Reg. Nr BK 2004/077075/23

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ENVIRONMENTAL IMPACT ASSESSMENT REPORT & ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT FOR:

THE PROSPECTING RIGHT APPLICATION COMBINED WITH A WASTE LICENCE APPLICATION FOR THE PROSPECTING OF DIAMONDS (ALLUVIAL, GENERAL & IN KIMBERLITE) & DIAMONDS NEAR DOUGLAS ON PORTION 1 OF THE FARMS VALS PAN 26, PORTION 2 & 3 OF THE FARM VRAAI PLAATS 27, PORTION 1 OF THE FARM ANNEX DIAMOND VALLEY, REGISTRATION DIVISION: HOPETOWN, NORTHERN CAPE PROVINCE.

NAME OF APPLICANT	**Mopane Tree SA (Pty) Ltd**
PREPARED BY	**Milnex CC**
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REFERENCE NUMBER:	**NC30/5/1/1/2/12983PR**

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PROJECT INFORMATION

Project Name:	Application for an Environmental Authorisation for the proposed Prospecting Right combined with a Waste Licence application for the prospecting of Diamonds (Alluvial, General & in Kimberlite) & Diamonds near Douglas on Portion 1 of the farm Vals Pan 26, Portion 2 and Portion 3 of the farm Vraai Plaats 27, Portion 1 of the farm Annex Diamond Valley, Registration Division: Hopetown, Northern Cape Province.
Report Title:	EIR & EMPr
Prepared By:	Milnex CC Environmental Consultants
Date:	October 2022

QUALITY CONTROL:

	Report Author:	**Report Reviewer:**
Name:	Christiaan Baron Master's Degree in Environmental Management Registered EAP (EAPASA) **Reg No: 2020/2639**	N/A
Signature:		

DISCLAIMER:

The DEA screening tool was used in compiling this document

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
Christiaan Baron	Master's Degree in Environmental Management (refer to Appendix 1) Registered EAP (EAPASA) **Reg No: 2020/2639**	Tel No.: (018) 011 1925 Fax No. : (053) 963 2009 e-mail address: christiaan@milnex-sa.co.za

Contact details of Milnex CC	Qualifications	Contact details
Lizanne Esterhuizen	Honours Degree in Environmental Science (refer to **Appendix 1**)	Tel No.: (018) 011 1925 Fax No. : (053) 963 2009 e-mail address: lizanne@milnex-sa.co.za
Andile Nxumalo	Honours Degree in Environmental Science (refer to Appendix 1)	Tel No.: (018) 011 1925 Fax No. : (053) 963 2009 e-mail address: andile.grant@milnex-sa.co.za

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

Milnex CC was contracted by **Mopane Tree SA (Pty) Ltd** as the independent environmental consultant to undertake the Scoping and EIA process for a proposed Prospecting Right combined with a Waste Licence application for the prospecting of Diamonds (Alluvial, General & in Kimberlite) & Diamonds near Douglas on Portion 1 of the farm Vals Pan 26, Portion 2 and Portion 3 of the farm Vraai Plaats 27, Portion 1 of the farm Annex Diamond Valley, Registration Division: Hopetown, Northern Cape Province. The property is located approximately 64.3km South West of Douglas in the Northern Cape Province. 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 expierence in environmental impact assessment and environmental management, esprcially in the mining industry.

Milnex CC has extensive experience in consulting within 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

Farm Name:	1. Portion 1 of the farm Vals Pan 26 Extent: 2765.4906 hectares Title deed: 51508/2003CNT Registration division: Hopetown RD Province: Northern Cape 2. Portion 2 of the farm Vraai Plaats 27 Extent: 342.6128 hectares Title Deed: T74843/2002CNT Registration Division: Hopetown RD Province: Northern Cape 3. Portion 3 of the farm Vraai Plaats 27 Extent: 2569.2748 hectares Title Deed: T74843/2002CNT Registration Division: Hopetown RD Province: Northern Cape 4. Portion 1 of the farm Annex Diamond Valley 28 Extent: 324.6256 hectares Title Deed: T74843/2002CNT Registration Division: Hopetown RD Province: Northern Cape
Application area (Ha)	6002.0038ha
Magisterial district:	Pixley ka Seme District Municipality
Local Municipality	Thembelihle local Municipality
Registration Division	Hopetown RD
Distance and direction from nearest town	The property is located approximately 64.3km South West of Douglas in the Northern Cape Province.
21 digit Surveyor General Code for each farm portion	C03300000000002600001 C03300000000002700002 C03300000000002700003 C03300000000002800001
Minerals Applied for	DIAMONDS ALLUVIAL DIAMONDS GENERAL DIAMONDS IN KIMBERLITE DIAMONDS

iii. Farm co-ordinates

Farms		Longitude	Latitude
1. Portion 1 of the farm Vals Pan 26	1	23° 29' 8.409" E	29° 18' 32.942" S
	2	23° 28' 19.129" E	29° 19' 37.009" S
2. Portion 2 of the farm Vraai Plaats 27	3	23° 30' 53.945" E	29° 20' 54.115" S
	4	23° 30' 8.257" E	29° 22' 22.486" S
3. Portion 3 of the farm Vraai Plaats 27	5	23° 30' 12.579" E	29° 22' 28.658" S
	6	23° 26' 56.555" E	29° 22' 18.744" S
4. Portion 1 of the farm Annex Diamond Valley 28	7	23° 24' 55.565" E	29° 22' 41.183" S
	8	23° 22' 46.111" E	29° 22' 30.958" S

	9	23° 24' 32.496" E	29° 20' 44.726" S
	10	23° 25' 9.421" E	29° 18' 16.756" S
	11	23° 26' 37.528" E	29° 19' 21.281" 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.

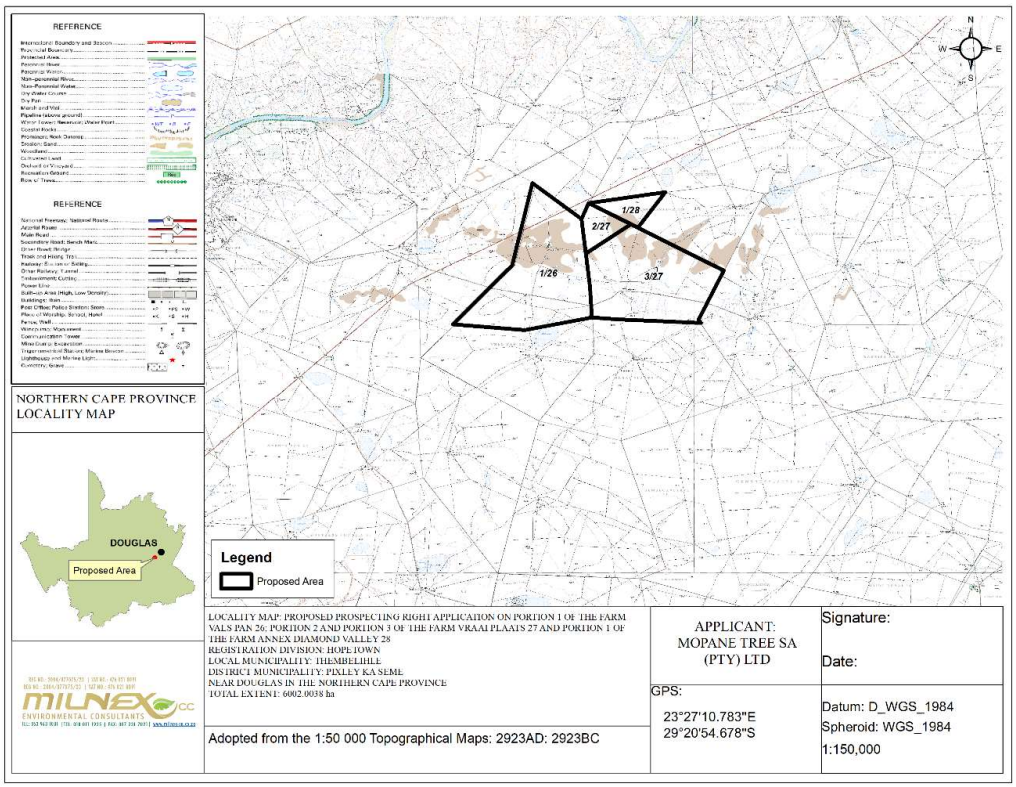


Figure 1: Locality Map

Refer to Site Plan included within **Appendix 4**.

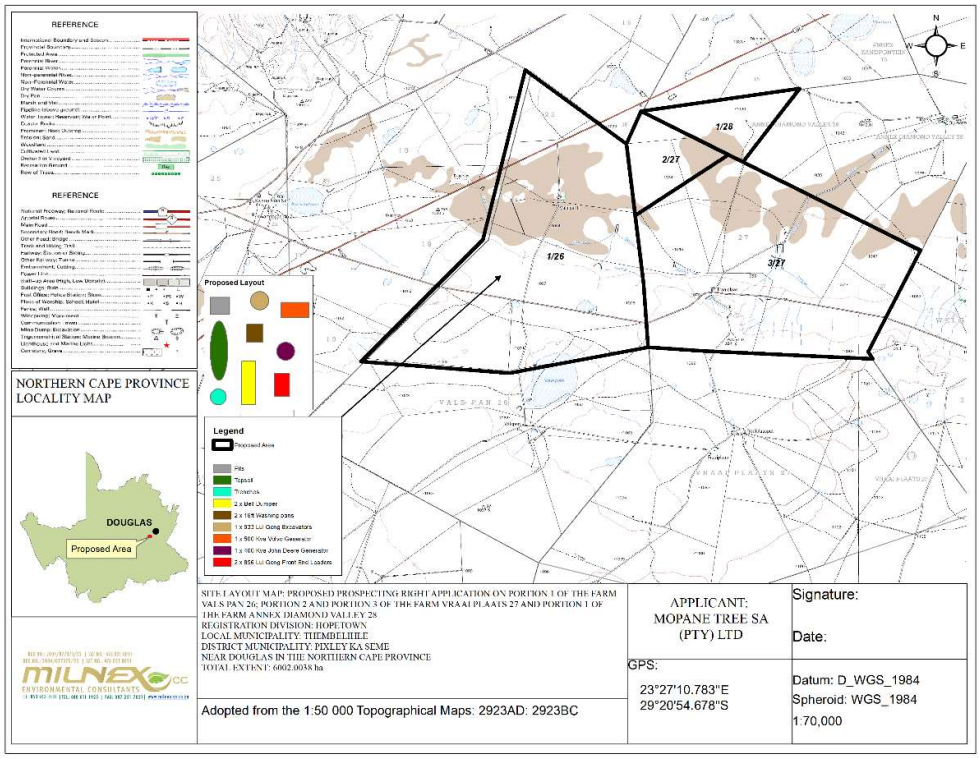


Figure 2: Site Plan

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

i) LISTED AND SPECIFIED ACTIVITIES

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)	**1)** **Listing Notice 1: GNR 327, Activity 19:** *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;* **2)** **Listing Notice 1, GNR 327, Activity 20:** *"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;* **3)** **Listing Notice 1, GNR 327, Activity 27:"** *The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation."* **4)** **Listing Notice 2, GNR 325, Activity 19**: *"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;*

	5) **Listing Notice 3 GNR 324, Activity 12(g) (ii):** *The clearance of an area of 300 square metres or more of indigenous vegetation **(g)** Northern Cape (ii) Within critical biodiversity areas identified in bioregional plans* **NEM:WA 59 of 2008:** ***6)*** **Residue stockpiles or residue deposits, Category A: (15)** *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).* Prospecting right with bulk samples for the prospecting of **Diamonds (Alluvial, General & in Kimberlite) & Diamonds** including associated infrastructure, structure and earthworks.

NAME OF ACTIVITY **(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.)	**Aerial extent of the Activity Ha or m²**	**LISTED ACTIVITY** (Mark with an **X** where applicable or affected).	**APPLICABLE LISTING NOTICE** **(*GNR 324, GNR 325 or GNR 326)***	**WASTE MANAGEMENT AUTHORISATION** (Indicate whether an authorisation is required in terms of the Waste Management Act) **(Mark with an X)**
Prospecting Right: **<u>BULK SAMPLING:</u>** 6002.0038Ha - 150 pits (3m x 2m x 4m), 50 trenches (40m x 30m x 4m). **Listing Notice 1: GNR 327, Activity 19:** *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;*	Extent of the proposed portions are 6002.0038 Ha Concurrent backfilling will take place in order to rehabilitate.	X	Listing Notice 1: GNR 327, Activity 19	-
Prospecting Right: **<u>BULK SAMPLING:</u>** 6002.0038Ha - 150 pits (3m x 2m x 4m), 50 trenches (40m x 30m x 4m). **Bulk sample of 240 000 tons** **Listing Notice 1, GNR 327, Activity 20:** *"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*	Extent of the proposed portions are 6002.0038 Ha Concurrent backfilling will take place in order to rehabilitate.	X	Listing Notice 1, GNR 327, Activity 20	-

Clearance of indigenous vegetation: **<u>BULK SAMPLING:</u>** 6002.0038Ha - 150 pits (3m x 2m x 4m), 50 trenches (40m x 30m x 4m). **Listing Notice 1, GNR 327, Activity 27:***"The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation."*	Extent of the proposed portions are 6002.0038 Ha Concurrent backfilling will take place in order to rehabilitate.	X	Listing Notice 1, GNR 327, Activity 27	-
Prospecting: **<u>BULK SAMPLING:</u>** 6002.0038Ha - 150 pits (3m x 2m x 4m), 50 trenches (40m x 30m x 4m). **Listing Notice 2 GNR 325, Activity 19**: *"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*	Extent of the proposed portions are 6002.0038 Ha Concurrent backfilling will take place in order to rehabilitate.	X	Listing Notice 2, GNR 325, Activity 19:	-
Clearance of indigenous vegetation: **<u>BULK SAMPLING:</u>** 6002.0038Ha - 150 pits (3m x 2m x 4m), 50 trenches (40m x 30m x 4m). **Listing Notice 3 GNR 324, Activity 12(g) (ii):** *The clearance of an area of 300 square metres or more of indigenous vegetation **(g)** Northern Cape (ii) Within critical biodiversity areas identified in bioregional plans*	Extent of the proposed portions are 6002.0038 Ha Concurrent backfilling will take place in order to rehabilitate.	X	Listing Notice 3 GNR 324, Activity 12g (ii)	-
NEM:WA 59 of 2008: Residue stockpiles or residue deposits, Category A: (15): *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).*			NEM:WA 59 of 2008 Category A: (15)	-

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

Mopane Tree SA (Pty Ltd) has embarked on a process for applying for a Prospecting Right combined with a Waste Licence to prospect for Diamonds (Alluvial, General & in Kimberlite) near Douglas on Portion 1 of the farm Vals Pan 26, Portion 2 and Portion 3 of the farm Vraai Plaats 27, Portion 1 of the farm Annex Diamond Valley, Registration Division: Hopetown, 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 Visits

The applicant will appoint Pierre de Jager as the project geologist to conduct the site visit. A formal site visit will be done within 90 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 right. 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 150 pits will be dug (it may be less depending on the results) at an extent of 3m (length) x 2m (breath) x 4m (depth).

- 150 pits / 2years = 75 pits dug per year
- Total area to be disturbed per year = 75 pits x (3m x 2m) / 10 000 = 0.045 Ha disturbed per year
- Total area disturbed for 24 months = 150 pits x (3m x 2m) / 10 000 = 0.09 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 240 000 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 compromising of dump trucks supported by appropriate excavators and front-end- 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. Topsoil 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 40m long x 30m 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 were the concentrate will be sorted

Calculations
It is planned that 50 trenches will be dug at an extent of 40m (length) x 30m (breath) x 4m (depth).

- 50 trenches / 2 years = 25 trenches dug per year
- Total area to be disturbed per month = 25 trenches x (40m x 30m) / 10 000 = 3 Ha disturbed per year.
- Total area disturbed for 48 months = 50 trenches x (40m x 30m) / 10 000 = 6 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 then 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.

Prospecting activities and phases

Please find the Prospecting Work Programme attached as **Appendix 9**.

Water Supply

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

It was indicated that water will be abstracted from the nearby river or that the proposed prospecting activities will make use of Bourevestnik X-ray sorters

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

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

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

Dust suppression

It was the intention of the applicant to implement dust management on site to determine if unacceptable levels of dust fallout occur. Monitoring compliance with the requirements of the National Dust Control Regulations for an activity, in terms of nuisance or disturbance.

The National Framework for Air Quality Management in the Republic of South Africa (the National Framework), as published under Government Notice No. 1144 of 26 October 2018, underpins NEM:AQA by providing national norms and standards for air quality management to ensure compliance with legislation. The National Framework serves as the country's AQMP.

Section 32 of the NEM:AQA makes provision for the Minister or the MEC to prescribe measures for the control of dust in specific places or areas, or by specified machinery or in specific instances. While dust generally does not pose a health risk, it may be regarded as a nuisance. It is the responsibility of the owner of the dust generating activity to take reasonable measures to limit the nuisance factor.

With respect to this, the Minister has published in the gazette the regulations for the control of dust in 2013 (Notice 827, Government Gazette No. 36974). These regulations provide requirements for measures for the control of dust, which includes the requirements for monitoring, dust management plan development and implementation and reporting.

According to dust levels set out by the National Dust Control Regulations 2013 (GNR. 827). The limits have the following threshold Section 3. Dustfall standard.

Table 1. Acceptable dust fall rates

Restriction Areas	***Dustfall rate (D) (mg/m2/day, 30-day average)***	***Permitted frequency of exceeding dust fall rate***
Residential Area	*D < 600*	*Two within a year, not sequential months*
Non-residential Area	*600 < D < 1200*	*Two within a year, not sequential months*

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 if any 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.

List of equipment's & infrastructure

List of equipment
1 x 400 Kva John Deere Generator 1 x 500 Kva Volvo Generator 1 x 933 Lui Gong Excavators 2 x 856 Lui Gong Front End Loaders 2 x 16ft Washing pans 2 x Bell Dumper

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;)

Title of legislation, policy or guideline:	Administering authority:	Promulgation Date:
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

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (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	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLIY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)
The Constitution of South Africa **(Act No. 108 of 1996)**		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.
The National Environmental Management Act **(Act No. 107 of 1998)**	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.

The National Water Act (Act No. 36 of 1998)	S21	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. 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.
Management: Air Quality Act (Act No. 39 of 2004)	S21	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. 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.
The National Heritage Resources Act (Act No. 25 of 1999)		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. 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

		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.
Conservation of Agricultural Resources Act (Act No. 85 of 1983)		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. 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.
Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)		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.
National Infrastructure Plan		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. Government will over the three years from 2013/14 invest R827 billion in building and upgrading existing infrastructure. 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. 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.
National Forest Act 84 of 1998		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). **Prohibition on destruction of trees in natural forests** (1) No person may - (a) cut, disturb, damage or destroy any indigenous tree in a natural forest; or

		(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- (i) a licence issued under subsection (4) or section 23; or (ii) an exemption from the provisions of this subsection published by the Minister in the *Gazette* on the advice of the Council.
National Environmental Management: Protected Areas Act 57 of 2003		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.
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)		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 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)).
National Environmental Management: Waste Act, 2008 (Act No. 59 Of 2008) Regulations regarding the Planning & Management of Residue Stockpiles & Residue Deposits from a Prospecting, Mining, Exploration or Production Operation		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.
District Municipality Integrated Development Plan (IDP)		The IDP and SDFs of the relevant municipalities was examined and relevant information will be included in the EIA report.
Local Municipality Integrated Development Plan (IDP)		The IDP and SDFs of the relevant municipalities was examined and relevant information will be included in the EIA report.

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 (R357). 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, General & in Kimberlite) near Douglas on Portion 1 of the farm Vals Pan 26, Portion 2 and Portion 3 of the farm Vraai Plaats 27, Portion 1 of the farm Annex Diamond Valley, Registration Division: Hopetown, Northern Cape Province, were identified.

The site is largely covered by low schrubland & grassland units together with ticket/dense bush & 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.

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 **Mopane Tree SA (Pty) Ltd** near the proposed 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.**

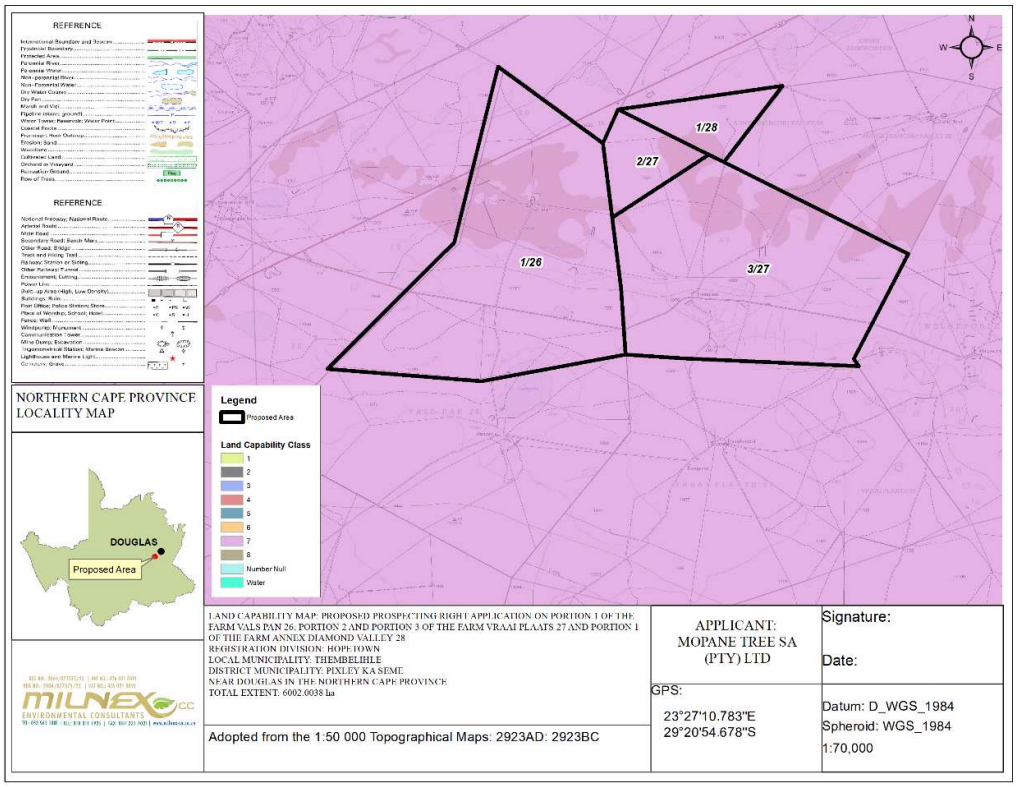


Figure 3: Land capability

- **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 is covered by low schrubland & grassland units together with ticket/dense bush & bare non vegetated areas.

- **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 purpouse of soil sampling. If gravel is found, the applicant wil 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 9**) 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 or to deposit it into the Bourevestnik Xray sorter, which makes no use of water.** Please find the Prospecting Work Programme attached as Appendix 9.

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/cm3), 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/cm3 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.

Pros & Cons of the alternative **Bourevestnik X-ray sorters**

Advantages	Disadvantages
High recovery;	
Effective concentration;	
Low operational costs;	
Low environmental impact	
Processing without water	

Bourevestnik, JSC is one of the world's largest manufacturer of X-ray sorters for the diamond industry. Production of the enterprise is successfully operated by diamond companies of Angola, South Africa, Lesotho, Zimbabwe and Russia.

Main advantages of X-ray sorters are: efficiency, high selectivity and recovery, high performance, low environmental impact and low operating costs.

The range of X-ray sorters of Bourevestnik, JSC covers all stages of enrichment of diamond materials: from the primary enrichment of ore to the final concentrate retreatment. Over the years the enter-prise has produced more than 1600 sorters, over 600 of which are currently in operation

All 3 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 or Bourevestnik X ray plant 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.

The Public Participation Process (PPP) must follow Regulation 41 of NEMA EIA Regulations; thus, the process needs to be transparent. However, due to the Protection of Personal Information Act (POPI Act) which commenced on 01 July 2021, Stakeholders, Landowners, surrounding landowners and registered I&AP' addresses, contact details and comments will not be included in any draft report to be circulated. All this information will form part of the final report to be submitted to the Competent Authority only.

Should you be identified as a Stakeholder, Landowner, Surrounding landowner and you do not wish to receive any further communique from Milnex CC regarding the application in question, you may request in writing that your details be removed from the Milnex CC database for this application.

Advertisement and Notices

An advertisement was placed in English in the newspaper **(Geklasifiseerd)** (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.

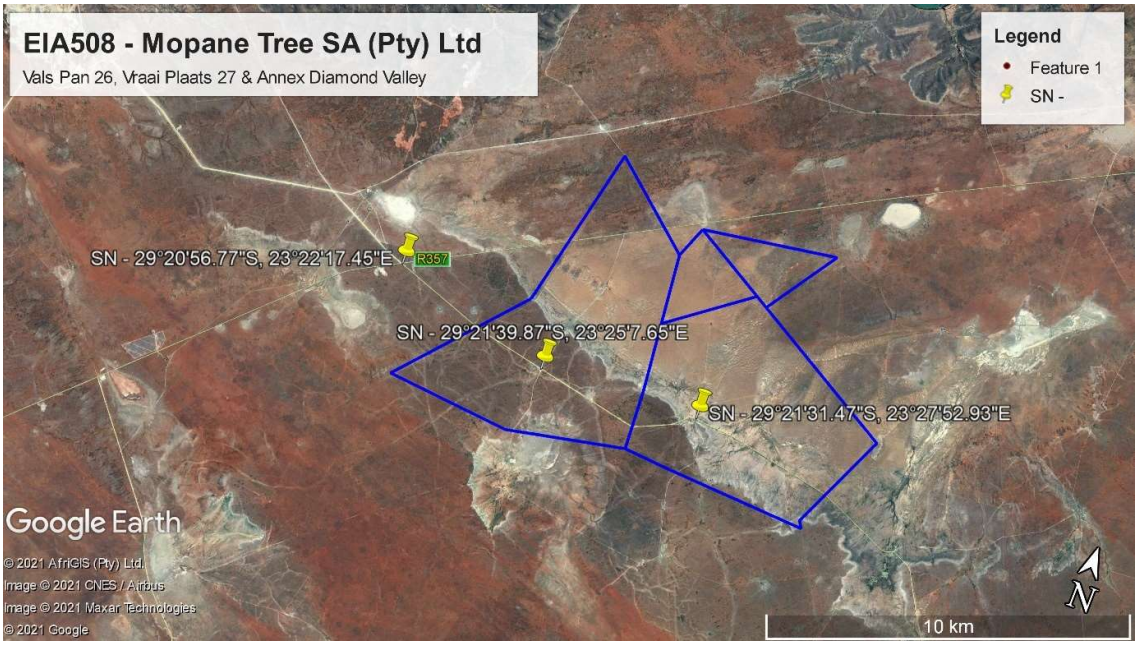


Figure 4: Site notice co-ordinates

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 and email on **31 August 2021** and were requested to submit comments by **01 October 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
Department of Agriculture, Environmental Affairs, Rural Development (DAEARD)
Department of Co-operative Governance, Human Settlements and Traditional Affairs (COGHSTA)
Department of Economic Development and Tourism (DEDAT)
Department of Roads and Public Works (DR&PW)
Department of Transport, Safety and Liaison (DTSL)
Department of Social Development (DSD)
Northern Cape Tourism Authority
Northern Cape Heritage Resources Authority (NCHRA)
Department of Mineral Resources and Energy (DMRE)
Department of Human Settlements, Water and Sanitation (DHSWS)
Commission of Restitution of Land Rights.
Thembelihle Local Municipality: The municipal manager
Thembelihle Local Municipality: Ward 1 Councillor
WESSA
Landowner
Francois Gerhardus Johannes Wiid
Surrounding landowners
Pieter van Niekerk Familie Trust
Micoba Plase
Maria Susanna Jansen van Rensburg
Wiida Pelster Trust
Martha Susanna Gous
Stander Familie Trust
Lucky Valley Boerdery (Pty) Ltd
Eaglewhizz 19 (Pty) Ltd

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.**

Until date no meeting has been requested by any of the I&AP's

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 **11 January 2022** and were requested to submit comments by **10 February 2022.** 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**.

Direct notification and circulation of te 2nd Draft EIR & EMPr to identified I&APs, landowners and occupiers

After the initial Final EIR & EMPR was submitted and reviewed, DMRE provided comments. Milnex saw it necessary to do a Phase 1 Heritage Impact Assessment & Paleontological Desktop Assessment. The Report inclusive of specialist studies were circulated to I&AP's.

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 List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		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
Organisation	**Contact person**			
Landowner				
Vals Pan 1/26	Francois Gerhardus Johannes Wiid			
Vraai Plaats 2/27				
Vraai Plaats 3/27				
Annex Diamond Valley 1/28				
Surrounding Landowners				
Kransfontein 2/19	Pieter van Niekerk Familie Trust Frans Jacobus Lubbe & Henrietta van Niekerk			
Kransfontein RE/0/19	Micoba Plase (Pty) Ltd Pierre Wrensch De Villiers & Catharina Elizabeth Jacoba van Niekerk			
Vals Pan RE/0/26	Maria Susanna Jansen van Rensburg			

Vraaiplaats RE/0/27	Wiida Pelster Trust Wiida Pelster			
Vraaiplaats 4/27	Valrena Trust Alfred Charles Youngsberg & Charles William Youngsberg			
Annex Diamond Valley RE/0/28	Martha Susanna Gous			
Welgevonden RE/0/30	Stander Familie Trust Johannes Gerhardus Stander & Zenobia Stander			

Annex Zandfontein RE/0/15	Lucky Valley Boerdery (Pty) Ltd Johan Gerrit Jacobus			
Zandfontein RE/0/16	Eaglewhizz 19 (Pty) Ltd Anna Maria Johanna Lotter			
The Municipality in which jurisdiction the development is located				
Thembelihle Local Municipality	Municipal Manager: Mr. Michael Jack			
Municipal councilor of the ward in which the site is located				
Thembelihle Local Municipality Ward 1 Councillor	To whom it may concern			
Organs of state having jurisdiction				

Department of Agriculture, Environmental Affairs, Rural Development (DAEARD)	Head of Department: Ms. Mase Manopole			
Department of Co-operative Governance, Human Settlements and Traditional Affairs (COGHSTA)	Head of Department: Mr Bafedile Lenkoe			
Department of Economic Development and Tourism (DEDAT)	Head of Department: Mr T Mabija			
Department of Roads and Public Works (DR&PW)	Head of Department: Mr K Nogwili			
Department of Transport, Safety and Liaison (DTSL)	Head of Department Mr. M. Dichaba			
Department of Social Development (DSD)	Head of Department Ms H Samson			
Northern Cape Tourism Authority	Chairperson: Mr Colin Fortune			
Northern Cape Heritage Resources Authority (NCHRA)	Senior Management: Mrs Rose Kelebogile (Senior Admin) and			
	Mr Ratha Andrew Timothy (Manager)			
Department of Mineral Resources and Energy (DMRE)	Regional Manager: Mr Ndlelenhle Zindela Secretary: Ms Ntombi Mayekiso			
	Eugene Nkatlholang			

	Tumelo Sedupane			
Department of Human Settlements, Water and Sanitation (DHSWS)	Mr Khutjo Kwena Sekwaila (WUL Manager)			
Commission of Restitution of Land Rights.	Chief Director: Ms. M. Du Toit			

	P. Mokale			
Other–				
Pixley ka Seme District Municipality	Municipal Manager: Mr Rodney Pieterse			
WESSA	Graham Avery			

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.

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	12/12/20/2512	Solar PV	Approved	21.7
2	12/12/20/2645	Solar PV	Approved	1.9
3	14/12/16/3/3/1/484	Solar PV	Approved	1.9
4	12/12/20/1942	Solar PV	Approved	5.5

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

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.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low 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			

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

Geology and Soils

Karoo Supergroup

→ **Dwyka Group** (**C-Pd** – tillite, sandstone, mudstone, shale)

Classification

The **Dwyka Group** forms the lowermost and oldest deposit in the Karoo Supergroup basin. Permo-carboniferous glacially-related sediments of the Dwyka Group underlie the thin, superficial cover of Gordonia sands, calcrete and

Late Cenozoic alluvium. The Dwyka tillite is mostly a very fine-grained, blue-grey rock comprised of clay matrix with inclusions (or clasts) of many other fragments picked up by glaciers during their travels.

Ecological habitat and landscape features

The result obtained by plotting the coordinates are as follow:

The proposed area falls within vegetation unit Northern Upper Karoo

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, Pampoenpoort 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, 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 Ecca 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 karooicus*, *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).

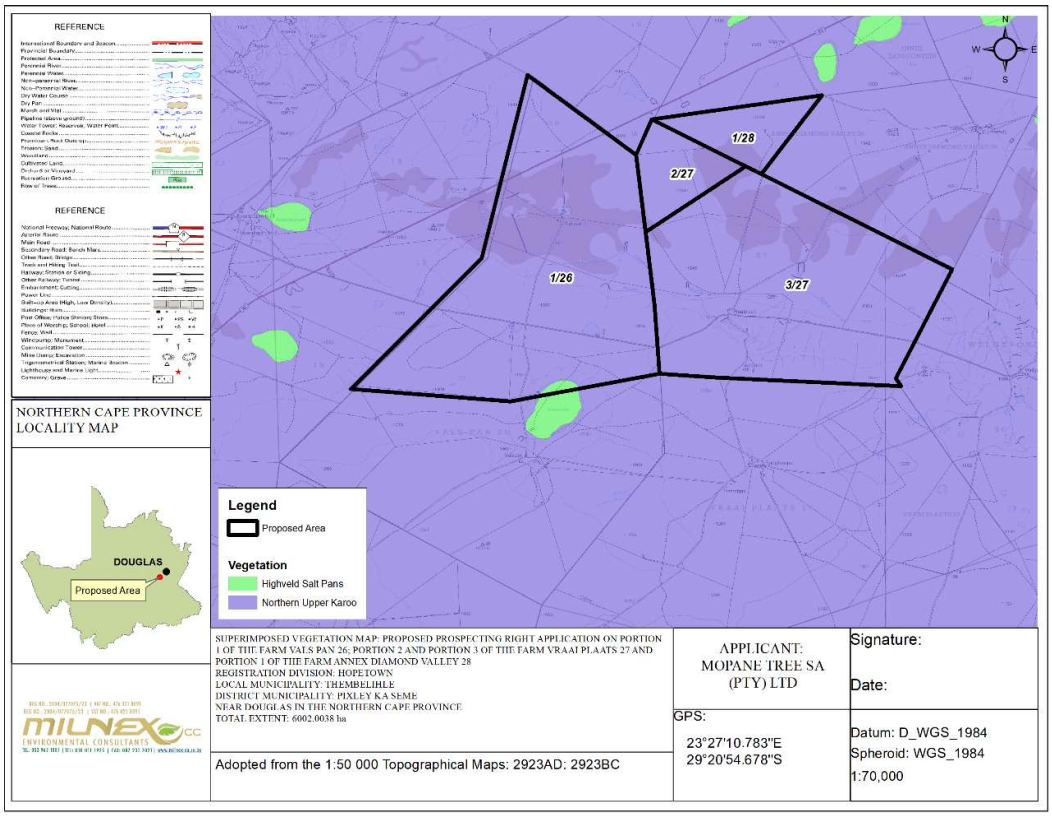


Figure 5: Vegetation types associated with the study site (Mucina & Rutherford 2006/2018).

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.

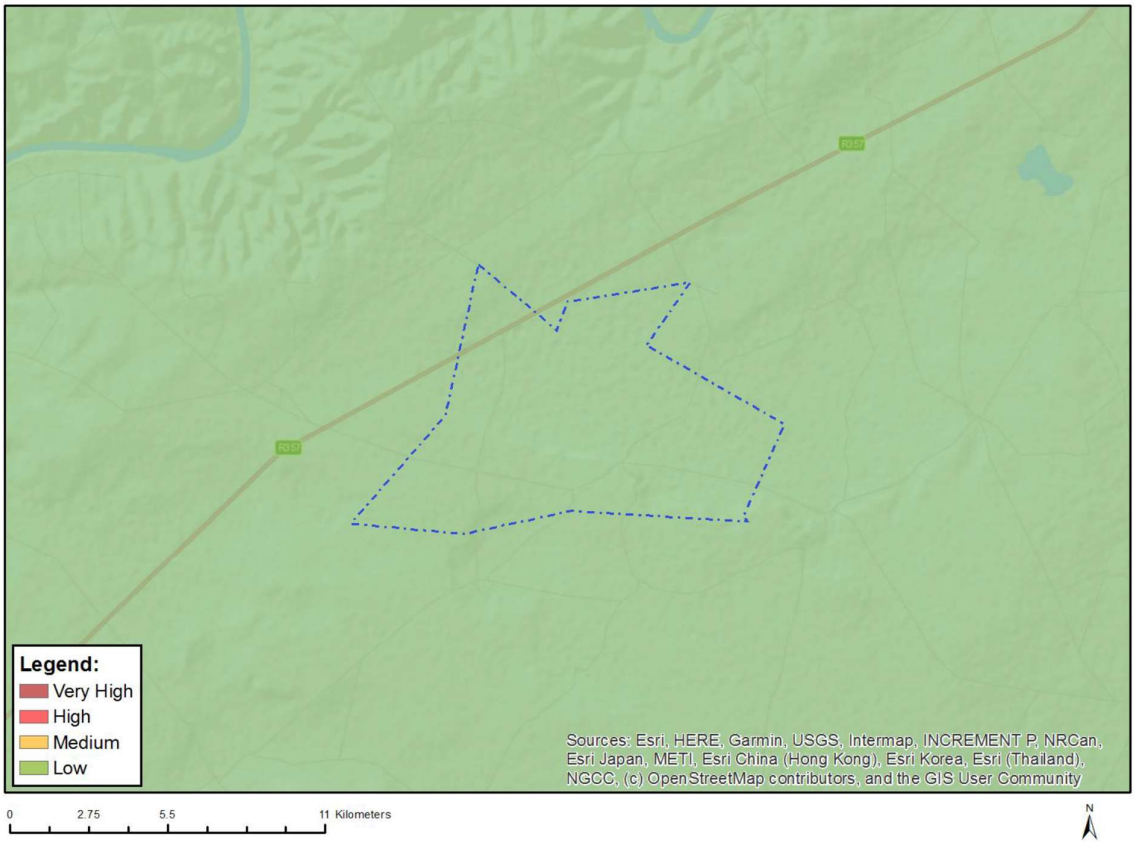


Figure 6: Plant Species Combined Sensitivity

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.

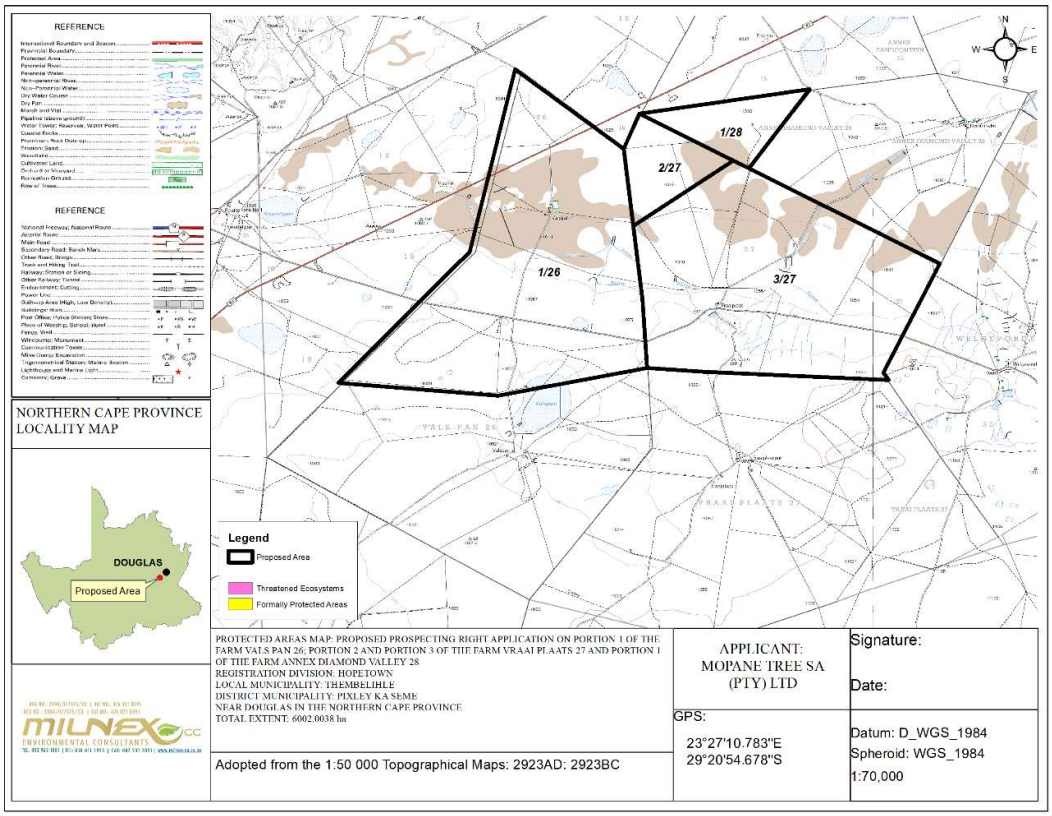


Figure 7: Threatened and Protected Areas Map

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);
- Other Natural Areas (ONA); and
- Protected Area (PA).

Based on the desktop information (**Figure 8**), the proposed site does not overlap with any Critical Biodiversity Areas The proposed property also falls on an ESA (see the Left bottom corner). The rest of the property is classified as other natural areas.

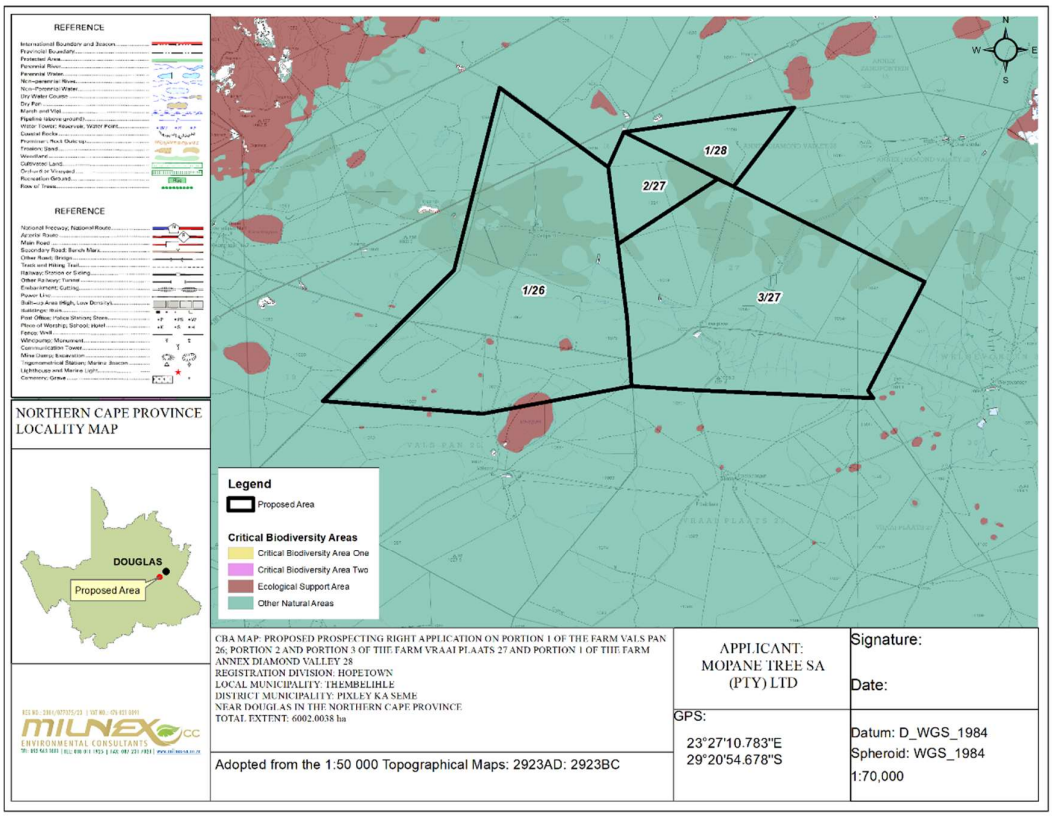


Figure 8: Critical Biodiversity Areas Map.

According to the DEA screening tool, the application area falls mostly within a low Aquatic Biodiversity with small parts being classified as very high Combined Sensitivity area (see **figure 9** below) Please see **Appendix 7** for the colour map.

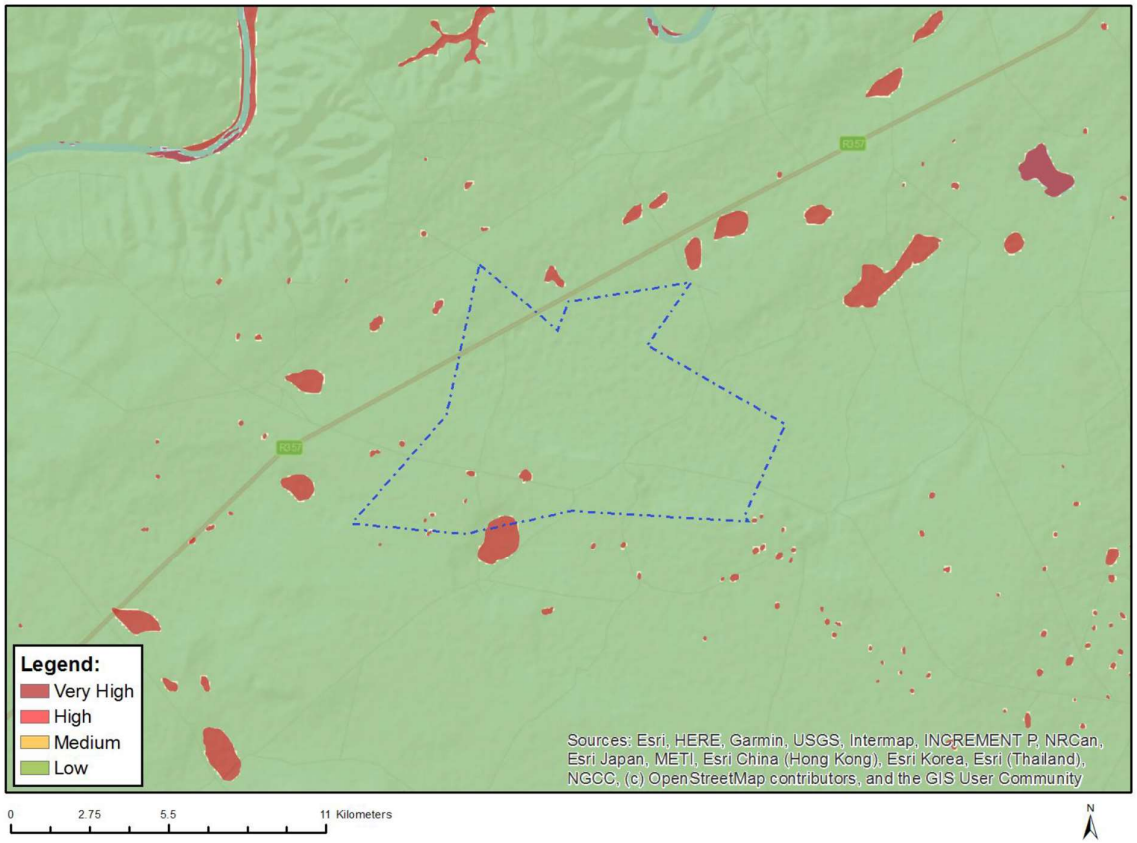


Figure 9: Aquatic Biodiversity Combined Sensitivity

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

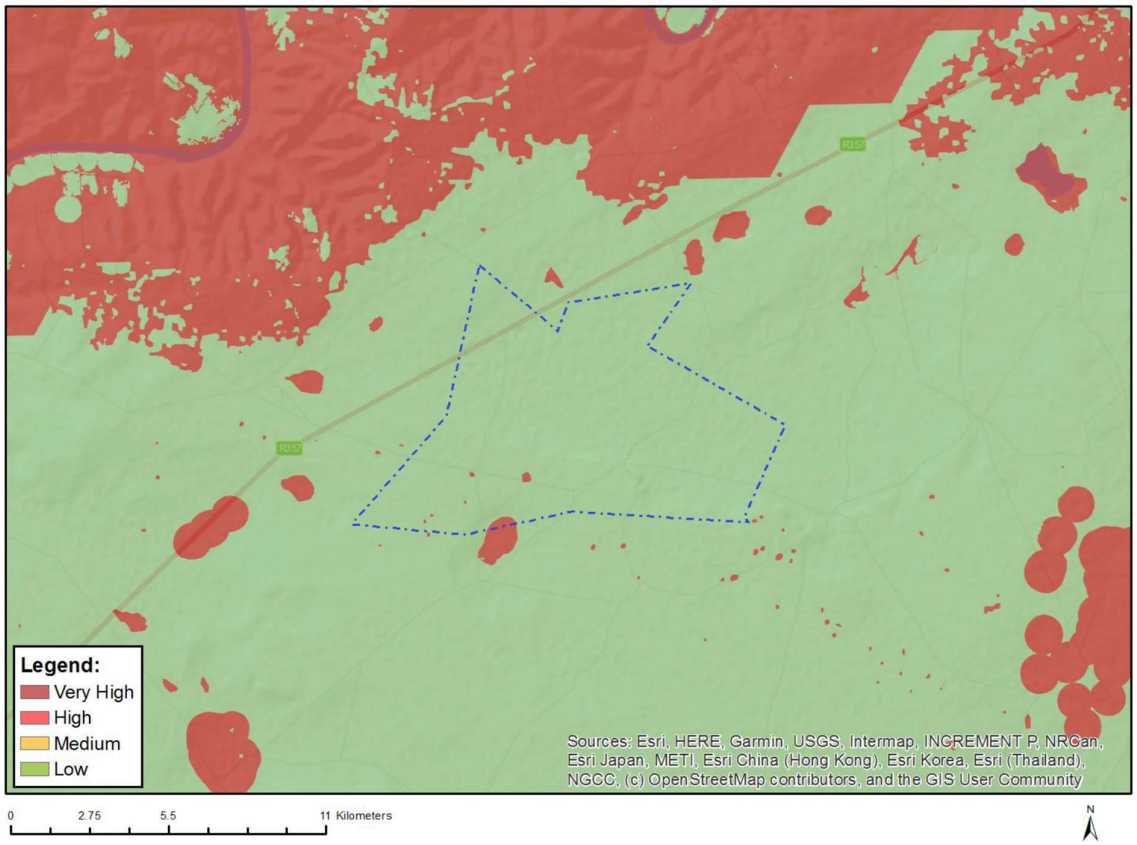


Figure 10: Terrestrial Biodiversity Combined Sensitivity

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

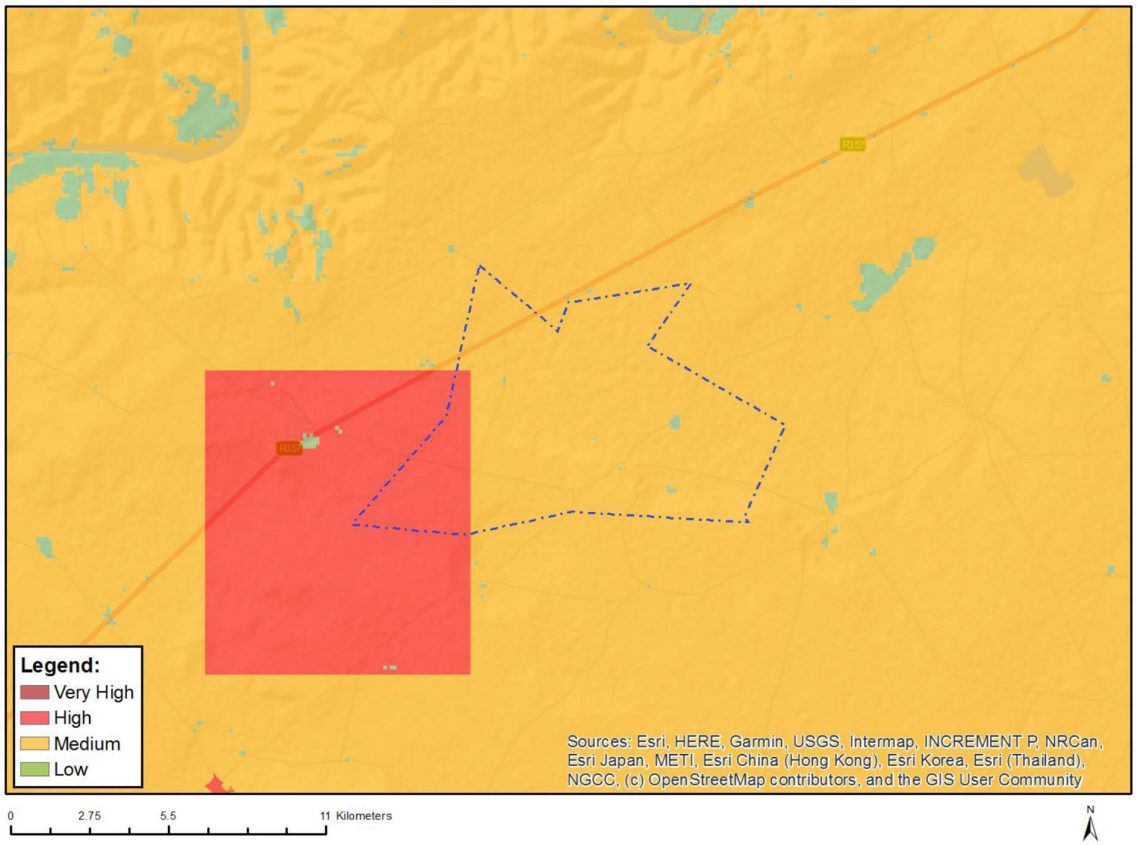


Figure 11: Animal Species theme sensitivity

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.

Category	Biodiversity Priority Areas	Risks for Mining	Implications for Mining
A. Legally Protected	• Protected areas (including National Parks, Nature Reserves, World Heritage Sites, Protected Environments, Nature Reserves) • Areas declared under Section 49 of the Mineral and Petroleum Resources Development Act (No. 28 of 2002)	**Mining Prohibited**	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. 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.
B. Highest Biodiversity Importance	• Critically endangered and endangered ecosystems • Critical Biodiversity Areas (or equivalent areas) from provincial spatial biodiversity plans • River and wetland Freshwater Ecosystem Priority Areas (FEPAs) and a 1km buffer around these FEPAs • Ramsar Sites	**Highest Risk for Mining**	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. 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. 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. 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. Authorisations may well not be granted. If granted, the authorisation may set limits on allowed activities and impacts and may specify biodiversity offsets that would be written into licence agreements and/or authorisations.
C. High Biodiversity Importance	• Protected area buffers (including buffers around National Parks, World Heritage Sites* and Nature Reserves) • Transfrontier Conservation Areas (remaining areas outside of formally proclaimed protected areas) • Other identified priorities from provincial spatial biodiversity plans • High water yield areas • Coastal Protection Zone • Estuarine functional zone *Note that the status of buffer areas of World Heritage Sites is subject to a current intra-governmental process	**High Risk for Mining**	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. An EIA should include an assessment of optimum, sustainable land use for an area and will determine the significance of the impact on biodiversity. Mining options may be limited in these areas, and limitations for mining projects are possible. Authorisations may set limits and specify biodiversity offsets that would be written into licence agreements and/or authorisations.
D. Moderate Biodiversity Importance	• Ecological support areas • Vulnerable ecosystems • Focus areas for protected area expansion (land-based and offshore protection)	**Moderate Risk for Mining**	These areas are of moderate biodiversity value. 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. Authorisations may set limits and specify biodiversity offsets that would be written into licence agreements and/or authorisations.

Based on **Figure 12,** the area does not overlap with any of the category's above.

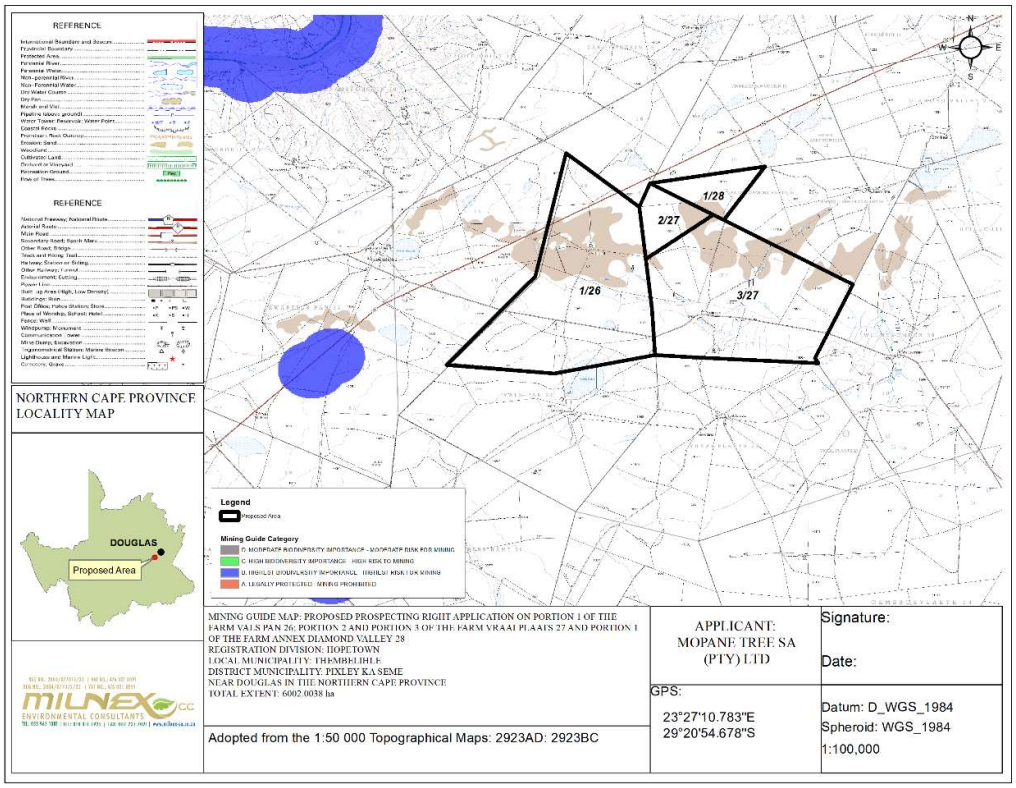


Figure 12: Biodiversity priority areas, in accordance with the Mining of Biodiversity Guidelines, associated with the study site.

Wetland Areas

In terms of Section 1 of the National Water Act (No. 36 of 1998) (NWA), wetlands are legally defined as: "*land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil*" (NWA 1998).

Wetlands are defined by the presence of unique soils and vegetation that do not occur in terrestrial and purely aquatic environments (Edwards *et al.* 2018). Wetland soils are referred to as hydric soils that develop under anaerobic conditions (condition where oxygen is virtually absent from the soil). Wetlands are also typically characterized by relatively large and dense stands of plants sticking out of shallow water or wet soil. Plants adapted to such waterlogged conditions are referred to as hydrophytes. Wetlands are distinct from true aquatic ecosystems like river ecosystems, which are characterized by fast flowing water within channels, and lake ecosystems, that are

flooded to great depth; both of which are not primarily characterized by the occurrence of hydric soils and hydrophytes.

A wide variety of wetland types are present in South Africa, and can be classified into six broad types, namely floodplain wetlands, unchannelled valley bottom wetlands, channelled valley bottom wetlands, seeps, depressions and wetland flats. Owing to the large variations in climate and topography across South Africa, vegetation and habitat associated with these wetland types vary tremendously from subtropical reed beds and tall swamp forests to arid salt pans, which all support unique and varied animal life.

Figure 13 illustrates all wetland types associated with the study area. Some depressions have been identified in the South-South West corner

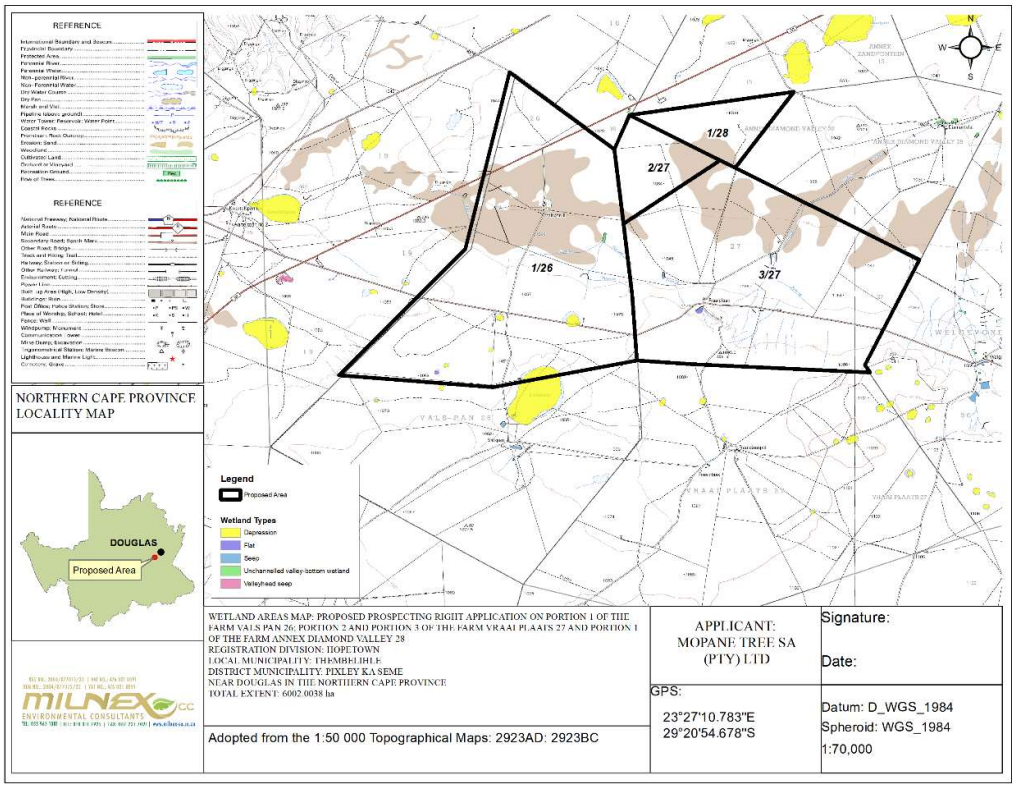


Figure 13 Wetland types located within or near the study site.

The Wetland vegetation that the site has been associated with the Upper Nama Karoo, as depicted in the figure below.

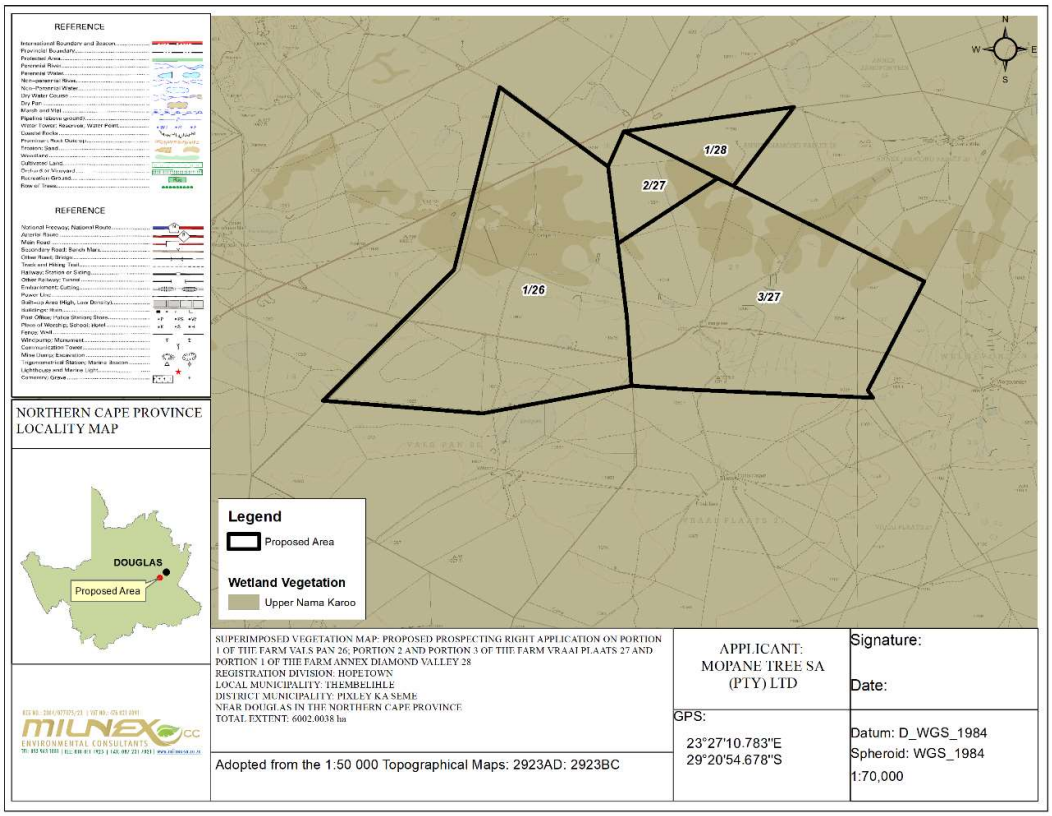


Figure 14: Wetland vegetation type

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**).

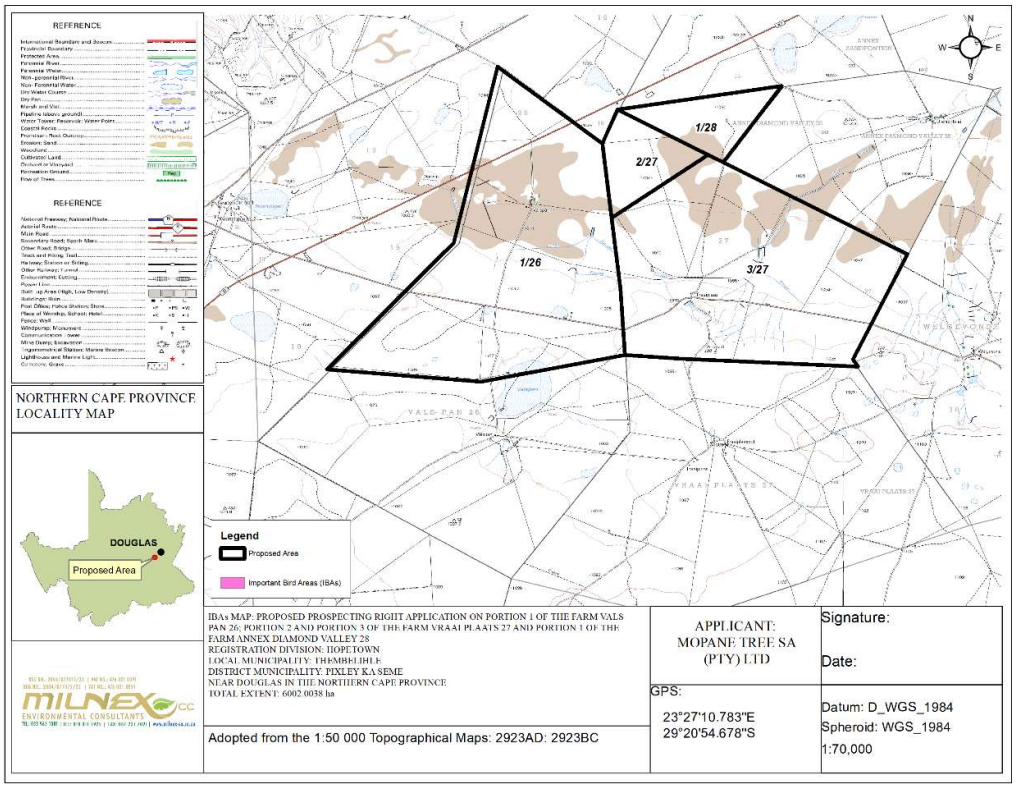


Figure 15: Important Bird and Biodiversity Areas associated with the study site.

River Ecosystem Status

According to **Figure 16**, no rivers traverse the study area

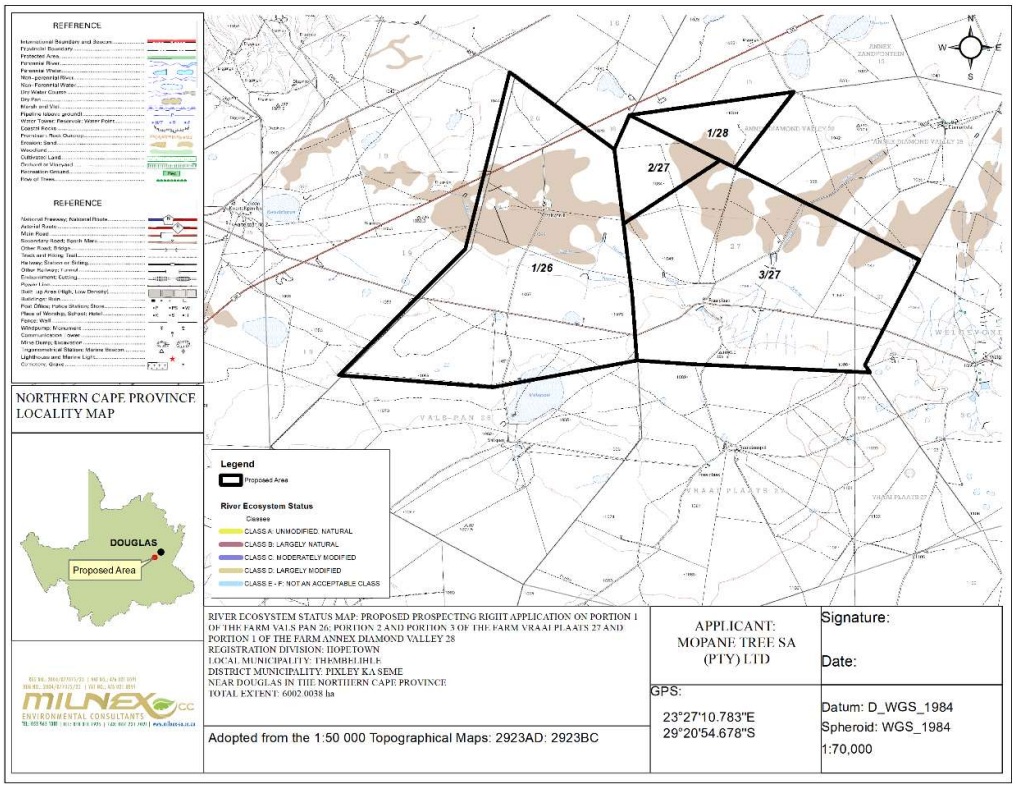


Figure 16: Ecosystem status of the rivers occurring in close proximity to the study site.

Archaeological and Cultural Heritage

According to the DEA screening tool, the application area falls within a low Archaeological and Cultural Heritage Combined Sensitivity area (see **figure 17** below). See colour map in **Appendix 7**

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

In accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by *Milnex CC Environmental Consultants* to conduct a cultural heritage assessment to determine if the proposed prospecting activities would have an impact on any sites, features or objects of cultural heritage significance.

This report describes the methodology used, the limitations encountered, the heritage features that were identified and the recommendations and mitigation measures proposed relevant to this. The HIA consisted of a desktop study (archival sources, database survey, maps and aerial imagery) and a physical survey that included the interviewing of relevant people. It should be noted that the implementation of the mitigation measures is subject to SAHRA/PHRA's approval.

The cultural landscape qualities of the region are made up of a pre-colonial element consisting of Stone Age and a much later colonial (farmer) component, which eventually also gave rise to an industrial (mining) component which manifest in a number of sites spread across the larger landscape.

Identified sites

During the survey, the following sites, features or objects of cultural significance were identified.
• 7.1.1 Change finds: A very low number of stone tools dating mostly to the Middle Stone Age, but some also dating to the Later Stone Age, have been identified as surface material.

• 7.3.1 – 7.3.2: Two very old and neglected burial sites were identified.

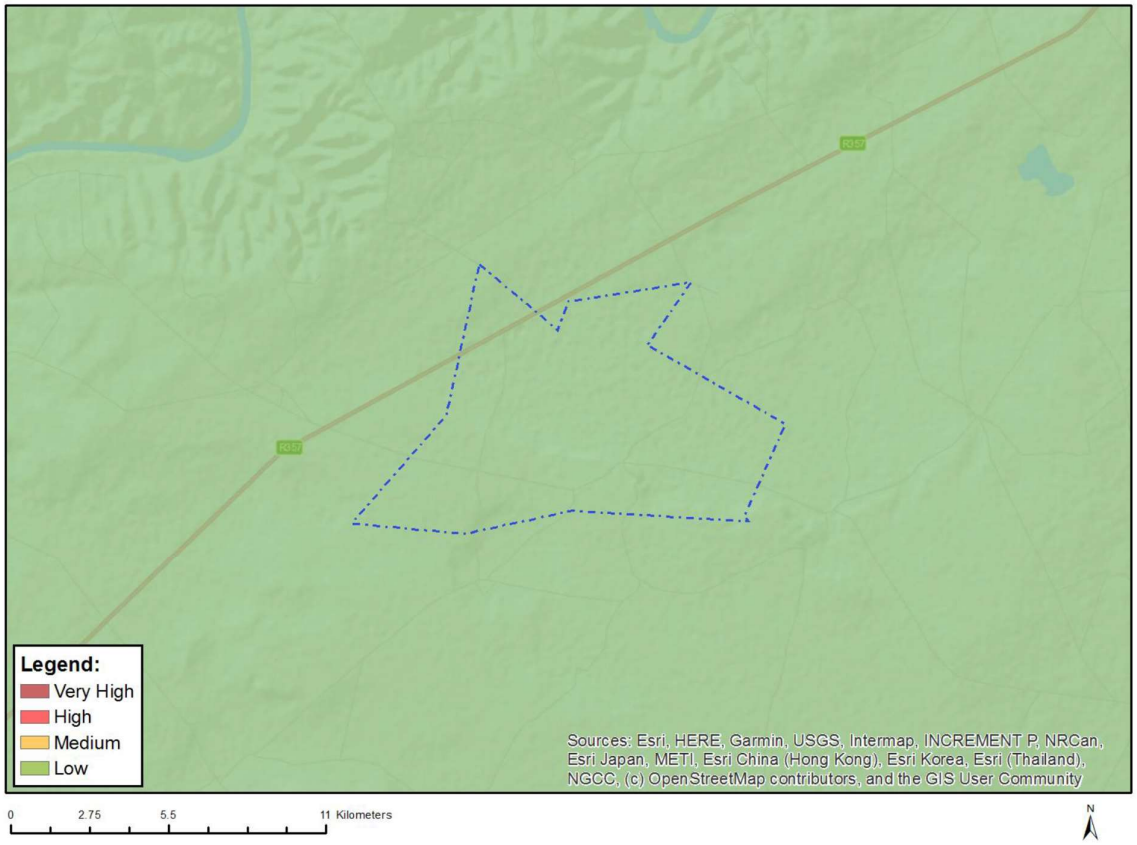


Figure 17: Archaeological and Cultural Heritage Combined Sensitivity

According to the DEA screening tool, the application area falls within a medium to high Paleontology Combined Sensitivity area (see **figure 18** below).

The proposed development is underlain by Quaternary alluvium, Tertiary to Quaternary calcrete as well as the Dwyka Group (Karoo Supergroup). Shape files compiled by the Council of Geosciences (Pretoria) indicates that the proposed development is underlain by the Kalahari Group in the south, a small strip of the Dwyka Group sediments crops out in the centre of the development while alluvium, colluvium, elluvium and gravel is present in the north of the study area. The PalaeoMap of the South African Heritage Resources Information System indicates that the Palaeontological Sensitivity of Tertiary calcrete is High while that of the Quaternary alluvium and Dwyka Group is moderate (Almond and Pether 2008, SAHRIS website).

A Low Palaeontological Significance has been allocated to the proposed diamond prospecting development. The construction and operation of the project may be authorised, as the whole extent of the development footprint is not considered sensitive in terms of palaeontological heritage. If fossil remains or trace fossils are discovered during any phase of construction, either on the surface or exposed by excavations the Environmental Control Officer (ECO) in charge of these developments 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: www.sahra.org.za) so that mitigation can be carry out by a palaeontologist.

It is consequently recommended that no further palaeontological heritage studies, ground truthing and/or specialist mitigation are required pending the discovery of newly discovered fossils.

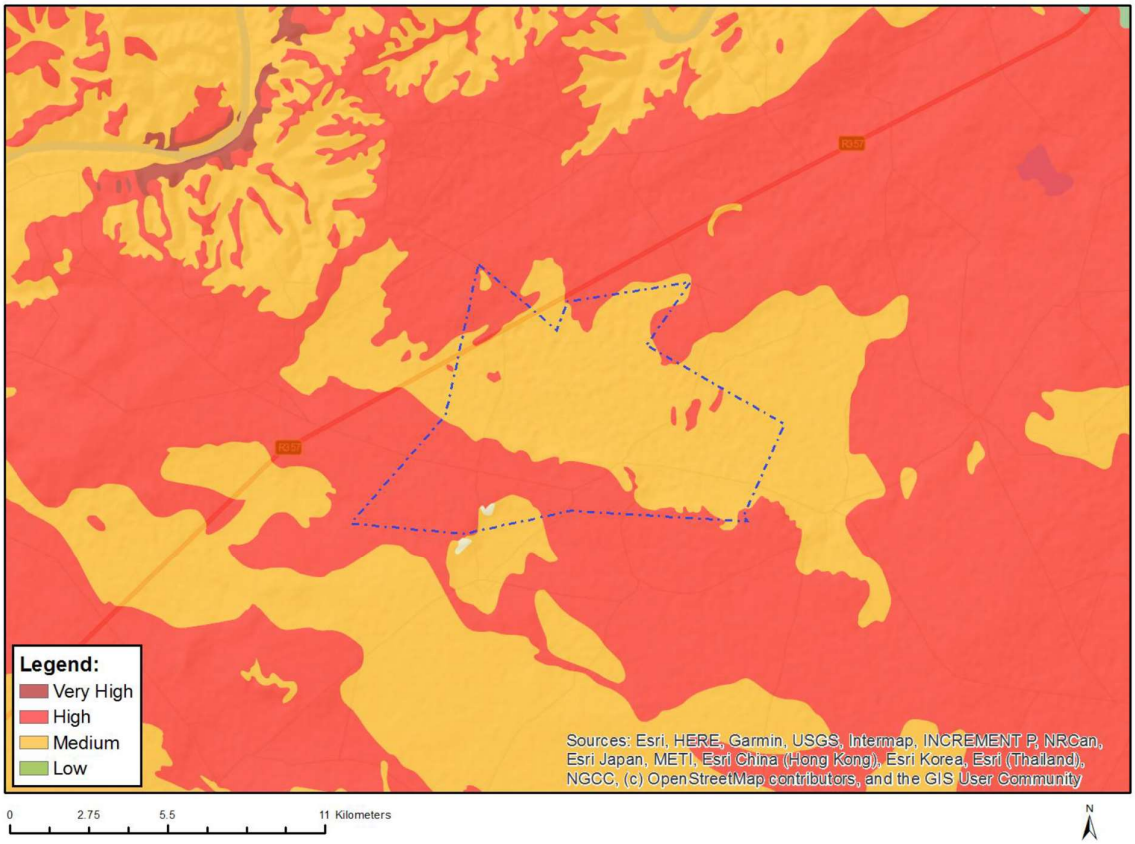


Figure 18: Palaeontology Combined Sensitivity

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 Gariep Dams, are situated on the borders of the district municipality

Thembelihle Local Municipality

Key Statistics Summary

Demographic Information

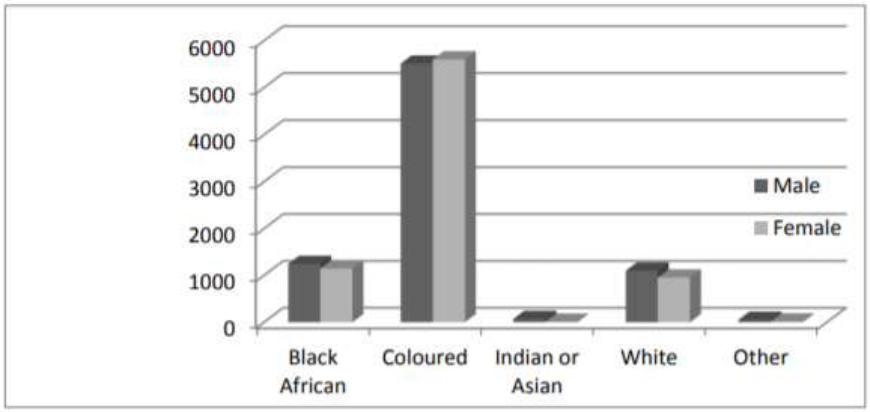
	2016	2011
Population	16 230	15 701
Age Structure		
Population under 15	25.0%	30.9%
Population 15 to 64	68.5%	62.8%
Population over 65	6.5%	6.4%
Dependency Ratio		
Per 100 (15-64)	46.0	59.3
Sex Ratio		
Males per 100 females	104.6	103.3
Population Growth		
Per annum	0.75%	n/a
Labour Market		
Unemployment rate (official)	n/a	28.4%
Youth unemployment rate (official) 15-34	n/a	35.2%
Education (aged 20 +)		
No schooling	10.8%	15.1%
Matric	22.2%	19.9%
Higher education	5.0%	6.6%
Household Dynamics		
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%
Household Services		
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
Black African	1245	1146	2391
Coloured	5511	5601	11112
Indian or Asian	69	12	81
White	1101	954	2055
Other	51	15	66
Grand Total	**7977**	**7728**	**15705**

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	**3861**
Unemployed	111	126	600	672	-	-	12	6	-	-	**1527**
Discouraged work-seeker	33	57	195	381	3	-	3	12	-	-	**684**
Other not economically active	264	333	1203	1470	18	3	186	291	6	6	**3780**
Age less than 15 years	-	-	-	-	-	-	-	-	-	-	-
Not applicable	372	387	2178	2172	12	6	420	294	-	-	**5841**
Grand Total	1248	1146	5508	5601	69	12	1104	948	48	9	**15693**

Piped Water by Source of Water for households

Piped Water by Source of Water for Household : NC076: THEMBELIHLE

	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	-
Grand Total	**4140**

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 farm)	252	-	111	18	420	12	-	-
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.**

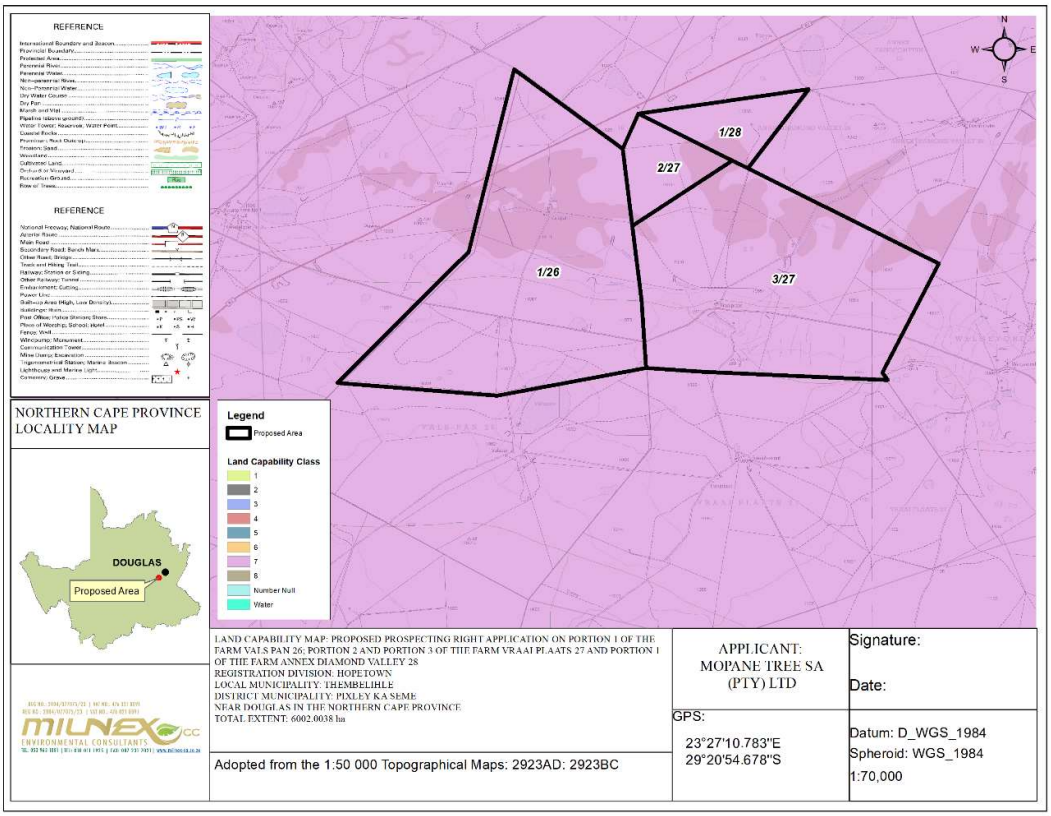


Figure 19: Land capability

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

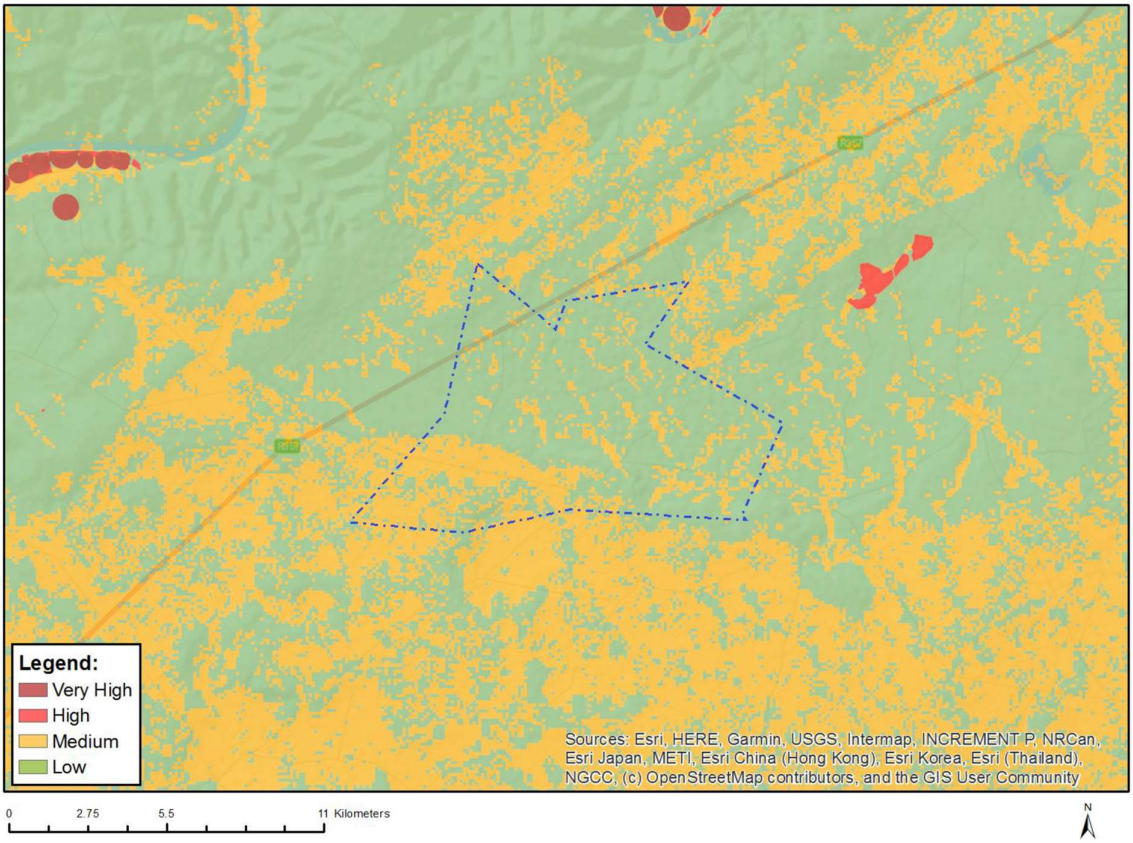


Figure 20: Agriculture Combined Sensitivity

(b) Description of the current land uses.

The site is largely covered by low schrubland & grassland units together with ticket/dense bush & bare non vegetated areas.

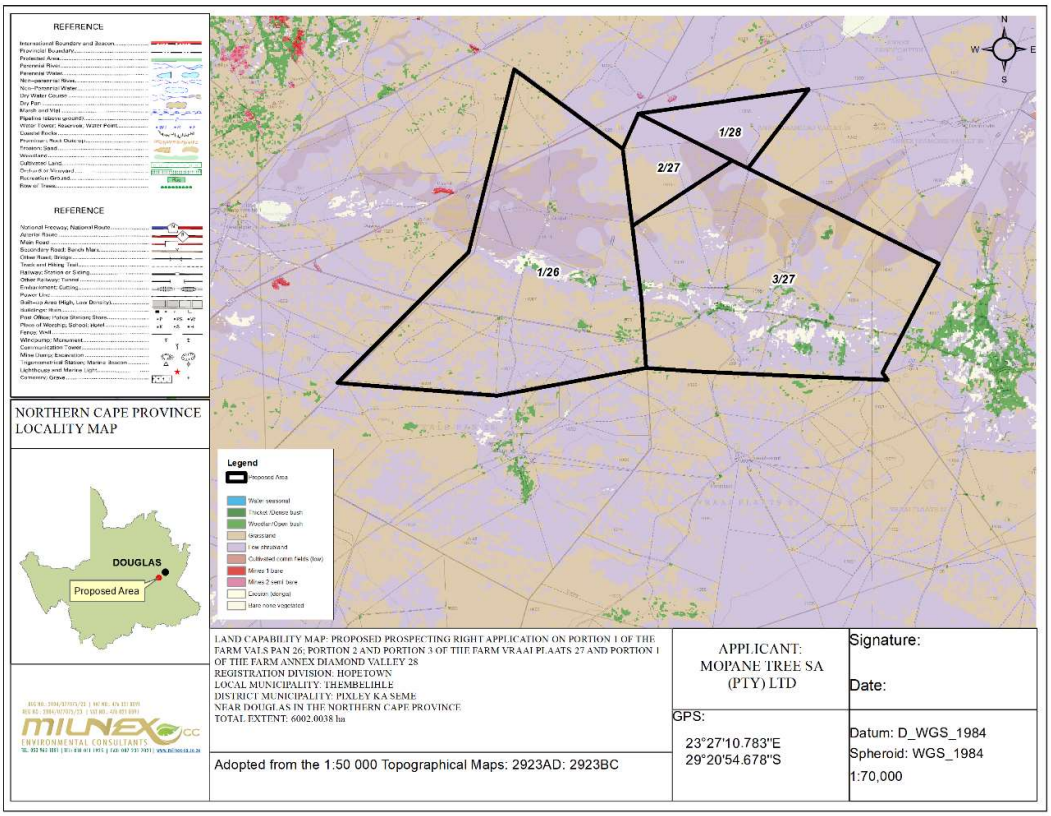


Figure 21: Current Land Use associated with study site and surrounding areas.

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 results 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.

INTENSITY/ MAGNITUDE		
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.
REVERSIBILITY		
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.
IRREPLACEABLE LOSS OF RESOURCES		
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.
CUMULATIVE EFFECT		
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
SIGNIFICANCE		
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: (Extent + probability + reversibility + irreplaceability + duration + cumulative effect) x 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.
- Impact on Heritage resources
- Impact on Paleontological features

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, the possibility to encounter high volumes of Diamonds (Alluvial, General & in Kimberlite) near Douglas on Portion 1 of the farm Vals Pan 26, Portion 2 and Portion 3 of the farm Vraai Plaats 27, Portion 1 of the farm Annex Diamond Valley, Registration Division: Hopetown, Northern Cape Province, were identified.

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
1. Are any of the following located on the site earmarked for the development?				
I. A river, stream, dam or wetland	✕			Some non perennial streams are present
II. A conservation or open space area		✕		No
III. An area that is of cultural importance			✕	According to the DEA Screening Report the area falls within a low Archaeological and Cultural Heritage Theme Sensitivity (Appendix 7).
IV. Site of geological significance			✕	According to the DEA Screening Report the portions fall within High and Medium Paleontology Theme Sensitivity (Appendix 7).
V. Areas of outstanding natural beauty		✕		No
VI. Highly productive agricultural land			✕	According to the Land Capability map the proposed area falls within land capability Class 7 (Appendix 5).
VII. Floodplain		✕		No floodplain identified within the study area
VIII. Indigenous forest			✕	According to the land use map certain areas is covered in Woodland/Open bush (Appendix 5).
IX. Grass land	✕			According to the land use map certain areas is covered in Grassland (Appendix 5).
X. Bird nesting sites		✕		According to the Important Bird Areas map (Appendix 7) the proposed area does not fall within an Important Bird Area (IBAs).
XI. Red data species			✕	According to the CBA map the portions fall within other natural areas (Appendix 7).
XII. Tourist resort		✕		
2. Will the project potentially result in potential?				
I. Removal of people		✕		None.
II. Visual Impacts	✕			Visual impacts will be managed.
III. Noise pollution	✕			The noise impact will be limited to working hours.
IV. Construction of an access road		✕		Access will be obtained from existing gravel roads off the R357 and were no road exist, roads may be created.
V. Risk to human or valuable ecosystems due to explosion/fire/ discharge of waste into water or air.		✕		None.
VI. Accumulation of large workforce (>50 manual workers) into the site.		✕		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.		✕		**The application area will use 2 x 16 feet washing pans, the amount of water for the pans will be 34 000 L/hour from which 30% is re-used.**
VIII. Job creation	✕			**Approximately 15 employment opportunities will be created during the construction and operational phase of the project.**
IX. Traffic generation		✕		**None.**
X. Soil erosion	✕			**Only areas earmarked for mining will be cleared. prospecting will be phased and the topsoil stockpiled separately. Concurrent rehabilitation will take place.**
XI. Installation of additional bulk telecommunication transmission lines or facilities		✕		**None.**
3. Is the proposed project located near the following?				
I. A river, stream, dam or wetland	✕			**Some non perennial streams are nearby**
II. A conservation or open space area		✕		**No**
III. An area that is of cultural importance			✕	
IV. A site of geological significance			✕	
V. An area of outstanding natural beauty			✕	
VI. Highly productive agricultural land			✕	
VII. A tourist resort		✕		
VIII. A formal or informal settlement		✕		

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;

MATRIX ANALYSIS

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	
CONSTRUCTION PHASE									
Listing Notice 1 (GNR 327), Activity 27: *"The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation"* **Listing Notice 3 (GNR 324), Activity 12(g) (ii):** *The clearance of an area of 300 square metres or more of indigenous vegetation (g) Northern Cape (ii) Within critical biodiversity areas identified in bioregional plans*	Site clearing and preparation Areas earmarked for prospecting will need to be cleared, topsoil will be stockpiled separately.	BIOPHYSICAL ENVIRONMENT	Fauna & Flora	• Loss or fragmentation of indigenous natural vegetation. • Loss of sensitive species. • Loss or fragmentation of habitats.		-	S	Yes	-
			Air	• Air pollution due to the increase of traffic. • Dust from mining/prospecting activities	-		M	Yes	-
			Soil	• Soil degradation, including erosion. • Loss of topsoil. • Disturbance of soils and existing land use (soil compaction).	-	-	S	Yes	-
			Geology	• It is not foreseen that the removal of indigenous vegetation will impact on the geology or vice versa.	-		S	Yes	-
			Existing services infrastructure	• Generation of waste that need to be accommodated at a licensed landfill site. • Generation of sewage that need to be accommodated by the local sewage plant.	-		S	Yes	-
			Ground water	• Pollution due to construction vehicles.	-		S	Yes	-
			Surface water	• Increase in storm water run-off. • Pollution of water sources due to soil erosion. • Destruction of watercourses (pans/dams/streams).		-	S	Yes	-
		SOCIAL/ECONOMIC ENVIRONMENT	Local unemployment rate	• Job creation. • Business opportunities. • Skills development.		+	S	Yes	-
			Visual landscape	• Potential visual impact on residents of farmsteads and motorists in close proximity to proposed facility.	-		L	Yes	-
			Traffic volumes	• Increase in construction vehicles.	-		S	Yes	-
			Health & Safety	• Air/dust pollution. • Road safety. • Increased risk of veld fires.		-	S	Yes	-
			Noise levels	• The generation of noise as a result of construction vehicles, the use of machinery such as drills, excavators, dumper trucks and people working on the site.	-		L	Yes	-
			Tourism industry	• 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.	N/A	N/A	N/A	N/A	-

			Heritage resources	• Removal or destruction of archaeological and/or paleontological sites. • Removal or destruction of buildings, structures, places and equipment of cultural significance. • Removal or destruction of graves, cemeteries and burial grounds.	-		L	Yes	-
OPERATIONAL PHASE									
Listing Notice 1 (GNR 327), Activity 19: *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:* *(ii) a watercourse;* **Listing Notice 1 (GNR 327), Activity 20:** *"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; –* **Listing Notice 2 (GNR 325), Activity 19**: *"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;* **NEM:WA 59 of 2008: Residue stockpiles or residue deposits, Category A: (15)** *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).*	The key components of the proposed project are described below: • <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 50m² or less. Other supporting infrastructure includes a site office and workshop area. • <u>Roads</u> – Access will be obtained from existing roads on the proposed portion. • <u>Fencing</u> - For health, safety and security reasons, the facility will be required to be fenced off from the surrounding farm.	BIOPHYSICAL ENVIRONMENT	Fauna & Flora	• Fragmentation of habitats. • Establishment and spread of declared weeds and alien invader plants (operations).		-	L	Yes	-
				Air quality	• Air pollution due to the mining / prospecting activity and transport of the gravel to the designated areas.	-		S	Yes	-
				Soil	• Soil degradation, including erosion. • Disturbance of soils and existing land use (soil compaction). • Loss of agricultural potential (Low - medium significance relative to agricultural potential of the site).	-		L	Yes	-
				Geology	• Collapsible soil. • Seepage (shallow water table). • Active soil (high soil heave). • Erodible soil. • The presence of undermined ground. • Instability due to soluble rock. • Steep slopes or areas of unstable natural slopes. • Areas subject to seismic activity. • Areas subject to flooding.		-	L	Yes	-
				Existing services infrastructure	• Generation of waste that need to be accommodated at a licensed landfill site. • Generation of sewage that need to be accommodated by the municipal sewerage system and the local sewage plant. • Increased consumption of water, dust suppression.	-		L	Yes	-
				Ground water	• Leakage of hazardous materials. The machinery on site require oils and fuel to function. Leakage of these oils and fuels can contaminate water supplies.	-		L	Yes	-
				Surface water	• 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. • Destruction of watercourses (pans/dams/streams). • Leakage of hazardous materials. The machinery on site require oils and fuel to function. Leakage of these oils and fuels can contaminate water supplies.		-	L	Yes	-
			SOCIAL/ECONOMIC ENVIRONMENT	Local unemployment rate	• Job creation. Security guards will be required for 24 hours every day of the week. • Skills development.	-		L	Yes	-
				Visual landscape	• The proposed portions are used for livestock grazing and crop production which will still take place simultaneously with the prospecting activity, however this depends on the location of the activity.	-		L	Yes	-
				Traffic volumes	• Increase in vehicles collecting gravel for distribution.	-		S	Yes	-
				Health & Safety	• Air/dust pollution. • Road safety.		-	S	Yes	-

			Noise levels	• The proposed development will result in noise pollution during the operational phase.	-		M	Yes	-
			Tourism industry	• Since there are tourism facilities in close proximity to the site, the decommissioning activities may have an impact on tourism in the area.	N/A	N/A	N/A	N/A	-
			Heritage resources	• It is not foreseen that the proposed activity will impact on heritage resources or vice versa.	N/A	N/A	N/A	N/A	-
DECOMMISSIONING PHASE									
-	Mine closure During the mine closure the Mine and its associated infrastructure will be dismantled. Rehabilitation of biophysical environment The biophysical environment will be rehabilitated.	BIOPHYSICAL ENVIRONMENT	Fauna & Flora	• Re-vegetation of exposed soil surfaces to ensure no erosion in these areas.		+	L	Yes	-
			Air quality	• Air pollution due to the increase of traffic of construction vehicles.	-		S	Yes	-
			Soil	• Backfilling of all voids • Placing of topsoil on backfill		+	L	Yes	-
			Geology	• It is not foreseen that the decommissioning phase will impact on the geology of the site or vice versa.	N/A	N/A	N/A	N/A	-
			Existing services infrastructure	• Generation of waste that need to be accommodated at the local landfill site. • Generation of sewage that need to be accommodated by the municipal sewerage system and the local sewage plant. • Increase in construction vehicles.	-		S	Yes	-
			Ground water	• Pollution due to construction vehicles.	-		S	Yes	-
			Surface water	• Increase in storm water run-off. • Pollution of water sources due to soil erosion. • Destruction of watercourses (pans/dams/streams).	-		S	Yes	-
		SOCIAL/ECONOMIC ENVIRONMENT	Local unemployment rate	• Loss of employment.	-		L	Yes	-
			Visual landscape	• Potential visual impact on visual receptors in close proximity to proposed facility.	-		S	Yes	-
			Traffic volumes	• Increase in construction vehicles.	-		S	Yes	-
			Health & Safety	• Air/dust pollution. • Road safety. • 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.		-	L	Yes	-
			Noise levels	• The generation of noise as a result of construction vehicles, the use of machinery and people working on the site.	-		S	Yes	-
			Tourism industry	• 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.	N/A	N/A	N/A	N/A	-
			Heritage resources	• It is not foreseen that the decommissioning phase will impact on any heritage resources.	-		L	Yes	-

(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, loss of topsoil, 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 unit Northern Upper Karoo

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).

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)	
Significance	**Negative high impact (57)**	**Negative medium (45)**
Can impacts be mitigated?	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. The potential impacts associated with damage to and loss of farmland should be effectively mitigated. The aspects that should be covered include:	

	• The site should be fenced off prior to commencement of construction activities; • 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; • An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase; • 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; • 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. • The implementation of the Rehabilitation Programme should be monitored by the ECO.

- Loss or fragmentation of habitats –

Loss or fragmentation of habitats	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	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),	
Significance	**Negative high impact (51)**	**Negative low (26)**
Can impacts be mitigated?	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.	

- 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.

Loss of topsoil	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).	
Significance	**Negative High (51)**	**Negative low (10)**
Can impacts be mitigated?	The following mitigation or management measures are provided: • 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.	

	• Topsoil stockpiles must be conserved against losses through erosion by establishing vegetation cover on them. • Dispose of all subsurface spoils from excavations where they will not impact on undisturbed land. • During rehabilitation, the stockpiled topsoil must be evenly spread over the entire disturbed surface. • Erosion must be controlled where necessary on top soiled areas. 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. • Record the GPS coordinates of each area. • Record the date of topsoil stripping. • Record the GPS coordinates of where the topsoil is stockpiled. • Record the date of cessation of constructional (or operational) activities at the particular site. • Photograph the area on cessation of constructional activities. • Record date and depth of re-spreading of topsoil. • Photograph the area on completion of rehabilitation and on an annual basis thereafter to show vegetation establishment and evaluate progress of restoration over time. Section (f) of the EMPr also provide mitigation measures related to topsoil management.

• 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).	
Significance	**Negative High (51)**	**Negative low (10)**
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.	

- 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).	
Significance	**Negative low (18)**	**Negative low (8)**
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.	
Significance	**Negative low (12)**	**Negative low (11)**
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

Cultural Heritage in South Africa (includes all heritage resources) is protected by the **National Heritage Resources Act (Act 25 of 1999) (NHRA).** According to Section 3 of the Act, all Heritage resources include **"all objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens**".

If such resources are found during the mining 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 must stop.

If anything of Archaeological and/or paleontological significance is found during the construction and operational phase of the mine the following applies:

- NHRA 38(4)c(i) – If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils

or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (021 462 5402) must be alerted as per section 35(3) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule;

- NHRA 38(4)c(ii) – If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule;
- NHRA 38(4)e – The following conditions apply with regards to the appointment of specialists: i) If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA;

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. 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: www.sahra.org.za) so that mitigation can be carry out by a paleontologist.

Chance Find Procedure

- If a chance find is made the person responsible for the find must immediately stop working and all work that could impact that finding must cease in the immediate vicinity of the find.
- The person who made the find must immediately report 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: www.sahra.org.za). The information to the Heritage Agency must include photographs of the find, from various angles, as well as the GPS co-ordinates.
- A preliminary report must be submitted to the Heritage Agency within 24 hours 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.
- 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.

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.

- The site must be secured to protect it from any further damage. No attempt 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.
- 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.
- Once Heritage Agency has issued the written authorization, the developer may continue with the development on the affected area.

7.1.1 Chance find Stone Age material

Impact assessment: Although this material is found inside the project area, their low significance as well as the fact that the area has already extensively been disturbed as surface occurrences flooding the plain, the impact is viewed to be very low.		
	Without mitigation	With mitigation
Extent	Local area (1)	Local area (1)
Duration	Permanent (5)	Permanent (5)
Intensity	Low (1)	Low (1)
Probability	Improbable (2)	Improbably (2)
Significance	Low (14)	Low (14)
Status (positive or negative)	Negative	Neutral
Reversibility	Non-reversible	-
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated	No	
Cumulative impact: Loss of limited number of similar features in the larger landscape.		

7.1.1 Type: Chance finds Stone Age material
Mitigation
(5) No further action required: This is applicable only where sites or features have been rated to be of such low significance that it does not warrant further documentation, as it is viewed to be fully documented after inclusion in this report.

7.3.1 – 7.3.2 Type: Burial sites		
Impact assessment		
These sites are located inside the project area. Due to their location it might be impacted on by the proposed prospecting activities.		
	Without mitigation	With mitigation
Extent	Site (1)	Site (1)
Duration	Permanent (5)	Permanent (5)
Intensity (Magnitude)	Low (4)	Low (1)
Probability	Highly probable (4)	Improbable (2)
Significance	Medium (40)	Low (14)
Status (positive or negative)	Negative	Neutral
Reversibility	Non-reversible	Non-reversible
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated	Yes	
Cumulative impact: Loss of a limited number of similar features in the larger landscape.		

7.3.1 – 7.3.2 Type: Burial sites
Mitigation
(1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and applies where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact. This measure often includes the change / alteration of development planning and therefore impact zones in order not to impact on resources.

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 no responsible for the damage.	
Significance	**Negative medium impacts (33)**	**Negative low (11)**
Can impacts be mitigated?	The potential impacts associated with heavy vehicles can be effectively mitigated. The mitigation measures include: • 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; • 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; • 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. Also refer section (f) of the EMPr. For mitigation measures related to traffic.	

- 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 famer's and farm workers in the vicinity of the site threat. 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.	
Significance	**Negative High (64)**	**Negative low (28)**
Can impacts be mitigated?	Key mitigation measures include: • **Mopane Tree (SA) Pty Ltd** should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences; • 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; • Contractors appointed by **Mopane Tree (SA) Pty Ltd** 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; • **Mopane Tree (SA) Pty Ltd** 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 loses and costs associated with fires caused by construction workers or construction related activities (see below); • 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; • Contractors appointed **Mopane Tree (SA) Pty Ltd** 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. • Contractors appointed by **Mopane Tree (SA) Pty Ltd** 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; • The housing of construction workers on the site should be strictly limited to security personnel (if any).

- 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.	
Significance	**Negative medium (33)**	**Negative low (9)**
Can impacts be mitigated?	The mitigation measures include: • A fire-break should be constructed around the perimeter of the site prior to the commencement of the construction phase; • Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas; • 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; • Contractor to provide adequate firefighting equipment on-site, including a fire fighting vehicle; • Contractor to provide fire-fighting training to selected construction staff; • No construction staff, with the exception of security staff, to be accommodated on site over night; • 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.

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.	
Significance	**Negative High (51)**	**Negative Low (26)**
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	Local (2)	Local (2)
Probability	Possible (2)	Possible (2)
Duration	Medium term (2)	medium term (2)

Magnitude	Medium (2)	Medium (2)
Reversibility	Partly reversible (2)	Completely reversible (1)
Irreplaceable loss of resources	Marginal loss of resource (2)	No loss of resource (1)
Cumulative impact	Low cumulative impacts (3).	
Significance	**Negative low (24)**	**Negative low (20)**
Can impacts be mitigated?	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. Also refer to section (f) of the EMPr.	

- 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.	
Significance	**Negative medium (30)**	**Negative low (13)**
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 to ensure that these impacts do not occur 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. 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. If these practices is found to be insufficient for the control of storm water and sedimentation, other alternatives should immediately be investigated and implemented.	

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.	
Significance	**Negative high impact (63)**	**Negative medium (40)**
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.	
Significance	**Negative low (15)**	**Negative low (15)**
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)	
Significance	**Negative medium (36)**	**Negative low (22)**
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.	

- 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).	
Significance	**Negative High (52)**	**Negative medium (36)**
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)	
Significance	**Negative high (39)**	**Negative high (39)**
Can impacts be mitigated?	No mitigation required	

DECOMMISIONING 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)	
Significance	**Positive low (7)**	**Positive low (16)**
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)	
Significance	**Negative medium (30)**	**Negative low (18)**
Can impacts be mitigated?	The following mitigation measures are recommended: • All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning; • **Mopane Tree SA (Pty) Ltd** should establish an Environmental Rehabilitation Trust Fund to cover the costs of decommissioning and rehabilitation of disturbed areas.	

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;):-

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.
Phase 1 Heritage Impact Assessment	*Milnex 189 CC Environmental Consultants* was contracted by *Mopane Tree SA (Pty) Ltd* as the independent environmental consultant to undertake the Scoping and EIA process for the proposed prospecting right combined with a waste licence application for the prospecting of diamonds (Alluvial, General & in Kimberlite) & diamonds near Douglas on Portion 1 of the Farms Vals Pan 26, Portion 2 & 3 of the farm Vraai Plaats 27, Portion 1 of the farm Annex Diamond Valley, Registration Division: Hopetown, Northern Cape Province. This report describes the methodology used, the limitations encountered, the heritage features that were identified and the recommendations and mitigation measures proposed relevant to this. The HIA consisted of a desktop study (archival sources, database survey, maps and aerial imagery) and a physical survey that included the interviewing of relevant people. It should be noted that the implementation of the mitigation measures is subject to SAHRA/PHRA's approval. The cultural landscape qualities of the region are made up of a pre-colonial element consisting of Stone Age and a much later colonial (farmer) component, which eventually also gave rise to an industrial (mining) component which manifest in a number of sites spread across the larger landscape. Identified sites During the survey, the following sites, features or objects of cultural significance were identified. 7.1.1 Change finds: A very low number of stone tools dating mostly to the Middle Stone Age, but some also dating to the Later Stone Age, have been identified as surface material.	**X**	**Appendix 12**

7.3.1 – 7.3.2: Two very old and neglected burial sites were identified.

Impact assessment and proposed mitigation measures
Impact analysis of cultural heritage resources under threat of the proposed prospecting activities is based on the present understanding of the project:

Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.1.1	Archaeological resources	Section 35	Generally protected 4C: Low significance - Requires no further recording before destruction.	Low (14) Low (14)
Mitigation: (5) No further action required				

Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.3.1 - 7.3.2	Graves, Cemeteries and Burial Grounds	Section 36	Generally protected 4A: High/medium significance.	Medium (40) Low (14)
Mitigation: (1) Avoidance/Preserve: A minimum buffer of 100m must be established around the burial site for the duration of the mining operations.				

Legal requirements
The legal requirements related to heritage specifically are specified in Section 3 of this report. For this proposed project, the assessment has determined that sites, features or objects of heritage significance occur in the project area, therefore various permits, depending on the type of site to be impacted on would be required.

If heritage features are identified during prospecting activities, as stated in the management recommendation, these finds would have to be assessed by a specialist, after which a decision will be made regarding the application for relevant permits.

Reasoned opinion as to whether the proposed activity should be authorised:

From a heritage point of view, it is recommended that the proposed prospecting activities be allowed to continue on acceptance of the proposed mitigation measures and the conditions proposed below.

Conditions for inclusion in the environmental authorisation:

The Palaeontological Sensitivity Map (https://sahris.sahra.org.za/map/palaeo) indicate that the project area has a rather complex geological make-up, with large sections having a high

	sensitivity for which a desktop assessment is required, or a moderate possibility of fossil remains to be found and therefore a desktop palaeontological assessment is required.		
Paleontological Desktop Assessment	The proposed development is underlain by Quaternary alluvium, Tertiary to Quaternary calcrete as well as the Dwyka Group (Karoo Supergroup). Shape files compiled by the Council of Geosciences (Pretoria) indicates that the proposed development is underlain by the Kalahari Group in the south, a small strip of the Dwyka Group sediments crops out in the centre of the development while alluvium, colluvium, elluvium and gravel is present in the north of the study area. The PalaeoMap of the South African Heritage Resources Information System indicates that the Palaeontological Sensitivity of Tertiary calcrete is High while that of the Quaternary alluvium and Dwyka Group is moderate (Almond and Pether 2008, SAHRIS website). A Low Palaeontological Significance has been allocated to the proposed diamond prospecting development. The construction and operation of the project may be authorised, as the whole extent of the development footprint is not considered sensitive in terms of palaeontological heritage. However, if fossil remains or trace fossils are discovered during any phase of construction, either on the surface or exposed by excavations the Environmental Control Officer (ECO) in charge of these developments 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: www.sahra.org.za) so that mitigation can be carry out by a palaeontologist. It is consequently recommended that no further palaeontological heritage studies, ground truthing and/or specialist mitigation are required pending the discovery of newly discovered fossils. **CHANCE FINDS PROTOCOL** The following procedure will only need to be followed if fossils are uncovered during excavation. This informational document is intended for workmen and	**X**	**Appendix 12**

	foremen on the construction site. It describes the actions to be taken when mining or construction activities accidentally uncovers fossil material. It is the responsibility of the Environmental Site Officer (ESO) or site manager of the project to train the workmen and foremen in the procedure to follow when a fossil is accidentally uncovered. In the absence of the ESO, a member of the staff must be appointed to be responsible for the proper implementation of the Chance Find Protocol as not to compromise the conservation of fossil material. **Legislation** Cultural Heritage in South Africa (includes all heritage resources) is protected by the **National Heritage Resources Act (Act 25 of 1999) (NHRA).** According to Section 3 of the Act, all Heritage resources include **"all objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens**". Palaeontological heritage is unique and non-renewable and is protected by the NHRA and is the property of the State. It is thus the responsibility of the State to manage and conserve fossils on behalf of the citizens of South Africa. Palaeontological resources may not be excavated, broken, moved, or destroyed by any development without prior assessment and without a permit from the relevant heritage resources authority as per section 35 of the NHRA. A fossil is the naturally preserved remains (or traces) of plants or animals embedded in rock. These plants and animals lived in the geologic past millions of years ago. Fossils are extremely rare and irreplaceable. By studying fossils, it is possible to determine the environmental conditions that existed in a specific geographical area millions of years ago.		

	1.1 Protocol • If a chance find is made the person responsible for the find must immediately **stop working** and all work that could impact that finding must cease in the immediate vicinity of the find. • The person who made the find must immediately **report** 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: www.sahra.org.za). The information to the Heritage Agency must include photographs of the find, from various angles, as well as the GPS co-ordinates. • A preliminary report must be submitted to the Heritage Agency within **24 hours** 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. • 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. • 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. • The site must be secured to protect it from any further damage. **No attempt** 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.		

	• 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. • Once Heritage Agency has issued the written authorization, the developer may continue with the development on the affected area.		

According to the DEA Screening Report, nine (9) specialist assessments have been identified for inclusion in the assessment report. Please see the table below for the list of these studies and also our response. Please refer to **Appendix 7.**

Specialist study according to DEA Screening tool	Response
Agriculture Impact Assessment	According to the DEA Screening Tool the Agriculture Theme Sensitivity of the proposed area is low to medium. The land capability falls withing Land capability Class 7. The site is largely covered by low schrubland & grassland units together with ticket/dense bush & bare non vegetated areas. According to the Prospecting Work Programme (PWP) prospecting activities include 150 pits (3m x 2m x 4m) and 50 trenches (40m x 30m x 4m). The whole application area is 6002.0038 hectares, the area to be disturbed by pitting and trenching will be ± 7 Ha. Concurrent backfilling will take place in order to rehabilitate which means only 0.7ha will be disturbed at any given time. Mitigation measures as in the EMPr will be implemented. Due to the low disturbance (±7 Ha over a 6002.0038 ha area) the impact is expected to be low.
Archaeological & Cultural Heritage Impact Assessment	Studies have been conducted and full reports are available in **Appendix 12**
Palaeontology Impact Assessment	
Terrestrial Biodiversity Impact Assessment	According to the Prospecting Work Programme (PWP) prospecting activities include 150 pits (3m x 2m x 4m) and 50 trenches (40m x 30m x 4m). The whole application area is 6002.0038 hectares, the area to be disturbed by pitting and trenching will be ± 7 Ha. Concurrent backfilling will take place in order to rehabilitate which means only 0.7ha will be disturbed at any given time. Mitigation measures as in the EMPr will be implemented. Due to the low disturbance (±7 Ha over a 6002.0038 ha area) the impact is expected to be low.

	According to the screening report the area falls largely on a low terrestrial sensitive area. There are small pockets that are deemed high due to some parts being classified as an Ecological Support Area (ESA). The does not in any way traverse and of the 2 CBA's.
Aquatic Biodiversity Impact Assessment	According to the Prospecting Work Programme (PWP) prospecting activities include 150 pits (3m x 2m x 4m) and 50 trenches (40m x 30m x 4m). The whole application area is 6002.0038 hectares, the area to be disturbed by pitting and trenching will be ± 7 Ha. Concurrent backfilling will take place in order to rehabilitate which means only 0.7ha will be disturbed at any given time. Mitigation measures as in the EMPr will be implemented. Due to the low disturbance (±7 Ha over a 6002.0038 ha area) the impact is expected to be low. According to the screening report the area falls largely on a low aquatic terrestrial sensitive area. There are small pockets that are deemed high due to some parts being classified as wetlands. An adequate buffer will be maintained from any water bodies, should any prospecting be conducted within the regulated zones, a Water Use Licence will be applied for.
Noise Impact Assessment	We do not see the need for this study as noise is limited to working hours. The area is also far away from any residential areas.
Radioactivity Impact Assessment	This study is not necessary since the process of mining Diamonds (Alluvial, General & in Kimberlite) & diamonds does not have any radioactive effects.
Plant Species Assessment	According to the Prospecting Work Programme (PWP) prospecting activities include 150 pits (3m x 2m x 4m) and 50 trenches (40m x 30m x 4m). The whole application area is 6002.0038 hectares, the area to be disturbed by pitting and trenching will be ± 7 Ha. Concurrent backfilling will take place in order to rehabilitate which means only 0.7ha will be disturbed at any given time. Mitigation measures as in the EMPr will be implemented. Due to the low disturbance (±7 Ha over a 6002.0038 ha area) the impact is expected to be low. According to the Screening Report the proposed site also falls within a low plant species sensitive area.
Animal Species Assessment	According to the Prospecting Work Programme (PWP) prospecting activities include 150 pits (3m x 2m x 4m) and 50 trenches (40m x 30m x 4m). The whole application area is 6002.0038 hectares, the area to be disturbed by pitting and trenching will be ± 7 Ha. Concurrent backfilling will take place in order to rehabilitate which means only 0.7ha will be disturbed at any given time. Mitigation measures as in the EMPr will be implemented. Due to the low disturbance (±7 Ha over a 6002.0038 ha area) the impact is expected to be low. According to the Screening Report the site falls mostly within a medium animal sensitive area, with a small part in the western corner traversing a high sensitive area. As the actual disturbance will only be ±7 Ha over a 6002.0038 ha area, we do not see the need for this study. No animals will be hunt or killed during the prospecting phase.

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 an Ecological Support Area & natural areas. 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: Should the mitigation measures be implemented, the impact will be low

- 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 some of the areas 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) & Diamonds 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.

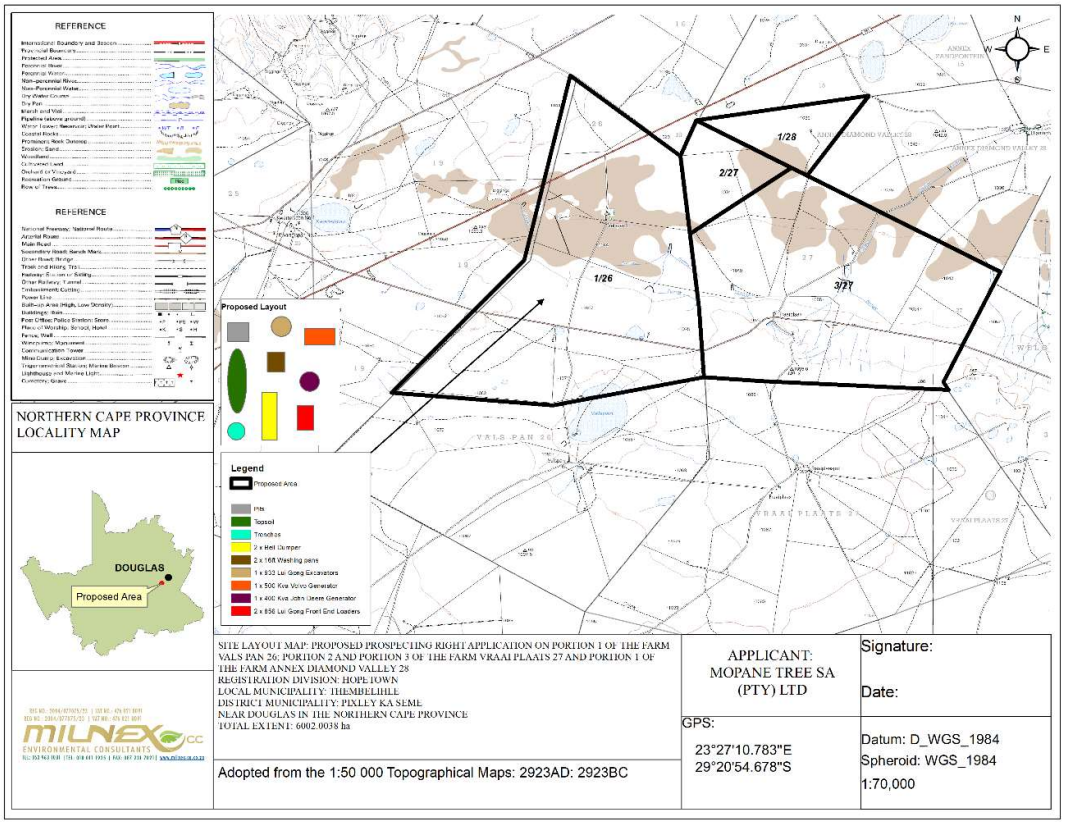


Figure 21: Site Plan

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) & Diamond 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. Portion 1 of the farm Vals Pan 26, Portion 2 and Portion 3 of the farm Vraai Plaats 27, Portion 1 of the farm Annex Diamond Valley, 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) & Diamonds 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) & Diamond 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; ☒

Signature of the environmental assessment practitioner:

Milnex CC – Environmental Consultants
Name of company:

10– 10 - 2022
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;)

XXXXXX

Concurrent Rehabilitation

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

Topsoil will be removed from trench no.1, where after it will be stored separately on the proposed area. Stored topsoil will be kept separate from overburden. Stored topsoil will be adequately protected from being eroded or blown away.

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 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 **0.35ha**

Pitting

Calculations

It is planned that 150 pits will be dug (it may be less depending on the results) at an extent of 3m (length) x 2m (breath) x 4m (depth).

- 150 pits / 2years = 75 pits dug per year
- Total area to be disturbed per year = 75 pits x (3m x 2m) / 10 000 = 0.045 Ha disturbed per year
- Total area disturbed for 24 months = 150 pits x (3m x 2m) / 10 000 = 0.09 Ha disturbed

Trenches

Calculations

It is planned that 50 trenches will be dug at an extent of 40m (length) x 30m (breath) x 4m (depth).

- 50 trenches / 2 years = 25 trenches dug per year
- Total area to be disturbed per month = 25 trenches x (40m x 30m) / 10 000 = 3 Ha disturbed per year.
- Total area disturbed for 48 months = 50 trenches x (40m x 30m) / 10 000 = 6 Ha disturbed

Calculations

PITTING: 24 months (months 7 – 30)	
150 pits / 2 years =	75 pits per year
75 pits x (3m x 2m) / 10 000 =	0.045 Ha disturbed per year
TRENCHES: 24 months (31 - 54 months)	
50 trenches / 2 years =	25 trenches per year

Concurrent backfilling will take place in order to rehabilitate trenches:	
The area to be disturbed for 1 trench	1 trench x (40m x 30m) / 10 000 = 0.12ha
3 trenches will be worked on at any given time: • 2 trenches will be open to remove gravel • 1 trench will be backfilled and rehabilitated	0.12ha x 2 trenches = 0.24ha 0.12ha / 2 = 0.06ha
The area to be disturbed at any given time	0.24ha + 0.06ha = 0.3ha
After the trench is backfilled and rehabilitated only then will another trench be opened.	
Total	0.045ha + 0.3ha = 0.35ha

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 **Mopane Tree SA (Pty) Ltd** will be submitted

Rehabilitation Fund

Mopane Tree SA (Pty) Ltd 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) & Diamonds 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.

Diamonds (Alluvial, General & in Kimberlite) near Douglas Portion 1 of the farm Vals Pan 26, Portion 2 and Portion 3 of the farm Vraai Plaats 27, Portion 1 of the farm Annex Diamond Valley, Registration Division: Hopetown, Northern Cape Province, were identified. The specific site has been chosen for its mineral resources thus making an alternative site selection null and void. No prospecting should commence without the necessary permits and the impacts on the surrounding area, the livestock grazing, agricultural land and natural area should be kept to the minimum.

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
Christiaan Baron	Master's Degree in Environmental Management (refer to Appendix 1) Registered EAP (EAPASA) **Reg No: 2020/2639**	Tel No.: (018) 011 1925 Fax No. : (053) 963 2009 e-mail address: christiaan@milnex-sa.co.za

Contact details of other	Qualifications	Contact details
Lizanne Esterhuizen	Honours Degree in Environmental Science **(refer to Appendix 1)**	Tel No.: (018) 011 1925 Fax No. : (053) 963 2009 e-mail address: lizanne@milnex-sa.co.za
Andile Nxumalo	Honours Degree in Environmental Science **(refer to Appendix 1)**	Tel No.: (018) 011 1925 Fax No. : (053) 963 2009 e-mail address: andile.grant@milnex-sa.co.za

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 **Mopane Tree SA (Pty) Ltd**. 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:

- Conducing 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 10.**

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

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

. XXXXXXXXXXX

Financial Guarantee

The financial guarantee for the rehabilitation for land disturbed **Mopane Tree SA (Pty) Ltd** will be submitted

Rehabilitation Fund

Mopane Tree SA (Pty) Ltd 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

ACTIVITIES **(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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE of disturbance** (volumes, tonnages and hectares or m²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** 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)	6002.0038Ha – 150 pits (3m x 2m x 4m), 50 trenches (40m x 30m x 4m).	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)		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. 2. Construction routes and required access roads must be clearly defined. 3. Damping down of the un-surfaced roads must be implemented to reduce dust and nuisance. 4. Soils compacted by construction/prospecting activities shall be deep ripped to loosen compacted layers and re-graded to even running levels. 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; 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; 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.		
Prospecting of Diamonds (Alluvial, in Kimberlite & General) – Soils and geology	Pitting and trenching phase- (construction and operation phase)	6002.0038Ha – 150 pits (3m x 2m x 4m), 50 trenches (40m x 30m x 4m).	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	Compliance with Duty of Care as detailed within NEMA	Duration of operations on the prospecting activities.

			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. 2. Care must be taken not to mix topsoil and subsoil during stripping. 3. The topsoil must be conserved on site in and around the pit/trench area. 4. Subsoil and overburden in the prospecting area should be stockpiled separately to be returned for backfilling in the correct soil horizon order. 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. 6. Stockpiles should be kept clear of weeds and alien vegetation growth by regular weeding. 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. 8. The impact on the geology will be permanent. There is no mitigation measure.		
Prospecting Diamonds (Alluvial, in Kimberlite & General) – excavations and blasting	Pitting and trenching phase- (construction and operation phase)	6002.0038Ha – 150 pits (3m x 2m x 4m), 50 trenches (40m x 30m x 4m).	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.	Compliance with Duty of Care as detailed within NEMA	Duration of operations on the prospecting area

			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. 3. Truck traffic should be routed away from noise sensitive areas, where possible. 4. Noise levels must be kept within acceptable limits. 5. Noisy operations should be combined so that they occur where possible at the same time. 6. Mine workers to wear necessary ear protection gear. 7. Noisy activities to take place during allocated hours. 8. Noise from labourers must be controlled. 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. 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. 11. Implementation of enclosure and cladding of processing plants. 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.		

IMPACT MANAGEMENT OUTCOMES

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

ACTIVITY (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.)**.	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)**	**MITIGATION TYPE** **(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.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** • **Remedy through rehabilitation..**	**STANDARD TO BE ACHIEVED** **(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)	**Existing vegetation** 1. Vegetation removal must be limited to the prospecting area. 2. Vegetation to be removed as it becomes necessary rather than removal of all vegetation throughout the site in one step. 3. No vegetation to be used for firewood. 4. Exotic and invasive plant species should not be allowed to establish, if the development is approved. **Rehabilitation** 5. All damaged areas shall be rehabilitated upon completion of the contract. 6. Re-vegetation of the disturbed site is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to construction.	Minimisation of impacts to acceptable limits

				7. All natural areas impacted during construction/prospecting must be rehabilitated with locally indigenous grasses typical of the representative botanical unit. 8. Rehabilitation must take place in a phased approach as soon as possible. 9. Rehabilitation process must make use of species indigenous to the area. Seeds from surrounding seed banks can be used for re-seeding. 10. Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas. 11. Planting of indigenous tree species in areas not to be cultivated or built on must be encouraged. **Demarcation of prospecting area** 12. All plants not interfering with prospecting operations shall be left undisturbed clearly marked and indicated on the site plan. 13. The prospecting area must be well demarcated and no construction/prospecting activities must be allowed outside of this demarcated footprint. 14. Vegetation removal must be phased in order to reduce impact of construction/prospecting. 15. Site office and laydown areas must be clearly demarcated and no encroachment must occur beyond demarcated areas. 16. Strict and regular auditing of the prospecting process to ensure containment of the prospecting and laydown areas. 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. **Utilisation of resources** 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.	

				Exotic vegetation 19. Alien vegetation on the site will need to be controlled. 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. 21. The spread of exotic species occurring throughout the site should be controlled. **Herbicides** 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. 23. The use of pesticides and herbicides on the site must be discouraged as these impact on important pollinator species of indigenous vegetation. **Fauna** 24. Rehabilitation to be undertaken as soon as possible after the prospecting activities have been completed. 25. No trapping or snaring to fauna on the construction/prospecting site should be allowed. 26. No faunal species must be disturbed, trapped, hunted or killed by maintenance staff during any routine maintenance at the development.	
Prospecting Diamonds (Alluvial, in Kimberlite & general) – excavations	Loss of topsoil	Soil	Pitting and trenching phase-(construction and operation phase)	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	Minimisation of impacts to acceptable limits

				building footprints, working areas and storage areas. Topsoil must be reused where possible to rehabilitate disturbed areas. 2. Care must be taken not to mix topsoil and subsoil during stripping. 3. The topsoil must be conserved on site in and around the pit/trench area. 4. Subsoil and overburden in the prospecting area should be stockpiled separately to be returned for backfilling in the correct soil horizon order. 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. 6. Stockpiles should be kept clear of weeds and alien vegetation growth by regular weeding. 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. 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. • Record the GPS coordinates of each area. • Record the date of topsoil stripping. • Record the GPS coordinates of where the topsoil is stockpiled. • Record the date of cessation prospecting activities at the particular site. • Photograph the area on cessation of prospecting activities. • Record date and depth of re-spreading of topsoil.	

				• Photograph the area on completion of rehabilitation and on an annual basis thereafter to show vegetation establishment and evaluate progress of restoration over time.	
	Erosion	Soil Air Water	Pitting and trenching phase-(construction and operation phase)	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. 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. 3. Wind screening and stormwater control should be undertaken to prevent soil loss from the site. 4. The use of silt fences and sand bags must be implemented in areas that are susceptible to erosion. 5. Other erosion control measures that can be implemented are as follows: o Brush packing with cleared vegetation o Mulch or chip packing o Planting of vegetation o Hydroseeding/hand sowing 6. Sensitive areas need to be identified prior to construction/prospecting so that the necessary precautions can be implemented. 7. All erosion control mechanisms need to be regularly maintained. 8. Seeding of topsoil and subsoil stockpiles to prevent wind and water erosion of soil surfaces. 9. Retention of vegetation where possible to avoid soil erosion. 10. Vegetation clearance should be phased to ensure that the minimum area of soil is exposed to potential erosion at any one time. 11. Re-vegetation of disturbed surfaces should occur immediately after construction/prospecting activities are completed. This should be done through seeding with indigenous grasses.	Minimisation of impacts to acceptable limits

				12. No impediment to the natural water flow other than approved erosion control works is permitted. 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. 14. Stockpiles not used in three (3) months after stripping must be seeded or backfilled to prevent dust and erosion.	
	Air Pollution	Air	Pitting and trenching phase-(construction and operation phase)	**Dust control** 1. Wheel washing and damping down of un-surfaced and un-vegetated areas. 2. Retention of vegetation where possible will reduce dust travel. 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. 4. Damping down of all exposed soil surfaces with a water bowser or sprinklers when necessary to reduce dust. 5. The Contractor shall be responsible for dust control on site to ensure no nuisance is caused to the neighbouring communities. 6. A speed limit of 30km/h must not be exceeded on site. 7. Any complaints or claims emanating from the lack of dust control shall be attended to immediately by the Contractor. 8. Any dirt roads that are utilised by the workers must be regularly maintained to ensure that dust levels are controlled. **Odour control** 9. Regular servicing of vehicles in order to limit gaseous emissions. 10. Regular servicing of onsite toilets to avoid potential odours. **Rehabilitation**	Minimisation of impacts to acceptable limits

				11. The Contractor should commence rehabilitation of exposed soil surfaces as soon as practical after completion of earthworks. **Fire prevention** 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. 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.	
	Noise		Pitting and trenching phase-(construction and operation phase)	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. 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. 3. Truck traffic should be routed away from noise sensitive areas, where possible. 4. Noise levels must be kept within acceptable limits. 5. Noisy operations should be combined so that they occur where possible at the same time. 6. Mine workers to wear necessary ear protection gear. 7. Noisy activities to take place during allocated hours. 8. Noise from labourers must be controlled. 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	Minimisation of impacts to acceptable limits

				working order, the Contractor may be instructed to remove the offending vehicle or machinery from the site. 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. 11. Implementation of enclosure and cladding of processing plants. 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.	
	Impact on potential cultural, heritage artefacts & paleontological aspects	Heritage & paleontological aspects	Pitting and trenching phase-(construction and operation phase)	Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. Those resources that cannot be avoided and that are directly impacted by the proposed development can be excavated/recorded and a management plan can be developed for future action. Those sites that are not impacted on can be written into the management plan, whence they can be avoided or cared for in the future. Sources of risk were considered with regards to development activities defined in Section 2(viii) of the NHRA that may be triggered and are summarised in Table 2A and 2B below. These issues formed the basis of the impact assessment described. The potential risks are discussed according to the various phases of the project below. Objectives:	Minimisation of impacts to acceptable limits

				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 following shall apply: Known sites should be clearly marked in order that they can be avoided during construction activities. The contractors and workers should be notified that archaeological sites might be exposed during the construction activities. 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; 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; Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and 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). Control 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. 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. 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. Palaeontology: **CHANCE FINDS PROTOCOL** The following procedure will only need to be followed if fossils are uncovered during excavation. This informational document is intended for workmen and foremen on the construction site. It describes the actions to be taken when mining or construction activities accidentally uncovers fossil material.	

				It is the responsibility of the Environmental Site Officer (ESO) or site manager of the project to train the workmen and foremen in the procedure to follow when a fossil is accidentally uncovered. In the absence of the ESO, a member of the staff must be appointed to be responsible for the proper implementation of the Chance Find Protocol as not to compromise the conservation of fossil material. **Legislation** Cultural Heritage in South Africa (includes all heritage resources) is protected by the **National Heritage Resources Act (Act 25 of 1999) (NHRA).** According to Section 3 of the Act, all Heritage resources include **"all objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens**". Palaeontological heritage is unique and non-renewable and is protected by the NHRA and is the property of the State. It is thus the responsibility of the State to manage and conserve fossils on behalf of the citizens of South Africa. Palaeontological resources may not be excavated, broken, moved, or destroyed by any development without prior assessment and without a permit from the relevant heritage resources authority as per section 35 of the NHRA. A fossil is the naturally preserved remains (or traces) of plants or animals embedded in rock. These plants and animals lived in the geologic past millions of years ago. Fossils are extremely rare and irreplaceable. By studying fossils, it is possible to determine the environmental conditions that existed in a specific geographical area millions of years ago.	

				1.2 Protocol If a chance find is made the person responsible for the find must immediately **stop working** and all work that could impact that finding must cease in the immediate vicinity of the find. The person who made the find must immediately **report** 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: www.sahra.org.za). The information to the Heritage Agency must include photographs of the find, from various angles, as well as the GPS co-ordinates. A preliminary report must be submitted to the Heritage Agency within **24 hours** 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. 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. 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.	

				The site must be secured to protect it from any further damage. **No attempt** 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. 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. Once Heritage Agency has issued the written authorization, the developer may continue with the development on the affected area.	
Waste management		Pollution	Pitting and trenching phase-(construction and operation phase)	**Litter management** 1. Refuse bins must be placed at strategic positions to ensure that litter does not accumulate within the construction site. 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. 3. Good housekeeping practices should be implemented to regularly maintain the litter and rubble situation on the construction site. 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. 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. 6. Skip waste containers should be maintained on site. These should be kept covered and	Minimisation of impacts to acceptable limits

				arrangements made for them to be collected regularly. 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. 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. 9. A certificate of disposal shall be obtained by the Contractor and kept on file, if relevant. 10. Under no circumstances may solid waste be burnt on site. 11. All waste must be removed promptly to ensure that it does not attract vermin or produce odours. **Hazardous waste** 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. 13. Contaminants to be stored safely to avoid spillage. 14. Machinery must be properly maintained to keep oil leaks in check. 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. **Sanitation** 16. The Contractor shall install mobile chemical toilets on the site. 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. 18. Toilets shall be serviced regularly and the ECO shall inspect toilets regularly.	

				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. 20. Under no circumstances may open areas, neighbours fences or the surrounding bush be used as a toilet facility. 21. The construction of "Long Drop" toilets is forbidden, but rather toilets connected to the sewage treatment plant. 22. Potable water must be provided for all construction staff. **Remedial actions** 23. Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-site. 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. 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. 26. If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent material. 27. If necessary, oil absorbent sheets or pads must be attached to leaky machinery or infrastructure. 28. Materials used for the remediation of petrochemical spills must be used according to product specifications and guidance for use. 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.	

Water Use and Quality	Water pollution	Water	Pitting and trenching phase-(construction and operation phase)	**Water Use** 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. 2. Water must be reused, recycled or treated where possible. **Water Quality** 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. 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. 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. **Stormwater** 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. 7. Silt fences should be used to prevent any soil entering the stormwater drains. 8. Temporary cut off drains and berms may be required to capture stormwater and promote infiltration. 9. Promote a water saving mind set with construction/prospecting workers in order to Contractor ensure less water wastage. 10. Hazardous substances must be stored at least 40m from any water bodies on site to avoid pollution.	

				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. 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. 13. There should be a periodic checking of the site's drainage system to ensure that the water flow is unobstructed. 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. 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. 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. If these practices is found to be insufficient for the control of storm water and sedimentation, other alternatives should immediately be investigated and implemented. **Groundwater resource protection** 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. 16. Prevent dirty water runoff from leaving the general mining area;	

				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; 18. Enough supply of absorbent fibre should be kept at the site to contain accidental spills; 19. Contain dirty water in return water dams and re-use dirty water for dust suppression and make up water in the plant; 20. Proper storm water management should be implemented. Berms should also be constructed to ensure separation of clean water and dirty water areas; 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. **Sanitation** 22. Adequate sanitary facilities and ablutions must be provided for construction workers (1 toilet per every 15 workers). 23. The facilities must be regularly serviced to reduce the risk of surface or groundwater pollution. **Concrete mixing** 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. **Public areas** 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.	

				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. **27.** No washing or servicing of vehicles on site. **Infrastructure** 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.	

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. **(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.)**.	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**MITIGATION TYPE** **(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.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** **Remedy through rehabilitation..**	**TIME PERIOD FOR IMPLEMENTATION** 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:-..	**COMPLIANCE WITH STANDARDS** (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)

			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	Loss or fragmentation of habitats	**Existing vegetation** 1. Vegetation removal must be limited to the prospecting site. 2. Vegetation to be removed as it becomes necessary rather than removal of all vegetation throughout the site in one step. 3. No vegetation to be used for firewood. 4. Exotic and invasive plant species should not be allowed to establish, if the development is approved. **Rehabilitation** 5. All damaged areas shall be rehabilitated upon completion of the contract. 6. Re-vegetation of the disturbed site is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to construction. 7. All natural areas impacted during construction/prospecting must be rehabilitated with locally indigenous grasses typical of the representative botanical unit. 8. Rehabilitation must take place in a phased approach as soon as possible. 9. Rehabilitation process must make use of species indigenous to the area. Seeds from surrounding seed banks can be used for re-seeding. 10. Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas. 11. Planting of indigenous tree species in areas not to be cultivated or built on must be encouraged.	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.

		Demarcation of prospecting area 12. All plants not interfering with prospecting operations shall be left undisturbed clearly marked and indicated on the site plan. 13. The prospecting area must be well demarcated and no construction activities must be allowed outside of this demarcated footprint. 14. Vegetation removal must be phased in order to reduce impact of construction/prospecting. 15. Site office and laydown areas must be clearly demarcated and no encroachment must occur beyond demarcated areas. 16. Strict and regular auditing of the prospecting process to ensure containment of the prospecting and laydown areas. 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. **Utilisation of resources** 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. **Exotic vegetation** 19. Alien vegetation on the site will need to be controlled. 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. 21. The spread of exotic species occurring throughout the site should be controlled. **Herbicides** 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. 23. The use of pesticides and herbicides on the site must be discouraged as these impact on important pollinator species of indigenous vegetation. **Fauna** 24. Rehabilitation to be undertaken as soon as possible after prospecting has been completed. 25. No trapping or snaring to fauna on the construction/prospecting site should be allowed. 26. No faunal species must be disturbed, trapped, hunted or killed by maintenance staff during any routine maintenance at the development.		
Prospecting of Diamonds (Alluvial, in Kimberlite & General) – excavations	Loss of topsoil	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. This should include the building footprints, working areas and storage areas. Topsoil must be reused where possible to rehabilitate disturbed areas. 2. Care must be taken not to mix topsoil and subsoil during stripping. 3. The topsoil must be conserved on site in and around the pit/trench area. 4. Subsoil and overburden in the prospecting area should be stockpiled separately to be returned for backfilling in the correct soil horizon order. 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.	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.

		6. Stockpiles should be kept clear of weeds and alien vegetation growth by regular weeding. 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. 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. • Record the GPS coordinates of each area. • Record the date of topsoil stripping. • Record the GPS coordinates of where the topsoil is stockpiled. • Record the date of cessation prospecting activities at the particular site. • Photograph the area on cessation of prospecting activities. • Record date and depth of re-spreading of topsoil. • Photograph the area on completion of rehabilitation and on an annual basis thereafter to show vegetation establishment and evaluate progress of restoration over time.		
	Erosion	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. 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. 3. Wind screening and stormwater control should be undertaken to prevent soil loss from the site.	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.

		4. The use of silt fences and sand bags must be implemented in areas that are susceptible to erosion. 5. Other erosion control measures that can be implemented are as follows: o Brush packing with cleared vegetation o Mulch or chip packing o Planting of vegetation o Hydroseeding/hand sowing 6. Sensitive areas need to be identified prior to construction/prospecting so that the necessary precautions can be implemented. 7. All erosion control mechanisms need to be regularly maintained. 8. Seeding of topsoil and subsoil stockpiles to prevent wind and water erosion of soil surfaces. 9. Retention of vegetation where possible to avoid soil erosion. 10. Vegetation clearance should be phased to ensure that the minimum area of soil is exposed to potential erosion at any one time. 11. Re-vegetation of disturbed surfaces should occur immediately after construction/prospecting activities are completed. This should be done through seeding with indigenous grasses. 12. No impediment to the natural water flow other than approved erosion control works is permitted. 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. 14. Stockpiles not used in three (3) months after stripping must be seeded/backfilled to prevent dust and erosion.		
	Air Pollution	**Dust control** 14. Wheel washing and damping down of un-surfaced and un-vegetated areas.	Duration of operation	The implementation of the recommended mitigation measures will result in the minimisation of

		15. Retention of vegetation where possible will reduce dust travel. 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. 17. Damping down of all exposed soil surfaces with a water bowser or sprinklers when necessary to reduce dust. 18. The Contractor shall be responsible for dust control on site to ensure no nuisance is caused to the neighbouring communities. 19. A speed limit of 30km/h must not be exceeded on site. 20. Any complaints or claims emanating from the lack of dust control shall be attended to immediately by the Contractor. 21. Any dirt roads that are utilised by the workers must be regularly maintained to ensure that dust levels are controlled. **Odour control** 22. Regular servicing of vehicles in order to limit gaseous emissions. 23. Regular servicing of onsite toilets to avoid potential odours. **Rehabilitation** 24. The Contractor should commence rehabilitation of exposed soil surfaces as soon as practical after completion of earthworks. **Fire prevention** 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. 26. The Contractor shall have operational fire-fighting equipment available on site at all times. The level of firefighting equipment must be assessed and		impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.

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	Noise	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. 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. 3. Truck traffic should be routed away from noise sensitive areas, where possible. 4. Noise levels must be kept within acceptable limits. 5. Noisy operations should be combined so that they occur where possible at the same time. 6. Mine workers to wear necessary ear protection gear. 7. Noisy activities to take place during allocated hours. 8. Noise from labourers must be controlled. 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. 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. 11. Implementation of enclosure and cladding of processing plants. 12. Applying regular and thorough maintenance schedules to equipment and processes. An	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.

		increase in noise emission levels very often is a sign of the imminent mechanical failure of a machine.		
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		individual or persons representing the Environmental Control Officer as identified above. 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. Palaeontology: **CHANCE FINDS PROTOCOL** The following procedure will only need to be followed if fossils are uncovered during excavation. This informational document is intended for workmen and foremen on the construction site. It describes the actions to be taken when mining or construction activities accidentally uncovers fossil material. It is the responsibility of the Environmental Site Officer (ESO) or site manager of the project to train the workmen and foremen in the procedure to follow when a fossil is accidentally uncovered. In the absence of the ESO, a member of the staff must be appointed to be responsible for the proper implementation of the Chance Find Protocol as not to compromise the conservation of fossil material. **Legislation** Cultural Heritage in South Africa (includes all heritage resources) is protected by the **National Heritage Resources Act (Act 25 of 1999) (NHRA).** According to Section 3 of the Act, all Heritage resources include **"all**		

		objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens". Palaeontological heritage is unique and non-renewable and is protected by the NHRA and is the property of the State. It is thus the responsibility of the State to manage and conserve fossils on behalf of the citizens of South Africa. Palaeontological resources may not be excavated, broken, moved, or destroyed by any development without prior assessment and without a permit from the relevant heritage resources authority as per section 35 of the NHRA. A fossil is the naturally preserved remains (or traces) of plants or animals embedded in rock. These plants and animals lived in the geologic past millions of years ago. Fossils are extremely rare and irreplaceable. By studying fossils, it is possible to determine the environmental conditions that existed in a specific geographical area millions of years ago. **1.3 Protocol** If a chance find is made the person responsible for the find must immediately **stop working** and all work that could impact that finding must cease in the immediate vicinity of the find. The person who made the find must immediately **report** 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: www.sahra.org.za). The information to the Heritage Agency must include photographs of the find, from various angles, as well as the GPS co-ordinates. A preliminary report must be submitted to the Heritage Agency within **24 hours** 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. 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. 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. The site must be secured to protect it from any further damage. **No attempt** 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. 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. Once Heritage Agency has issued the written authorization, the developer may continue with the development on the affected area.		
Waste Management		**Litter management**	Duration of operation	The implementation of the recommended mitigation measures

		1. Refuse bins must be placed at strategic positions to ensure that litter does not accumulate within the construction/prospecting site. 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. 3. Good housekeeping practices should be implemented to regularly maintain the litter and rubble situation on the construction/prospecting site. 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. 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. 6. Skip waste containers should be maintained on site. These should be kept covered and arrangements made for them to be collected regularly. 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. 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. 9. A certificate of disposal shall be obtained by the Contractor and kept on file, if relevant. 10. Under no circumstances may solid waste be burnt on site. 11. All waste must be removed promptly to ensure that it does not attract vermin or produce odours. **Hazardous waste** 12. All waste hazardous materials must be carefully stored as advised by the ECO, and then disposed		will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.

		of offsite at a licensed landfill site, where practical. Incineration may be used where relevant. 13. Contaminants to be stored safely to avoid spillage. 14. Machinery must be properly maintained to keep oil leaks in check. 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. **Sanitation** 16. The Contractor shall install mobile chemical toilets on the site. 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. 18. Toilets shall be serviced regularly and the ECO shall inspect toilets regularly. 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. 20. Under no circumstances may open areas, neighbours fences or the surrounding bush be used as a toilet facility. 21. The construction of "Long Drop" toilets is forbidden, but rather toilets connected to the sewage treatment plant. 22. Potable water must be provided for all construction staff. **Remedial actions** 23. Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-site. 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.		

		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. 26. If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent material. 27. If necessary, oil absorbent sheets or pads must be attached to leaky machinery or infrastructure. 28. Materials used for the remediation of petrochemical spills must be used according to product specifications and guidance for use. 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.		
Water Use and Quality	Water pollution	**Water Use** 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. 2. Water must be reused, recycled or treated where possible. **Water Quality** 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. 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. 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. **Stormwater**		

		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. 7. Silt fences should be used to prevent any soil entering the stormwater drains. 8. Temporary cut off drains and berms may be required to capture stormwater and promote infiltration. 9. Promote a water saving mind set with construction/prospecting workers in order to Contractor ensure less water wastage. 10. New stormwater construction must be developed strictly according to specifications from engineers in order to ensure efficiency. 11. Hazardous substances must be stored at least 20m from any water bodies on site to avoid pollution. 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. 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. 14. There should be a periodic checking of the site's drainage system to ensure that the water flow is unobstructed. 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. **Groundwater resource protection** 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. 17. Prevent dirty water runoff from leaving the general mining area; 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; 19. Enough supply of absorbent fibre should be kept at the site to contain accidental spills; 20. Contain dirty water in return water dams and re-use dirty water for dust suppression and make up water in the plant; 21. Proper storm water management should be implemented. Berms should also be constructed to ensure separation of clean water and dirty water areas; 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 **Sanitation** 23. Adequate sanitary facilities and ablutions must be provided for construction workers (1 toilet per every 15 workers). 24. The facilities must be regularly serviced to reduce the risk of surface or groundwater pollution. **Concrete mixing** 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. **Public areas** 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. 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. 28. No washing or servicing of vehicles on site. **Infrastructure** 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.		

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	• Conduct regular internal audits • Conduct regular external audits	• Environmental Manager • Suitable qualified environmental auditor	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	• Conduct regular internal audits • Conduct regular external audits	• Environmental Manager • Suitable qualified environmental auditor	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	• Conduct regular internal audits • Conduct regular external audits	• Environmental Manager • Suitable qualified environmental auditor	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	• Conduct regular internal audits • Conduct regular external audits	• Environmental Manager • Suitable qualified environmental auditor	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.

Mopane Tree SA (Pty) Ltd 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.

Mopane Tree SA (Pty) Ltd 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************