feet washing pans to determine diamond proceeds per 100 tons of gravel.

All data will be consolidated and processed to determine the diamond bearing resources on the property. This will be a continuous process throughout the prospecting work programme.

No feasible alternatives to the pitting and trenching method currently exists. Impacts associated with the prospecting operations will be managed through the implementation of a management plan, developed as part of the application for authorisation.

- **No-go alternative**

This alternative considers the option of ‘do nothing’ and maintaining the status quo. The description provided in section H of this report could be considered the baseline conditions (status quo) to persist should the no-go alternative be preferred. Should the proposed activity not proceed, the site will remain unchanged.

- **Technology alternatives**

In terms of the technologies proposed, these have been chosen based on the long term success of their prospecting history. The prospecting activities proposed in the Prospecting Works Programme (**Appendix 8**) is dependent on the preceding phase as previously discussed, therefore no alternatives are indicated, but rather a phased approach of trusted prospecting techniques.

The preferred technology for the proposed mining activity, will be to remove the diamond bearing gravel with an excavator, depositing it in the 2 16 feet washing pan(s) to be washed and sorted. Please find the Prospecting Work Programme attached as **Appendix 8**.

Pros & Cons of the alternative **Dense Media Separation (DMS)**

Advantages	Disadvantages
DMS plants is used mostly for kimberlite deposits	10 times more expensive than Rotary pan
	Water consumption is high
	Operating costs are expensive

In a Dense Media Separation (DMS) plant, powdered ferrosilicon (an alloy of iron and silicone) is suspended in water to form a fluid near the density of diamond (3.52 g/cm<sup>3</sup>), to which the diamond bearing material is added to begin the separation process of the heavier minerals from the lighter material. Additional separation of the denser material occurs by centrifuge in “cyclones” that swirl the mixture at low and high speeds, forcing the diamonds and other dense minerals to the walls and then out the bottom of the cyclone. Wastewater rises at the center of the cyclones and is sucked out and screened to remove waste particles. The DMS process results in a concentrate that generally weighs less than one percent of the original material fed into the plant at the beginning of the process.

Pros & Cons of the alternative **Rotary Pan Plants**

Advantages	Disadvantages
More cost effective	The industry perception that Rotary Pan Plants yield poorer diamond recoveries
Readily available	
Generate more work opportunities	
Consume less water	
Rotary Pan Plants are most often used when mining alluvial deposits	

In a Rotary Pan plant, crushed ore, when mining kimberlite, or alluvial gravel and soil is mixed with water to create a liquid slurry called “puddle” which has a density in the 1.3 to 1.5 g/cm<sup>3</sup> range. The mix is stirred in the pan by angled rotating “teeth”. The heavier minerals, or “concentrate”, settle to the bottom and are pushed toward an extraction point, while lighter waste remains suspended and overflows out of the centre of the pan as a separate stream of material. The concentrate, representing just a small percentage of the original kimberlite ore or alluvial gravels, is drawn off for final recovery of the diamonds.

Milnex CC: EIA446 –EIR & EMPr - The proposed Prospecting Right application combined with a waste licence application of AAA Mining CC for the prospecting of Diamonds Alluvial (DA), Diamonds in Kimberlite (DK), Diamonds General (D) & Diamonds (DIA) on the remaining extent of the farm Kameeldrift 285, Registration Division: Hopetown; Northern Cape Province

Both methods are in actual fact used for bulk material reduction and require a further process for the final diamond recovery however, for this project the Rotary Pan will be used.

When it comes to dust suppression two main methods were considered, namely molasses stillage and the wetting (water) of roads. The table below provides a short summary of the advantages and disadvantages of each.

Water	Molasses stillage
More cost effective	Much more expensive
Could lead to the depleting of water resources	Requires less water
No damage (only if used excessively)	The product may be toxic to aquatic organisms. (As this product could have physical effects on aquatic organisms for e.g. floating, osmotic damage)
No harm to humans or animals (Only a high quantity will have harm to humans or animals)	Not Hazardous or toxic. Could cause irritation to eyes, skin or when ingested and inhaled.
Non-flammable	Non-flammable
Eye-wash fountains not needed	Eye-wash fountains in the work place are strongly recommended
	Working procedures should be designed to minimize worker exposure to this product.
Basic storing methods	Storing methods are a bit more complicated. Should be stored in a plastic, plastic lined or stainless steel, tight closed containers between 5 and 40 degrees Centigrade.

Considering the above mentioned information, water will be used for dust suppression purposes.

## ii) Details of the Public Participation Process Followed

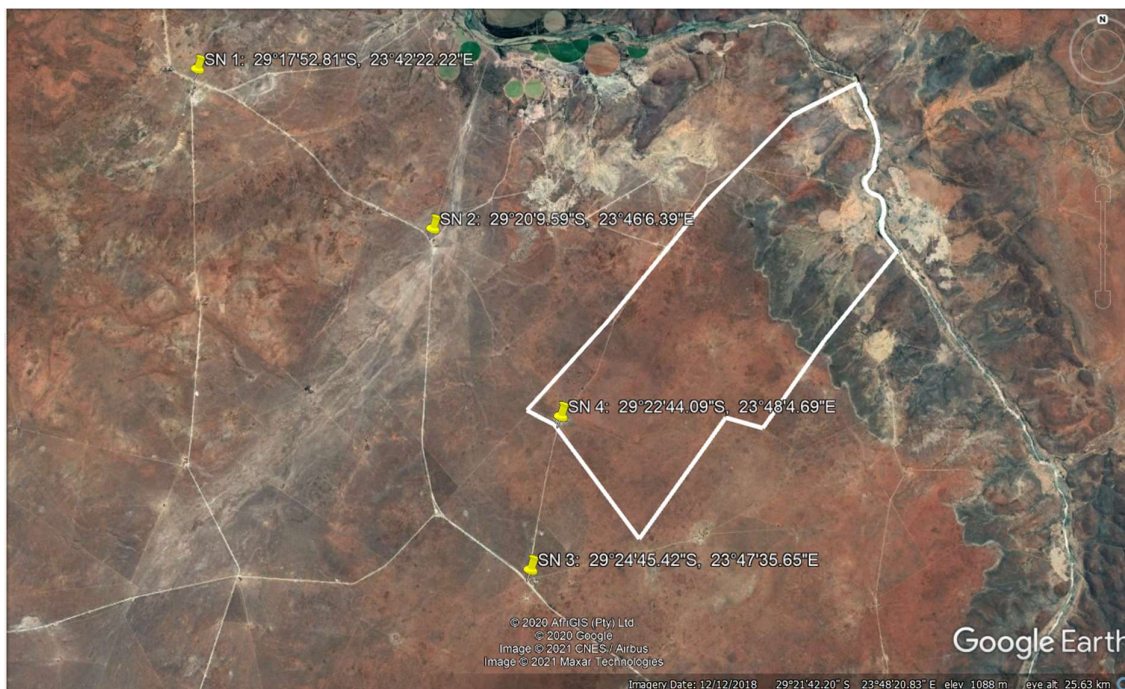
Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings. (Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.

### Advertisement and Notices

An advertisement was placed in English in the newspaper (**Noordkaap Bulletin**) on **14 January 2021** (see **Appendix 6**) notifying the public of the EIA process and requesting Interested and Affected Parties (I&APs) to register with, and submit their comments to Milnex CC. I&APs were given the opportunity to raise comments within 30 days of the advertisement.

### Site notices

Site notices were placed (on the coordinates below) on site in English to inform surrounding communities and immediately adjacent landowners of the proposed development. I&APs will be given the opportunity to raise comments. Photographic evidence of the site notices are included in **Appendix 6**. Below are the coordinates where the site notices were placed.



**Direct notification and circulation of Scoping Report to identified I&APs, landowners and occupiers**

Identified I&APs, including key stakeholders representing various sectors, are directly informed of the proposed development and the availability of the Scoping Report via registered post on **10 December 2020** and were requested to submit comments by **30 January 2021**. A copy of the report was also available at the Milnex offices in Schweizer-Reneke, 4 Botha Street, Schweizer-Reneke and Potchefstroom (Waterberry Street, Waterberry Square, 1st floor, Office 5B, Potchefstroom), between 7:30AM and 5PM, Monday to Friday. For a complete list of stakeholder details and for proof of registered post see **Appendix 6**. The consultees included:

**Table 1: List of Stakeholders, Landowners, & surrounding landowners**

Stakeholders	Landowners	Surrounding Landowner
Northern Cape Department of Environmental Affairs and Nature Conservation (DENC)	JD Ferreira Familie Trust (Leopold Ignatius Ferreira)	Klipfontein Trust (Wilna Du Raan)
DMR Department of Mineral Resources and Energy, Northern Cape. (DMRE)		Hendrik Van Der Merwe Le Roux
Department of Water & Sanitation (DHSWS) (Upper Orange)		Maria Magdeline Coetzee
NC Department of Agriculture, Forestry and Fisheries (DAFF)		Wynand Lodewikus Nel
Northern Cape Department of Agriculture, Land Reform & Rural Development (DALRRD)		JD Ferreira Familie Trust (Leopold Ignatius Ferreira)
Department of Roads and Public Works (DRPW)		
Department of Economic Development and Tourism		
Department of Cooperative Governance, Human Settlements and Traditional Affairs		
Pixley Ka Seme District Municipality		

Stakeholders	Landowners	Surrounding Landowner
WESSA (National Office)		
Thembelihle Local Municipality		

## 2. Consultation

Due to the Covid-19 nation-wide lockdown the public meeting could not be carried due to the circumstances. The option to hold a public meeting via Zoom was considered if the landowners, surrounding landowners and stakeholders would comply. Refer to **Appendix 6 for the Public Participation Plan**.

### Direct notification and circulation of Scoping Report to identified I&APs, surrounding landowners and occupiers

Identified I&APs, including key stakeholders representing various sectors, are directly informed of the proposed development and the availability of the Scoping Report via registered post on **10 December 2020** and were requested to submit comments by **31 January 2021**. A copy of the report is also available at the Milnex offices in Schweizer-Reneke, 4 Botha Street, Schweizer-Reneke and Potchefstroom (Waterberry Street, Waterberry Square, 1st floor, Office 5B, Potchefstroom), between 7:30AM and 5PM, Monday to Thursday & between 7:30AM and 4PM on a Friday. For a complete list of stakeholder details and for proof of registered post see **Appendix 6**. The consultees included:

### Direct notification and circulation of Draft EIR & EMPr to identified I&APs, landowners and occupiers

Identified I&APs, including key stakeholders representing various sectors, are directly informed of the proposed development and the availability of the Draft EIR & EMPr via registered post on **25 March 2021** and were requested to submit comments by **28 April 2021**. A copy of the report is also available at the Milnex offices in Schweizer-Reneke, 4 Botha Street, Schweizer-Reneke and Potchefstroom (Waterberry Street, Waterberry Square, 1st floor, Office 5B, Potchefstroom), between 7:30AM and 5PM, Monday to Friday. For a complete list of stakeholder details and for proof of registered post see **Appendix 6**.

### Issues Raised by Interested and Affected Parties

Comments received during this period are attached as comment & response report as well as populated in the table of summary of issues raised.

iii) Summary of Issues Raised by I&APs

(Complete the table summarising comments and issues raised, and reaction to those responses)

Interested and Affected Parties		Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issue and or response where incorporated
List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.				
Organisation	Contact person			
<b>Landowner</b>				
KAMEELDRIFT 285	JD Ferreira Familie Trust (Leopold Ignatius		Email; sent on 22/02/2021  Dear Mr Ferreira  Above mentioned and the telephonic conversation between our office's Mr Broodryk on the 22 <sup>nd</sup> of February refers.  Find attached self- explanatory letter pertaining to the prospecting right application, the attachment contains a Dropbox link, together with a letter in which you can provide comment.  We look forward to your comments  Regards Werner Broodryk	
		Email received on 22/02/2021  The attachment is not Kameeldrift 285??		

			<p>Email sent on 22/02/2021</p> <p>Dear Leon</p> <p>Sorry for the inconvenience.</p> <p>Find attached the email where we make reference to the attachment that can be ignored. We hereby attach the correct attachment for ease of reference.</p> <p>Regards Werner Broodryk</p>	
		<p>Email sent on 23/02/2021</p> <p>Werner, that is correct that AAA Mining can process. Is there something I must do?</p>		
			<p>Mr Werner Broodryk from Milnex CC telephonically contacted Mr Ferreira to explain the document.</p>	
			<p>Consent letter signed by the landowner serves as proof of consultation &amp; agreement. Attached as <b>Appendix 14</b></p>	
<b>Surrounding Landowners</b>				
<b>KLIPFONTEIN TRUST (KLIPFONTEIN RE/38 &amp; ANNEX KLIPFONTEIN RE/48)</b>	Klipfontein Trust (Wina Du Raan)	No comments received		
<b>UITKOMST ANNEX RE/284 and SLYPSTEEN 3/41 &amp; 4/41</b>	Hendrik Van Der Merwe Le Roux	No comments received		
<b>SLYPSTEEN RE/41</b>	Maria Magdeline Coetzee	No comments received		
<b>ETTRICK RE/182 &amp; 1/182</b>	Wynand Lodewikus Nel	No comments received		

LOT 271 RE/39	JD Ferreira Familie Trust (Leopold Ignatius Ferreira	No comments received		
<b>The Municipality in which jurisdiction the development is located</b>				
Thembelihle Local Municipality	Municipal Manager: To whom it may concern	No comments received		
<b>Municipal councilor of the ward in which the site is located</b>				
Thembelihle Local Municipality	Ward 2 Councillor	No comments received		
<b>Organs of state having jurisdiction</b>				
Northern Cape Department of Environmental Affairs and Nature Conservation (DENC)	Head of Department Mr M Ndzilili	No comments received		
Department of Mineral Resources and Energy, Northern Cape. (DMRE)	DDG- Mineral Regulation: Adv Mmadikeledi Malebe	Email received on 14/08/2020, with attachment, states that the Application lodged on 2 July 2020 is hereby acknowledged.		
	Reabetswe Molefe	<p>Email received on 04/12/2021 states the following:</p> <ol style="list-style-type: none"> <li>1. "This is to inform you that your application for a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) ("Act") as amended to prospect for Diamond (Alluvial, General and in Kimberlite) has been accepted".</li> <li>2. In terms of section 12 (d) of the Act, you are directed to comply with the following instructions: <ol style="list-style-type: none"> <li>a. Notify and consult with the landowner, lawful occupier and any interested and affected party and include the result of the consultation in the environmental reports in line with Regulation 41(2) read with Section 24J of the National Environmental Management Act, 1998.</li> <li>b. Lodge an application in terms of National Water Act No. 36 of 1998 with the Department of Water Affairs with immediate effect.</li> </ol> </li> </ol>	<p>EAP response:</p> <p>2a- Letters were sent to all I&amp;AP's on the 10th of December 2020 informing them of the Draft Scoping available for comment. Another set of letters were circulated on 25 March to inform them of the circulation of the Draft EIR &amp; EMPR See Appendix 6(ii)- Proof of correspondence for proof.</p> <p>2b- A Water Use Licence has been applied for and is in the process of being assessed. The WUL ref no is: WU20363.</p>	



	Takalani Khorombi		<p>Email sent on 11/12/2020 stating:</p> <p>Dear Takalani, Hope you are well. Kindly find the attached Public Participation Plan for AAA Mining with ref number: NC30/5/1/1/2/12632PR.</p> <p>Regards Percy Sehaole</p>	
<p>Email with attachment received on 10/02/2021, states the following:</p> <ol style="list-style-type: none"> <li>1- The SR is hereby accepted.</li> <li>2- You may proceed with the Environmental Impact Assessment.</li> <li>3- Specialist Studies recommended by the screening tool should be undertaken/ give reasons for not including them.</li> <li>4- All comments received should be included in the EIAR.</li> <li>5- Should this application for EA need any permits or authorizations i.t.o any SEMAs, proof will be required.</li> <li>6- An implementable Waste Strategy Management for general &amp; hazardous for the PR project.</li> <li>7. A Water Use Licence needs to be obtained if prospecting is to happen within 500m from the Orange River.</li> <li>8. Closure Management Plan &amp; Closure objectives must be developed.</li> <li>9. The public comments must be recorded and registered.</li> <li>10. Specialist studies must comply or compiled in terms of NEMA EIA Regulation, 2014 Appendix 6.</li> <li>11. EIA Timeframes should be complied with.</li> </ol>		<p>Comments:</p> <ol style="list-style-type: none"> <li>1- N/A</li> <li>2- N/A</li> <li>3- A heritage Impact Report together with a Paleontological Desktop Assessment &amp; Ecological Desktop Assessment have been commissioned for this project. Relevant specialist studies have been identified by the screening report, however upon further investigation many of the studies were not needed. Reasons for not undertaking certain studies are noted down on <b>page 32</b> of this report and <b>Appendix 7</b></li> <li>4- All comments were captured and responded to, in this table together with the comments and response table in <b>Appendix 6.</b></li> <li>5 – No authorizations in any SEMA's are required.</li> <li>6- A Waste Management Strategy has been compiled and attached as <b>Appendix 13</b></li> <li>7- A Water Use Licence is in process of being submitted. The WUL ref no is: WU20363.</li> </ol>		

		12. 2 hard copies of the EIAR & EMPr together with 1 electronic copy should be submitted to this Regional office	8- A rehabilitation plan & Closure plan is attached as <b>appendix 9.</b>  9 - All comments were captured and responded to, in this table together with the comments and response table in <b>Appendix 6.</b>  10 – Complied with  11- N/A  12- 2 hard copies & 1 electronic copy was couriered to this Department.	
Department of Water and Sanitation (DHSWS) Upper Orange Water Management Area	To whom it may concern	No comments received		
Department of Agriculture, Forestry and Fisheries (DAFF)	Admin Clerk National Office: T Buthelezi	No comments received		
Department of Agriculture, Land Reform & Rural Development (DALRRD)	Head of Department Mr. V Mothibi			
	P. Mokale	Email sent on 06/08/2021 with attachment stating:  We refer to your letter received: 04 August 2020.  “We confirm that as at the date of this letter that no land claim appears on our database in respect of the Property this includes the database for claims lodged by 31 December 1998; and those lodged between 1 July 2014 and 27 July 2016 in terms of the Restitution of Land Rights Amendment Act, 2014”	Email sent on 04/08/2020 serves as consultation with the land claims office.	
Department of Roads and Public Works (DRPW)	Head of Department: Mr. Kholekile Nogwili	No comments received		

Department of Economic Development and Tourism	Head of Department: Mr. G Mabilo			
	Head of Department: Mr B. Lenkoe	No comments received		
Department of Cooperative Governance, Human Settlements & Traditional Affairs	Mr Andile Mboletsa	Email received on 22/01/2021, with attachment, states the following:  I am unable to open the report on dropbox and therefore am unable to make meaningful comments on the report. However it is advisable that you should take all planning documents, provisions of the municipality into consideration when dealing with your application <ul style="list-style-type: none"> <li>• Planning requirements and land use requirements in the SDF, IDP</li> </ul>	Email sent on 25/01/2021 states the following:  Thank you for your comments. When preparing the draft EIR & EMPr, all will be taken into consideration. I have attached the draft scoping report for your perusal. You have been registered as an I&AP and will receive the draft documents going forward.  The IDP and the SDT of the Local municipality was consulted and has been used in the final EIR & EMPR.	
		Email sent on 25/01/2021 acknowledging receipt of the report		
South African Heritage Resources Agency (SAHRA)	Natasha Higgitt	Email sent on the 12/02/21 with attachment that states:  As the proposed development is undergoing an EA Application process in terms of the National Environmental Management Act, 107 of 1998 (NEMA), NEMA Environmental Impact Assessment (EIA) Regulations as amended, it is incumbent on the developer to ensure that a Heritage Impact Assessment (HIA) is done as per section 38(3) and 38(8) of the National Heritage Resources Act, Act 25 of 1999 (NHRA) as required by section 24(4)b(iii) of NEMA. This must include an archaeological component, palaeontological component and any other applicable heritage components. The HIA must be conducted as part of the EA Application in terms of NEMA and the NEMA EIA Regulations.	Document uploaded onto the SAHRA website for comments on 31/032020.  <b>No comments were received</b>  <b>Document was re-uploaded on 18/05/2021.</b>  Once final comments has been received, it will be submitted to the Department	

		<p>The assessment must include an assessment of the impact to archaeological and palaeontological resources. The assessment of archaeological resources must be conducted by a qualified archaeologist and the report comply with the SAHRA 2007 Minimum Standards: Archaeological and Palaeontological Components of Impact Assessment Reports (see <a href="http://www.asapa.co.za">www.asapa.co.za</a> or <a href="http://www.aphp.org.za">www.aphp.org.za</a> for a list of qualified archaeologists).</p> <p>The proposed development is located within an area of moderate or high Palaeontological Sensitivity as per the SAHRIS PalaeoSensitivity map, and therefore a desktop Palaeontological Impact Assessment (PIA) must be required to be undertaken by a qualified palaeontologist. (See <a href="https://www.palaeosa.org/heritage-practitioners.html">https://www.palaeosa.org/heritage-practitioners.html</a> for a list of qualified palaeontologists). The report must comply with the 2012 Minimum Standards: Palaeontological Components of Heritage Impact Assessments.</p> <p>Any other heritage resources as defined in section 3 of the NHRA that may be impacted, such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewsapes must also be assessed.</p>		
<b>Other–</b>				
Pixley Ka Seme District Municipality	Municipal Manager: Mr Rodney Pieterse	No comments received		
WESSA (National Office)	Graham Avery	No comments received		

iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;

**Baseline Environment**

The baseline environment is described with specific reference to geotechnical conditions, ecological habitat and landscape features, Soil, land capability and agricultural potential, climate and the visual landscape.

**According to the DEA Screening Tool the proposed development area Environmental sensitivity**

In 2018 the Department of Environmental Affairs has developed a screening tool that has enabled Environmental Assessment Practitioners (EAP's) to conduct a site environmental sensitivity screening with regards to their respective projects. With the help of an online screening tool EAP's can now identify site sensitivity with regards to various aspects. The screening report for this project has been generated and the following specialist studies have been identified. However it became apparent that many of the specialist studies are not relevant.

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

	sensitivity	sensitivity	sensitivity	sensitivity
Agriculture Theme			X	
Animal Species Theme			X	
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme		X		
Civil Aviation Theme				X
Defence Theme				X
Paleontology Theme		X		
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report. As it is the responsibility of the EAP to confirm this list and to motivate in the assessment report reasons for not including it in the report, see table below:

No	Specialist Assessment	Comment
1	Agricultural Impact Assessment	No Agricultural Impact Assessment was commissioned for the project. About 50% of the property falls on low agriculture sensitivity & the other 50% falls on medium agriculture sensitivity. The land capability map also indicates that it falls in class 7, which indicates that the soil is not suitable for agricultural purposes
2	Archaeological and Cultural Heritage Impact Assessment	A Heritage Impact Assessment (HIA) was commissioned and is attached as <b>Appendix 10</b>
3	Palaeontology Impact Assessment	A Paleontological Desktop Study was undertaken for this project and is attached as <b>Appendix 10</b>
4	Terrestrial Biodiversity Impact Assessment	A Desktop Ecological Study was commissioned. It can be seen from the google earth photo that the area where the prospecting will likely occur has been quite disturbed from previous mining activities.  The vegetation units that do occur there are: The Kimberley Thornveld, Vaalbos Rocky Schrubland, Upper Gariep Alluvial Vegetation & Northern Upper Karoo all which are listed as least threatened, except for the Upper Gariep Alluvial Vegetation unit, which is classified as Vulnerable, but is only present on a very small portion of the property. Also according to the protected areas map, the area

		does not fall within threatened Ecosystems or formally protected areas It is therefore that only an Ecological Desktop Study was commissioned. The study is also attached as <b>Appendix 10</b>
5	Aquatic Biodiversity Impact Assessment	According to the screening tool the project area falls 90% of the time in a low aquatic sensitive area, the other 10% are isolated wetland area & the Orange River. No wetlands will be impacted, and a suitable buffer zone will be maintained. A Water Use License will also be applied for in due time. The wetland areas comprise of a very small percentage of the whole property, and it is indicated that the Orange River along the property falls within a Class D: Largely Modified River Ecosystem status. It therefore that only an Ecological Desktop Study was commissioned. The study is also attached as <b>Appendix 10</b>
6	Noise Impact Assessment	No noise Impact Assessment was done, as the proposed area is far away from any towns/settlements or cities, it is foreseen that no people will be affected by this aspect.
7	Radioactivity Impact Assessment	The proposed project is only for the prospecting of Diamonds (Alluvial, in Kimberlite & General)
8	Plant Species Assessment	According to the Screening Tool, the plant species combined sensitivity is low. The vegetation units that do occur there are: the Kimberley Thornveld, Vaalbos Rocky Schrubland, Upper Gariep Alluvial Vegetation & Northern Upper Karoo all which are listed as least threatened, except for the Upper Gariep Alluvial Vegetation unit, which is classified as Vulnerable, but is only present on a very small portion of the property. Also according to the protected areas map, the area does not fall within threatened Ecosystems or formally protected areas. It is for this reason that no Plant species assessment was done.
9	Animal Species Assessment	According to the Screening Tool, the animal species combined sensitivity is medium. It was indicated that the Aves-Neotis ludwigii (Ludwig's bustard), could be present on the property. It is also indicated in <b>section F of the Environmental Management Programme (EMPr)</b> that no animals/birds will be taken or hunted and will be left alone. The project relates to prospecting activities and no overhead infrastructure such as powerlines, railway lines, telecommunication lines or permanent buildings will be erected. It is therefore foreseen that no animals or birds will be impacted. It is for this reason that no Animal species assessment was done.

- (a) **Type of environment affected by the proposed activity.**  
(its current geographical, physical, biological, socio- economic, and cultural character).

### Geology and Soils

#### **Geological formation**

The farm geology of the farm Kameeldrift 285 consist mainly of a veneer of Dwyka derived rubble situated on Dwyka shale. The alluvial gravels have been deposited on bedrock of Dwyka shale. The Dwyka deposits are underlain by Ventersdorp Lava. The deposit formed as an erosion scour at the contact between Ventersdorp lava and Dwyka shale. Areas surrounding this feature is covered by Rooikoppie gravels. There are also higher elevation areas on the farm with elevations similar to alluvial terraces that are being mined on adjacent farms. These areas must be targeted during future exploration activities. Surface drainage in the area is affected through the Orange river. Although alluvium is largely restricted to the river, the river has resulted in the creation of a large floodplain immediately to the west, which comprises alluvium that is largely covered by windblown sand. Of additional interest in this area are the presence of alluvial gravels some of which are covered by alluvium and windblown sand. Patches of these gravels outcrop immediately adjacent to the Orange river, however, they are also found as higher level terrace deposits, previously deposited by the Paleo-Orange river.

#### Ecological habitat and landscape features

The proposed area falls within vegetation units SVk 4, SVk5, AZa 4 & NKu 3, which is known as the Kimberley Thornveld, Vaalbos Rocky Schrubland, Upper Gariep Alluvial Vegetation & Northern Upper Karoo.

#### Kimberley Thornveld

**Distribution** North-West, Free State and Northern Cape Provinces: Most of the Kimberley, Hartswater, Bloemhof and Hoopstad Districts as well as substantial parts of the Warrenton, Christiana, Taung, Boshof and to some extent the Barkly West Districts. Also includes pediment areas in the Herbert and Jacobsdal Districts. Altitude 1 050–1 400 m (Mucina & Rutherford, 2006).

**Vegetation & Landscape Features** Plains often slightly irregular with well-developed tree layer with *Acacia erioloba*, *A. tortilis*, *A. karroo* and *Boscia albitrunca* and well-developed shrub layer with occasional dense stands of *Tarchonanthus camphoratus* and *A. mellifera*. Grass layer open with much uncovered soil (Mucina & Rutherford, 2006).

**Geology & Soils** Andesitic lavas of the Allanridge Formation in the north and west and fine-grained sediments of the Karoo Supergroup in the south and east. Deep (0.6–1.2 m) sandy to loamy soils of the Hutton soil form (Ae and Ah land types) on slightly undulating sandy plains (Mucina & Rutherford, 2006).

**Climate** Summer and autumn rainfall and very dry winters. MAP from about 300 mm in the southwest to about 500 mm in the northeast. Frost frequent in winter. Mean monthly maximum and minimum temperatures for Kimberley 37.5°C and –4.1°C for January and July, respectively. Corresponding values for Vaalharts-Agr 37.4°C and –3.9°C, respectively. See also climate diagram for SVk 4 Kimberley Thornveld (Mucina & Rutherford, 2006).

**Important Taxa** Tall Tree: *Acacia erioloba* (d). Small Trees: *Acacia karroo* (d), *A. mellifera* subsp. *detinens* (d), *A. tortilis* subsp. *hete-racantha* (d), *Rhus lancea*. Tall Shrubs: *Tarchonanthus camphoratus* (d), *Diospyros pallens*, *Ehretia rigida* subsp. *rigida*, *Euclea crispa* subsp. *ovata*, *Grewia flava*, *Lycium arenicola*, *L. hirsutum*, *Rhus tridactyla*. Low Shrubs: *Acacia hebeclada* subsp. *hebeclada* (d), *Anthospermum rigidum* subsp. *pumilum*, *Helichrysum zeyheri*, *Hermannia comosa*, *Lycium pilifolium*, *Melolobium microphyllum*, *Pavonia burchellii*, *Peliostomum leuco-rhizum*, *Plinthus sericeus*, *Wahlenbergia nodosa*. Succulent Shrubs: *Aloe hereroensis* var. *hereroensis*, *Lycium cinereum*. Graminoids: *Eragrostis lehmanniana* (d), *Aristida canescens*, *A. congesta*, *A. mollissima* subsp. *argentea*, *Cymbopogon pospischilii*, *Digitaria argyro-grapta*, *D. eriantha* subsp. *eriantha*, *Enneapogon cenchroides*, *E. scoparius*, *Eragrostis rigidior*, *Heteropogon contortus*, *Themeda triandra*. Herbs: *Barleria macro-stegia*, *Dicoma schinzii*, *Harpagophytum procumbens* subsp. *procumbens*, *Helichrysum cerastioides*, *Hermbstaedtia odorata*, *Hibiscus marlothianus*, *Jamesbrittenia aurantiaca*, *Lippia scaberrima*, *Osteospermum muricatum*, *Vahlia capensis* subsp. *vulgaris*. Succulent Herbs: *Aloe grandidentata*, *Piaranthus decipiens* (Mucina & Rutherford, 2006).

**Biogeographically Important Taxa** (GWGriqualand West endemic, Kalahari endemic) Low Shrub: *Blepharis marginata*. Succulent Shrub: *Euphorbia bergii*. Graminoid: *Panicum kalaharensis*. Herbs: *Helichrysum Arenicola*, *Neuradopsis bechuana-nensis*. Succulent Herbs: *Lithops aucampiae* subsp. *aucamp-iae*GW, *Tridentea marientalensis* subsp. *marientalensis* (Mucina & Rutherford, 2006).

**Conservation** Least threatened. Target 16%. Only 2% statutorily conserved in Vaalbos National Park as well as in Sandveld, Bloemhof Dam and S.A. Lombard Nature Reserves. Some 18% already transformed, mostly by cultivation. Erosion is very low. Area is mostly used for cattle farming or game ranching. Overgrazing leads to encroachment of *Acacia mellifera* subsp. *detinens* (Mucina & Rutherford, 2006).

#### Upper Gariep Alluvial Vegetation

**Distribution** Free State and Northern Cape Provinces: Broad alluvia of the Orange River, lower Caledon as well as lower stretches of the Vaal, Riet and Modder Rivers as far as Groblershoop. These river stretches are surrounded by vegetation units of broad transitional regions between the dry facies of the Savanna and Grassland and northern regions of the Nama-Karoo Biome. Altitude ranging from 1 000–1 500 m (Mucina & Rutherford, 2006).

**Vegetation & Landscape Features** Flat alluvial terraces supporting complex of riparian thickets (gallery forests) dominated by native *Acacia karroo* and *Diospyros lycioides*, flooded grasslands, reed beds and ephemeral herblands populating mainly sand banks within the river and on its banks (Mucina & Rutherford, 2006).

**Geology, Soil & Hydrology** Recent alluvial deposits underlain mostly by Karoo Supergroup sediments and tillites, supporting soils typical of Ia group land types. Subject to flooding, especially in summer (Mucina & Rutherford, 2006).

**Climate** Bimodal (equinoctial) climate with a major peak in March and with a lesser peak in November–December. The overall MAP is 325 mm (range 230–600 mm for Prieska and Wepener, respectively). MAT for the entire area averages 17°C (range 19.3–

Milnex CC: EIA446 –EIR & EMPr - The proposed Prospecting Right application combined with a waste licence application of AAA Mining CC for the prospecting of Diamonds Alluvial (DA), Diamonds in Kimberlite (DK), Diamonds General (D) & Diamonds (DIA) on the remaining extent of the farm Kameeldrift 285, Registration Division: Hopetown; Northern Cape Province

15.4°C for Prieska and Aliwal North, respectively). See also climate diagram for AZa 4 Upper Gariep Alluvial Vegetation (Figure 13.2) (Mucina & Rutherford, 2006).

**Important Taxa** Riparian thickets Small Trees: *Acacia karroo* (d), *Celtis africana* (d), *Salix mucronata* subsp. *mucronata* (d). Tall Shrubs: *Diospyros lycioides* (d), *Melianthus comosus* (d), *Rhus pyroides*. Low Shrubs: *Asparagus setaceus*, *A. suaveolens*. Woody Climber: *Clematis brachiata*. Succulent Shrubs: *Lycium arenicola*, *L. hirsutum*. Herb: *Rubia cordifolia*. Flooded grasslands & herblands Graminoid: *Melica decumbens* (d). Herbs: *Cineraria dregeana*, *C. lobata* (Mucina & Rutherford, 2006).

**Conservation** Vulnerable. Target 31%. Only about 3% statutorily conserved in Tussen Die Riviere, Gariep Dam and Oviston Nature Reserves. More than 20% transformed for cultivation (vegetables, grapes) and building of dams. Exotic woody species such as *Salix babylonica*, *Eucalyptus camaldulensis*, *E. sideroxylon*, *Prosopis* and *Populus* species have become common dominants in patches of heavily disturbed alluvial vegetation (Mucina & Rutherford, 2006).

### Vaalbos Rocky Schrubland

**Distribution** Northern Cape and Free State Provinces: Extends along solitary hills and scattered ridges east of the confluence of the Orange and Vaal Rivers, mainly in the Kimberley and Herbert Districts and west of a line bounded by the western Free State towns of Luckhoff, Petrusburg, Dealesville, Bultfontein and Hertzogville. Altitude 1 000–1 400 m (Mucina & Rutherford, 2006).

**Vegetation & Landscape Features** Slopes and elevated hills and ridges within plains of mainly SVk 4 Kimberley Thornveld, also in the vicinity of NKu 3 Northern Upper Karoo. Evergreen shrub communities dominated by *Tarchonanthus camphoratus*, *Olea europaea* subsp. *africana*, *Euclea crispa*, *Diospyros lycioides*, *Rhus burchellii* and *Buddleja saligna*. Sheltered, cool sites include trees such as *R. lancea*, *Celtis africana* and *Ziziphus mucronata*. On the footslopes of the dolerite hills, where calcrete-rich soils occur, shrubs and small trees of *Acacia tortilis* and *Z. mucronata* can be dominant (Mucina & Rutherford, 2006).

**Geology & Soils** A highly fragmented area on Ecca and Dwyka Group sediments and Karoo dolerites as well as on Ventersdorp Supergroup lavas (Allanridge Formation). Extensive dolerite sills which form ridges, and plateaus and slopes of koppies and small escarpments mark the erosion terraces. These dolerite sills cover alternating layers of mudstone and sandstone of sedimentary origin. The lb land type is typical of these rock- and boulder-covered slopes. Prominent soil forms are the stony Mispah and gravel-rich Glenrosa forms derived from Jurassic dolerite, calcrete-rich soils cover the lowlands (Kimberley and Plooyburg forms) (Mucina & Rutherford, 2006).

**Climate** Summer and autumn rainfall with very dry winters. MAP about 250–450 mm. Frost frequent in winter, especially on bottomlands. Mean monthly maximum and minimum temperatures for Douglas 39.7°C and –4.6°C for January and July, respectively. See also climate diagram for SVk 5 Vaalbos Rocky Shrubland (Mucina & Rutherford, 2006).

**Important Taxa** Small Trees: *Boscia albitrunca*, *Cussonia paniculata*, *Rhus lancea*. Tall Shrubs: *Euclea crispa* subsp. *crispa* (d), *Olea europaea* subsp. *africana* (d), *Tarchonanthus camphoratus* (d), *Ziziphus mucronata* (d), *Buddleja saligna*, *Cadaba aphylla*, *Diospyros austro-africana*, *D. lycioides* subsp. *lycioides*, *Ehretia rigida* subsp. *rigida*, *Gymnosporia polyacantha*, *Rhigozum obovatum*, *Rhus burchellii*. Low Shrubs: *Asparagus suaveolens*, *Hermannia comosa*, *Lantana rugosa*, *Lycium pillifolium*, *Pentzia globosa*, *Rhus ciliata*. Succulent Shrubs: *Cotyledon orbiculata* var. *orbiculata*, *Crassula nudicaulis*, *Kalanchoe paniculata*, *Lycium cinereum*. Graminoids: *Aristida adscensionis*, *A. congesta*, *Digitaria eriantha* subsp. *eriantha*, *Elionurus muticus*, *Enneapogon scoparius*, *Eragrostis lehmanniana*, *E. obtusa*, *Eustachys paspaloides*, *Fingerhuthia africana*, *Heteropogon contortus*, *Hyparrhenia hirta*, *Stipagrostis uniplumis*, *Themeda triandra*. Herbs: *Chascanum pinnatifidum*, *Harpagophytum procumbens* subsp. *procumbens*, *Hibiscus pusillus*. Geophytic Herbs: *Albucca setosa*, *Cheilanthes eckloniana*, *Haemanthus humilis* subsp. *humilis*, *Pellaea calomelanos*. Succulent Herbs: *Aloe grandidentata*, *Stapelia grandiflora* (Mucina & Rutherford, 2006).

**Conservation** Least threatened. Target 16%. Less than 2% statutorily conserved in the Vaalbos National Park. Only about 2% already transformed (Mucina & Rutherford, 2006).

**Remarks** Although similar topography and geology to that of koppies in the broad surrounds of Bloemfontein (Gh 4 Besemkaree Koppies Shrubland and Gh 7 Winburg Grassy Shrubland) in the Grassland Biome, the vegetation of this unit differs considerably in species composition through the occurrence of more arid elements (Mucina & Rutherford, 2006).

### Northern Upper Karoo

**Distribution** Northern Cape and Free State Provinces: Northern regions of the Upper Karoo plateau from Prieska, Vosburg and Carnarvon in the west to Philipstown, Petrusville and Petrusburg in the east. Bordered in the north by Niekerkshoop, Douglas and Petrusburg and in the south by Carnarvon, Pamponpoort and De Aar. A few patches occur in Griqualand West. Altitude varies mostly from 1 000–1 500 m (Mucina & Rutherford, 2006).

**Vegetation & Landscape Features** Shrubland dominated by dwarf karoo shrubs, grasses and *Acacia mellifera* subsp. *detinens* and some other low trees (especially on sandy soils in the northern parts and vicinity of the Orange River). Flat to gently sloping,



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with isolated hills of Upper Karoo Hardeveld in the south and Vaalbos Rocky Shrubland in the northeast and with many interspersed pans (Mucina & Rutherford, 2006).

**Geology & Soils** Shales of the Volksrust Formation and to a lesser extent the Prince Albert Formation (both of the Ecce Group) as well as Dwyka Group diamictites form the underlying geology. Jurassic Karoo Dolerite sills and sheets support this vegetation complex in places. Wide stretches of land are covered by superficial deposits including calcretes of the Kalahari Group. Soils are variable from shallow to deep, red-yellow, apedal, freely drained soils to very shallow Glenrosa and Mispah forms. Mainly Ae, Ag and Fc land types (Mucina & Rutherford, 2006).

**Climate** Rainfall peaks in autumn (March). MAP ranges from about 190 mm in the west to 400 mm in the northeast. Mean maximum and minimum monthly temperatures for Britstown are 37.9°C and –3.6°C for January and July, respectively. Corresponding values are 37.1°C and –4.8°C for De Aar and 39.0°C and –2.3°C for Kareekloof (northwest of Strydenburg). See also climate diagram for NKU 3 Northern Upper Karoo (Figure 7.2) (Mucina & Rutherford, 2006).

**Important Taxa** Small Trees: *Acacia mellifera* subsp. *detinens*, *Boscia albitrunca*. Tall Shrubs: *Lycium cinereum* (d), *L. horridum*, *L. oxycarpum*, *L. schizocalyx*, *Rhigozum trichotomum*. Low Shrubs: *Chrysocoma ciliata* (d), *Gnidia polycephala* (d), *Pentzia calcarea* (d), *P. globosa* (d), *P. incana* (d), *P. spinescens* (d), *Rosenia humilis* (d), *Amphiglossa triflora*, *Aptosimum marlothii*, *A. spinescens*, *Asparagus glaucus*, *Barleria rigida*, *Berkheya annectens*, *Eriocephalus ericoides* subsp. *ericoides*, *E. glandulosus*, *E. spinescens*, *Euryops asparagoides*. *Felicia muricata*, *Helichrysum lucilioides*, *Hermannia spinosa*, *Leucas capensis*, *Limeum aethiopicum*, *Melolobium candicans*, *Microloma armatum*, *Osteospermum leptolobum*, *O. spinescens*, *Pegolettia retrofracta*, *Pentzia lanata*, *Phyllanthus maderaspatensis*, *Plinthus karoocicus*, *Pteronia glauca*, *P. sordida*, *Selago geniculata*, *S. saxatilis*, *Tetragonia arbuscula*, *Zygophyllum lichtensteinianum*. Succulent Shrubs: *Hertia pallens*, *Salsola calluna*, *S. glabrescens*, *S. rabieana*, *S. tuberculata*, *Zygophyllum flexuosum*. Semiparasitic Shrub: *Thesium hystrix* (d), Herbs: *Chamaesyce inaequilatera*, *Convolvulus sagittatus*, *Dicoma capensis*, *Gazania krebsiana*, *Hermannia comosa*, *Indigofera alternans*, *Lessertia pauciflora*, *Radyera urens*, *Sesamum capense*, *Sutera pinnatifida*, *Tribulus terrestris*, *Vahlia capensis*. Succulent Herb: *Psilocaulon coriarium*. Geophytic Herb: *Moraea pallida*. Graminoids: *Aristida adscensionis* (d), *A. congesta* (d), *A. diffusa* (d), *Enneapogon desvauxii* (d), *Eragrostis lehmanniana* (d), *E. obtusa* (d), *E. truncata* (d), *Sporobolus fimbriatus* (d), *Stipagrostis obtusa* (d), *Eragrostis bicolor*, *E. porosa*, *Fingerhuthia africana*, *Heteropogon contortus*, *Stipagrostis ciliata*, *Themeda triandra*, *Tragus berteronianus*, *T. koelerioides*, *T. racemosus* (Mucina & Rutherford, 2006).

**Biogeographically Important Taxa** Herb (western distribution limit): *Convolvulus boedeckerianus*. Tall Shrub (southern limit of distribution): *Gymnosporia szyszylowiczii* subsp. *Namibiensis* (Mucina & Rutherford, 2006).

**Endemic Taxa** Succulent Shrubs: *Lithops hookeri*, *Stomatium pluridens*. Low Shrubs: *Atriplex spongiosa*, *Galenia exigua*. Herb: *Manulea deserticola* (Mucina & Rutherford, 2006).

**Conservation** Least threatened. Target 21%. None conserved in statutory conservation areas. About 4% has been cleared for cultivation (the highest proportion of any type in the Nama-Karoo) or irreversibly transformed by building of dams (Houwater, Kalkfontein and Smart Syndicate Dams). Areas of human settlements are increasing in the northeastern part of this vegetation type (Hoffman et al. 1999). Erosion is moderate (46.2%), very low (32%) and low (20%). *Prosopis glandulosa*, regarded as one of the 12 agriculturally most important invasive alien plants in South Africa, is widely distributed in this vegetation type (Hoffman et al. 1999). *Prosopis* occurs in generally isolated patches, with densities ranging from very scattered to medium (associated with the lower Vaal River drainage system and the confluence with the Orange River) to localised closed woodland on the western border of the unit with Bushmanland Basin Shrubland (Mucina & Rutherford, 2006).

**Remark** This Karoo unit is found on floristic and ecological gradients between the Nama-Karoo, arid Kalahari savanna and arid highveld grasslands (Mucina & Rutherford, 2006).

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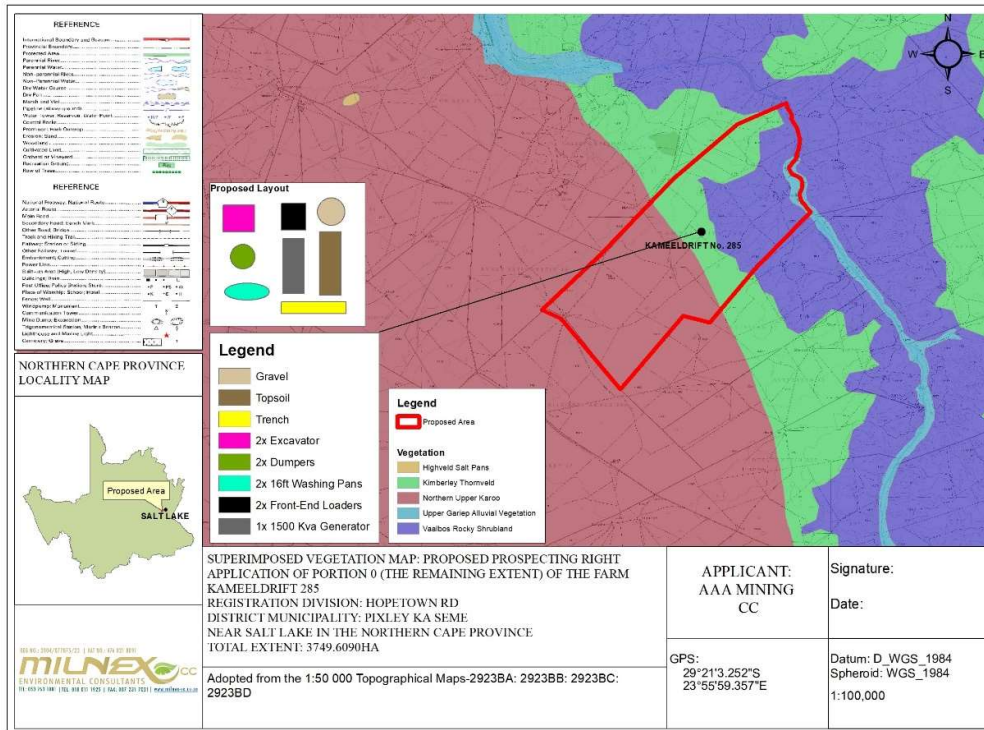


Figure 5: Vegetation types associated with the study site (Mucina & Rutherford 2006/2018).

According to the DEA screening tool, the application area falls within a low relative Plant Species theme sensitivity area (see figure 6 below) Please see Appendix 7 for the colour map.

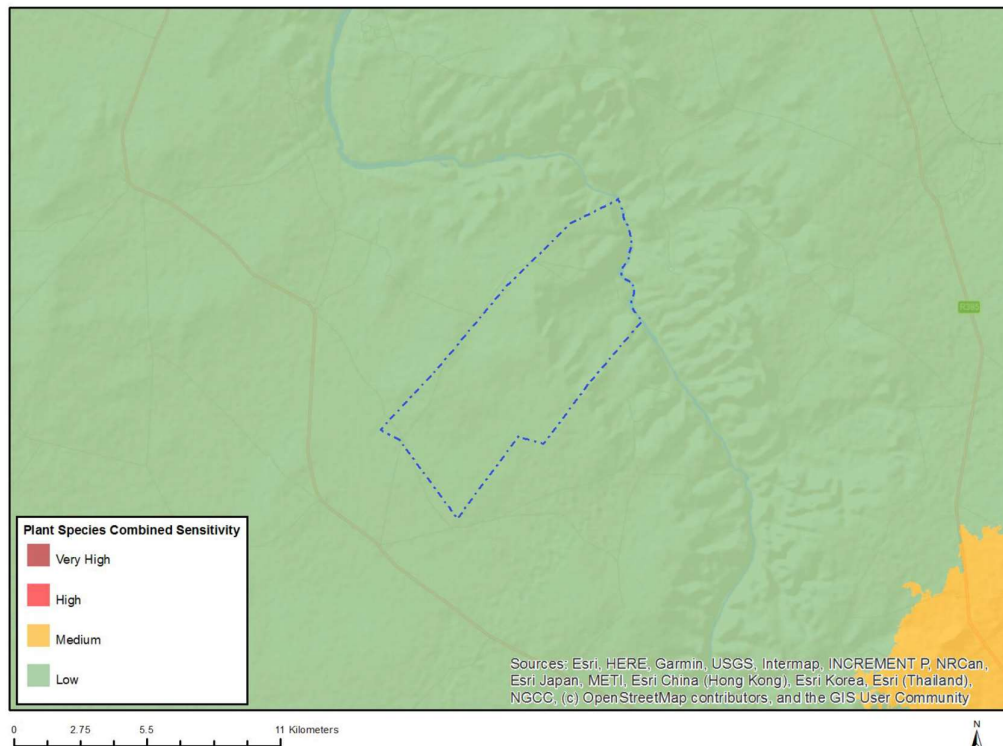


Figure 6: Plant Species Combined Sensitivity

### Threatened Ecosystems

Ecosystem threat status outlines the degree to which ecosystems are still intact or alternatively losing vital aspects of their structure, function and composition, on which their ability to provide ecosystem services ultimately depends (Driver *et al.* 2011). Datasets have been developed by SANBI (2016) in order to outline threatened ecosystems, with the primary objective of limiting the rate of ecosystem extinctions. Four established categories group these ecosystems namely: Critically Endangered (CR), Endangered (EN), Vulnerable (VU) and Protected.

No threatened terrestrial ecosystems were identified within the vicinity of the study site (Figure 7).

### Protected Areas

Formally protected areas are protected either by national or provincial legislation. Based on the SANBI (2010) Protected Areas Map (Figure 7), the study site does not overlap with any formally protected area. Therefore, the location of the study site is not expected to have an impact on any formally protected areas.

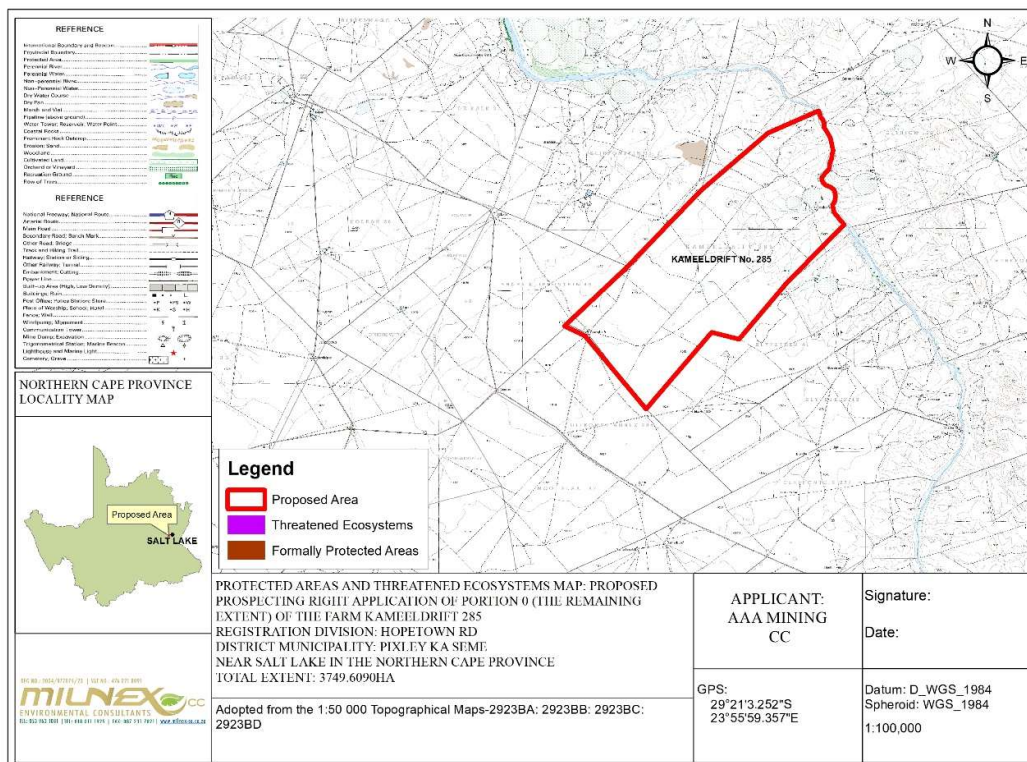


Figure 7: Threatened and Protected Areas Map

### Critical Biodiversity Area

Critical Biodiversity Areas (CBAs) are terrestrial and aquatic areas of high biodiversity value that need to be conserved and maintained in a natural or near-natural state to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services (MTPA, 2014). According to the National Environmental Management Act (NEMA) (Act no. 107 of 1998) certain activities have strict guidelines or are prohibited within CBAs and ESAs. Refer to the listed activities under the NEMA: Environmental Impact Assessment Regulations of 2014 (GNR 982) as promulgated in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA) [as amended] for a comprehensive breakdown. The following terms are used to categorise the various land used types according to their biodiversity and environmental importance:

- Critical Biodiversity Area One (CBA1);
- Critical Biodiversity Area Two (CBA2);
- Ecological Support Area (ESA);



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According to the DEA screening tool, the application area falls mostly within a low Aquatic Biodiversity Combined Sensitivity area (see figure 9 below) Please see Appendix 7 for the colour map.

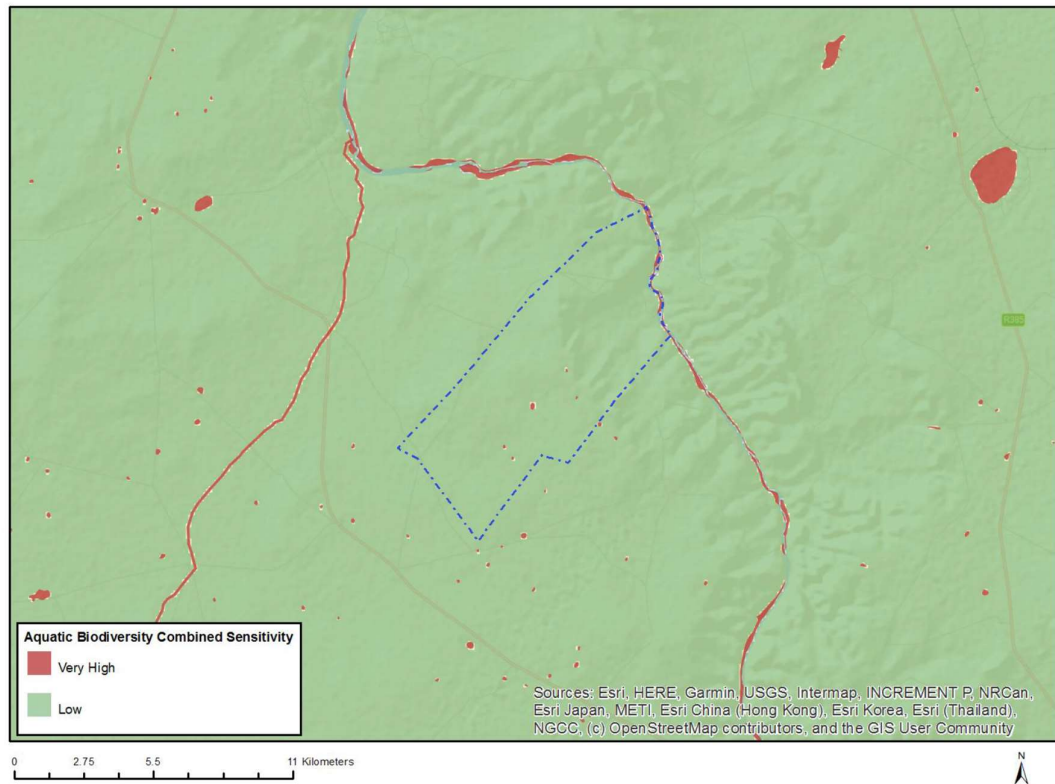


Figure 9: Aquatic Biodiversity Combined Sensitivity

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According to the DEA screening tool, the application area falls within a low to very high Terrestrial Biodiversity Combined Sensitivity area (see figure 10 below) Please see Appendix 7 for the colour map.

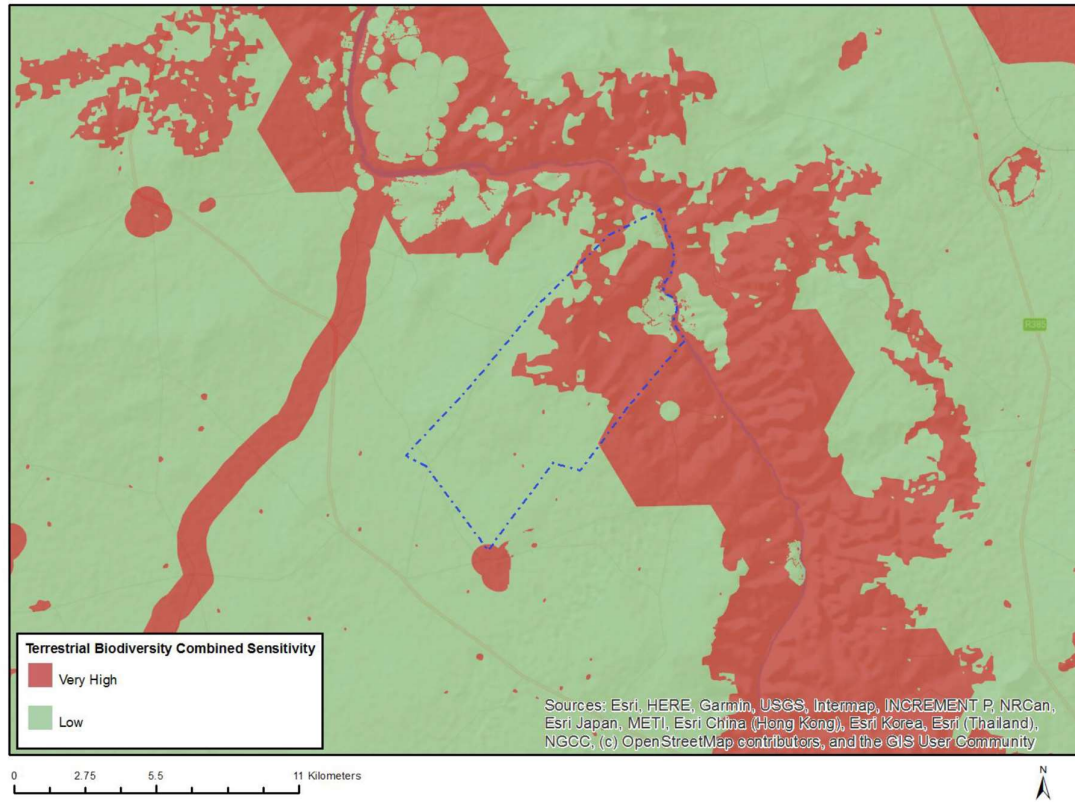
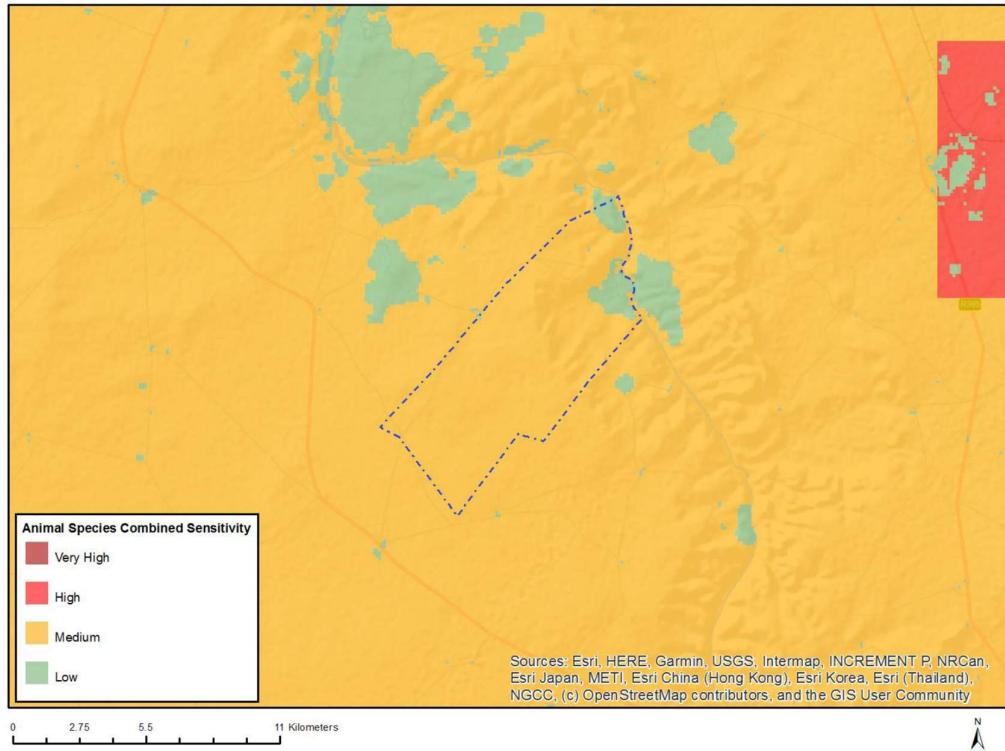


Figure 10: Terrestrial Biodiversity Combined Sensitivity

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According to the DEA screening tool, the application area falls within a low to medium Animal Species combined sensitivity area (see figure 11 below) Please see **Appendix 7** for the colour map.



**Figure 11:** Animal Species theme sensitivity

### **Biodiversity Priority Areas for Mining**

The Mining and Biodiversity Guideline was developed in 2013 for the purpose of mainstreaming biodiversity management practices into the mining sector (DEA, DMR, Chamber of Mines, SAMBF & SANBI 2013). This Guideline provides explicit direction in terms of where mining-related impacts are legally prohibited, where biodiversity priority areas may present high risks for mining projects, and where biodiversity may limit the potential for mining. The Guideline distinguishes between four categories of biodiversity priority areas in relation to their importance from a biodiversity and ecosystem service perspective as well as the implications for mining in these areas (Table 1).

**Table 1:** Four categories of biodiversity priority areas in relation to their biodiversity importance and implications for mining.

<b>Category</b>	<b>Biodiversity Priority Areas</b>	<b>Risks for Mining</b>	<b>Implications for Mining</b>
<b>A. Legally Protected</b>	<ul style="list-style-type: none"> <li>Protected areas (including National Parks, Nature Reserves, World Heritage Sites, Protected Environments, Nature Reserves)</li> <li>Areas declared under Section 49 of the Mineral and Petroleum Resources Development Act (No. 28 of 2002)</li> </ul>	<b>Mining Prohibited</b>	<p>Mining projects cannot commence as mining is legally prohibited. Although mining is prohibited in Protected Areas, it may be allowed in Protected Environments if both the Minister of Mineral Resources and Minister of Environmental Affairs approve it.</p> <p>In cases where mining activities were conducted lawfully in protected areas before Section 48 of the Protected Areas Act (No. 57 of 2003) came into effect, the Minister of Environmental Affairs may, after consulting with the Minister of Mineral Resources, allow such mining activities to continue, subject to prescribed conditions that reduce environmental impacts.</p>
<b>B. Highest Biodiversity Importance</b>	<ul style="list-style-type: none"> <li>Critically endangered and endangered ecosystems</li> <li>Critical Biodiversity Areas (or equivalent areas) from provincial spatial biodiversity plans</li> <li>River and wetland Freshwater Ecosystem Priority Areas (FEPAs) and a 1km buffer around these FEPAs</li> <li>Ramsar Sites</li> </ul>	<b>Highest Risk for Mining</b>	<p>Environmental screening, environmental impact assessment (EIA) and their associated biodiversity specialist studies should focus on confirming the presence and significance of these biodiversity features, and to provide site-specific basis on which to apply the mitigation hierarchy to inform regulatory decision-making for mining, water use licences, and environmental authorisations.</p> <p>If they are confirmed, the likelihood of a fatal flaw for new mining projects is very high because of the significance of the biodiversity features in these areas and the associated ecosystem services. These areas are viewed as necessary to ensure protection of biodiversity, environmental sustainability, and human well-being.</p> <p>An EIA should include the strategic assessment of optimum, sustainable land use for an area and will determine the significance of the impact on biodiversity.</p> <p>This assessment should fully consider the environmental sensitivity of the area, the overall environmental and socio-economic costs and benefits of mining, as well as the potential strategic importance of the minerals to the country.</p> <p>Authorisations may well not be granted. If granted, the authorisation may set limits on allowed activities and</p>



			impacts and may specify biodiversity offsets that would be written into licence agreements and/or authorisations.
<b>C. High Biodiversity Importance</b>	<ul style="list-style-type: none"> <li>Protected area buffers (including buffers around National Parks, World Heritage Sites* and Nature Reserves)</li> <li>Transfrontier Conservation Areas (remaining areas outside of formally proclaimed protected areas)</li> <li>Other identified priorities from provincial spatial biodiversity plans</li> <li>High water yield areas</li> <li>Coastal Protection Zone</li> <li>Estuarine functional zone</li> </ul> <p>*Note that the status of buffer areas of World Heritage Sites is subject to a current intra-governmental process</p>	<b>High Risk for Mining</b>	<p>These areas are important for conserving biodiversity, for supporting or buffering other biodiversity priority areas, and for maintaining important ecosystem services for communities or the country.</p> <p>An EIA should include an assessment of optimum, sustainable land use for an area and will determine the significance of the impact on biodiversity.</p> <p>Mining options may be limited in these areas, and limitations for mining projects are possible.</p> <p>Authorisations may set limits and specify biodiversity offsets that would be written into licence agreements and/or authorisations.</p>
<b>D. Moderate Biodiversity Importance</b>	<ul style="list-style-type: none"> <li>Ecological support areas</li> <li>Vulnerable ecosystems</li> <li>Focus areas for protected area expansion (land-based and offshore protection)</li> </ul>	<b>Moderate Risk for Mining</b>	<p>These areas are of moderate biodiversity value.</p> <p>EIAs and their associated specialist studies should focus on confirming the presence and significance of these biodiversity features, identifying features (e.g. threatened (land-based and offshore protection) species) not included in the existing datasets, and on providing site-specific information to guide the application of the mitigation hierarchy.</p> <p>Authorisations may set limits and specify biodiversity offsets that would be written into licence agreements and/or authorisations.</p>

Based on **Figure 12**, the area does overlap with Category B in a small area (see the South West corner).





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**Important Bird and Biodiversity Areas**

Important Bird and Biodiversity Areas (IBAs) are a network of sites that are significant for the long-term viability of naturally occurring bird populations (Birdlife 2019). Many sites are also important for other forms of biodiversity; therefore, the conservation of Important Bird & Biodiversity Areas ensures the survival of a correspondingly large number of other animals and plants.

No IBAs were identified within the vicinity of the study site (Figure 15).

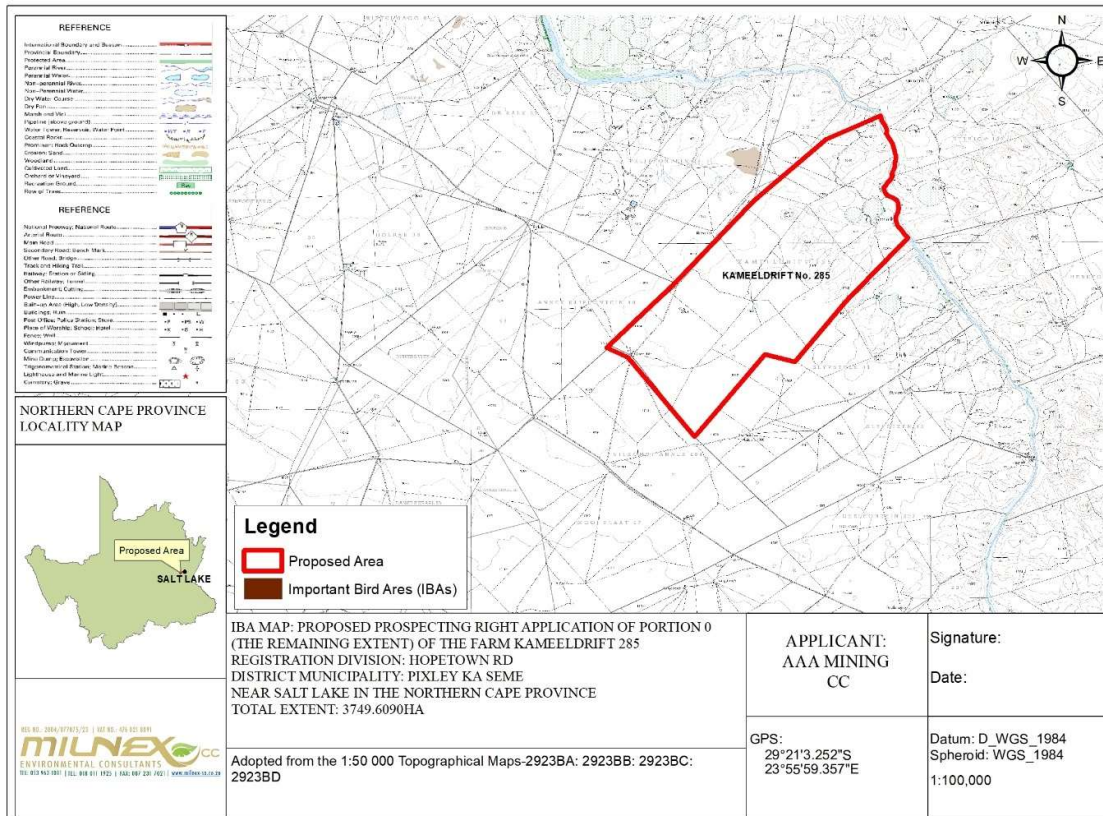


Figure 15: Important Bird and Biodiversity Areas associated with the study site.

**River Ecosystem Status**

According to **Figure 16**, the status of the Orange River situated to the north east of the study site, is classed Largely Modified (Class C).

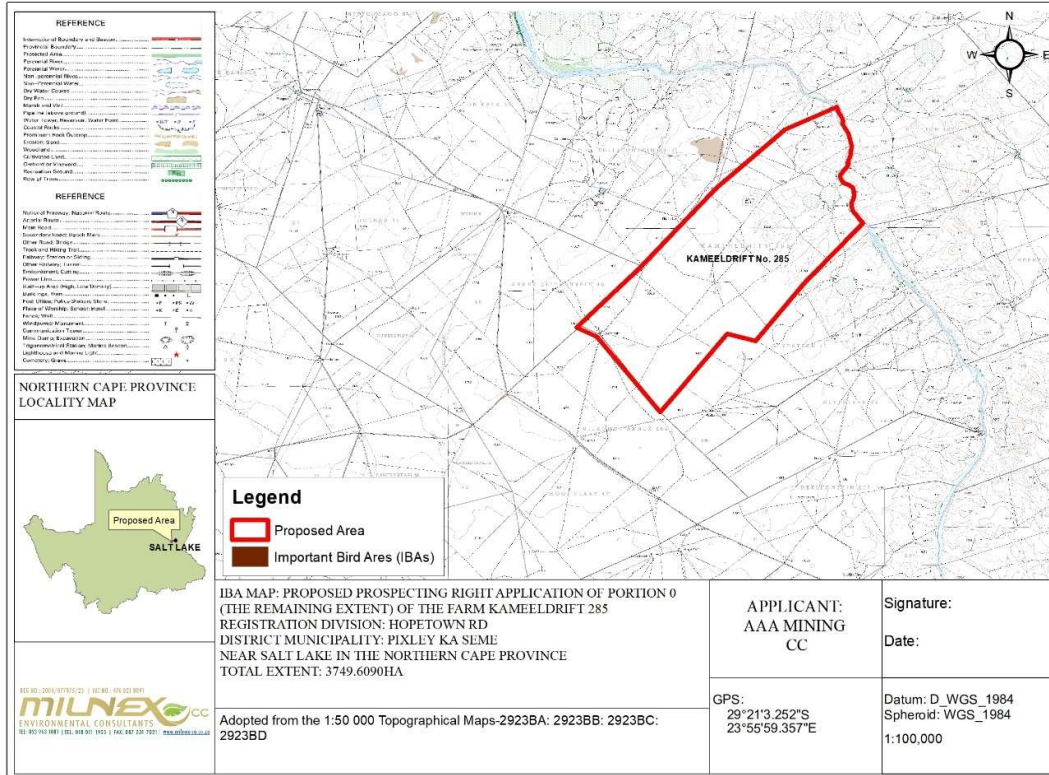


Figure 16: Ecosystem status of the rivers occurring in close proximity to the study site.

**DEA Screening Tool (Appendix 7)**

**Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area**

According to the DEA Screening Tool

No	EIA Reference No	Classification	Status of application	Distance from proposed area (km)
1	12/12/20/2682	Solar PV	Approved	11.8
2	12/12/20/2512	Solar PV	Approved	24.4
3	14/12/16/3/3/2/283	Solar PV	Approved	25.3
4	14/12/16/3/3/1/825	Solar PV	Approved	29

**Archaeological and Cultural Heritage**

According to the DEA screening tool, the application area falls within a low to high Archaeological and Cultural Heritage Combined Sensitivity area (see **figure 17** below). Also see full Heritage Impact Assessment in **Appendix 10**.

Special attention will be given to the identification of possible cultural or heritage resources on site.

However, heritage resources including archaeological and paleontological sites over 100 years old, graves older than 60 years, structure older than 60 years are protected by the National Heritage Resources Act no 25 of 1999. Therefore if such resources are

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found during the prospecting or development activities, they shall not be disturbed without a permit from the relevant heritage resource Authority, which means that before such sites are disturbed by development it is incumbent on the developer to ensure that a heritage impact assessment is done and the Provincial Heritage Resources Authority and SAHRA must be contacted immediately and work will stop.

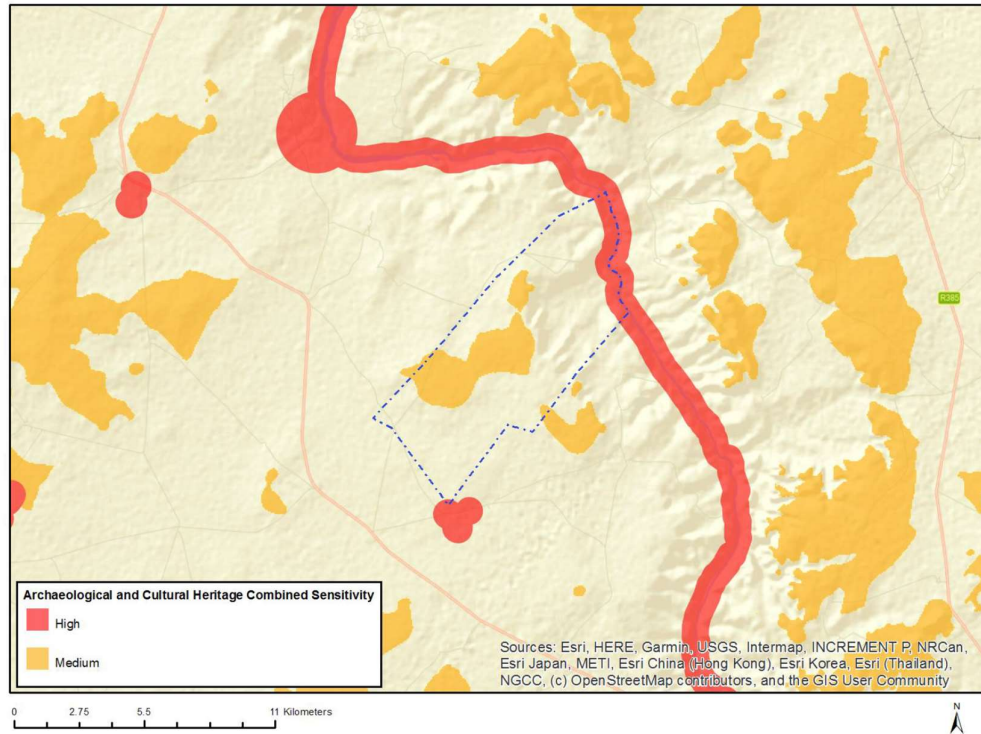
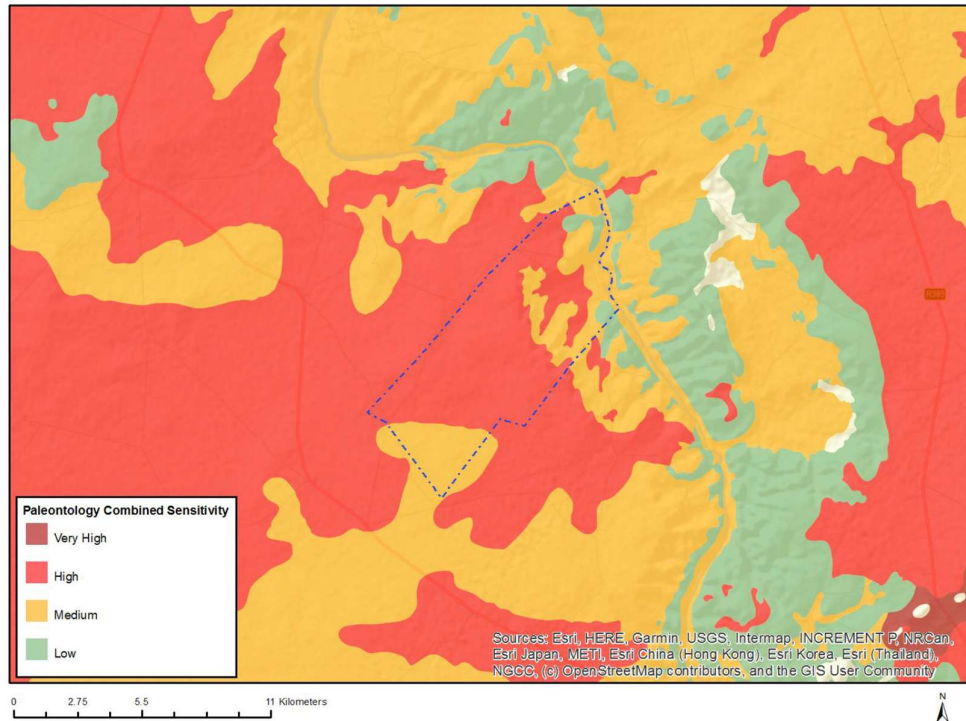


Figure 17: Archaeological and Cultural Heritage Combined Sensitivity

According to the DEA screening tool, the application area falls within a low to high Paleontology Combined Sensitivity area (see figure 18 below). Also see Appendix 10 for the full Paleontological Desktop Study.



**Figure 18:** Palaeontology Combined Sensitivity

According to the Desktop Paleontological Study (DPS) done for this project, the significance is low. “ From a Paleontological point of view the prospecting development may be authorized, but if fossil remains or trace fossils are discovered during any phase of construction, either on the surface or exposed by excavations the Chance Find Protocol must be implemented by the Environmental Control Officer (ECO) in charge of these developments.” See the full report under **Appendix 10**.

**Description of the socio-economic environment**

- **Socio-economic conditions**

The Pixley Ka Seme District Municipality is a Category C municipality situated in the south-east of the Northern Cape Province. It shares its borders with three other provinces, namely the Free State to the east, the Eastern Cape to the south-east, and the Western Cape to the south-west. It is the second-largest district of the five in the province, but makes up almost a third of its geographical area. The district is comprised of eight local municipalities: Ubuntu, Umsobomvu, Emthanjeni, Kareeberg, Renosterberg, Thembelihle, Siyathemba and Siyancuma. Its main town is De Aar. Traffic flows through the region, linking the major industrial areas of the country. The area has a low rainfall, while the largest river in South Africa flows through it. Two of the major dams in South Africa, the Vanderkloof and Gariiep Dams, are situated on the borders of the district municipality

Thembelihle Local Municipality

**Key Statistics Summary**

**Demographic Information**

	<b>2016</b>	<b>2011</b>
<b>Population</b>	16 230	15 701
<b>Age Structure</b>		
Population under 15	25.0%	30.9%
Population 15 to 64	68.5%	62.8%
Population over 65	6.5%	6.4%
<b>Dependency Ratio</b>		
Per 100 (15-64)	46.0	59.3
<b>Sex Ratio</b>		
Males per 100 females	104.6	103.3
<b>Population Growth</b>		
Per annum	0.75%	n/a
<b>Labour Market</b>		
Unemployment rate (official)	n/a	28.4%
Youth unemployment rate (official) 15-34	n/a	35.2%
<b>Education (aged 20 +)</b>		
No schooling	10.8%	15.1%
Matric	22.2%	19.9%
Higher education	5.0%	6.6%
<b>Household Dynamics</b>		
Households	4 736	4 140
Average household size	3.4	3.7
Female headed households	32.4%	32.3%
Formal dwellings	77.4%	77.5%
Housing owned	51.0%	51.4%
<b>Household Services</b>		
Flush toilet connected to sewerage	66.4%	60.0%
Weekly refuse removal	59.4%	68.4%
Piped water inside dwelling	39.9%	33.5%
Electricity for lighting	84.2%	75.2%

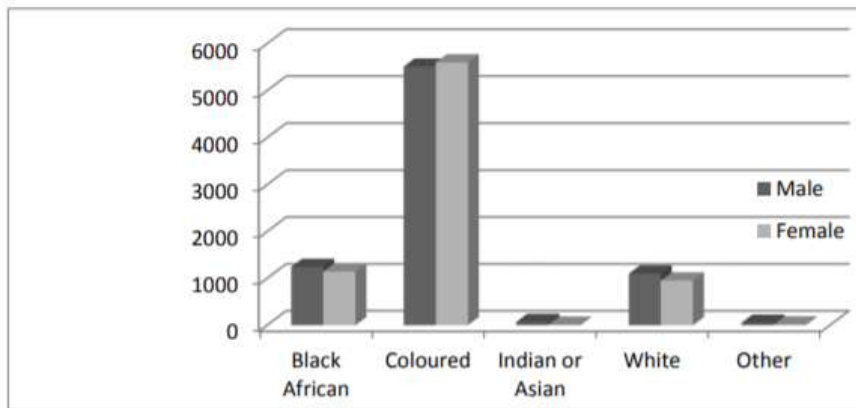
The chart below shows the population growth from 2011 to 2016 in the Thembelihle Local Municipality.



### Population Census 2011

	Male	Female	Grand Total
<b>Black African</b>	1245	1146	2391
<b>Coloured</b>	5511	5601	11112
<b>Indian or Asian</b>	69	12	81
<b>White</b>	1101	954	2055
<b>Other</b>	51	15	66
<b>Grand Total</b>	<b>7977</b>	<b>7728</b>	<b>15705</b>

The population has grown from 15 705 in 2011 to 16 230 in 2016, which represents a population growth of 0.75% per annum. See the below figure for the demographics of the municipality.



### Employment status across population groups

	Black African		Coloured		Indian or Asian		White		Other		Grand Total
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
Employed	468	243	1332	906	36	3	483	345	42	3	<b>3861</b>
Unemployed	111	126	600	672	-	-	12	6	-	-	<b>1527</b>
Discouraged work-seeker	33	57	195	381	3	-	3	12	-	-	<b>684</b>
Other not economically active	264	333	1203	1470	18	3	186	291	6	6	<b>3780</b>
Age less than 15 years	-	-	-	-	-	-	-	-	-	-	-
Not applicable	372	387	2178	2172	12	6	420	294	-	-	<b>5841</b>
<b>Grand Total</b>	<b>1248</b>	<b>1146</b>	<b>5508</b>	<b>5601</b>	<b>69</b>	<b>12</b>	<b>1104</b>	<b>948</b>	<b>48</b>	<b>9</b>	<b>15693</b>

### Piped Water by Source of Water for households

<b>Piped Water by Source of Water for Household : NC076: THEMBELIHLE</b>									
	Regional/local water scheme (operated by municipality or other water services provider)	Borehole	Spring	Rain water tank	Dam/pool/stagnant water	River/stream	Water vendor	Water tanker	Other
Piped (tap) water inside dwelling/institution	1131	174	-	3	3	75	-	6	-
Piped (tap) water inside yard	1254	480	-	-	15	33	-	30	-
Piped (tap) water on community stand: distance less than 200m from dwelling/institution	396	57	3	-	6	3	3	-	-
Piped (tap) water on community stand: distance between 200m and 500m from dwelling/institution	288	3	-	-	-	-	-	-	-
Piped (tap) water on community stand: distance between 500m and 1000m (1km) from dwelling /institution	39	21	-	-	-	-	-	-	-
Piped (tap) water on community stand: distance greater than 1000m (1km) from dwelling/institution	6	93	-	-	-	-	-	-	-
No access to piped (tap) water	3	3	-	-	-	3	-	3	3
Unspecified	-	-	-	-	-	-	-	-	-

Toilet facilities

**Toilet facilities**

for Household weighted, NC076: Thembelihle

None	429
Flush toilet (connected to sewerage system)	2484
Flush toilet (with septic tank)	222
Chemical toilet	18
Pit toilet with ventilation (VIP)	456
Pit toilet without ventilation	486
Bucket toilet	9
Other	36
Unspecified	-
Not applicable	-
<b>Grand Total</b>	<b>4140</b>

Type of dwelling by refuse removal

	Removed by local authority/private company at least once a week	Removed by local authority/private company less often	Communal refuse dump	Own refuse dump	No rubbish disposal	Other	Unspecified	Not applicable
House or brick/concrete block structure on a separate stand or yard or on a farm	2385	33	72	534	45	21	-	-
Traditional dwelling/hut/structure made of traditional materials	9	-	-	-	-	3	-	-
Flat or apartment in a block of flats	30	-	-	6	3	-	-	-
Cluster house in complex	3	-	-	-	-	-	-	-
Townhouse (semi-detached house in a complex)	3	-	-	-	-	-	-	-
Semi-detached house	-	-	-	-	3	-	-	-
House/flat/room in backyard	15	-	6	3	-	-	-	-
Informal dwelling (shack; in backyard)	54	-	-	3	3	-	-	-
Informal dwelling (shack; not in backyard; e.g. in an informal/squatter settlement or on a	252	-	111	18	420	12	-	-

Thembehle FINAL IDP / MAY / for wider municipal area 2016/2017 Page 18

farm)								
Room/flatlet on a property or larger dwelling/servants quarters/granny flat	45	-	-	3	-	-	-	-
Caravan/tent	6	-	-	-	-	-	-	-
Other	33	-	3	-	-	-	-	-
Unspecified	-	-	-	-	-	-	-	-
Not applicable	-	-	-	-	-	-	-	-

### Land capability

The National Department of Agriculture (2006) classified land capability into two broad categories, namely land suited to cultivation (Classes I – IV) and land with limited use, generally not suited to cultivation (Classes V – VIII). The site falls within Class VII and therefore the agricultural potential of the site is limited and it is unlikely that the change in land use will impact significantly on agricultural production (AGIS, 2016).

Refer to Land capability map attached as **Appendix 5 & figure 19 below**.

Milnex CC: EIA446 –EIR & EMPr - The proposed Prospecting Right application combined with a waste licence application of AAA Mining CC for the prospecting of Diamonds Alluvial (DA), Diamonds in Kimberlite (DK), Diamonds General (D) & Diamonds (DIA) on the remaining extent of the farm Kameeldrift 285, Registration Division: Hopetown; Northern Cape Province

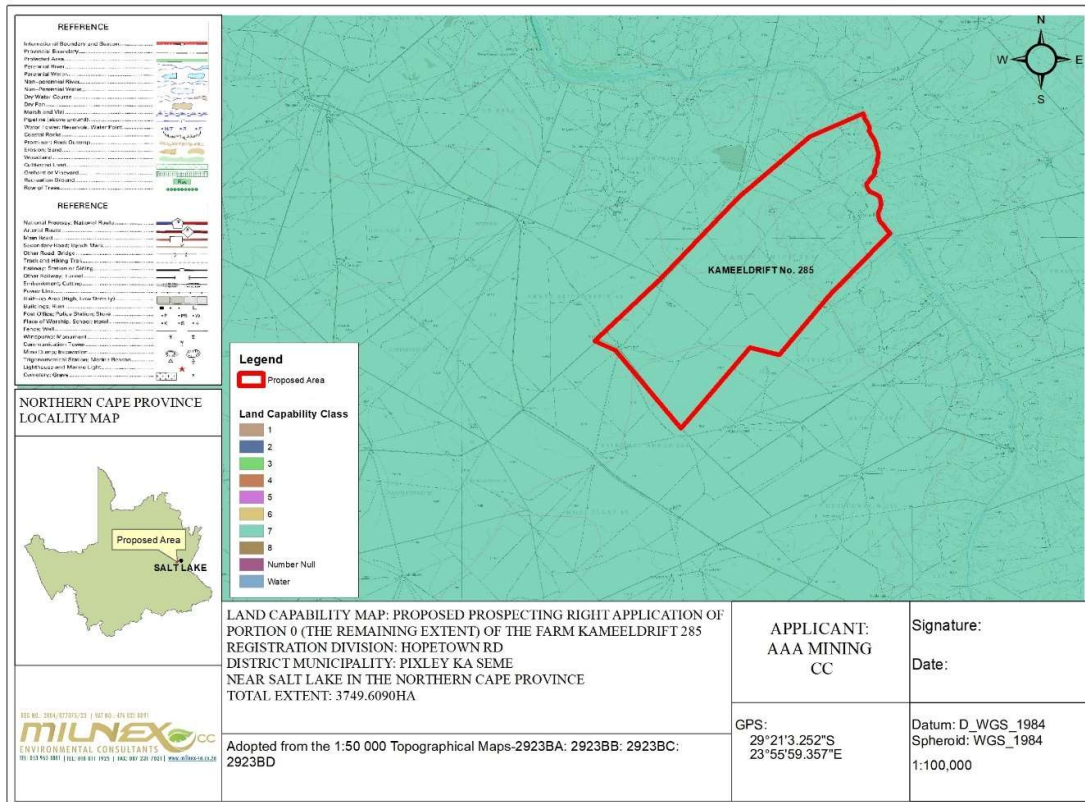
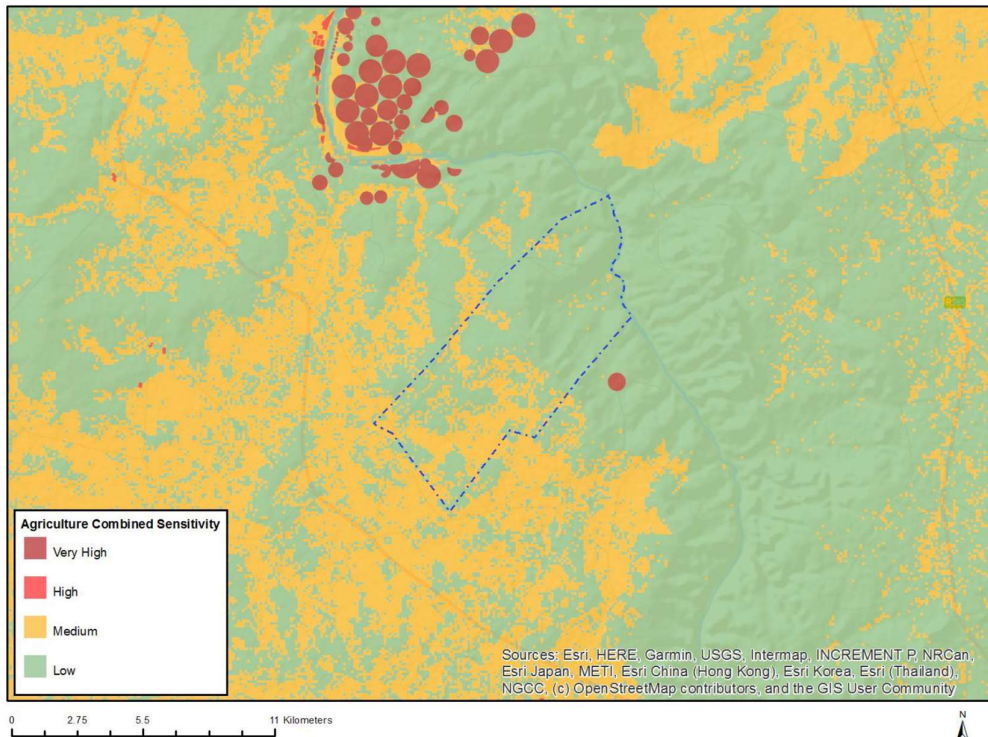


Figure 19: Land capability

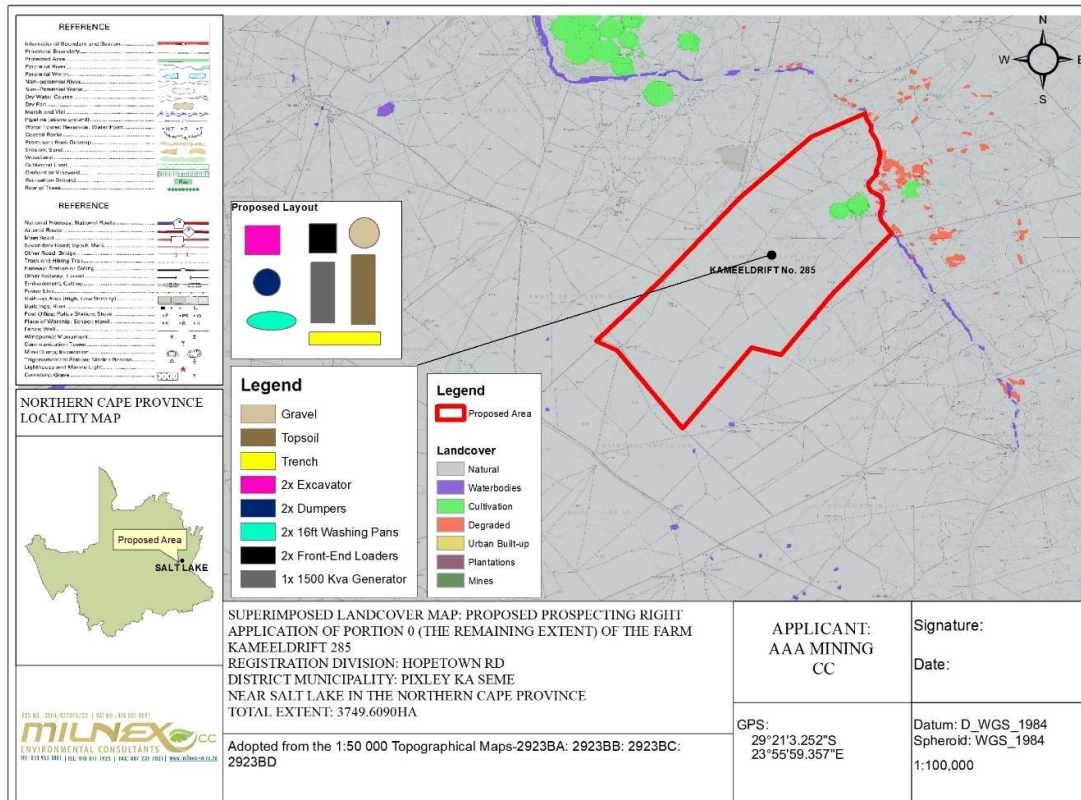
According to the DEA screening tool, the application area falls within low to medium agriculture sensitivity area (see figure 20 below)



**Figure 20:** Agriculture Combined Sensitivity

**(b) Description of the current land uses.**

The site is largely natural with some cultivation according to the below map, (**Figure 21**).



**Figure 21:** Current Land Use associated with study site and surrounding areas.

**v) The impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts—**

- (aa) can be reversed;
- (bb) may cause irreplaceable loss of resources; and
- (cc) can be avoided, managed or mitigated;

Please go to heading **J) AN ASSESSMENT OF EACH IDENTIFIED POTENTIALLY SIGNIFICANT IMPACT AND RISK**, for the impacts identified and their assessment.

**vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;**

**Method of environmental assessment**

The environmental assessment aims to identify the various possible environmental impacts that could result from the proposed development. Different impacts need to be evaluated in terms of its significance and in doing so highlight the most critical issues to be addressed.

Significance is determined through a synthesis of impact characteristics which include context and intensity of an impact. Context refers to the geographical scale i.e. site, local, national or global whereas intensity is defined by the severity of the impact e.g. the

magnitude of deviation from background conditions, the size of the area affected, the duration of the impact and the overall probability of occurrence. Significance is calculated as shown in the Table below.

Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

### **Impact Rating System**

Impact assessment must take account of the nature, scale and duration of impacts on the environment whether such impacts are positive or negative. Each impact is also assessed according to the following project phases:

- Construction
- Operation
- Decommissioning

Where necessary, the proposal for mitigation or optimisation of an impact should be detailed. A brief discussion of the impact and the rationale behind the assessment of its significance should also be included. The rating system is applied to the potential impacts on the receiving environment and includes an objective evaluation of the mitigation of the impact. In assessing the significance of each impact the following criteria is used:

**Table: The rating system**

NATURE		
Include a brief description of the impact of environmental parameter being assessed in the context of the project. This criterion includes a brief written statement of the environmental aspect being impacted upon by a particular action or activity.		
GEOGRAPHICAL EXTENT		
This is defined as the area over which the impact will be experienced.		
1	Site	The impact will only affect the site.
2	Local/district	Will affect the local area or district.
3	Province/region	Will affect the entire province or region.
4	International and National	Will affect the entire country.
PROBABILITY		
This describes the chance of occurrence of an impact.		
1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than a 75% chance of occurrence).
DURATION		
This describes the duration of the impacts. Duration indicates the lifetime of the impact as a result of the proposed activity.		
1	Short term	The impact will either disappear with mitigation or will be mitigated through natural processes in a span shorter than the construction phase (0 – 1 years), or the impact will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).

3	Long term	The impact and its effects will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter (10 – 30 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered indefinite.
<b>INTENSITY/ MAGNITUDE</b>		
Describes the severity of an impact.		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/ component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very high	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired. Rehabilitation and remediation often impossible. If possible rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.
<b>REVERSIBILITY</b>		
This describes the degree to which an impact can be successfully reversed upon completion of the proposed activity.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures.
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible and no mitigation measures exist.
<b>IRREPLACEABLE LOSS OF RESOURCES</b>		
This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.		
1	No loss of resource	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.
<b>CUMULATIVE EFFECT</b>		
This describes the cumulative effect of the impacts. A cumulative impact is an effect which in itself may not be significant but may become significant if added to other existing or potential impacts emanating from other similar or diverse activities as a result of the project activity in question.		
1	Negligible cumulative impact	The impact would result in negligible to no cumulative effects.
2	Low cumulative impact	The impact would result in insignificant cumulative effects.
3	Medium cumulative impact	The impact would result in minor cumulative effects.
4	High cumulative impact	The impact would result in significant cumulative effects
<b>SIGNIFICANCE</b>		

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The calculation of the significance of an impact uses the following formula:

$(\text{Extent} + \text{probability} + \text{reversibility} + \text{irreplaceability} + \text{duration} + \text{cumulative effect}) \times \text{magnitude/intensity}$ .

The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.

Points	Impact significance rating	Description
6 to 28	Negative low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
6 to 28	Positive low impact	The anticipated impact will have minor positive effects.
29 to 50	Negative medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
29 to 50	Positive medium impact	The anticipated impact will have moderate positive effects.
51 to 73	Negative high impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
51 to 73	Positive high impact	The anticipated impact will have significant positive effects.
74 to 96	Negative very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
74 to 96	Positive very high impact	The anticipated impact will have highly significant positive effects.

**vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;**

- Increased ambient noise levels resulting from geophysical surveys, site fly-overs and increased traffic movement during all prospecting phases.
- Potential water and soil pollution impacts resulting from hydrocarbon spills and soil erosion which may impact on environmental resources utilized by communities, landowners and other stakeholders.
- Potential water and soil pollution impacts resulting from hydrocarbon spills and soil erosion which may impact on ecosystem functioning.
- Increased vehicle activity within the area resulting in the possible destruction and disturbance of fauna and flora.
- Poor access control to farms which may impact on cattle movement, breeding and grazing practices.
- Access control to portion which may impact on cattle movement, breeding and grazing practices of the surrounding community.
- Influx of persons (job seekers) to site as a result of increased activity and the possible resultant increase in opportunistic crime.
- Potential visual impacts caused by prospecting activities.
- Prospecting will be undertaken by specialist sub - contractors and it is not anticipated that employment opportunities for local and / or regional communities will result from the prospecting activities.
- Negative impacts on the groundwater resources.
- Longterm loss of indigenous vegetation.
- Air pollution due to dust
- Impact on tourism.

**viii) the possible mitigation measures that could be applied and level of residual risk;**

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/discussion of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered).



Adverse environmental associated with the prospecting activity have been identified through the Scoping & EIR process. Mitigation measures as set out in the Environmental Management Programme (EMPr) attached in Part B must be implemented in order to minimise any potential impacts.

All comments received during the review period of the Scoping and EIR report, as well as response provided is captured and recorded within the Comments and Response Report and will be attached in the final EIR.

**ix) if no alternative development [location] footprints for the activity were investigated, the motivation for not considering such; and**

As discussed in the previous section, based on outcomes of previous studies in the vicinity of the proposed site, it is expected that high volumes of Diamonds (Alluvial, in Kimberlite & General) and Diamonds on the remaining extent of the farm Kameeldrift 285, Registration Division: Hopetown; Northern Cape Province.

**x) a concluding statement indicating the location of the preferred alternative development [location] footprint within the approved site as contemplated in the accepted scoping report;**  
(Provide a statement motivating the final site layout that is proposed)

Design alternatives were considered throughout the planning and design phase (i.e. where is the rock bed located?). In this regard discussions on the design were held between the EAP and the developer. The layout follows the limitations of the site and aspects such as, roads, site offices and workshop area as well as fencing.

**I. A FULL DESCRIPTION OF THE PROCESS UNDERTAKEN TO IDENTIFY, ASSESS AND RANK THE IMPACTS THE ACTIVITY AND ASSOCIATED STRUCTURES AND INFRASTRUCTURE WILL IMPOSE ON THE PREFERRED [LOCATION] DEVELOPMENT FOOTPRINT ON THE APPROVED SITE**  
(AS CONTEMPLATED IN THE ACCEPTED SCOPING REPORT THROUGH THE LIFE OF THE ACTIVITY, INCLUDING—.)

**i. A description of all environmental issues and risks that are identified during the environmental impact assessment process**

**Process for the identification of key issues**

The methodology for the identification of key issues aims, as far as possible, to provide a user-friendly analysis of information to allow for easy interpretation.

- **Checklist:** The checklist consists of a list of structured questions related to the environmental parameters and specific human actions. They assist in ordering thinking, data collection, presentation and alert against the omission of possible impacts.
- **Matrix:** The matrix analysis provides a holistic indication of the relationship and interaction between the various activities, development phases and the impact thereof on the environment. The method aims at providing a first order cause and effect relationship between the environment and the proposed activity. The matrix is designed to indicate the relationship between the different stressors and receptors which leads to specific impacts. The matrix also indicates the specialist studies, which will be submitted as part of the Environmental Impact Report in order to address the potentially most significant impacts.

**Checklist analysis**

The site visit was conducted to ensure a proper analysis of the site specific characteristics of the study area. The table below provides a checklist, which is designed to stimulate thought regarding possible consequences of specific actions and so assist scoping of key issues. It consists of a list of structured questions related to the environmental parameters and specific human actions. They assist in ordering thinking, data collection, presentation and alert against the omission of possible impacts. The table highlights certain issues, which are further analysed in matrix format.

**Table:** Environmental checklist

QUESTION	YES	NO	Un-sure	Description
<b>1. Are any of the following located on the site earmarked for the development?</b>				
I. A river, stream, dam or wetland	X			The proposed area is directly adjacent to the Orange Rivier and is characterized by a few streams and drainage lines
II. A conservation or open space area		X		
III. An area that is of cultural importance		X		Appendix 10 sheds more light on this
IV. Site of geological significance		X		
V. Areas of outstanding natural beauty		X		Land capability 7
VI. Highly productive agricultural land		X		2 cultivated lands are present on the property
VII. Floodplain	X			None
VIII. Indigenous forest		X		
IX. Grass land	X			Yes
X. Bird nesting sites		X		
XI. Red data species		X		
XII. Tourist resort		X		
<b>2. Will the project potentially result in potential?</b>				
I. Removal of people		X		None.
II. Visual Impacts	X			The visual impact will be managed;
III. Noise pollution		X		The noise impact is unlikely to be significant.
IV. Construction of an access road			X	Should access roads be constructed is shall solely be constructed for the purpose of the project and shall be suitably rehabilitated after decommissioning of the of the prospecting activities
V. Risk to human or valuable ecosystems due to explosion/fire/ discharge of waste into water or air.		X		None.
VI. Accumulation of large workforce (>50 manual workers) into the site.		X		Approximately 15 employment opportunities will be created during the construction and operational phase of the project.

VII. Utilisation of significant volumes of local raw materials such as water, wood etc.	X			The application area will use 2 x 16 feet washing pans will be used, the amount of water for both pans will be 34 000 L/hour from which 30% is re-used.
VIII. Job creation	X			Some employment opportunities will be created during the construction and operational phase of the project.
IX. Traffic generation		X		None.
X. Soil erosion		X		Only areas earmarked for mining will be cleared. Mining will be phased and the topsoil stockpiled separately. Concurrent rehabilitation will take place. The soil also has a low erosion potential.
XI. Installation of additional bulk telecommunication transmission lines or facilities		X		None.
<b>3. Is the proposed project located near the following?</b>				
I. A river, stream, dam or wetland	X			Orange river
II. A conservation or open space area			X	Unsure
III. An area that is of cultural importance			X	Unsure
IV. A site of geological significance			X	Unsure
V. An area of outstanding natural beauty		X		
VI. Highly productive agricultural land			X	Unsure
VII. A tourist resort			X	Unsure
VIII. A formal or informal settlement		X		

#### Matrix analysis

The matrix describes the relevant listed activities, the aspects of the development that will apply to the specific listed activity, a description of the environmental issues and potential impacts, the significance and magnitude of the potential impacts, and the mitigation of the potential impacts. The matrix also highlights areas of particular concern, which requires more in depth assessment. Each cell is evaluated individually in terms of the nature of the impact, duration and its significance – should no mitigation measures be applied. This is important since many impacts would not be considered insignificant if proper mitigation measures were implemented. The matrix also provides an indication if mitigation measures are available.

In order to conceptualise the different impacts the matrix specify the following:

- **Stressor:** Indicates the aspect of the proposed activity, which initiates and cause impacts on elements of the environment.
- **Receptor:** Highlights the recipient and most important components of the environment affected by the stressor.
- **Impacts:** Indicates the net result of the cause-effect between the stressor and receptor.
- **Mitigation:** Impacts need to be mitigated to minimise the effect on the environment.

ii) 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;

LISTED ACTIVITY (The Stressor)	ASPECTS OF THE DEVELOPMENT /ACTIVITY	POTENTIAL IMPACTS		SIGNIFICANCE AND MAGNITUDE OF POTENTIAL IMPACTS			MITIGATION OF POTENTIAL IMPACTS	SPECIALIST STUDIES / INFORMATION	
		Receptors	Impact description	Minor	Major	Duration	Possible Mitigation		
<b>CONSTRUCTION PHASE</b>									
<p><b>Listing Notice GNR 325, Activity 15:</b> "The clearance of an area of 20 hectares or more, of indigenous vegetation."</p> <p><b>Listing Notice 3: GNR 324, Activity 12 (g):</b> Northern Cape; The clearance of an area of 300 square metres or more of indigenous vegetation; ii) Within critical biodiversity areas identified in bioregional plans;</p>	<p><u>Site clearing and preparation</u> Areas earmarked for prospecting will need to be cleared, topsoil will be stockpiled separately.</p>	BIOPHYSICAL ENVIRONMENT	Fauna & Flora	<ul style="list-style-type: none"> <li>Loss or fragmentation of indigenous natural vegetation.</li> <li>Loss of sensitive species.</li> <li>Loss or fragmentation of habitats.</li> </ul>		-	L	Yes	-
			Air	<ul style="list-style-type: none"> <li>Air pollution due to the increase of traffic of construction vehicles.</li> </ul>	-		M	Yes	-
			Soil	<ul style="list-style-type: none"> <li>Soil degradation, including erosion.</li> <li>Loss of topsoil.</li> <li>Disturbance of soils and existing land use (soil compaction).</li> </ul>	-	-	S	Yes	-
			Geology	<ul style="list-style-type: none"> <li>It is not foreseen that the removal of indigenous vegetation will impact on the geology or vice versa.</li> </ul>	-		S	Yes	-
			Existing services infrastructure	<ul style="list-style-type: none"> <li>Generation of waste that need to be accommodated at a licensed landfill site.</li> <li>Generation of sewage that need to be accommodated by the local sewage plant.</li> </ul>		-	S	Yes	-
			Ground water	<ul style="list-style-type: none"> <li>Pollution due to construction vehicles leaking oil/diesel</li> </ul>	-		S	Yes	-
			Surface water	<ul style="list-style-type: none"> <li>Increase in storm water run-off.</li> <li>Pollution of water sources due to soil erosion.</li> <li>Destruction of watercourses (pans/dams/streams).</li> </ul>		-	S	Yes	-
		SOCIAL/ECONOMIC ENVIRONMENT	Local unemployment rate	<ul style="list-style-type: none"> <li>Job creation.</li> <li>Business opportunities.</li> <li>Skills development.</li> </ul>		+	S	Yes	-
			Visual landscape	<ul style="list-style-type: none"> <li>Potential visual impact on residents of farmsteads and motorists in close proximity to proposed facility.</li> </ul>	-		M	Yes	-
			Traffic volumes	<ul style="list-style-type: none"> <li>Increase in construction vehicles.</li> </ul>	-		S	Yes	-
			Health & Safety	<ul style="list-style-type: none"> <li>Air/dust pollution.</li> <li>Road safety.</li> <li>Increased risk of veld fires.</li> </ul>		-	M	Yes	-
			Noise levels	<ul style="list-style-type: none"> <li>The generation of noise as a result of construction vehicles, the use of machinery such as drills, excavators, rotary pans, dumper trucks and people working on the site.</li> </ul>	-		M	Yes	-
			Tourism industry	<ul style="list-style-type: none"> <li>Since there are no tourism facilities in close proximity to the site, the construction activities will not have an impact on tourism in the area.</li> </ul>	N/A	N/A	N/A	Yes	-
Heritage resources	<ul style="list-style-type: none"> <li>Removal or destruction of archaeological and/or paleontological sites.</li> </ul>	-		S	Yes	-			

				<ul style="list-style-type: none"> <li>Removal or destruction of buildings, structures, places and equipment of cultural significance.</li> <li>Removal or destruction of graves, cemeteries and burial grounds.</li> </ul>					
<p><b>Listing Notice 1: GNR 327, Activity 19:</b> <i>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from: (i) a watercourse;</i></p> <p><b>Listing Notice GNR 327, Activity 20:</b> "Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)</p> <p><b>Listing Notice GNR 325, Activity 19:</b> "The removal and disposal of minerals contemplated in terms of section 20 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002),</p> <p><b>NEM:WA 59 of 2008</b>  <b>Residue stockpiles or residue deposits</b>  <b>Category A: (15)</b> The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a prospecting right or mining permit, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).</p>	<p><u>Site clearing and preparation</u>                  Areas earmarked for prospecting will need to be cleared, topsoil will be stockpiled separately. This will inevitably result in the removal of indigenous vegetation located on the site.</p>	BIOPHYSICAL ENVIRONMENT	Fauna & Flora	<ul style="list-style-type: none"> <li>Loss or fragmentation of indigenous natural vegetation.</li> <li>Loss of sensitive species.</li> <li>Loss or fragmentation of habitats.</li> </ul>		-	L	Yes	-
			Air quality	<ul style="list-style-type: none"> <li>Air pollution due to the increase of traffic.</li> </ul>	-		M	Yes	-
			Soil	<ul style="list-style-type: none"> <li>Soil degradation, including erosion.</li> <li>Disturbance of soils and existing land use (soil compaction).</li> <li>Loss of agricultural potential (low – medium significance relative to agricultural potential of the site).</li> </ul>		-	M	Yes	-
			Geology	<ul style="list-style-type: none"> <li>It is not foreseen that the removal of indigenous vegetation will impact on the geology or vice versa.</li> </ul>	N/A	N/A	N/A	N/A	-
			Existing services infrastructure	<ul style="list-style-type: none"> <li>Generation of waste that need to be accommodated at a licensed landfill site.</li> <li>Generation of sewage that need to be accommodated by the local sewage plant.</li> </ul>	-		S	Yes	-
			Ground water	<ul style="list-style-type: none"> <li>Pollution due to construction vehicles leaking oil/diesel</li> </ul>	-		S	Yes	-
			Surface water	<ul style="list-style-type: none"> <li>Increase in storm water run-off.</li> <li>Pollution of water sources due to soil erosion.</li> <li>Destruction of watercourses (pans/dams/streams).</li> </ul>	-		M	Yes	-
		SOCIALECONOMIC ENVIRONMENT	Local unemployment rate	<ul style="list-style-type: none"> <li>Job creation.</li> <li>Skills development.</li> </ul>		+	S	N/A	-
			Visual landscape	<ul style="list-style-type: none"> <li>Since there are no tourism facilities in close proximity to the site, the construction activities will not have an impact on tourism in the area.</li> </ul>	-		M	Yes	-
			Traffic volumes	<ul style="list-style-type: none"> <li>Increase in construction vehicles.</li> </ul>	-		S	Yes	-
			Health & Safety	<ul style="list-style-type: none"> <li>Air/dust pollution.</li> <li>Road safety.</li> </ul>	-		S	Yes	-
			Noise levels	<ul style="list-style-type: none"> <li>The generation of noise as a result of construction vehicles, and people working on the site.</li> </ul>	-		M	Yes	-
			Tourism industry	<ul style="list-style-type: none"> <li>Since there are no tourism facilities in close proximity to the site, the construction activities will not have an impact on tourism in the area.</li> </ul>	N/A	N/A	N/A	N/A	-
Heritage resources	<ul style="list-style-type: none"> <li>Removal or destruction of archaeological and/or paleontological sites.</li> <li>Removal or destruction of buildings, structures, places and equipment of cultural significance.</li> <li>Removal or destruction of graves, cemeteries and burial grounds.</li> </ul>		N/A	N/A	N/A	N/A	-		
<b>OPERATIONAL PHASE</b>									

<p><b>Listing Notice 1: GNR 327, Activity 19:</b> <i>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from: (i) a watercourse;</i></p> <p><b>Listing Notice GNR 327, Activity 20:</b> "Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)</p> <p><b>Listing Notice GNR 325, Activity 19:</b> "The removal and disposal of minerals contemplated in terms of section 20 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)</p> <p><b>NEM:WA 59 of 2008</b>  <b>Residue stockpiles or residue deposits</b>  <b>Category A: (15)</b> The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a prospecting right or mining permit, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).</p>	<p>The key components of the proposed project are described below:</p> <ul style="list-style-type: none"> <li><u>Supporting Infrastructure</u> - A control facility with basic services such as water and electricity will be constructed on the site and will have an approximate footprint 50m<sup>2</sup> or less. Other supporting infrastructure includes a site office and workshop area.</li> <li><u>Roads</u> – Access will be obtained from nearby roads &amp; gravel roads. Some roads may be constructed to gain access to prospecting areas</li> <li><u>Fencing</u> - For health, safety and security reasons, the facility will be required to be fenced off from the surrounding farm.</li> </ul>	BIOPHYSICAL ENVIRONMENT	Fauna & Flora	<ul style="list-style-type: none"> <li>Fragmentation of habitats.</li> <li>Establishment and spread of declared weeds and alien invader plants (operations).</li> </ul>	-	-	L	Yes	-	
			Air quality	<ul style="list-style-type: none"> <li>Air pollution due to the mining activity, crusher plant and transport of the gravel to the designated areas.</li> </ul>	-	-	S	Yes	-	
			Soil	<ul style="list-style-type: none"> <li>Soil degradation, including erosion.</li> <li>Disturbance of soils and existing land use (soil compaction).</li> <li>Loss of agricultural potential (low – medium significance relative to agricultural potential of the site).</li> </ul>	-	-	L	Yes	-	
			Geology	<ul style="list-style-type: none"> <li>Collapsible soil.</li> <li>Seepage (shallow water table).</li> <li>Active soil (high soil heave).</li> <li>Erodible soil.</li> <li>The presence of undermined ground.</li> <li>Instability due to soluble rock.</li> <li>Steep slopes or areas of unstable natural slopes.</li> <li>Areas subject to seismic activity.</li> <li>Areas subject to flooding.</li> </ul>	-	-	L	Yes	-	
			Existing services infrastructure	<ul style="list-style-type: none"> <li>Generation of waste that need to be accommodated at a licensed landfill site.</li> <li>Generation of sewage that need to be accommodated by the municipal sewerage system and the local sewage plant.</li> <li>Increased consumption of water. Approximately 17 000 L/hour per pan</li> </ul>	-	-	L	Yes	-	
			Ground water	<ul style="list-style-type: none"> <li>Leakage of hazardous materials. The machinery on site require oils and fuel to function. Leakage of these oils and fuels can contaminate water supplies.</li> </ul>	-	-	L	Yes	-	
			Surface water	<ul style="list-style-type: none"> <li>Increase in storm water runoff. The development will potentially result in an increase in storm water run-off that needs to be managed to prevent soil erosion.</li> <li>Destruction of watercourses (pans/dams/streams).</li> <li>Leakage of hazardous materials. The machinery on site require oils and fuel to function. Leakage of these oils and fuels can contaminate water supplies.</li> </ul>	-	-	L	Yes	-	
			SOCIALECONOMIC ENVIRONMENT	Local unemployment rate	<ul style="list-style-type: none"> <li>Job creation. Security guards will be required for 24 hours every day of the week.</li> <li>Skills development.</li> </ul>	+	-	L	Yes	-
				Visual landscape	<ul style="list-style-type: none"> <li>The proposed portion is dominated by schrubland and as it is not close to any national-, provincial roads or establishments, the visual impact will be of low significance.</li> <li>The prospecting activity will however impact on the current landscape</li> </ul>	-	-	M	Yes	-
				Traffic volumes	<ul style="list-style-type: none"> <li>Increase in vehicles collecting gravel for distribution.</li> </ul>	-	-	S	Yes	-
				Health & Safety	<ul style="list-style-type: none"> <li>Air/dust pollution.</li> <li>Road safety.</li> </ul>	-	-	S	Yes	-
				Noise levels	<ul style="list-style-type: none"> <li>The proposed development will result in noise pollution during the operational phase.</li> </ul>	-	-	L	Yes	-
				Tourism industry	<ul style="list-style-type: none"> <li>Since there are no tourism facilities in close proximity to the site, the decommissioning activities will not have an impact on tourism in the area.</li> </ul>	N/A	N/A	N/A	N/A	-
Heritage resources	<ul style="list-style-type: none"> <li>It is not foreseen that the proposed activity will impact on heritage resources or vice versa .</li> </ul>	N/A	N/A	N/A	N/A	-				

DECOMMISSIONING PHASE									
-	<p><u>Mine closure</u> During the mine closure the Mine and its associated infrastructure will be dismantled.</p> <p><u>Rehabilitation of biophysical environment</u> The biophysical environment will be rehabilitated.</p>	BIOPHYSICAL ENVIRONMENT	Fauna & Flora	<ul style="list-style-type: none"> <li>Re-vegetation of exposed soil surfaces to ensure no erosion in these areas.</li> </ul>	+		L	Yes	-
			Air quality	<ul style="list-style-type: none"> <li>Air pollution due to the increase of traffic of construction vehicles.</li> </ul>	-		S	Yes	-
			Soil	<ul style="list-style-type: none"> <li>Backfilling of all voids</li> <li>Placing of topsoil on backfill</li> </ul>	+		L	Yes	-
			Geology	<ul style="list-style-type: none"> <li>It is not foreseen that the decommissioning phase will impact on the geology of the site or vice versa.</li> </ul>	N/A	N/A	N/A	N/A	-
			Existing services infrastructure	<ul style="list-style-type: none"> <li>Generation of waste that need to be accommodated at the local landfill site.</li> <li>Generation of sewage that need to be accommodated by the municipal sewerage system and the local sewage plant.</li> <li>Increase in construction vehicles.</li> </ul>	-		S	Yes	-
			Ground water	<ul style="list-style-type: none"> <li>Pollution due to construction vehicles.</li> </ul>	-		S	Yes	-
			Surface water	<ul style="list-style-type: none"> <li>Increase in storm water run-off.</li> <li>Pollution of water sources due to soil erosion.</li> <li>Destruction of watercourses (pans/dams/streams).</li> </ul>	-		S	Yes	-
		SOCIAL/ECONOMIC ENVIRONMENT	Local unemployment rate	<ul style="list-style-type: none"> <li>Loss of employment.</li> </ul>		-	L	Yes	-
			Visual landscape	<ul style="list-style-type: none"> <li>Potential visual impact on visual receptors in close proximity to proposed facility.</li> </ul>	-		S	Yes	-
			Traffic volumes	<ul style="list-style-type: none"> <li>Increase in construction vehicles.</li> </ul>	-		S	Yes	-
			Health & Safety	<ul style="list-style-type: none"> <li>Air/dust pollution.</li> <li>Road safety.</li> <li>Increased crime levels. The presence of mine workers on the site may increase security risks associated with an increase in crime levels as a result of influx of people in the rural area.</li> </ul>		-	L	Yes	-
			Noise levels	<ul style="list-style-type: none"> <li>The generation of noise as a result of construction vehicles, the use of machinery and people working on the site.</li> </ul>	-		S	Yes	-
			Heritage resources	<ul style="list-style-type: none"> <li>It is not foreseen that the decommissioning phase will impact on any heritage resources.</li> </ul>	N/A	N/A	N/A	N/A	-

(N/A) No impact (+) Positive Impact (-) Negative Impact (S) Short Term (M) Medium Term (L) Long Term

**J. AN ASSESSMENT OF EACH IDENTIFIED POTENTIALLY SIGNIFICANT IMPACT AND RISK, INCLUDING—**

- (i) cumulative impacts;
- (ii) the nature, significance and consequences of the impact and risk;
- (iii) the extent and duration of the impact and risk;
- (iv) the probability of the impact and risk occurring;
- (v) the degree to which the impact and risk can be reversed;
- (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and
- (vii) the degree to which the impact and risk can be mitigated;

**Significance of potential impacts**

The following sections present the outcome of the significance rating exercise. The results suggest that almost none of the key issues identified as part of the EIR process had a negative high environmental significance. Instead the overall score indicate a low environmental significance score.

**INITIAL CLEARANCE AND SITE PREPARATION PHASE**

**Direct impacts:** During this phase minor negative impacts are foreseen over the short term. The latter refers to a period of weeks. The site preparation may result in the loss or fragmentation of indigenous natural fauna and flora, loss or fragmentation of habitats, soil erosion, hydrology, and temporary noise disturbance, generation of waste, visual intrusions, increase in heavy vehicle traffic, and risk to safety, livestock and farm infrastructure, and increased risk of veld fires. The above mentioned impacts are discussed in more detail below:

Loss or fragmentation of indigenous natural fauna and flora:

The proposed area falls within vegetation units SVk 4, SVk5 & AZa 4, which is known as the Kimberley Thornveld, Vaalbos Rocky Schrubland and Upper Gariep Alluvial Vegetation.

Kimberley Thornveld

Mucina and Rutherford (2006:517) also states that the conservation of this thornveld type, is Least Threatened with a target of 16%. Only 2% of this thornveld is statutorily conserved in Vaalbos National Park and in Sanveld, Bloemhof Dam and S.A. Lombard Nature Reserve. As much as 18% is already transformed, mostly by cultivation. Low erosion is associated with this type of thornveld. The area is mostly used for cattle farming or game ranching. Overgrazing leads to encroachment of *Acacia mellifera* subsp. *detinens*.

Vaalbos Rocky Schrubland

Least threatened. Target 16%. Less than 2% statutorily conserved in the Vaalbos National Park. Only about 2% already transformed (Mucina & Rutherford, 2006).

Upper Gariep Alluvial Vegetation

Upper Gariep Alluvial Vegetation has a conservation which is vulnerable with a target of 31%. Only about 3% statutorily conserved in Tussen Die Riviere, Gariep Dam and Oviston Nature Reserve. More than 20% transformation for cultivation (vegetable grapes) and building of dams. Exotic woody species such as *Salix babylonica*, *Eucalyptus camaldulensis*, *E. sideroxylon*, *Prosopis* and *Populus* species have become common dominants in patches of heavily disturbed alluvial vegetation (Mucina and Rutherford, 2006:639-640).

Loss or fragmentation of indigenous natural fauna and flora	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Site (1)	Site (1)
Probability	Definite (4)	Definite (4)
Duration	Long term (3)	Medium (2)
Magnitude	High (3)	Medium (2)
Reversibility	Irreversible (4)	Partly reversible (2)
Irreplaceable loss of resources	Significant loss of resource (3)	Marginal loss of resource (2)
Cumulative impact	High cumulative impacts (4)	



<b>Significance</b>	<b>Negative high impact (57)</b>	<b>Negative medium (45)</b>
Can impacts be mitigated?	<p>If the development is approved, contractors must ensure that no mammalian species are disturbed, trapped, hunted or killed. If the development is approved, every effort should be made to confine the footprint to the blocks allocated for the development and have the least possible edge effects on the surrounding area. The EMPr also provides numerous mitigation measures – refer to section (f) of the EMPr.</p> <p>The potential impacts associated with damage to and loss of farmland should be effectively mitigated. The aspects that should be covered include:</p> <ul style="list-style-type: none"> <li>• The site should be fenced off prior to commencement of construction activities;</li> <li>• The footprint associated with the construction related activities (access roads, construction platforms, workshop etc.) should be confined to the fenced off area and minimised where possible;</li> <li>• An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase;</li> <li>• All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase;</li> <li>• The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed. Specifications for the rehabilitation are provided throughout the EMPr – section (f) of the EMPr.</li> <li>• The implementation of the Rehabilitation Programme should be monitored by the ECO.</li> </ul>	

- Loss or fragmentation of habitats – Given the high probability of habitat fragmentation a desktop vegetation study was conducted attached as appendix 10

<b>Loss or fragmentation of habitats</b>	<b>Pre-mitigation impact rating</b>	<b>Post mitigation impact rating</b>
Status (positive or negative)	Negative	Negative
Extent	Site (1)	Site (1)
Probability	Definite (4)	Definite (4)
Duration	Long term (3)	Medium (2)
Magnitude	High (3)	Medium (2)
Reversibility	Barely reversible (3)	Completely reversible (1)
Irreplaceable loss of resources	Significant loss of resource (3)	Marginal loss of resource (2)
Cumulative impact	Medium cumulative impacts (3),	
<b>Significance</b>	<b>Negative high impact (51)</b>	<b>Negative low (26)</b>
Can impacts be mitigated?	<p>Exotic and invasive plant species should not be allowed to establish, if the development is approved. Where exotic and invasive plant species are found at the site continuous eradication should take place. If the development is approved, every effort should be made to confine the footprint to the blocks allocated for development – section (f) of the EMPr also provides numerous mitigation measures related to fauna and flora.</p>	

- Loss of topsoil – Topsoil may be lost due to poor topsoil management (burial, erosion, etc.) during construction related soil profile disturbance (levelling, excavations, disposal of spoils from excavations etc.) The effect will be the loss of soil fertility on disturbed areas after rehabilitation.

<b>Loss of topsoil</b>	<b>Pre-mitigation impact rating</b>	<b>Post mitigation impact rating</b>
Status (positive or negative)	Negative	Negative
Geographical extent	Site (1)	Site (1)
Probability	Probable (3)	Unlikely (1)
Duration	Permanent (4)	Medium term (2)

Magnitude	High (3)	Low (1)
Reversibility	Barely reversible (3)	Completely reversible (1)
Irreplaceable loss of resources	Significant (3)	Marginal (2)
Cumulative impact	Medium cumulative impact (3).	
<b>Significance</b>	<b>Negative High (51)</b>	<b>Negative low (10)</b>
Can impacts be mitigated?	<p>The following mitigation or management measures are provided:</p> <ul style="list-style-type: none"> <li>• If an activity will mechanically disturb below surface in any way, then any available topsoil should first be stripped from the entire surface and stockpiled for re-spreading during rehabilitation.</li> <li>• Topsoil stockpiles must be conserved against losses through erosion by establishing vegetation cover on them.</li> <li>• Dispose of all subsurface spoils from excavations where they will not impact on undisturbed land.</li> <li>• During rehabilitation, the stockpiled topsoil must be evenly spread over the entire disturbed surface.</li> <li>• Erosion must be controlled where necessary on top soiled areas.</li> </ul> <p>Establish an effective record keeping system for each area where soil is disturbed for constructional purposes. These records should be included in environmental performance reports, and should include all the records below.</p> <ul style="list-style-type: none"> <li>• Record the GPS coordinates of each area.</li> <li>• Record the date of topsoil stripping.</li> <li>• Record the GPS coordinates of where the topsoil is stockpiled.</li> <li>• Record the date of cessation of constructional (or operational) activities at the particular site.</li> <li>• Photograph the area on cessation of constructional activities.</li> <li>• Record date and depth of re-spreading of topsoil.</li> <li>• Photograph the area on completion of rehabilitation and on an annual basis thereafter to show vegetation establishment and evaluate progress of restoration over time.</li> </ul> <p>Section (f) of the EMPr also provide mitigation measures related to topsoil management.</p>	

- Soil erosion – Soil erosion due to alteration of the land surface run-off characteristics. Alteration of run-off characteristics may be caused by construction related land surface disturbance, vegetation removal and the establishment of roads. Erosion will cause loss and deterioration of soil resources. The erosion risk is low due to the low slope gradients and low to moderate erodibility of the soils.

Soil erosion	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Geographical extent	Site (1)	Site (1)
Probability	Probable (3)	Unlikely (1)
Duration	Permanent (4)	Medium term (2)
Magnitude	High (3)	Low (1)
Reversibility	Barely reversible (3)	Completely reversible (1)
Irreplaceable loss of resources	Significant (3)	Marginal (2)
Cumulative impact	Medium cumulative impact (3).	
<b>Significance</b>	<b>Negative High (51)</b>	<b>Negative low (10)</b>

Can impacts be mitigated?	The following mitigation or management measures are provided: Implement an effective system of run-off control, where it is required, that collects and safely disseminates run-off water from all hardened surfaces and prevents potential down slope erosion.  Include periodical site inspection in environmental performance reporting that inspects the effectiveness of the run-off control system and specifically records the occurrence any erosion on site or downstream – refer to section (f) of the EMPr.
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- Temporary noise disturbance - Preparation activities will result in the generation of noise over a period of months. Sources of noise are likely to include vehicles, the use of machinery such as back actors and people working on the site. The noise impact is unlikely to be significant; but activities should be limited to normal working days and hours (6:00 – 18:00).

Temporary noise disturbance	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Probable (3)	Possible (2)
Duration	Short term (1)	Short term (1)
Magnitude	Medium (2)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	The impact would result in negligible to no cumulative effects (1).	
<b>Significance</b>	<b>Negative low (18)</b>	<b>Negative low (8)</b>
Can impacts be mitigated?	Yes, management actions related to noise pollution are included in section (f) of the EMPr.	

- Generation of waste - general waste, construction waste, sewage and grey water - The workers on site are likely to generate general waste such as food wastes, packaging, bottles, etc. Construction waste is likely to consist of packaging, scrap metals, waste cement, etc (if any). The applicant will need to ensure that general and construction waste is appropriately disposed of i.e. taken to the nearest licensed landfill. Sufficient ablution facilities will have to be provided, in the form of portable/VIP toilets. No pit latrines, French drain systems or soak away systems shall be allowed.

Generation of waste	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local/district (2)	Local/district (2)
Probability	Definite (4)	Definite (4)
Duration	Short term (1)	Short term (1)
Magnitude	Low (1)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	Marginal loss of resource (2)	No loss of resource (1)
Cumulative impact	Low cumulative impact (2) - An additional demand for landfill space could result in low significant cumulative impacts if services become unstable or unavailable, which in turn would negatively impact on the local community.	
<b>Significance</b>	<b>Negative low (12)</b>	<b>Negative low (11)</b>
Can impacts be mitigated?	Yes, it is therefore important that all management actions and mitigation measures included in section (f) of the EMPr are implemented.	

- Impacts on heritage objects – Protection of archaeological, historical and any other site or land considered being of cultural value within the project boundary against vandalism, destruction and theft. The preservation and appropriate management of new discoveries in accordance with the NHRA, should these be discovered during construction activities. The HIA discovered an engraved rock with some significance, as well as a old house in the south western side of the project area. Refer to **Appendix 10** for full report

Impacts on heritage objects	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative

Extent	Site (1)	Site (1)
Probability	Definite (5)	Very Improbable (1)
Duration	Permanent (5)	Short term (1)
Magnitude	Very high (4)	Minor (1)
Reversibility	Irreversible (1)	Irreversible (1)
Irreplaceable loss of resources	Marginal loss of resource (2)	No loss of resource (1)
Cumulative impact	Medium cumulative impact (3). The impact would result in medium cumulative effects.	
<b>Significance</b>	<b>Negative high (68)</b>	<b>Negative low (5)</b>
Can impacts be mitigated?	<p>If archaeological sites or graves are exposed during construction work, it should immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made. Also refer to section (f) of the EMPr.</p> <p>The following shall apply:</p> <ul style="list-style-type: none"> <li>• Known sites should be clearly marked in order that they can be avoided during construction activities.</li> <li>• A 100 m buffer is proposed</li> <li>• The contractors and workers should be notified that archaeological sites might be exposed during the construction activities.</li> <li>• Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible;</li> <li>• All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made.</li> <li>• Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken;</li> <li>• Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and</li> <li>• Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the National Heritage Resources Act (Act No. 25 of 1999), Section 51. (1).</li> </ul> <p>In order to achieve this, the following should be in place:</p> <ul style="list-style-type: none"> <li>• A person or entity, e.g. the Environmental Control Officer, should be tasked to take responsibility for the heritage sites and should be held accountable for any damage.</li> <li>• Known sites should be located and isolated, e.g. by fencing them off. All construction workers should be informed that these are no-go areas, unless accompanied by the individual or persons representing the Environmental Control Officer as identified above.</li> <li>• In areas where the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, but only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.</li> </ul>	

**Indirect impacts:** The nuisance aspects generally associated with the installation of infrastructure or ground preparation will also be applicable to this development, which relates primarily to the increase in vehicle traffic associated with prospecting practices, the influx of job seekers to the area, risk to safety, livestock and farm infrastructure, and increased risk of veld fires.

- Increase in vehicle traffic – The movement of heavy vehicles during the clearance of vegetation and topsoil has the potential to damage local farm roads and create dust and safety impacts for other road users in the area. Access will be obtained from existing tar and gravel roads. While the volume of traffic along this road is low, the movement of heavy vehicles along this road is likely to damage the road surface and impact on other road users. The contractor should be required to ensure that damage to the road is repaired periodically. The movement of additional heavy vehicle traffic will add significantly to the current traffic load on the road. The impact on the roads is therefore likely to be moderate.

Increase in vehicle traffic	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Probable (3)	Probable (3)
Duration	Short term (1)	Short term (1)
Magnitude	High (3)	Medium (2)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	Medium cumulative impact (3). If damage to roads is not repaired then this will affect the farming activities in the area and result in higher maintenance costs for vehicles of local farmers and other road users. The costs will be borne by road users who were not responsible for the damage.	
<b>Significance</b>	<b>Negative medium impacts (33)</b>	<b>Negative low (11)</b>
Can impacts be mitigated?	<p>The potential impacts associated with heavy vehicles can be effectively mitigated. The mitigation measures include:</p> <ul style="list-style-type: none"> <li>• The contractor must ensure that damage caused by construction on the roads are repaired. The costs associated with the repair must be borne by the contractor;</li> <li>• Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers;</li> <li>• All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.</li> </ul> <p>Also refer section (f) of the EMP. For mitigation measures related to traffic.</p>	

- Risk to safety, livestock and farm infrastructure - The presence on and movement of workers on and off the site poses a potential safety threat to local farmer's and farm workers in the vicinity of the site. In addition, farm infrastructure, such as fences and gates, may be damaged and stock losses may also result from gates being left open and/or fences being damaged or stock theft linked either directly or indirectly to the presence of farm workers on the site.

Risk to safety, livestock and farm infrastructure	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Probable (3)	Probable (3)
Duration	Medium term (2)	Medium term (2)
Magnitude	Very High (4)	Medium (2)
Reversibility	Barely reversible (3)	Partly reversible (2)
Irreplaceable loss of resources	Significant resource (3)	Marginal resource (2)
Cumulative impact	Medium cumulative effects (3), provided losses are compensated for.	
<b>Significance</b>	<b>Negative High (64)</b>	<b>Negative low (28)</b>
Can impacts be mitigated?	<p>Key mitigation measures include:</p> <ul style="list-style-type: none"> <li>• <b>AAA Mining CC</b> should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during</li> </ul>	

	<p>the construction phase will be compensated for. The agreement should be signed before the construction phase commences;</p> <ul style="list-style-type: none"> <li>• The construction area should be fenced off prior to the commencement of the construction phase. The movement of construction workers on the site should be confined to the fenced off area;</li> <li>• Contractors appointed by <b>AAA Mining CC</b> should provide daily transport for low and semi-skilled workers to and from the site. This would reduce the potential risk of trespassing on the remainder of the farm and adjacent properties;</li> <li>• <b>AAA Mining CC</b> should hold contractors liable for compensating farmers in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors and neighbouring landowners. The agreement should also cover losses and costs associated with fires caused by construction workers or construction related activities (see below);</li> <li>• The Environmental Management Programme (EMPr) should outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested;</li> <li>• Contractors appointed <b>AAA Mining CC</b> must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.</li> <li>• Contractors appointed by <b>AAA Mining CC</b> must ensure that construction workers who are found guilty of trespassing, stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation;</li> <li>• The housing of construction workers on the site should be strictly limited to security personnel (if any).</li> </ul>
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- **Increased risk of veld fires** - The presence of construction workers and construction-related activities on the site poses an increased risk of grass fires that could in turn pose a threat to livestock and farmsteads in the area. In the process, farm infrastructure may also be damaged or destroyed and human lives threatened. The potential risk of grass fires was heightened by the windy conditions in the area, especially during the dry, windy winter months from May to October. In terms of potential mitigation measures, a fire-break should be constructed around the perimeter of the site prior to the commencement of the construction phase. In addition, fire-fighting equipment should be provided on site during the construction phase.

Increased risk of veld fires	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Region (3)	Local (2)
Probability	Probable (3)	Probable (3)
Duration	Medium term (2)	Short term (1)
Magnitude	High (3)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	Negligible cumulative effects (1), provided losses are compensated for.	
<b>Significance</b>	<b>Negative medium (33)</b>	<b>Negative low (9)</b>
Can impacts be mitigated?	<p>The mitigation measures include:</p> <ul style="list-style-type: none"> <li>• A fire-break should be constructed around the perimeter of the site prior to the commencement of the construction phase;</li> </ul>	

	<ul style="list-style-type: none"> <li>• Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas;</li> <li>• Contractor to ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high risk dry, windy winter months;</li> <li>• Contractor to provide adequate firefighting equipment on-site, including a fire fighting vehicle;</li> <li>• Contractor to provide fire-fighting training to selected construction staff;</li> <li>• No construction staff, with the exception of security staff, to be accommodated on site over night;</li> <li>• As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the firefighting costs borne by farmers and local authorities.</li> </ul>
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**OPERATIONAL PHASE**

**Direct impacts:** During the operational phase the study area will serve as an prospecting area and the impacts are generally associated with soil erosion, change in land use, impacts associated with the, increase in storm water runoff, increased consumption of water, visual intrusion, the generation of general waste, leakage of hazardous materials, and the change in the sense of place. The operational phase will also have a direct positive impact through the provision of temporary employment opportunities and facilitating a positive economic growth. The above mentioned impacts are discussed in more detail below:

- Soil erosion – The largest risk factor for soil erosion will be during the operational phase when the prospecting activity ensues and soil is left bare until rehabilitation is initiated. Erosion will be localised within the site. This will ultimately lead to the irretrievable commitment of this resource. The measurable effect of reducing erosion by utilizing mitigation measures may reduce possible erosion significantly.

Soil erosion	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local/Regional (2)	Local/Regional (2)
Probability	Definite (4)	Unlikely (1)
Duration	Long term (3)	Long term (3)
Magnitude	High (3)	Medium (2)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	Significant loss of resource (3)	Marginal loss of resource (2)
Cumulative impact	Medium cumulative impact (3). Should these impacts occur, there will be a cumulative impact on the air and water resources in the study area in terms of pollution.	
<b>Significance</b>	<b>Negative High (51)</b>	<b>Negative Low (26)</b>
Can impacts be mitigated?	Yes, to avoid soil erosion it will be a good practice to not remove all the vegetation at once but to only clear the area as it becomes necessary and to implement concurrent rehabilitation.  Also refer to section (f) of the EMPr.	

- Change in land-use – The use of the area for the operation of the prospecting activity will not disturb any agricultural activities on most of the portions as both will be done concurrently.

Change in land use	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Province (3)	Local (2)
Probability	Definite (4)	Definite (4)
Duration	medium term (2)	medium term (2)
Magnitude	High (3)	Medium (2)
Reversibility	Barely reversible (3)	Partly reversible (2)
Irreplaceable loss of resources	Significant loss of resource (3)	Marginal loss of resource (2)
Cumulative impact	Medium cumulative impacts (3).	
<b>Significance</b>	<b>Negative high (54)</b>	<b>Negative medium (30)</b>
Can impacts be mitigated?	<p>The proponent should establish a Rehabilitation Fund to be used to rehabilitate the area once the proposed facility has been decommissioned. The fund should be funded by revenue generated during the operational phase of the project. The motivation for the establishment of a Rehabilitation Fund is based on the experience in the mining sector where many mines on closure have not set aside sufficient funds for closure and decommissioning.</p> <p>Also refer to section (f) of the EMPr.</p>	

- Increase in storm water runoff – The development will potentially result in an increase in storm water run-off that needs to be managed to prevent soil erosion, especially where vegetation will be cleared. Not all the vegetation should be removed at once. Only the specific trench being excavated at the specific time should be cleared

Increase in storm water runoff	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Probable (3)	Unlikely (1)
Duration	Long term (3)	Long term (3)
Magnitude	Medium (2)	Low (1)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	Marginal loss of resource (2)	Marginal loss of resource (2)
Cumulative impact	Medium cumulative impact (3) - Should these impacts occur, there will be a cumulative impacts on the wider area.	
<b>Significance</b>	<b>Negative medium (30)</b>	<b>Negative low (13)</b>
Can impacts be mitigated?	<p>Yes. It is therefore important that all management actions and mitigation measures included in section (f) of the EMPr. are implemented to ensure that these impacts do not occur</p> <p>The cut-off trenches and silt fences will be installed where necessary as to control runoff storm water by attenuating it and control the movement of sediment on the premises.</p> <p>These structures will be monitored on a regular basis. It is suggested that it be monitored on a weekly basis during the rainy season, and after possible rain events during the dry season.</p> <p>If these practices is found to be insufficient for the control of storm water and sedimentation, other alternatives should immediately be investigated and implemented.</p>	



Increased consumption of water - Since 2 x 16 feet washing pans will be used, the amount of water for the pans will be 34 000 L/hour from which 30% is re-used.

Increased consumption of water	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Region (3)	Region (3)
Probability	Definite (4)	Definite (4)
Duration	Long term (3)	Long term (3)
Magnitude	High (3)	Medium (2)
Reversibility	Irreversible (4)	Irreversible (4)
Irreplaceable loss of resources	Significant loss of resources (3)	Marginal loss of resources (2)
Cumulative impact	High cumulative impacts (4) - An additional demand on water sources could result in a significant cumulative impact with regards to the availability of water.	
<b>Significance</b>	<b>Negative high impact (63)</b>	<b>Negative medium (40)</b>
Can impacts be mitigated?	Yes, management actions and mitigation measures related to the use of water are included in section (f) of the EMPr.	

- Generation of waste – Approximately 15 Workers will be present on site from 6:00 – 18:00, Monday to Saturday. Sources of general waste will be waste food, packaging, paper, etc. General waste will be stored on the site and removed on a weekly basis by a contractor.

Generation of waste	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Definite (4)	Definite (4)
Duration	Long term (3)	Long term (3)
Magnitude	Low (1)	Low (1)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	Medium cumulative impact (3) - An additional demand for landfill space could result in significant cumulative impacts with regards to the availability of landfill space.	
<b>Significance</b>	<b>Negative low (15)</b>	<b>Negative low (15)</b>
Can impacts be mitigated?	Yes, management actions related to waste management are included in section (f) of the EMPr.	

- Leakage of hazardous materials - The proposed prospecting activity will make use of machinery that use fuel and oil. Leakage of these oils and fuel can contaminate water supplies and must be prevented by constructing oil and diesel permeable bunds to ensure that any spills are suitably attenuated and not released into the environment.

Leakage of hazardous materials	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Possible (2)	Unlikely (1)
Duration	Long term (3)	Long term (3)
Magnitude	High (3)	Medium (2)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	Marginal loss of resource (2)	Marginal loss of resource (2)
Cumulative impact	The impact would result in negligible to no cumulative effects (1)	
<b>Significance</b>	<b>Negative medium (36)</b>	<b>Negative low (22)</b>

Can impacts be mitigated?	Yes. It is therefore important that all management actions and mitigation measures included in the section (f) of EMPr are implemented to ensure that these impacts do not occur.
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- Noise disturbance - Prospecting activities will result in the generation of noise over a period of 3-5 years. Sources of noise are likely to include vehicles, the use of machinery such as backactors, rotary pans and people working on the site, as well as occasional blasting. The noise impact is likely to be significant as the closest

Temporary noise disturbance	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Definite (4)	Probable (3)
Duration	Medium term (2)	Medium term (2)
Magnitude	Very high (4)	High (3)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	The impact would result in medium cumulative effects (3).	
<b>Significance</b>	<b>Negative High (52)</b>	<b>Negative medium (36)</b>
Can impacts be mitigated?	Yes, management actions related to noise pollution are included in section (f) of the EMPr.	

**Indirect impacts:** The operational phase will have an indirect negative impact through the change in the sense of place and an indirect positive impact through the provision of additional electrical infrastructure.

- Potential impact on the sense of place – The impact of the proposed prospecting of diamond (alluvial, in Kimberlite & General) on the areas sense of place with mitigation is likely to be medium. In addition, the site will be visible from the existing tar and gravel roads.

Potential impacts on sense of place	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Site (1)	Site (1)
Probability	Possible (2)	Possible (2)
Duration	Medium term (2)	Medium term (2)
Magnitude	High (3)	High (3)
Reversibility	Barely reversible (3)	Barely reversible (3)
Irreplaceable loss of resources	Marginal loss of resources (2)	Marginal loss of resources (2)
Cumulative impact	Medium cumulative impacts (3)	
<b>Significance</b>	<b>Negative high (39)</b>	<b>Negative high (39)</b>
Can impacts be mitigated?	No mitigation required	

## DECOMMISSIONING PHASE (MINE CLOSURE AND REHABILITATION)

**Direct impacts:** Typically, the major social impacts associated with the decommissioning phase are linked to the loss of jobs and associated income. This has implications for the households who are directly affected, the communities within which they live. If infrastructures are removed after a 3/5 year period, the site will be returned to its natural state. Therefore the physical environment will benefit from the closure of the prospecting area.

- Rehabilitation of the physical environment – The physical environment will benefit from the closure of the prospecting area since the site will be restored to its natural state.

Rehabilitation of the physical environment	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Positive	Positive
Extent	Site (1)	Site (1)
Probability	Possible (2)	Probable (3)

Duration	Long term (3)	Long term (3)
Magnitude	Low (1)	Medium (2)
Reversibility	N/A	N/A
Irreplaceable loss of resources	N/A	N/A
Cumulative impact	The impact would result in negligible to no cumulative effects (1)	
<b>Significance</b>	<b>Positive low (7)</b>	<b>Positive low (16)</b>
Can impacts be mitigated?	No mitigation measures required.	

- Loss of employment - Given the relatively large number of people employed during the operational phase, the decommissioning of the facility has the potential to have a negative social impact on the local community.

Loss of employment	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Possible (2)	Possible (2)
Duration	Medium term (2)	Short term (1)
Magnitude	High (3)	Medium (2)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	The impact would result in negligible to no cumulative effects (1)	
<b>Significance</b>	<b>Negative medium (30)</b>	<b>Negative low (18)</b>
Can impacts be mitigated?	<p>The following mitigation measures are recommended:</p> <ul style="list-style-type: none"> <li>• All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning;</li> <li>• <b>AAA Mining CC</b> should establish an Environmental Rehabilitation Trust Fund to cover the costs of decommissioning and rehabilitation of disturbed areas.</li> </ul>	

**Indirect impacts:** No indirect impacts are anticipated from the decommissioning phase of the proposed development.

**K. SUMMARY OF THE FINDINGS AND RECOMMENDATIONS OF ANY SPECIALIST REPORT**

(where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report):-

Also see **Appendix 10** for full specialist reports

LIST OF STUDIES UNDERTAKEN	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.
<p><b>Desktop Paleontological Study</b></p>	<p>The proposed development footprint is largely mantled by superficial sediments of Late Caenozoic age. The Late Tertiary to Quaternary calcretes covers the largest area of the development while unconsolidated aeolian (i.e. wind-blown) sands of the Kalahari Group (Gordonia Formation) is present in the far south. In the east Dwyka sediments are present and is locally overlain in the Douglas area by fossiliferous mudrocks of the Prince Albert Formation (Ecca Group) as well as inliers of the Allanridge Formation (Ventersdorp Supergroup).</p> <p>The fossil assemblages of the Quaternary are generally Low in diversity, occur over a wide range and mostly has a Low Paleontologically Sensitivity but locally High. The Permo-Carboniferous Dwyka sediments and Kalahari Group (Gordonia) Formation has a Moderate Palaeontological Sensitivity. The Prince Albert Formation (Ecca Group) is fossiliferous and has a High palaeontological sensitivity but is not represented on the</p>	<p><b>X</b></p>	<p><b>Appendix 10</b></p>

	<p>SAHRIS map (Figure 4) as the scale of the map is most probably too high. Sediments of the Allanridge Formation within the Ventersdorp Supergroup is unfossiliferous and thus has a zero Palaeontological Sensitivity.</p> <p>A low Palaeontological significance has been allocated to the proposed development. From a Palaeontological point of view the prospecting development may be authorised, but if fossil remains or trace fossils are discovered during any phase of construction, either on the surface or exposed by excavations the <b>Chance Find Protocol</b> must be implemented by the Environmental Control Officer (ECO) in charge of these developments. These discoveries ought to be protected and the ECO must report to SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: <a href="http://www.sahra.org.za">www.sahra.org.za</a>) so that mitigation can be carry out by a paleontologist.</p> <p>Preceding any collection of fossil material, the palaeontologist would need to apply for a collection permit from SAHRA. Fossil material must be curated in an accredited collection (museum or university collection), while all fieldwork and reports should meet the minimum standards for palaeontological impact studies required by SAHRA.</p> <p><b>Chance Find Procedure</b></p> <ul style="list-style-type: none"> <li>• If a chance find is made the person responsible for the find must immediately <b>stop working</b> and all work that could impact that finding must cease in the immediate vicinity of the find.</li> <li>• The person who made the find must immediately <b>report</b> the find to his/her direct supervisor which in turn must report the find to his/her manager and the ESO or site manager. The ESO or site manager must report the find to the relevant</li> </ul>		
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	<p>Heritage Agency (South African Heritage Research Agency, SAHRA). (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: <a href="http://www.sahra.org.za">www.sahra.org.za</a>). The information to the Heritage Agency must include photographs of the find, from various angles, as well as the GPS co-ordinates.</p> <ul style="list-style-type: none"> <li>• A preliminary report must be submitted to the Heritage Agency within <b>24 hours</b> of the find and must include the following: 1) date of the find; 2) a description of the discovery and a 3) description of the fossil and its context (depth and position of the fossil), GPS co-ordinates.</li> <li>• Photographs (the more the better) of the discovery must be of high quality, in focus, accompanied by a scale. It is also important to have photographs of the vertical section (side) where the fossil was found.</li> </ul> <p>Upon receipt of the preliminary report, the Heritage Agency will inform the ESO (or site manager) whether a rescue excavation or rescue collection by a palaeontologist is necessary.</p> <ul style="list-style-type: none"> <li>• The site must be secured to protect it from any further damage. <b>No attempt</b> should be made to remove material from their environment. The exposed finds must be stabilized and covered by a plastic sheet or sand bags. The Heritage agency will also be able to advise on the most suitable method of protection of the find.</li> <li>• In the event that the fossil cannot be stabilized the fossil may be collected with extreme care by the ESO (site manager). Fossils finds must be stored in tissue paper and in an appropriate box while due care must be taken to remove all fossil material from the rescue site.</li> <li>• Once Heritage Agency has issued the written authorization, the developer may continue with the development on the affected area.</li> </ul>		
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<p style="text-align: center;"><b>Phase 1 Heritage Impact Assessment</b></p>	<p>This report contains a comprehensive heritage impact assessment investigation in accordance with the provisions of Sections 38(1) and 38(3) of the National Heritage Resources Act (Act No. 25 of 1999) (NHRA) and focuses on the survey results from a cultural heritage survey as requested by Milnex CC. The Scoping and EIA process for a Prospecting Right application combined with a Waste License Application for the Prospecting of Diamonds Alluvial (DA), Diamonds in Kimberlite (DK), Diamonds General (D) &amp; Diamonds (DIA) on the remaining extent of the farm Kameeldrift 285, near Hopetown, Thembelihle Local Municipality, Pixley ka Seme District Municipality, Northern Cape Province. The property is located approximately 30 km from Douglas, towards Hopetown in the Northern Cape Province. The Orange River is bordering the north-eastern boundary of the survey area. The Scoping and EIA process for Environmental Authorisation for the proposed diamond prospecting is conducted in terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA). Application reference number: (NC30/5/1/1/2/12632PR).</p> <table border="1" data-bbox="600 902 1411 1029"> <thead> <tr> <th>Site No</th> <th>Site Type</th> <th>Field Rating of Significance</th> <th>Direct Impacts</th> <th>Significance of Impact before Mitigation</th> <th>Significance of Impact after Mitigation</th> <th>Proposed Mitigation</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Rock Art Site</td> <td>Local Grade 3A</td> <td>None</td> <td>80 (High)</td> <td>5 (Low)</td> <td> <ul style="list-style-type: none"> <li>100 metres buffer zone</li> </ul> </td> </tr> <tr> <td>2</td> <td>Historical house</td> <td>Generally Protected C: Low Significance</td> <td>None</td> <td></td> <td></td> <td> <ul style="list-style-type: none"> <li>None</li> </ul> </td> </tr> </tbody> </table> <p>The survey yielded a total of two heritage sites which includes a rock art site (Site 1) and a historic house (Site 2). The rock art site includes at least two large boulders with at least three animal engravings on the one boulder and a single rhinoceros on the other. The historical house structure falls outside the active mining zone and there will be no impact on the structure. However, Site 1 is located near the river where most of the mining activities are taking place. As a result the following recommendations and mitigation measures are proposed:</p>	Site No	Site Type	Field Rating of Significance	Direct Impacts	Significance of Impact before Mitigation	Significance of Impact after Mitigation	Proposed Mitigation	1	Rock Art Site	Local Grade 3A	None	80 (High)	5 (Low)	<ul style="list-style-type: none"> <li>100 metres buffer zone</li> </ul>	2	Historical house	Generally Protected C: Low Significance	None			<ul style="list-style-type: none"> <li>None</li> </ul>	<p><b>X</b></p>	<p><b>Appendix 10</b></p>
Site No	Site Type	Field Rating of Significance	Direct Impacts	Significance of Impact before Mitigation	Significance of Impact after Mitigation	Proposed Mitigation																		
1	Rock Art Site	Local Grade 3A	None	80 (High)	5 (Low)	<ul style="list-style-type: none"> <li>100 metres buffer zone</li> </ul>																		
2	Historical house	Generally Protected C: Low Significance	None			<ul style="list-style-type: none"> <li>None</li> </ul>																		

	<ul style="list-style-type: none"> <li>▣ Site 1 should be fenced off (either a palisade or other physical barrier) and an entrance gate installed;</li> <li>▣ A buffer zone of 100 metres should be maintained along its periphery; and</li> <li>▣ Care should be taken during the mining phase to prevent any impact on the site.</li> </ul> <p>No Stone Age or Iron Age settlements, structures, features or assemblages were recorded during the survey.</p> <p>It is therefore recommended, from a cultural heritage perspective that the proposed mining activities may proceed.</p> <p>Also, please note:</p> <p>Archaeological deposits usually occur below ground level. Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and a university or museum notified in order for an investigation and evaluation of the find(s) to take place (cf. NHRA (Act No. 25 of 1999), Section 36 (6)).</p>		
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<p><b>Ecological Desktop Study</b></p>	<p>The Ecological habitat status of the proposed mining right area was determined by means of a desktop study. In this document a brief description of the ecology, as stated by Mucina and Rutherford (2006), will be given. This information will be supported with a map and site-specific photographs.</p> <p>It should be noted that the status of these vegetation may have changed as the data used from Mucina and Rutherford (2006) is 15 years old.</p> <p>Conclusion and Recommendations include:</p> <p>Focus of this report was on the areas current ecological state, where the site for future prospecting rights was located. This ecological desktop study enabled the assessment and coverage of major ecosystems and habitats. The general floral overview and current impacts were obtained from this desktop assessment.</p> <ul style="list-style-type: none"> <li>- According to the Mining and Biodiversity Guidelines (2013), the study area is within an area which is considered the highest risk for mining and of high biodiversity importance. As a result, a 500m buffer is recommended around any FEPA rivers or wetlands located in this category.</li> <li>- Ensure that the infrastructure is at least 500m away from sensitive wetlands and rivers, unless the applicant is in possession of the relevant Water Use Licence.</li> <li>- Protected trees and plants shall not be removed or damaged without prior approval and permits or licenses from the relevant authority;</li> <li>- Vegetation clearance, if any, should be kept to the minimum required for the operation; and</li> <li>- No activities may occur within wetlands without authorisation</li> </ul>	<p><b>X</b></p>	<p><b>Appendix 10</b></p>
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## **L. AN ENVIRONMENTAL IMPACT STATEMENT WHICH CONTAINS—**

### **(i) a summary of the key findings of the environmental impact assessment:**

This section provides a summary of the assessment and conclusions drawn from the proposed prospecting area. In doing so, it draws on the information gathered as part of the environmental impact assessment process and the knowledge gained by the environmental consultant during the course of the process and presents an informed opinion on the environmental impacts associated with the proposed project. The following conclusions can be drawn for the proposed prospecting activity:

- Potential impacts on biodiversity: According to the critical biodiversity, the proposed farm portion fall within other natural areas and a part of the application fall within Critical Biodiversity Area Two. But through implementing mitigation measures, no adverse impacts are expected.
- Potential impacts on land use: According to the landowners, the proposed application area is currently used for mining and livestock. There are homesteads on the south western side as well.
- Potential impacts on heritage resources: According to the HIA with mitigation measures in place the impacts can be reversed to a low significance
- The activity which will be subject to concurrent rehabilitation will still have a low impact on the land use and will change the sense of place of the area because of the area already being disturbed.
- Potential social impacts: The presence of construction workers poses a potential risk to family structures and social networks. While the presence of construction workers does not in itself constitute a social impact, the manner in which construction workers conduct themselves can impact on local communities. The most significant negative impact is associated with the disruption of existing family structures and social networks.
- Potential negative impacts: (noise, dust, soil degradation, storm water, traffic, health and safety) associated with the operation of the facility are expected to be of low-medium impact, of medium terms and site specific. These can be mitigated or negated through the implementation of practical and appropriate mitigation measures.
- Positive impacts: The mining of Diamonds (Alluvial, in Kimberlite & General) will have socio-economic benefit to the area.

All possible negative impacts and risks that have been identified in this report can be effectively mitigated and managed by implementing the migratory measures as set out in the Environmental Management Programme (EMPr) attached in Part B. It is therefore recommended that the environmental authorisation for the prospecting right be granted.

### **(i) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred [site] development footprint on the approved site as contemplated in the accepted scoping report indicating any areas that should be avoided, including buffers; and**

Provide a map at an appropriate scale which superimposes the proposed overall activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers.

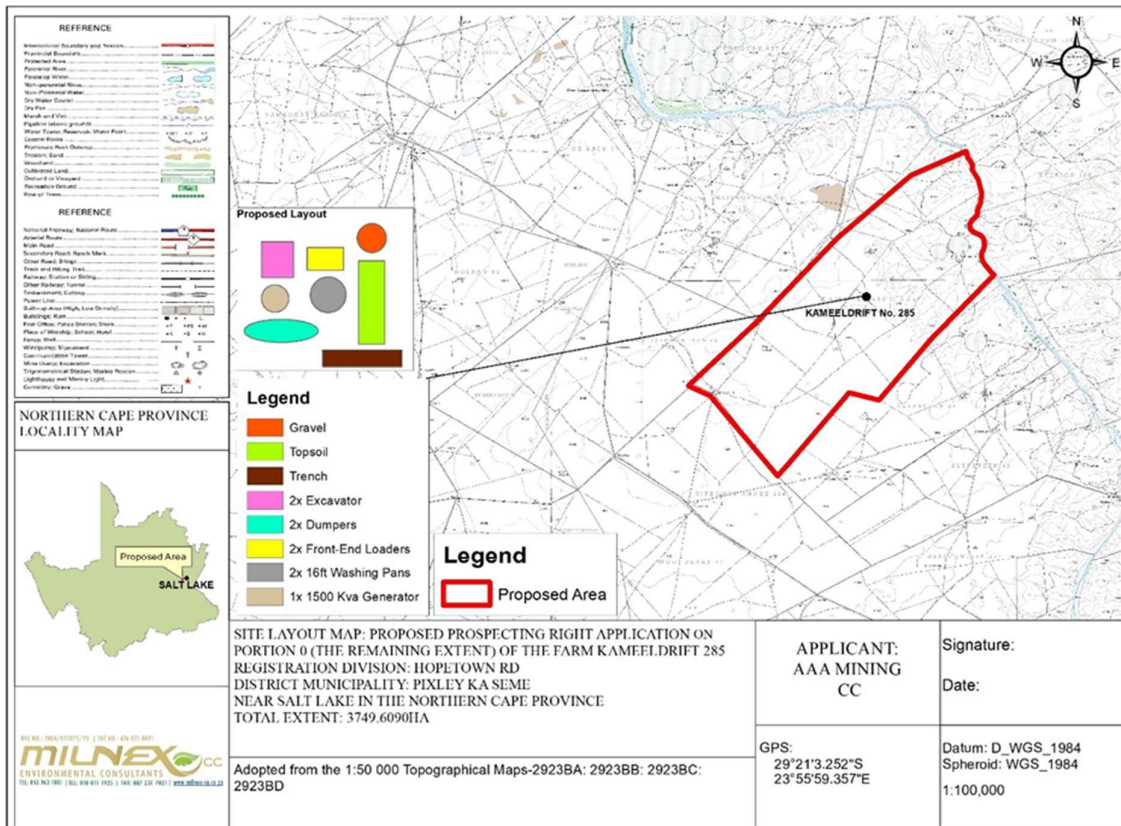


Figure 12: Site Plan

Refer to Site layout Map attached in Appendix 4.

(ii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;

There are regional socio economic benefits due to the Diamonds (Alluvial, in Kimberlite & General) being prospected in the Northern Cape Province and greater knowledge is gained on the mineralogy of South Africa. All possible negative impacts and risks that have been identified in this report can be effectively mitigated and managed by implementing the mitigation measures as set out in the Environmental Management Programme (EMPr) attached in Part B. Significant adverse social environmental impacts are anticipated.

**M. PROPOSED IMPACT MANAGEMENT OBJECTIVES AND THE IMPACT MANAGEMENT OUTCOMES FOR INCLUSION IN THE EMPr**

Based on the assessment and where applicable the recommendations from specialist reports, the recording of proposed [impact management objectives, and the] impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation.

Management objectives include:

- Ensure that the prospecting activity does not cause pollution to the environment or harm to persons.
- Minimise production of waste.
- All prospecting activities must be conducted in a manner that minimises noise impact, litter, environmental degradation and health hazards i.e. injuries.
- The mine must be kept neat and tidy during waste handling to prevent unsightliness and accidents.

Expected outcomes include:

- Minimum impacts on the environment as a result of Diamonds (Alluvial, in Kimberlite & General) prospecting.

- Compliance with legislative requirements.
- Mine is neat and tidy and well managed.

#### **N. FINAL PROPOSED ALTERNATIVES.**

**(Provide an explanation for the final layout of the infrastructure and activities on the overall site as shown on the final site map together with the reasons why they are the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment)**

This alternative asks the question, if there is not, from an environmental perspective, a more suitable location for the proposed activity. The remaining extent of the farm Kameeldrift 285, Registration Division: Hopetown; Northern Cape Province is preferred due to the sites underlying Diamonds (Alluvial, in Kimberlite & General) bearing gravel, therefore there will be no other alternative (i.e. to facilitate the movement of machinery, equipment, infrastructure).

#### **O. ASPECTS FOR INCLUSION AS CONDITIONS OF AUTHORISATION.**

**(Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;)**

- The operational activities and relevant rehabilitation of disturbed areas should be monitored against the improved EMPr and all other relevant environmental legislation.
- A copy of the EMP should be made available onsite at all times.
- Implementation of the proposed mitigation measures set out in the EMPr.

#### **P. DESCRIPTION OF ANY ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE.**

**(Which relate to the assessment and mitigation measures proposed)**

The uncertainties in results are mostly related to the availability of information, time available to gather the relevant information as well as the sometimes subjective nature of the assessment methodology. In terms of addressing the key issues the EAP is satisfied that there are no major gaps in knowledge and that the report provide sufficient information to conduct the significance rating and provide the environmental authority with sufficient information to make an informed decision.

#### **Q. REASONED OPINION AS TO WHETHER THE PROPOSED 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;)**

##### **Reasons why the activity should be authorized or not.**

Based on the outcomes of other diamond mines in the area, the possibility to encounter further Diamond Reserves were identified.

The proposed prospecting area is targeted as, historically, several Diamonds (Alluvial, in Kimberlite & General) occurrences are known in the area, and a number of these have been exploited in the past. There are also various Diamonds (Alluvial, in Kimberlite & General) operations within the vicinity of the exploration area.

No other properties have been secured by the applicant and the site is therefore regarded as the preferred site, and alternatives are not considered.

The option of not approving the activities will result in a significant loss to valuable diamond deposits being exploited. And all economic benefits will be lost.

##### **Conditions that must be included in the authorisation**

- The operational activities and relevant rehabilitation of disturbed areas should be monitored against the EMPr and all other relevant environmental legislation.

- A copy of the EMPr should be made available onsite at all times.
- Implementation of the proposed mitigation measures set out in the EMPr.

The EMPr should be binding on all managers and contractors operating/utilizing the site.  
 The applicant shall familiarize himself with the content of this document and the attached specialist studies and the requirements/conditions thereof.

**R. PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED.**

For a minimum of 5 years.

**S. AN UNDERTAKING UNDER OATH OR AFFIRMATION BY THE EAP IN RELATION TO:**

Confirm that the undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Environmental Impacts report and the Environmental Management Programme report.

The undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Environmental Impact Assessment report and the Environmental Management Programme report.

I, Christiaan Baron 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 acceptability of the project in relation to the finding of the assessment and level of mitigation proposed;




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Signature of the environmental assessment practitioner:

Milnex CC – Environmental Consultants

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Name of company:

26 – 05 - 2021

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Date:

## T. FINANCIAL PROVISION

(where applicable, details of any financial provision[s] for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;)

CALCULATION OF THE QUANTUM							
Applicant: <b>AAA CC</b> Evaluators: <b>Milnex CC Environmental Consultants</b>		Ref No.: <b>NC305/WW2/12632PR</b> Date: <b>Apr-21</b>					
No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	1000	17.14	1	1	17140
2 (A)	Demolition of steel buildings and structures	m2		238.71	1	1	0
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	351.79	1	1	0
3	Rehabilitation of access roads	m2		42.72	1	1	0
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	414.61	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	226.15	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	477.42	1	1	0
6	Opencast rehabilitation including final voids and ramps	ha	1.05	242984.15	0.52	1	132669.3459
7	Sealing of shafts adits and inclines	m3	0	128.15	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0.03	166847.44	1	1	5005.4232
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0.09	207805.47	1	1	18702.4923
8 ( C )	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha		603565.59	1	1	0
9	Rehabilitation of subsided areas	ha	0.03	139709.6	1	1	4191.288
10	General surface rehabilitation	ha	0.03	132171.31	1	1	3965.1393
11	River diversions	ha		132171.31	1	1	0
12	Fencing	m	200	150.77	1	1	30154
13	Water management	ha	0	50255.25	1	1	0
14	2 to 3 years of maintenance and aftercare	ha	0.18	17589.34	1	1	3166.0812
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum				1	0
Sub Total 1							214993.7699
1	Preliminary and General		25799.25239		<b>weighting factor 2</b> 1.05		27089.21501
2	Contingencies			21499.37699			21499.37699
Subtotal 2							263582.36
VAT (15%)							39537.35
<b>Grand Total</b>							<b>303120</b>

It is planned that 100 pits will be dug (it may be less depending on the results) at an extent of 5m (length) x 5m (breath) x 5m (depth).

- (100 pits / 24 months) x 12 months = 50 pits dug per year
- Total area to be disturbed per year = 50 pits x (5m x 5m) / 10 000 = 0.125 Ha disturbed per year
- Total area disturbed for 24 months = 100 pits x (5m x 5m) / 10 000 = 0.25 Ha disturbed

It is planned that 50 trenches will be dug (it may be less depending on the results) at an extent of 60m (length) x 50m (breath) x 5m (depth).

- (50 trenches / 24 months) x 12 months = 25 trenches dug per year
- Total area to be disturbed per year = 25 trenches x (60m x 50m) / 10 000 = 7.5 Ha disturbed per year
- Total area disturbed for 24 months = 50 trenches x (60m x 50m) / 10 000 = 15 Ha disturbed

The total area to be disturbed in one year is 0.125ha + 7.5ha = 7.625ha

However, concurrent backfilling will take place in order to rehabilitate. Please see the explanation below how concurrent rehabilitation is carried out:

The exposed diamondiferous gravel of trench no.1 and no.2 will then be removed. The diamondiferous gravel will be sorted by means of a screen and all material larger than for example 100mm will be separated from the rest. This material will be used in the backfilling stage. Screened material for example smaller than 100mm will be fed into a wet rotary screen and then directly onto the washing pans.

As prospecting activities progress from trench no.2 towards the following trench no.3, backfilling and rehabilitation of trench no.1 will commence. The coarse gravel sifted at the screen, tailings from the pans and fine concrete will be transported back into open trench no.1. During this process of backfilling, variation in the dumping sequence of different sized materials will be followed to ensure

better compaction and stability of the reclaimed gravel. This will ensure that voids surrounding the coarse gravel will be filled up with finer sediments. Compaction will be achieved through heavy vehicles during backfilling stage. This prospecting sequence will be utilised for the final rehabilitation of the last actively prospected trench.

Since concurrent backfilling will take place in order to rehabilitate, the total area to be disturbed per year will be less than the above calculation. Because of the aforementioned the total area to be disturbed is divided by two. Following the aforementioned sequence will ensure that the maximum area to be disturbed by prospecting activities at any given time, is only approximately **1.05ha**

Please see the calculations below:

100 pits in 24 months and 50 trenches in 24 months	
The area to be disturbed for 1 pit	$1 \text{ pit} \times (5\text{m} \times 5\text{m}) / 10\,000 = 0.0025$
The area to be disturbed for 12 months (50 pits)	$0.0025 \times 50 \text{ pits} = 0.125$
The area to be disturbed for 1 trench	$1 \text{ trench} \times (60\text{m} \times 50\text{m}) / 10\,000 = 0.3\text{ha}$
3 trenches will be worked on at any given time:	
<ul style="list-style-type: none"> <li>• 2 trenches will be open to remove gravel</li> <li>• 1 trench will be backfilled and rehabilitated</li> </ul>	$0.3\text{ha} \times 2 \text{ trenches} = 0.6\text{ha}$ $0.3\text{ha} / 2 = 0.15\text{ha}$
The area to be disturbed at any given time	$0.6\text{ha} + 0.15\text{ha} = 0.75\text{ha}$
After the trench is backfilled and rehabilitated only then will another trench be opened. This sequence will be done for the 50 trenches.	
<b>Total</b>	$0.3\text{ha} + 0.75\text{ha} = 1.05$

**A. Explain how the aforesaid amount was derived.**

The closure cost estimate provided above is aligned with the Guideline Document for the Evaluation of Quantum of Closure related Financial Provision Provided by a Mine, by the DMR (January, 2005). The amount was calculated by Milnex CC.

**B. Confirm that this amount can be provided for from operating expenditure.** (Confirm that the amount, is anticipated to be an operating cost and is provided for as such in the Mining work programme, Financial and Technical Competence Report or Prospecting Work Programme as the case may be).

**Financial Guarantee**

The financial guarantee for the rehabilitation for land disturbed by **AAA Mining CC** will be submitted

**Rehabilitation Fund**

**AAA Mining CC** will also make provision for rehabilitation during closure by establishing a rehabilitation trust.

**U. DEVIATIONS FROM THE APPROVED SCOPING REPORT AND PLAN OF STUDY.**

**(i) Any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and**

None of the methodologies approved for the scoping report were deviated

**(ii) Motivation for the deviation.**

Not applicable

**V. ANY SPECIFIC INFORMATION THAT MAY BE REQUIRED BY THE COMPETENT AUTHORITY; AND**

**W. COMPLIANCE WITH THE PROVISIONS OF SECTIONS 24(4)(A) AND (B) OF THE ACT**

Read with Section 24 (3) (A) and (7) of the National Environmental Management Act (Act 107 of 1998). The EIA Report must include the:

- ii. **Impact on the socio-economic conditions of any directly affected person.** (Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as **Appendix 2.19.1** and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6. and 2.12. herein).

The diamonds (alluvial, in kimberlite & general) prospecting will not impact directly on any socio-economic aspects. Indirect socio-economic benefits are expected to be associated with the creation of employment.

- iii. **Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.** (Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) with the exception of the national estate contemplated in section 3(2)(i)(vi) and (vii) of that Act, attach the investigation report as **Appendix 2.19.2** and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6. and 2.12. herein).

The Diamonds (Alluvial, in Kimberlite & General) prospecting will, with mitigation measures, not impact on any heritage estate referred to in section 3(2) of the National Heritage Resources Act. In terms of the National Heritage Resource Act no 25 of 1999. Heritage resources including archaeological and paleontological sites over 100 years old, graves older than 60 years, structure older than 60 years are protected. They may not be disturbed without a permit from the relevant heritage resource Authority, which means that before such sites are disturbed by development it is incumbent on the developer to ensure that a heritage impact assessment is done and the Provincial Heritage Resources Authority and SAHRA will be contacted immediately and work will stop.

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

(the EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist.

The remaining extent of the farm Kameeldrift 285, Registration Division: Hopetown; Northern Cape Province is preferred due to the sites underlying Diamonds (Alluvial, in Kimberlite & General) bearing gravel, therefore there will be no other alternative (i.e. to facilitate the movement of machinery, equipment, infrastructure). The specific site has been chosen for its mineral resources thus making an alternative site selection null and void.



## PART B

### ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

An EMPr must comply with section 24N of the Act and include—

#### A. DETAILS OF—

- (i) the EAP who prepared the EMPr; and
- (ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;

Name of Practitioner	Qualifications	Contact details
Percy Sehaole Pr. Sci. Nat. EAPASA (2019/959)	Master's Degree in Environmental Science  Master's Degree in Environmental Management (refer to <b>Appendix 1</b> )	Tel No.: (018) 011 1925 Fax No.: (053) 963 2009 e-mail address: <a href="mailto:percy@milnex-sa.co.za">percy@milnex-sa.co.za</a>
Mr. Christiaan Baron	Master's Degree in Environmental Management (M.ENV.MAN) (refer to <b>Appendix 1</b> )	Tel No.: (018) 011 1925 Fax No.: (053) 963 2009 e-mail address: <a href="mailto:christiaan@milnex-sa.co.za">christiaan@milnex-sa.co.za</a>
Lizanne Esterhuizen	Honours Degree in Environmental Science (refer to <b>Appendix 1</b> )	Tel No.: (018) 011 1925 Fax No.: (053) 963 2009 e-mail address: <a href="mailto:lizanne@milnex-sa.co.za">lizanne@milnex-sa.co.za</a>

It is hereby confirmed that the requirements for the provision of the details and expertise of the EAP are contained in Part A, section 1(a) as required. The Curriculum Vitae for the responsible EAP is contained in **Appendix 1 and 2**.

#### B. DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

(a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;)

It is hereby confirmed that the requirements to describe the aspects of the activity that are required by the EMP is already included in Part A, section 1(h).

#### C. COMPOSITE MAP

(a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that [any areas that] should be avoided, including buffers;)

Refer to Locality Map, attached as in **Appendix 3**.

#### D. A DESCRIPTION OF THE IMPACT MANAGEMENT [OBJECTIVES] OUTCOMES, INCLUDING MANAGEMENT STATEMENTS, IDENTIFYING THE IMPACTS AND RISKS THAT NEED TO BE AVOIDED, MANAGED AND MITIGATED AS IDENTIFIED THROUGH THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS FOR ALL PHASES OF THE DEVELOPMENT INCLUDING—

- i) **Determination of closure objectives.** (ensure that the closure objectives are informed by the type of environment described in 2.4 herein)

Closure objectives for the Diamonds (Alluvial, in Kimberlite & General) mine will aim to ensure that the residual post-closure impacts be minimized and be acceptable to relevant parties. To achieve these closure objectives, the following will be implemented:

- All prospecting related infrastructure, foundations and concrete areas will be decommissioned, removed from the site and appropriately disposed of. Reclaimable structures such as metal, electrical installations or equipment will be sold for re-use or as scrap.
  - All disturbed areas within the site not already vegetated will be re-vegetated with appropriate indigenous, ecologically adapted species appropriate to the area and the final land use as soon as possible after operation ceases. Progress of vegetation growth/establishment, stability and drainage/erosion will be monitored and, in the event of adverse trends being identified, corrective measures will be implemented.
  - Vegetation monitoring will consider, inter alia, the establishment of perennial ground cover and infestation by alien invasive plant species. The encroachment of indigenous vegetation into the area will be used as an indication of a stable, self-sustaining vegetation cover with little risk of retrogressing to a situation where are and water pollution may occur.
- Final landforms must be resilient to perturbation and also be self-sustaining to obviate/limit further/ongoing interventions and maintenance by **AAA Mining CC**. The remaining impacts be of an acceptable nature with minimal deterioration over time.
  - The final outcome of the mine site rehabilitation would be productive systems, where required sustaining either cattle or wildlife.
  - Environmental and human quality of life, including health and safety requirements in general, would not be compromised; and
  - Closure is achieved in an efficient and cost-effective manner as possible and with minimum socioeconomic changes.

#### **E. A DESCRIPTION AND IDENTIFICATION OF IMPACT MANAGEMENT OUTCOMES REQUIRED FOR THE ASPECTS CONTEMPLATED IN PARAGRAPH (D);]**

The above goal is underpinned by more specific objectives listed below.

##### **1. Upfront planning/development**

To provide overall guidance and direction to closure planning and/or the implementation of progressive closure measures over the remaining over the prospecting life.

##### **2. Physical stability**

To ensure that surface infrastructure and prospecting residue and/or disturbances that are present at processing plant decommissioning will be removed and/or stabilised in a manner that these will not compromise post-closure land use and be sustainable long-term landforms.

- Closure, removal and disposal of all surface infrastructure that has no beneficial post-closure use.
- Shaping and vegetating the remaining earth embankments, trenches, etc. to stabilise slopes and integrate with surrounding topography.

##### **3. Environmental quality**

To ensure that local environmental quality is not adversely affected by possible physical effects arising from prospecting operations and the prospecting site after closure. This will be achieved by:

- Avoiding and/or limiting the following during prospecting operations which could result in adverse effects that could not be readily addressed and/or mitigated at mine closure.
  - Dust fall-out areas surrounding the prospecting site.
  - Wash-off and/or mobilisation of chemically contaminated soils and sediments from the prospecting site that could have long term adverse effects on local aquatic health and/or other water uses.
  - Possible shallow groundwater contamination adversely affecting the quality of the local water resource and its beneficial use.
- Limiting the potential for dust generation on the rehabilitated prospecting site that could cause nuisance and/or health effects to surrounding landowners;
- Limiting the possible adverse water quality and quantity effects arising from the rehabilitated prospecting site to ensure that long term beneficial use of local resources is not compromised;
- Conducting soil clean-up/remediation to ensure that the planned land use could be implemented and maintained;

##### **4. Health and safety**

To limit the possible health and safety treats due to terrain hazards to humans and animals utilizing the rehabilitated prospecting site after closure by:

- Demonstrating through upfront soil testing that any resultant inorganic and organic pollution present on the site is acceptable;
- Removal of potential contaminants such as hydrocarbons and chemicals off site;
- Shaping of embankments and trenches to safe slopes and reintegrating of these into surrounding topography.
- Ensuring that the environmental quality as reflected above is achieved.

**5. Land capability / land use**

To ensure that the required land capability to achieve and support the planned land use can be achieved over the prospecting site by:

- Clean-up and reclamation of contaminated soil areas in order not to compromise the above land use planning earmarked for implementation;
- To ensure that the overall rehabilitated prospecting site is free draining
- Transferring prospecting related surface infrastructure to third parties for beneficial use after closure.

**6. Aesthetic quality**

To ensure that the rehabilitated prospecting site will display, at a minimum, an acceptable aesthetic appearance that would not compromise the planned land use by leaving behind:

- A prospecting area that is properly cleared-up with no fugitive/scattered waste piles
- Rehabilitated prospecting area that is free draining and disturbed areas that are suitably vegetated.
- Rehabilitated prospecting residues that are suitably landscaped, blending with the surrounding environment as far as possible.
- Shaped and rehabilitated terrace and hard stand areas, roughly emulating the local natural surface topography.

**7. Landscape viability**

To create a landscape that is self-sustaining and over time will evolve/converge to the desired ecosystem structure, function and composition by:

- Conducting surface profiling, with associated material movement optimisation, to obtain a landscape resembling the natural landscapes to support the succession trajectory towards a climax ecological system.
- Establishing woody patches and create “rough and loose” areas for pioneer specie establishment around the respective patches.
- Establishing pioneer species as follows:
  - Collected and prepared seeds for broad casting;
  - Seedlings grown on on-site nursery;
  - Cuttings collected from surrounding veld areas;
- Conducting rehabilitation monitoring and corrective action as required.

**8. Biodiversity**

To encourage, where appropriate, the re-establishment of native vegetation on the rehabilitated mine site such the terrestrial biodiversity is largely re-instated over time, by:

- Stabilising disturbed areas to prevent erosion in the short- to medium term until a suitable vegetation cover has established; and
- Establishing viable self-sustaining vegetation communities of local fauna, as far as possible.

**F. A DESCRIPTION OF PROPOSED IMPACT MANAGEMENT ACTIONS, IDENTIFYING THE MANNER IN WHICH THE IMPACT MANAGEMENT [OBJECTIVES AND] OUTCOMES CONTEMPLATED IN PARAGRAPH (D) [AND (E)] WILL BE ACHIEVED, AND MUST, WHERE APPLICABLE, INCLUDE ACTIONS TO —**

**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 & Closure Plan is attached as **Appendix 9**.

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

**CALCULATION OF THE QUANTUM**

Applicant: **AAA CC**  
 Evaluators: **Milnex CC Environmental Consultants**

Ref No.: **NC301511212632PR**  
 Date: **Apr-21**

No.	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	Master Rate	Multiplication factor	Weighting factor 1	Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	1000	17.14	1	1	17140
2 (A)	Demolition of steel buildings and structures	m2		238.71	1	1	0
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4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	414.61	1	1	0
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5	Demolition of housing and/or administration facilities	m2	0	477.42	1	1	0
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7	Sealing of shafts, adits and inclines	m3	0	128.15	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0.03	166847.44	1	1	5005.4232
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8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha		603565.59	1	1	0
9	Rehabilitation of subsided areas	ha	0.03	139709.6	1	1	4191.288
10	General surface rehabilitation	ha	0.03	132171.31	1	1	3965.1393
11	River diversions	ha		132171.31	1	1	0
12	Fencing	m	200	150.77	1	1	30154
13	Water management	ha	0	50255.25	1	1	0
14	2 to 3 years of maintenance and aftercare	ha	0.18	17589.34	1	1	3166.0812
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum				1	0
Sub Total 1							214993.7699
1	Preliminary and General		25799.25239		<b>weighting factor 2</b>		27089.21501
					1.05		
2	Contingencies			21499.37699			21499.37699
Subtotal 2							263582.36
VAT (15%)							39537.35
<b>Grand Total</b>							<b>303120</b>

It is planned that 100 pits will be dug (it may be less depending on the results) at an extent of 5m (length) x 5m (breath) x 5m (depth).

- (100 pits / 24 months) x 12 months = 50 pits dug per year
- Total area to be disturbed per year = 50 pits x (5m x 5m) / 10 000 = 0.125 Ha disturbed per year
- Total area disturbed for 24 months = 100 pits x (5m x 5m) / 10 000 = 0.25 Ha disturbed

It is planned that 50 trenches will be dug (it may be less depending on the results) at an extent of 60m (length) x 50m (breath) x 5m (depth).

- (50 trenches / 24 months) x 12 months = 25 trenches dug per year
- Total area to be disturbed per year = 25 trenches x (60m x 50m) / 10 000 = 7.5 Ha disturbed per year
- Total area disturbed for 24 months = 50 trenches x (60m x 50m) / 10 000 = 15 Ha disturbed

The total area to be disturbed in one year is 0.125ha + 7.5ha = 7.625ha

However, concurrent backfilling will take place in order to rehabilitate. Please see the explanation below how concurrent rehabilitation is carried out:

The exposed diamondiferous gravel of trench no.1 and no.2 will then be removed. The diamondiferous gravel will be sorted by means of a screen and all material larger than for example 100mm will be separated from the rest. This material will be used in the backfilling stage. Screened material for example smaller than 100mm will be fed into a wet rotary screen and then directly onto the washing pans. As prospecting activities progress from trench no.2 towards the following trench no.3, backfilling and rehabilitation of trench no.1 will commence. The coarse gravel sifted at the screen, tailings from the pans and fine concrete will be transported back into open trench no.1. During this process of backfilling, variation in the dumping sequence of different sized materials will be followed to ensure better compaction and stability of the reclaimed gravel. This will ensure that voids surrounding the coarse gravel will be filled up with finer sediments. Compaction will be achieved through heavy vehicles during backfilling stage. This prospecting sequence will be utilised for the final rehabilitation of the last actively prospected trench.

Since concurrent backfilling will take place in order to rehabilitate, the total area to be disturbed per year will be less than the above calculation. Because of the aforementioned the total area to be disturbed is divided by two. Following the aforementioned sequence will ensure that the maximum area to be disturbed by prospecting activities at any given time, is only approximately **1.05ha**

Please see the calculations below:

100 pits in 24 months and 50 trenches in 24 months	
The area to be disturbed for 1 pit	$1 \text{ pit} \times (5\text{m} \times 5\text{m}) / 10\,000 = 0.0025$
The area to be disturbed for 12 months (50 pits)	$0.0025 \times 50 \text{ pits} = 0.125$
The area to be disturbed for 1 trench	$1 \text{ trench} \times (60\text{m} \times 50\text{m}) / 10\,000 = 0.3\text{ha}$
3 trenches will be worked on at any given time: <ul style="list-style-type: none"> <li>• 2 trenches will be open to remove gravel</li> <li>• 1 trench will be backfilled and rehabilitated</li> </ul>	$0.3\text{ha} \times 2 \text{ trenches} = 0.6\text{ha}$ $0.3\text{ha} / 2 = 0.15\text{ha}$
The area to be disturbed at any given time	$0.6\text{ha} + 0.15\text{ha} = 0.75\text{ha}$
After the trench is backfilled and rehabilitated only then will another trench be opened. This sequence will be done for the 50 trenches.	
<b>Total</b>	$0.3\text{ha} + 0.75\text{ha} = 1.05$

- a. **Confirm that the financial provision will be provided as determined.**

**Financial Guarantee**

The financial guarantee for the rehabilitation for land disturbed **AAA Mining CC** will be submitted.

**Rehabilitation Fund**

**AAA Mining CC** will also make provision for rehabilitation during closure by establishing a rehabilitation trust.

**IMPACTS TO BE MITIGATED IN THEIR RESPECTIVE PHASES**

**Measures to rehabilitate the environment affected by the undertaking of any listed activity**

<b>ACTIVITIES</b>  (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc  E.g. For mining,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	<b>PHASE</b>  (of operation in which activity will take place.  State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	<b>SIZE AND SCALE of disturbance</b>  (volumes, tonnages and hectares or m <sup>2</sup> )	<b>MITIGATION MEASURES</b>  (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	<b>COMPLIANCE WITH STANDARDS</b>  (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	<b>TIME PERIOD FOR IMPLEMENTATION</b>  Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:- Upon cessation of the individual activity Or. Upon the cessation of mining, bulk sampling or Diamonds (Alluvial, in Kimberlite & General) prospecting as the case may be.
Clearance of vegetation	Pitting and trenching phase- (construction and operation phase)	3749.6090 ha – 5m x 5m x 5m (100 pits), 60m x 50m x 5m (50 trenches)	1. Site clearing must take place in a phased manner, as and when required. 2. Areas which are not to be prospected on within two months must not be cleared to reduce erosion risks. 3. The area to be cleared must be clearly demarcated and this footprint strictly maintained. 4. Spoil that is removed from the site must be removed to an approved spoil site or a licensed landfill site. 5. The necessary silt fences and erosion control measures must be implemented in areas where these risks are more prevalent.	Compliance with Duty of Care as detailed within NEMA	Duration of operations on the prospecting activities.
Construction of roads	Pitting and trenching phase-	+- 500m	1. Planning of access routes to the site for construction/prospecting purposes shall be done in conjunction with the Contractor	Compliance with Duty of Care as detailed within NEMA	Duration of operations on the prospecting activities.

	(construction and operation phase)		<p>and the Landowner. All agreements reached should be documented and no verbal agreements should be made. The Contractor shall clearly mark all access roads. Roads not to be used shall be marked with a "NO ENTRY for prospecting vehicles" sign.</p> <ol style="list-style-type: none"> <li>2. Construction routes and required access roads must be clearly defined.</li> <li>3. Damping down of the un-surfaced roads must be implemented to reduce dust and nuisance.</li> <li>4. Soils compacted by construction/prospecting activities shall be deep ripped to loosen compacted layers and re-graded to even running levels.</li> <li>5. The contractor must ensure that damage caused by related traffic to the gravel access road off the nearby tarr road is repaired continuously. The costs associated with the repair must be borne by the contractor;</li> <li>6. Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis and ensuring that vehicles used to transport the gravel are fitted with tarpaulins or covers;</li> <li>7. All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.</li> </ol>		
Prospecting of Diamonds (Alluvial, in Kimberlite & General) – Soils and geology	Pitting and trenching phase- (construction and operation phase)	3749.6090 ha – 5m x 5m x 5m (100 pits), 60m x 50m x 5m (50 trenches)	<ol style="list-style-type: none"> <li>1. The Contractor should, prior to the commencement of earthworks determine the average depth of topsoil (If topsoil exists), and agree on this with the ECO. The full depth of topsoil should be stripped from areas affected by construction and related activities prior to the</li> </ol>	Compliance with Duty of Care as detailed within NEMA	Duration of operations on the mine

			<p>commencement of major earthworks. This should include the building footprints, working areas and storage areas. Topsoil must be reused where possible to rehabilitate disturbed areas.</p> <ol style="list-style-type: none"> <li>2. Care must be taken not to mix topsoil and subsoil during stripping.</li> <li>3. The topsoil must be conserved on site in and around the pit/trench area.</li> <li>4. Subsoil and overburden in the prospecting area should be stockpiled separately to be returned for backfilling in the correct soil horizon order.</li> <li>5. If stockpiles are exposed to windy conditions or heavy rain, they should be covered either by vegetation or geofabric, depending on the duration of the project. Stockpiles may further be protected by the construction of berms, trenches or low brick walls around their bases.</li> <li>6. Stockpiles should be kept clear of weeds and alien vegetation growth by regular weeding.</li> <li>7. Where contamination of soil is expected, analysis must be done prior to disposal of soil to determine the appropriate disposal route. Proof from an approved waste disposal site where contaminated soils are dumped if and when a spillage/leakage occurs should be attained and given to the project manager.</li> <li>8. The impact on the geology will be permanent. There is no mitigation measure.</li> </ol>		
Prospecting Diamonds (Alluvial, in Kimberlite & General) – excavations and blasting	Pitting and trenching phase- (construction and operation phase)	3749.6090 ha – 5m x 5m x 5m (100 pits), 60m x 50m x 5m (50 trenches)	<ol style="list-style-type: none"> <li>1. The prospecting activities must aim to adhere to the relevant noise regulations and limit noise to within standard working hours in order to reduce disturbance of dwellings in close proximity to the development.</li> </ol>	Compliance with Duty of Care as detailed within NEMA	Duration of operations on the prospecting area



			<ol style="list-style-type: none"> <li>2. Mine, pans, workshops and other noisy fixed facilities should be located well away from noise sensitive areas. Once the proposed final layouts are made available by the Contractor(s), the sites must be evaluated in detail and specific measures designed in to the system.</li> <li>3. Truck traffic should be routed away from noise sensitive areas, where possible.</li> <li>4. Noise levels must be kept within acceptable limits.</li> <li>5. Noisy operations should be combined so that they occur where possible at the same time.</li> <li>6. Mine workers to wear necessary ear protection gear.</li> <li>7. Noisy activities to take place during allocated hours.</li> <li>8. Noise from labourers must be controlled.</li> <li>9. Noise suppression measures must be applied to all equipment. Equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. Should the vehicles or equipment not be in good working order, the Contractor may be instructed to remove the offending vehicle or machinery from the site.</li> <li>10. The Contractor must take measures to discourage labourers from loitering in the area and causing noise disturbance. Where possible labour shall be transported to and from the site by the Contractor or his Sub-Contractors by the Contractors own transport.</li> <li>11. Implementation of enclosure and cladding of processing plants.</li> <li>12. Applying regular and thorough maintenance schedules to equipment and processes. An increase in noise emission</li> </ol>		
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			levels very often is a sign of the imminent mechanical failure of a machine.		
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### IMPACT MANAGEMENT OUTCOMES

(A description of impact management outcomes, identifying the standard of impact management required for the aspects contemplated in paragraph ());

<b>ACTIVITY</b> (whether listed or not listed).  (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.).	<b>POTENTIAL IMPACT</b>  (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)	<b>ASPECTS AFFECTED</b>	<b>PHASE</b> In which impact is anticipated  (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)	<b>MITIGATION TYPE</b>  (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc)  E.g. <ul style="list-style-type: none"> <li>• <b>Modify through alternative method.</b></li> <li>• <b>Control through noise control</b></li> <li>• <b>Control through management and monitoring</b></li> <li>• <b>Remedy through rehabilitation..</b></li> </ul>	<b>STANDARD TO BE ACHIEVED</b>  (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
Clearance of vegetation	Loss or fragmentation of habitats	Fauna & flora	Pitting and trenching phase-(construction and operation phase)	<b>Existing vegetation</b> <ol style="list-style-type: none"> <li>1. Vegetation removal must be limited to the prospecting area.</li> <li>2. Vegetation to be removed as it becomes necessary rather than removal of all vegetation throughout the site in one step.</li> <li>3. No vegetation to be used for firewood.</li> <li>4. Exotic and invasive plant species should not be allowed to establish, if the development is approved.</li> </ol> <b>Rehabilitation</b> <ol style="list-style-type: none"> <li>5. All damaged areas shall be rehabilitated upon completion of the contract.</li> <li>6. Re-vegetation of the disturbed site is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to construction.</li> </ol>	Minimisation of impacts to acceptable limits

				<p>7. All natural areas impacted during construction/prospecting must be rehabilitated with locally indigenous grasses typical of the representative botanical unit.</p> <p>8. Rehabilitation must take place in a phased approach as soon as possible.</p> <p>9. Rehabilitation process must make use of species indigenous to the area. Seeds from surrounding seed banks can be used for re-seeding.</p> <p>10. Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas.</p> <p>11. Planting of indigenous tree species in areas not to be cultivated or built on must be encouraged.</p> <p><b>Demarcation of prospecting area</b></p> <p>12. All plants not interfering with prospecting operations shall be left undisturbed clearly marked and indicated on the site plan.</p> <p>13. The prospecting area must be well demarcated and no construction/prospecting activities must be allowed outside of this demarcated footprint.</p> <p>14. Vegetation removal must be phased in order to reduce impact of construction/prospecting.</p> <p>15. Site office and laydown areas must be clearly demarcated and no encroachment must occur beyond demarcated areas.</p> <p>16. Strict and regular auditing of the prospecting process to ensure containment of the prospecting and laydown areas.</p> <p>17. Soils must be kept free of petrochemical solutions that may be kept on site during construction/prospecting. Spillage can result in a loss of soil functionality thus limiting the re-establishment of flora.</p> <p><b>Utilisation of resources</b></p> <p>18. Gathering of firewood, fruit, muti plants, or any other natural material onsite or in areas adjacent to the site is prohibited unless with prior approval of the ECO.</p>	
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				<p><b>Exotic vegetation</b></p> <p>19. Alien vegetation on the site will need to be controlled.</p> <p>20. The Contractor should be responsible for implementing a programme of weed control (particularly in areas where soil has been disturbed); and grassing of any remaining stockpiles to prevent weed invasion.</p> <p>21. The spread of exotic species occurring throughout the site should be controlled.</p> <p><b>Herbicides</b></p> <p>22. Herbicide use shall only be allowed according to contract specifications. The application shall be according to set specifications and under supervision of a qualified technician. The possibility of leaching into the surrounding environment shall be properly investigated and only environmentally friendly herbicides shall be used.</p> <p>23. The use of pesticides and herbicides on the site must be discouraged as these impact on important pollinator species of indigenous vegetation.</p> <p><b>Fauna</b></p> <p>24. Rehabilitation to be undertaken as soon as possible after the prospecting activities have been completed.</p> <p>25. No trapping or snaring to fauna on the construction/prospecting site should be allowed.</p> <p>26. No faunal species must be disturbed, trapped, hunted or killed by maintenance staff during any routine maintenance at the development.</p>	
Prospecting Diamonds (Alluvial, in Kimberlite & general) – excavations	Loss of topsoil	Soil	Pitting and trenching phase-(construction and operation phase)	<p>1. The Contractor should, prior to the commencement of earthworks determine the average depth of topsoil, and agree on this with the ECO. The full depth of topsoil should be stripped from areas affected by construction and related activities prior to the commencement of major earthworks. This should include the</p>	Minimisation of impacts to acceptable limits

				<p>building footprints, working areas and storage areas. Topsoil must be reused where possible to rehabilitate disturbed areas.</p> <ol style="list-style-type: none"> <li>2. Care must be taken not to mix topsoil and subsoil during stripping.</li> <li>3. The topsoil must be conserved on site in and around the pit/trench area.</li> <li>4. Subsoil and overburden in the prospecting area should be stockpiled separately to be returned for backfilling in the correct soil horizon order.</li> <li>5. If stockpiles are exposed to windy conditions or heavy rain, they should be covered either by vegetation or geofabric, depending on the duration of the project. Stockpiles may further be protected by the construction of berms or low brick walls around their bases.</li> <li>6. Stockpiles should be kept clear of weeds and alien vegetation growth by regular weeding.</li> <li>7. Where contamination of soil is expected, analysis must be done prior to disposal of soil to determine the appropriate disposal route. Proof from an approved waste disposal site where contaminated soils are dumped if and when a spillage/leakage occurs should be attained and given to the project manager.</li> </ol> <p>Establish an effective record keeping system for each area where soil is disturbed for prospecting purposes. These records should be included in environmental performance reports, and should include all the records below.</p> <ul style="list-style-type: none"> <li>• Record the GPS coordinates of each area.</li> <li>• Record the date of topsoil stripping.</li> <li>• Record the GPS coordinates of where the topsoil is stockpiled.</li> <li>• Record the date of cessation prospecting activities at the particular site.</li> <li>• Photograph the area on cessation of prospecting activities.</li> <li>• Record date and depth of re-spreading of topsoil.</li> </ul>	
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				<ul style="list-style-type: none"> <li>Photograph the area on completion of rehabilitation and on an annual basis thereafter to show vegetation establishment and evaluate progress of restoration over time.</li> </ul>	
	Erosion	Soil Air Water	Pitting and trenching phase-(construction and operation phase)	<ol style="list-style-type: none"> <li>An effective system of run-off control should be implemented, where it is required, that collects and safely disseminates run-off water from all hardened surfaces and prevents potential down slope erosion.</li> <li>Periodical site inspection should be included in environmental performance reporting that inspects the effectiveness of the run-off control system and specifically records the occurrence of any erosion on site or downstream.</li> <li>Wind screening and stormwater control should be undertaken to prevent soil loss from the site.</li> <li>The use of silt fences and sand bags must be implemented in areas that are susceptible to erosion.</li> <li>Other erosion control measures that can be implemented are as follows: <ul style="list-style-type: none"> <li>Brush packing with cleared vegetation</li> <li>Mulch or chip packing</li> <li>Planting of vegetation</li> <li>Hydroseeding/hand sowing</li> </ul> </li> <li>Sensitive areas need to be identified prior to construction/prospecting so that the necessary precautions can be implemented.</li> <li>All erosion control mechanisms need to be regularly maintained.</li> <li>Seeding of topsoil and subsoil stockpiles to prevent wind and water erosion of soil surfaces.</li> <li>Retention of vegetation where possible to avoid soil erosion.</li> <li>Vegetation clearance should be phased to ensure that the minimum area of soil is exposed to potential erosion at any one time.</li> <li>Re-vegetation of disturbed surfaces should occur immediately after construction/prospecting activities are completed. This should be done through seeding with indigenous grasses.</li> </ol>	Minimisation of impacts to acceptable limits

				<p>12. No impediment to the natural water flow other than approved erosion control works is permitted.</p> <p>13. To prevent stormwater damage, the increase in stormwater run-off resulting from construction/prospecting activities must be estimated and the drainage system assessed accordingly.</p> <p>14. Stockpiles not used in three (3) months after stripping must be seeded or backfilled to prevent dust and erosion.</p>	
	Air Pollution	Air	Pitting and trenching phase-(construction and operation phase)	<p><b>Dust control</b></p> <ol style="list-style-type: none"> <li>1. Wheel washing and damping down of un-surfaced and un-vegetated areas.</li> <li>2. Retention of vegetation where possible will reduce dust travel.</li> <li>3. Clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas.</li> <li>4. Damping down of all exposed soil surfaces with a water bowser or sprinklers when necessary to reduce dust.</li> <li>5. The Contractor shall be responsible for dust control on site to ensure no nuisance is caused to the neighbouring communities.</li> <li>6. A speed limit of 30km/h must not be exceeded on site.</li> <li>7. Any complaints or claims emanating from the lack of dust control shall be attended to immediately by the Contractor.</li> <li>8. Any dirt roads that are utilised by the workers must be regularly maintained to ensure that dust levels are controlled.</li> </ol> <p><b>Odour control</b></p> <ol style="list-style-type: none"> <li>9. Regular servicing of vehicles in order to limit gaseous emissions.</li> <li>10. Regular servicing of onsite toilets to avoid potential odours.</li> </ol> <p><b>Rehabilitation</b></p>	Minimisation of impacts to acceptable limits

				<p>11. The Contractor should commence rehabilitation of exposed soil surfaces as soon as practical after completion of earthworks.</p> <p><b>Fire prevention</b></p> <p>12. No open fires shall be allowed on site under any circumstance. All cooking shall be done in demarcated areas that are safe and cannot cause runaway fires.</p> <p>13. The Contractor shall have operational fire-fighting equipment available on site at all times. The level of firefighting equipment must be assessed and evaluated through a typical risk assessment process.</p>	
	Noise		Pitting and trenching phase-(construction and operation phase)	<ol style="list-style-type: none"> <li>1. The prospecting activities must aim to adhere to the relevant noise regulations and limit noise to within standard working hours in order to reduce disturbance of dwellings in close proximity to the development.</li> <li>2. Mine, crushers, workshops and other noisy fixed facilities should be located well away from noise sensitive areas. Once the proposed final layouts are made available by the Contractor(s), the sites must be evaluated in detail and specific measures designed in to the system.</li> <li>3. Truck traffic should be routed away from noise sensitive areas, where possible.</li> <li>4. Noise levels must be kept within acceptable limits.</li> <li>5. Noisy operations should be combined so that they occur where possible at the same time.</li> <li>6. Mine workers to wear necessary ear protection gear.</li> <li>7. Noisy activities to take place during allocated hours.</li> <li>8. Noise from labourers must be controlled.</li> <li>9. Noise suppression measures must be applied to all equipment. Equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. Should the vehicles or equipment not be in good</li> </ol>	Minimisation of impacts to acceptable limits



				<p>working order, the Contractor may be instructed to remove the offending vehicle or machinery from the site.</p> <p>10. The Contractor must take measures to discourage labourers from loitering in the area and causing noise disturbance. Where possible labour shall be transported to and from the site by the Contractor or his Sub-Contractors by the Contractors own transport.</p> <p>11. Implementation of enclosure and cladding of processing plants.</p> <p>12. Applying regular and thorough maintenance schedules to equipment and processes. An increase in noise emission levels very often is a sign of the imminent mechanical failure of a machine.</p>	
	Impact on potential cultural, heritage artefacts & paleontological aspects	Heritage	Pitting and trenching phase-(construction and operation phase)	<ul style="list-style-type: none"> <li>Any finds must be reported to the nearest National Monuments office to comply with the National Heritage Resources Act (Act No 25 of 1999) and to DEA.</li> <li>Local museums as well as the South African Heritage Resource Agency (SAHRA) should be informed if any artefacts are uncovered in the affected area.</li> <li>The Contractor must ensure that his workforce is aware of the necessity of reporting any possible historical or archaeological finds to the ECO so that appropriate action can be taken.</li> <li>Any discovered artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits shall be obtained from the SAHRA should the proposed site affect any world heritage sites or if any heritage sites are to be destroyed or altered.</li> <li>The 100m buffer zone should be implemented</li> </ul> <p>According to Francois Coetzee (Appendix 10):</p> <p>Objectives</p>	Minimisation of impacts to acceptable limits

				<ul style="list-style-type: none"> <li>• Protection of archaeological, historical and any other site or land considered being of cultural value within the project boundary against vandalism, destruction and theft.</li> <li>• The preservation and appropriate management of new discoveries in accordance with the NHRA, should these be discovered during construction activities.</li> </ul> <p>The following shall apply:</p> <ul style="list-style-type: none"> <li>• Known sites should be clearly marked in order that they can be avoided during construction activities.</li> <li>• The contractors and workers should be notified that archaeological sites might be exposed during the construction activities.</li> <li>• Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible;</li> <li>• All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken;</li> <li>• Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and</li> <li>• Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the National Heritage Resources Act (Act No. 25 of 1999), Section 51. (1).</li> </ul> <p>In order to achieve this, the following should be in place:</p> <ul style="list-style-type: none"> <li>• A person or entity, e.g. the Environmental Control Officer, should be tasked to take responsibility for</li> </ul>	
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				<p>the heritage sites and should be held accountable for any damage.</p> <ul style="list-style-type: none"> <li>• Known sites should be located and isolated, e.g. by fencing them off. All construction workers should be informed that these are no-go areas, unless accompanied by the individual or persons representing the Environmental Control Officer as identified above.</li> <li>• In areas where the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, but only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.</li> </ul> <p><b>Palaeontology:</b></p> <ul style="list-style-type: none"> <li>• If a chance find is made the person responsible for the find must immediately <b>stop working</b> and all work that could impact that finding must cease in the immediate vicinity of the find.</li> <li>• The person who made the find must immediately <b>report</b> the find to his/her direct supervisor which in turn must report the find to his/her manager and the ESO or site manager. The ESO or site manager must report the find to the relevant Heritage Agency (South African Heritage Research Agency, SAHRA). (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: <a href="http://www.sahra.org.za">www.sahra.org.za</a>). The information to the Heritage Agency must include photographs of the find, from various angles, as well as the GPS co-ordinates.</li> <li>• A preliminary report must be submitted to the Heritage Agency within <b>24 hours</b> of the find and must include the following: 1) date of the find; 2) a description of the discovery and a 3) description of the fossil and its context (depth and position of the fossil), GPS co-ordinates.</li> </ul>	
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				<ul style="list-style-type: none"> <li>• Photographs (the more the better) of the discovery must be of high quality, in focus, accompanied by a scale. It is also important to have photographs of the vertical section (side) where the fossil was found.</li> </ul> <p>Upon receipt of the preliminary report, the Heritage Agency will inform the ESO (or site manager) whether a rescue excavation or rescue collection by a palaeontologist is necessary.</p> <ul style="list-style-type: none"> <li>• The site must be secured to protect it from any further damage. <b>No attempt</b> should be made to remove material from their environment. The exposed finds must be stabilized and covered by a plastic sheet or sand bags. The Heritage agency will also be able to advise on the most suitable method of protection of the find.</li> <li>• In the event that the fossil cannot be stabilized the fossil may be collected with extreme care by the ESO (site manager). Fossils finds must be stored in tissue paper and in an appropriate box while due care must be taken to remove all fossil material from the rescue site.</li> <li>• Once Heritage Agency has issued the written authorization, the developer may continue with the development on the affected area.</li> </ul>	
Waste management		Pollution	Pitting and trenching phase-(construction and operation phase)	<p><b>Litter management</b></p> <ol style="list-style-type: none"> <li>1. Refuse bins must be placed at strategic positions to ensure that litter does not accumulate within the construction site.</li> <li>2. The Contractor shall supply waste collection bins where such is not available and all solid waste collected shall be disposed of at registered/licensed landfill.</li> </ol>	Minimisation of impacts to acceptable limits

				<ol style="list-style-type: none"> <li>3. Good housekeeping practices should be implemented to regularly maintain the litter and rubble situation on the construction site.</li> <li>4. If possible and feasible, all waste generated on site must be separated into glass, plastic, paper, metal and wood and recycled. An independent contractor can be appointed to conduct this recycling.</li> <li>5. Littering by the employees of the Contractor shall not be allowed under any circumstances. The ECO shall monitor the neatness of the work sites as well as the Contractor campsite.</li> <li>6. Skip waste containers should be maintained on site. These should be kept covered and arrangements made for them to be collected regularly.</li> <li>7. All waste must be removed from the site and transported to a landfill site promptly to ensure that it does not attract vermin or produce odours.</li> <li>8. Where a registered waste site is not available close to the construction site, the Contractor shall provide a method statement with regard to waste management.</li> <li>9. A certificate of disposal shall be obtained by the Contractor and kept on file, if relevant.</li> <li>10. Under no circumstances may solid waste be burnt on site.</li> <li>11. All waste must be removed promptly to ensure that it does not attract vermin or produce odours.</li> </ol> <p><b>Hazardous waste</b></p> <ol style="list-style-type: none"> <li>12. All waste hazardous materials must be carefully stored as advised by the ECO, and then disposed of offsite at a licensed landfill site, where practical. Incineration may be used where relevant.</li> <li>13. Contaminants to be stored safely to avoid spillage.</li> <li>14. Machinery must be properly maintained to keep oil leaks in check.</li> </ol>	
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				<p>15. All necessary precaution measures shall be taken to prevent soil or surface water pollution from hazardous materials used during construction and any spills shall immediately be cleaned up and all affected areas rehabilitated.</p> <p><b>Sanitation</b></p> <p>16. The Contractor shall install mobile chemical toilets on the site.</p> <p>17. Staff shall be sensitised to the fact that they should use these facilities at all times. No indiscriminate sanitary activities on site shall be allowed.</p> <p>18. Toilets shall be serviced regularly and the ECO shall inspect toilets regularly.</p> <p>19. Toilets should be no closer than 50m or above the 1:100 year flood line from any natural or manmade water bodies or drainage lines or alternatively located in a place approved of by the Engineer.</p> <p>20. Under no circumstances may open areas, neighbours fences or the surrounding bush be used as a toilet facility.</p> <p>21. The construction of "Long Drop" toilets is forbidden, but rather toilets connected to the sewage treatment plant.</p> <p>22. Potable water must be provided for all construction staff.</p> <p><b>Remedial actions</b></p> <p>23. Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-site.</p> <p>24. Excavation of contaminated soil must involve careful removal of soil using appropriate tools/machinery to storage containers until treated or disposed of at a licensed hazardous landfill site.</p> <p>25. The ECO must determine the precise method of treatment for polluted soil. This could involve the</p>	
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				<p>application of soil absorbent materials as well as oil-digestive powders to the contaminated soil.</p> <p>26. If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent material.</p> <p>27. If necessary, oil absorbent sheets or pads must be attached to leaky machinery or infrastructure.</p> <p>28. Materials used for the remediation of petrochemical spills must be used according to product specifications and guidance for use.</p> <p>29. Contaminated remediation materials must be carefully removed from the area of the spill so as to prevent further release of petrochemicals to the environment, and stored in adequate containers until appropriate disposal.</p>	
Water Use and Quality	Water pollution	Water	Pitting and trenching phase-(construction and operation phase)	<p><b>Water Use</b></p> <ol style="list-style-type: none"> <li>1. Develop a sustainable water supply management plan to minimise the impact to natural systems by managing water use, avoiding depletion of aquifers and minimising impacts to water users.</li> <li>2. Water must be reused, recycled or treated where possible.</li> </ol> <p><b>Water Quality</b></p> <ol style="list-style-type: none"> <li>3. The quality and quantity of effluent streams discharged to the environment including stormwater should be managed and treated to meet applicable effluent discharge guidelines.</li> <li>4. Discharge to surface water should not result in contaminant concentrations in excess of local ambient water quality criteria outside a scientifically established mixing zone.</li> <li>5. Efficient oil and grease traps or sumps should be installed and maintained at refuelling facilities, workshops, fuel storage depots, and containment areas and spill kits should be available with emergency response plans.</li> </ol> <p><b>Stormwater</b></p>	

				<ol style="list-style-type: none"> <li>6. The site must be managed in order to prevent pollution of drains, downstream watercourses or groundwater, due to suspended solids and silt or chemical pollutants.</li> <li>7. Silt fences should be used to prevent any soil entering the stormwater drains.</li> <li>8. Temporary cut off drains and berms may be required to capture stormwater and promote infiltration.</li> <li>9. Promote a water saving mind set with construction/prospecting workers in order to Contractor ensure less water wastage.</li> <li>10. Hazardous substances must be stored at least 40m from any water bodies on site to avoid pollution.</li> <li>11. The installation of the stormwater system must take place as soon as possible to attenuate stormwater from the construction phase as well as the operation phase.</li> <li>12. Earth, stone and rubble is to be properly disposed of, or utilized on site so as not to obstruct natural water path ways over the site. i.e. these materials must not be placed in stormwater channels, drainage lines or rivers.</li> <li>13. There should be a periodic checking of the site's drainage system to ensure that the water flow is unobstructed.</li> <li>14. If a batching plant is necessary, run-off should be managed effectively to avoid contamination of other areas of the site. Untreated runoff from the batch plant must not be allowed to get into the storm water system or nearby streams, rivers or erosion channels or dongas.</li> </ol> <p>The cut-off trenches and silt fences will be installed where necessary as to control runoff storm water by attenuating it and control the movement of sediment on the premises.</p> <p>These structures will be monitored on a regular basis. It is suggested that it be monitored on a weekly basis during the</p>	
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				<p>rainy season, and after possible rain events during the dry season.</p> <p>If these practices is found to be insufficient for the control of storm water and sedimentation, other alternatives should immediately be investigated and implemented.</p> <p><b>Groundwater resource protection</b></p> <ol style="list-style-type: none"> <li>15. Process solution storage ponds and other impoundments designed to hold non fresh water or non-treated process effluents should be lined and be equipped with sufficient wells to enable monitoring of water levels and quality.</li> <li>16. Prevent dirty water runoff from leaving the general mining area;</li> <li>17. Compact the base of dirty areas, like the workshops and oil and diesel storage areas to minimise infiltration of poor-quality water to the underlying aquifers;</li> <li>18. Enough supply of absorbent fibre should be kept at the site to contain accidental spills;</li> <li>19. Contain dirty water in return water dams and re-use dirty water for dust suppression and make up water in the plant;</li> <li>20. Proper storm water management should be implemented. Berms should also be constructed to ensure separation of clean water and dirty water areas;</li> <li>21. A detailed mine closure plan should be prepared during the operational phase, including a risk assessment, water resource impact prediction etc. as stipulated in the DWS Best Practice Guidelines. The implementation of the mine closure plan, and the application for the closure certificate can be conducted during the decommissioned phase.</li> </ol> <p><b>Sanitation</b></p> <ol style="list-style-type: none"> <li>22. Adequate sanitary facilities and ablutions must be provided for construction workers (1 toilet per every 15 workers).</li> </ol>	
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				<p>23. The facilities must be regularly serviced to reduce the risk of surface or groundwater pollution.</p> <p><b>Concrete mixing</b></p> <p>24. Concrete contaminated water must not enter soil or any natural drainage system as this disturbs the natural acidity of the soil and affects plant growth.</p> <p><b>Public areas</b></p> <p>25. Food preparation areas should be provided with adequate washing facilities and food refuse should be stored in sealed refuse bins which should be removed from site on a regular basis.</p> <p>26. The Contractor should take steps to ensure that littering by construction/prospecting workers does not occur and persons should be employed on site to collect litter from the site and immediate surroundings, including litter accumulating at fence lines.</p> <p>27. No washing or servicing of vehicles on site.</p> <p><b>Infrastructure</b></p> <p>28. Infrastructure should adhere to the GN704 of the South African National Water Act (36 of 1998) and not be located within the 1:100- year Return Period flood line. This is essential for the safety of human life as well as for the protection of infrastructure from flood inundation and destruction.</p>	
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#### IMPACT MANAGEMENT ACTIONS

(A description of impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (c) and (d) will be achieved).

ACTIVITY Whether listed or not listed.	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
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<p>(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.).</p>	<p>(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)</p>	<p>(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc)</p> <p>E.g.</p> <ul style="list-style-type: none"> <li>• <b>Modify through alternative method.</b></li> <li>• <b>Control through noise control</b></li> <li>• <b>Control through management and monitoring</b></li> </ul> <p style="text-align: center;"><b>Remedy through rehabilitation..</b></p>	<p>Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:-..</p> <p>Upon cessation of the individual activity</p> <p>or.</p> <p>Upon the cessation of mining, bulk sampling or Diamonds (Alluvial, in Kimberlite &amp; General) prospecting as the case may be.</p>	<p>(A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)</p>
<p>Clearance of vegetation</p>	<p>Loss or fragmentation of habitats</p>	<p><b>Existing vegetation</b></p> <ol style="list-style-type: none"> <li>1. Vegetation removal must be limited to the prospecting site.</li> <li>2. Vegetation to be removed as it becomes necessary rather than removal of all vegetation throughout the site in one step.</li> <li>3. No vegetation to be used for firewood.</li> <li>4. Exotic and invasive plant species should not be allowed to establish, if the development is approved.</li> </ol> <p><b>Rehabilitation</b></p> <ol style="list-style-type: none"> <li>5. All damaged areas shall be rehabilitated upon completion of the contract.</li> <li>6. Re-vegetation of the disturbed site is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to construction.</li> </ol>	<p>Duration of operation</p>	<p>The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.</p>

		<p>7. All natural areas impacted during construction/prospecting must be rehabilitated with locally indigenous grasses typical of the representative botanical unit.</p> <p>8. Rehabilitation must take place in a phased approach as soon as possible.</p> <p>9. Rehabilitation process must make use of species indigenous to the area. Seeds from surrounding seed banks can be used for re-seeding.</p> <p>10. Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas.</p> <p>11. Planting of indigenous tree species in areas not to be cultivated or built on must be encouraged.</p> <p><b>Demarcation of prospecting area</b></p> <p>12. All plants not interfering with prospecting operations shall be left undisturbed clearly marked and indicated on the site plan.</p> <p>13. The prospecting area must be well demarcated and no construction activities must be allowed outside of this demarcated footprint.</p> <p>14. Vegetation removal must be phased in order to reduce impact of construction/prospecting.</p> <p>15. Site office and laydown areas must be clearly demarcated and no encroachment must occur beyond demarcated areas.</p> <p>16. Strict and regular auditing of the prospecting process to ensure containment of the prospecting and laydown areas.</p> <p>17. Soils must be kept free of petrochemical solutions that may be kept on site during construction/prospecting. Spillage can result in a loss of soil functionality thus limiting the re-establishment of flora.</p> <p><b>Utilisation of resources</b></p> <p>18. Gathering of firewood, fruit, muti plants, or any other natural material onsite or in areas adjacent to the site is prohibited unless with prior approval of the ECO.</p>		
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		<p><b>Exotic vegetation</b></p> <p>19. Alien vegetation on the site will need to be controlled.</p> <p>20. The Contractor should be responsible for implementing a programme of weed control (particularly in areas where soil has been disturbed); and grassing of any remaining stockpiles to prevent weed invasion.</p> <p>21. The spread of exotic species occurring throughout the site should be controlled.</p> <p><b>Herbicides</b></p> <p>22. Herbicide use shall only be allowed according to contract specifications. The application shall be according to set specifications and under supervision of a qualified technician. The possibility of leaching into the surrounding environment shall be properly investigated and only environmentally friendly herbicides shall be used.</p> <p>23. The use of pesticides and herbicides on the site must be discouraged as these impact on important pollinator species of indigenous vegetation.</p> <p><b>Fauna</b></p> <p>24. Rehabilitation to be undertaken as soon as possible after prospecting has been completed.</p> <p>25. No trapping or snaring to fauna on the construction/prospecting site should be allowed.</p> <p>26. No faunal species must be disturbed, trapped, hunted or killed by maintenance staff during any routine maintenance at the development.</p>		
Prospecting of Diamonds (Alluvial, in Kimberlite & General) – excavations	Loss of topsoil	<p>1. The Contractor should, prior to the commencement of earthworks determine the average depth of topsoil, and agree on this with the ECO. The full depth of topsoil should be stripped from areas affected by construction/prospecting and related activities prior to the commencement of major earthworks.</p>	Duration of operation	The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.

		<p>This should include the building footprints, working areas and storage areas. Topsoil must be reused where possible to rehabilitate disturbed areas.</p> <ol style="list-style-type: none"> <li>2. Care must be taken not to mix topsoil and subsoil during stripping.</li> <li>3. The topsoil must be conserved on site in and around the pit/trench area.</li> <li>4. Subsoil and overburden in the prospecting area should be stockpiled separately to be returned for backfilling in the correct soil horizon order.</li> <li>5. If stockpiles are exposed to windy conditions or heavy rain, they should be covered either by vegetation or geofabric, depending on the duration of the project. Stockpiles may further be protected by the construction of berms or low brick walls around their bases.</li> <li>6. Stockpiles should be kept clear of weeds and alien vegetation growth by regular weeding.</li> <li>7. Where contamination of soil is expected, analysis must be done prior to disposal of soil to determine the appropriate disposal route. Proof from an approved waste disposal site where contaminated soils are dumped if and when a spillage/leakage occurs should be attained and given to the project manager.</li> </ol> <p>Establish an effective record keeping system for each area where soil is disturbed for prospecting purposes. These records should be included in environmental performance reports, and should include all the records below.</p> <ul style="list-style-type: none"> <li>• Record the GPS coordinates of each area. <ul style="list-style-type: none"> <li>• Record the date of topsoil stripping.</li> <li>• Record the GPS coordinates of where the topsoil is stockpiled.</li> <li>• Record the date of cessation prospecting activities at the particular site.</li> <li>• Photograph the area on cessation of prospecting activities.</li> <li>• Record date and depth of re-spreading of topsoil.</li> <li>• Photograph the area on completion of rehabilitation and on an annual basis thereafter</li> </ul> </li> </ul>		
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		to show vegetation establishment and evaluate progress of restoration over time.		
	Erosion	<ol style="list-style-type: none"> <li>1. An effective system of run-off control should be implemented, where it is required, that collects and safely disseminates run-off water from all hardened surfaces and prevents potential down slope erosion.</li> <li>2. Periodical site inspection should be included in environmental performance reporting that inspects the effectiveness of the run-off control system and specifically records the occurrence of any erosion on site or downstream.</li> <li>3. Wind screening and stormwater control should be undertaken to prevent soil loss from the site.</li> <li>4. The use of silt fences and sand bags must be implemented in areas that are susceptible to erosion.</li> <li>5. Other erosion control measures that can be implemented are as follows: <ul style="list-style-type: none"> <li>o Brush packing with cleared vegetation</li> <li>o Mulch or chip packing</li> <li>o Planting of vegetation</li> <li>o Hydroseeding/hand sowing</li> </ul> </li> <li>6. Sensitive areas need to be identified prior to construction/prospecting so that the necessary precautions can be implemented.</li> <li>7. All erosion control mechanisms need to be regularly maintained.</li> <li>8. Seeding of topsoil and subsoil stockpiles to prevent wind and water erosion of soil surfaces.</li> <li>9. Retention of vegetation where possible to avoid soil erosion.</li> <li>10. Vegetation clearance should be phased to ensure that the minimum area of soil is exposed to potential erosion at any one time.</li> <li>11. Re-vegetation of disturbed surfaces should occur immediately after construction/prospecting activities are completed. This should be done through seeding with indigenous grasses.</li> <li>12. No impediment to the natural water flow other than approved erosion control works is permitted.</li> </ol>	Duration of operation	The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.

		<p>13. To prevent stormwater damage, the increase in stormwater run-off resulting from construction/prospecting activities must be estimated and the drainage system assessed accordingly. A drainage plan must be submitted to the Engineer for approval and must include the location and design criteria of any temporary stream crossings.</p> <p>14. Stockpiles not used in three (3) months after stripping must be seeded/backfilled to prevent dust and erosion.</p>		
	Air Pollution	<p><b>Dust control</b></p> <p>14. Wheel washing and damping down of un-surfaced and un-vegetated areas.</p> <p>15. Retention of vegetation where possible will reduce dust travel.</p> <p>16. Clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas.</p> <p>17. Damping down of all exposed soil surfaces with a water bowser or sprinklers when necessary to reduce dust.</p> <p>18. The Contractor shall be responsible for dust control on site to ensure no nuisance is caused to the neighbouring communities.</p> <p>19. A speed limit of 30km/h must not be exceeded on site.</p> <p>20. Any complaints or claims emanating from the lack of dust control shall be attended to immediately by the Contractor.</p> <p>21. Any dirt roads that are utilised by the workers must be regularly maintained to ensure that dust levels are controlled.</p> <p><b>Odour control</b></p> <p>22. Regular servicing of vehicles in order to limit gaseous emissions.</p> <p>23. Regular servicing of onsite toilets to avoid potential odours.</p>	Duration of operation	The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.



		<p><b>Rehabilitation</b></p> <p>24. The Contractor should commence rehabilitation of exposed soil surfaces as soon as practical after completion of earthworks.</p> <p><b>Fire prevention</b></p> <p>25. No open fires shall be allowed on site under any circumstance. All cooking shall be done in demarcated areas that are safe and cannot cause runaway fires.</p> <p>26. The Contractor shall have operational fire-fighting equipment available on site at all times. The level of firefighting equipment must be assessed and evaluated through a typical risk assessment process.</p>		
	Noise	<ol style="list-style-type: none"> <li>1. The prospecting activities must aim to adhere to the relevant noise regulations and limit noise to within standard working hours in order to reduce disturbance of dwellings in close proximity to the development.</li> <li>2. Pans, power plants, crushers, workshops and other noisy fixed facilities should be located well away from noise sensitive areas. Once the proposed final layouts are made available by the Contractor(s), the sites must be evaluated in detail and specific measures designed in to the system.</li> <li>3. Truck traffic should be routed away from noise sensitive areas, where possible.</li> <li>4. Noise levels must be kept within acceptable limits.</li> <li>5. Noisy operations should be combined so that they occur where possible at the same time.</li> <li>6. Mine workers to wear necessary ear protection gear.</li> <li>7. Noisy activities to take place during allocated hours.</li> <li>8. Noise from labourers must be controlled.</li> <li>9. Noise suppression measures must be applied to all equipment. Equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. Should the vehicles or equipment not be in good</li> </ol>	Duration of operation	The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.

		<p>working order, the Contractor may be instructed to remove the offending vehicle or machinery from the site.</p> <p>10. The Contractor must take measures to discourage labourers from loitering in the area and causing noise disturbance. Where possible labour shall be transported to and from the site by the Contractor or his Sub-Contractors by the Contractors own transport.</p> <p>11. Implementation of enclosure and cladding of processing plants.</p> <p>12. Applying regular and thorough maintenance schedules to equipment and processes. An increase in noise emission levels very often is a sign of the imminent mechanical failure of a machine.</p>		
	Impact on potential cultural, heritage artefacts & paleontological aspects	<ul style="list-style-type: none"> <li>Any finds must be reported to the nearest National Monuments office to comply with the National Heritage Resources Act (Act No 25 of 1999) and to DEA.</li> <li>Local museums as well as the South African Heritage Resource Agency (SAHRA) should be informed if any artefacts are uncovered in the affected area.</li> <li>The Contractor must ensure that his workforce is aware of the necessity of reporting any possible historical or archaeological finds to the ECO so that appropriate action can be taken.</li> <li>Any discovered artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits shall be obtained from the SAHRA should the proposed site affect any world heritage sites or if any heritage sites are to be destroyed or altered.</li> </ul> <p><b>Palaeontology:</b></p> <ul style="list-style-type: none"> <li>If a chance find is made the person responsible for the find must immediately <b>stop working</b> and all work that could impact that finding must cease in the immediate vicinity of the find.</li> </ul>	Duration of operation	The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.

		<ul style="list-style-type: none"> <li>• The person who made the find must immediately <b>report</b> the find to his/her direct supervisor which in turn must report the find to his/her manager and the ESO or site manager. The ESO or site manager must report the find to the relevant Heritage Agency (South African Heritage Research Agency, SAHRA). (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: <a href="http://www.sahra.org.za">www.sahra.org.za</a>). The information to the Heritage Agency must include photographs of the find, from various angles, as well as the GPS co-ordinates.</li> <li>• A preliminary report must be submitted to the Heritage Agency within <b>24 hours</b> of the find and must include the following: 1) date of the find; 2) a description of the discovery and a 3) description of the fossil and its context (depth and position of the fossil), GPS co-ordinates.</li> <li>• Photographs (the more the better) of the discovery must be of high quality, in focus, accompanied by a scale. It is also important to have photographs of the vertical section (side) where the fossil was found.</li> </ul> <p>Upon receipt of the preliminary report, the Heritage Agency will inform the ESO (or site manager) whether a rescue excavation or rescue collection by a palaeontologist is necessary.</p> <ul style="list-style-type: none"> <li>• The site must be secured to protect it from any further damage. <b>No attempt</b> should be made to remove material from their environment. The exposed finds must be stabilized and covered by a plastic sheet or sand bags. The Heritage agency will also be able to advise on the most suitable method of protection of the find.</li> <li>• In the event that the fossil cannot be stabilized the fossil may be collected with extreme care by the ESO (site manager). Fossils finds must be stored</li> </ul>		
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		<p>in tissue paper and in an appropriate box while due care must be taken to remove all fossil material from the rescue site.</p> <ul style="list-style-type: none"> <li>• Once Heritage Agency has issued the written authorization, the developer may continue with the development on the affected area.</li> </ul>		
Waste Management		<p><b>Litter management</b></p> <ol style="list-style-type: none"> <li>1. Refuse bins must be placed at strategic positions to ensure that litter does not accumulate within the construction/prospecting site.</li> <li>2. The Contractor shall supply waste collection bins where such is not available and all solid waste collected shall be disposed of at registered/licensed landfill.</li> <li>3. Good housekeeping practices should be implemented to regularly maintain the litter and rubble situation on the construction/prospecting site.</li> <li>4. If possible and feasible, all waste generated on site must be separated into glass, plastic, paper, metal and wood and recycled. An independent contractor can be appointed to conduct this recycling.</li> <li>5. Littering by the employees of the Contractor shall not be allowed under any circumstances. The ECO shall monitor the neatness of the work sites as well as the Contractor campsite.</li> <li>6. Skip waste containers should be maintained on site. These should be kept covered and arrangements made for them to be collected regularly.</li> <li>7. All waste must be removed from the site and transported to a landfill site promptly to ensure that it does not attract vermin or produce odours.</li> <li>8. Where a registered waste site is not available close to the construction/prospecting site, the Contractor shall provide a method statement with regard to waste management.</li> </ol>	Duration of operation	The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.

		<p>9. A certificate of disposal shall be obtained by the Contractor and kept on file, if relevant.</p> <p>10. Under no circumstances may solid waste be burnt on site.</p> <p>11. All waste must be removed promptly to ensure that it does not attract vermin or produce odours.</p> <p><b>Hazardous waste</b></p> <p>12. All waste hazardous materials must be carefully stored as advised by the ECO, and then disposed of offsite at a licensed landfill site, where practical. Incineration may be used where relevant.</p> <p>13. Contaminants to be stored safely to avoid spillage.</p> <p>14. Machinery must be properly maintained to keep oil leaks in check.</p> <p>15. All necessary precaution measures shall be taken to prevent soil or surface water pollution from hazardous materials used during construction/prospecting and any spills shall immediately be cleaned up and all affected areas rehabilitated.</p> <p><b>Sanitation</b></p> <p>16. The Contractor shall install mobile chemical toilets on the site.</p> <p>17. Staff shall be sensitised to the fact that they should use these facilities at all times. No indiscriminate sanitary activities on site shall be allowed.</p> <p>18. Toilets shall be serviced regularly and the ECO shall inspect toilets regularly.</p> <p>19. Toilets should be no closer than 50m or above the 1:100 year flood line from any natural or manmade water bodies or drainage lines or alternatively located in a place approved of by the Engineer.</p> <p>20. Under no circumstances may open areas, neighbours fences or the surrounding bush be used as a toilet facility.</p> <p>21. The construction of "Long Drop" toilets is forbidden, but rather toilets connected to the sewage treatment plant.</p>		
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		<p>22. Potable water must be provided for all construction staff.</p> <p><b>Remedial actions</b></p> <p>23. Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-site.</p> <p>24. Excavation of contaminated soil must involve careful removal of soil using appropriate tools/machinery to storage containers until treated or disposed of at a licensed hazardous landfill site.</p> <p>25. The ECO must determine the precise method of treatment for polluted soil. This could involve the application of soil absorbent materials as well as oil-digestive powders to the contaminated soil.</p> <p>26. If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent material.</p> <p>27. If necessary, oil absorbent sheets or pads must be attached to leaky machinery or infrastructure.</p> <p>28. Materials used for the remediation of petrochemical spills must be used according to product specifications and guidance for use.</p> <p>29. Contaminated remediation materials must be carefully removed from the area of the spill so as to prevent further release of petrochemicals to the environment and stored in adequate containers until appropriate disposal.</p>		
Water Use and Quality	Water pollution	<p><b>Water Use</b></p> <p>1. Develop a sustainable water supply management plan to minimise the impact to natural systems by managing water use, avoiding depletion of aquifers and minimising impacts to water users.</p> <p>2. Water must be reused, recycled or treated where possible.</p> <p><b>Water Quality</b></p> <p>3. The quality and quantity of effluent streams discharged to the environment including stormwater should be managed and treated to meet applicable effluent discharge guidelines.</p>		

		<ol style="list-style-type: none"> <li>4. Discharge to surface water should not result in contaminant concentrations in excess of local ambient water quality criteria outside a scientifically established mixing zone.</li> <li>5. Efficient oil and grease traps or sumps should be installed and maintained at refueling facilities, workshops, fuel storage depots, and containment areas and spill kits should be available with emergency response plans.</li> </ol> <p><b>Stormwater</b></p> <ol style="list-style-type: none"> <li>6. The site must be managed in order to prevent pollution of drains, downstream watercourses or groundwater, due to suspended solids and silt or chemical pollutants.</li> <li>7. Silt fences should be used to prevent any soil entering the stormwater drains.</li> <li>8. Temporary cut off drains and berms may be required to capture stormwater and promote infiltration.</li> <li>9. Promote a water saving mind set with construction/prospecting workers in order to Contractor ensure less water wastage.</li> <li>10. New stormwater construction must be developed strictly according to specifications from engineers in order to ensure efficiency.</li> <li>11. Hazardous substances must be stored at least 20m from any water bodies on site to avoid pollution.</li> <li>12. The installation of the stormwater system must take place as soon as possible to attenuate stormwater from the construction phase as well as the operation phase.</li> <li>13. Earth, stone and rubble is to be properly disposed of, or utilized on site so as not to obstruct natural water path ways over the site. i.e. these materials must not be placed in stormwater channels, drainage lines or rivers.</li> <li>14. There should be a periodic checking of the site's drainage system to ensure that the water flow is unobstructed.</li> </ol>		
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		<p>15. If a batching plant is necessary, run-off should be managed effectively to avoid contamination of other areas of the site. Untreated runoff from the batch plant must not be allowed to get into the storm water system or nearby streams, rivers or erosion channels or dongas.</p> <p><b>Groundwater resource protection</b></p> <p>16. Process solution storage ponds and other impoundments designed to hold non fresh water or un-treated process effluents should be lined and be equipped with sufficient wells to enable monitoring of water levels and quality.</p> <p>17. Prevent dirty water runoff from leaving the general mining area;</p> <p>18. Compact the base of dirty areas, like the workshops and oil and diesel storage areas to minimise infiltration of poor-quality water to the underlying aquifers;</p> <p>19. Enough supply of absorbent fibre should be kept at the site to contain accidental spills;</p> <p>20. Contain dirty water in return water dams and re-use dirty water for dust suppression and make up water in the plant;</p> <p>21. Proper storm water management should be implemented. Berms should also be constructed to ensure separation of clean water and dirty water areas;</p> <p>22. A detailed mine closure plan should be prepared during the operational phase, including a risk assessment, water resource impact prediction etc. as stipulated in the DWS Best Practice Guidelines. The implementation of the mine closure plan, and the application for the closure certificate can be conducted during the decommissioned phase</p> <p><b>Sanitation</b></p> <p>23. Adequate sanitary facilities and ablutions must be provided for construction workers (1 toilet per every 15 workers).</p>		
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		<p>24. The facilities must be regularly serviced to reduce the risk of surface or groundwater pollution.</p> <p><b>Concrete mixing</b></p> <p>25. Concrete contaminated water must not enter soil or any natural drainage system as this disturbs the natural acidity of the soil and affects plant growth.</p> <p><b>Public areas</b></p> <p>26. Food preparation areas should be provided with adequate washing facilities and food refuse should be stored in sealed refuse bins which should be removed from site on a regular basis.</p> <p>27. The Contractor should take steps to ensure that littering by construction workers does not occur and persons should be employed on site to collect litter from the site and immediate surroundings, including litter accumulating at fence lines.</p> <p>28. No washing or servicing of vehicles on site.</p> <p><b>Infrastructure</b></p> <p>29. Infrastructure should adhere to the GN704 of the South African National Water Act (36 of 1998) and not be located within the 1:100- year Return Period flood line. This is essential for the safety of human life as well as for the protection of infrastructure from flood inundation and destruction.</p>		
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**Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including**

**G. MONITORING OF IMPACT MANAGEMENT ACTIONS**

**H. MONITORING AND REPORTING FREQUENCY**

**I. RESPONSIBLE PERSONS**

**J. TIME PERIOD FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS**

**K. MECHANISM FOR MONITORING COMPLIANCE**

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Clearance of vegetation	Loss or fragmentation of habitats	<ul style="list-style-type: none"> <li>• Conduct regular internal audits</li> <li>• Conduct regular external audits</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental Manager</li> <li>• Suitable qualified environmental auditor</li> </ul>	Monitoring should be undertaken for duration of operations. Internal audits should be undertaken at least every 6 months. External audits should be undertaken by a suitably qualified auditor on an annual basis. Reports should be made available to the competent authority if required.
Prospecting of Diamonds (Alluvial, in Kimberlite & General) – excavations	Loss of topsoil Erosion Air Pollution Noise Impact on potential cultural and heritage artefacts	<ul style="list-style-type: none"> <li>• Conduct regular internal audits</li> <li>• Conduct regular external audits</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental Manager</li> <li>• Suitable qualified environmental auditor</li> </ul>	Monitoring should be undertaken for duration of operations. Internal audits should be undertaken at least every 6 months. External audits should be undertaken by a suitably qualified auditor on an annual basis. Reports should be made available to the competent authority if required.
Waste management	Pollution	<ul style="list-style-type: none"> <li>• Conduct regular internal audits</li> <li>• Conduct regular external audits</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental Manager</li> <li>• Suitable qualified environmental auditor</li> </ul>	Monitoring should be undertaken for duration of operations. Internal audits should be undertaken at least every 6 months. External audits should be undertaken by a suitably qualified auditor on an annual basis. Reports

				should be made available to the competent authority if required.
Water Use and Quality	Water pollution	<ul style="list-style-type: none"> <li>• Conduct regular internal audits</li> <li>• Conduct regular external audits</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental Manager</li> <li>• Suitable qualified environmental auditor</li> </ul>	Monitoring should be undertaken for duration of operations. Internal audits should be undertaken at least every 6 months. External audits should be undertaken by a suitably qualified auditor on an annual basis. Reports should be made available to the competent authority if required.

**L. A PROGRAM FOR REPORTING ON COMPLIANCE, TAKING INTO ACCOUNT THE REQUIREMENTS AS BY THE REGULATIONS;**

External audits should be undertaken by a suitably qualified auditor on an annual basis. Reports should be made available to the Competent Authority if required.

**M. AN ENVIRONMENTAL AWARENESS PLAN DESCRIBING THE MANNER IN WHICH—**

- (i) **Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work.**

**AAA Mining CC** will implement an Environmental Awareness Plan which will include various mechanisms for informing employees of environmental risks resulting from their work, including:

- Induction training for full –time staff and contractors;
- In-house training sessions to be held with relevant employees;
- On the job training regarding environmental issues
- Training and skills development

The above measures will be implemented through an Environmental Communication Strategy to be implemented.

See the attached **appendix 11** for the Awareness plan

- (ii) **Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment.**

**AAA Mining CC** will implement an incident reporting and reporting procedure in order to identify risks timeously and implement actions to avoid or minimise environmental impacts.

**N. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY  
(Among others, Confirm that the financial provision will be reviewed annually).**

No specific information requirements have been detailed by the Competent Authority.

\*\*\*\*\*END OF THE REPORT\*\*\*\*\*