Reg. Nr BK 2004/077075/23
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ENVIRONMENTAL IMPACT ASSESSMENT REPORT & ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT FOR:

The proposed Prospecting Right application to prospect for Diamonds Alluvial (DA), Diamonds General (D) and Diamonds (DIA) near Wolmaransstad on Portion 8, 16, 19, 21, 22 and 27 of the farm Katboschfontein 164, Registration Division: HO, North West province.

NAME OF APPLICANT	**NVW Boerdery (Pty) Ltd**
PREPARED BY	**Milnex CC**
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POSTAL ADDRESS:	P.O. Box 1086, Schweizer-Reneke, 2780
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REFERENCE NUMBER:	**NW30/5/1/1/2/13724PR**

Table of Contents

List of Figures:

LIST OF APPENDIXES

PROJECT INFORMATION

Project Name:	Application for an Environmental Authorisation and subsequent Environmental Impact Assessment (Scoping and EIR-phase) for the proposed Prospecting Right application to prospect for Diamonds Alluvial (DA), Diamonds General (D) and Diamonds (DIA) near Wolmaransstad on Portion 8, 16, 19, 21, 22 and 27 of the farm Katboschfontein 164, Registration Division: HO, North West province.
DMRE ref:	NW30/5/1/1/2/13724PR
Report Title:	EIR & EMPr
Prepared By:	Milnex CC
Date:	11/08/2023

QUALITY CONTROL:

	Report Author:	**Report Reviewer:**
Name:	Lizanne Esterhuizen Honours Degree in Environmental Science EAPASA reg: 2021/4429	N/A
Signature:		

DISCLAIMER:

The DFFE screening tool was used in compiling this document.

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.

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
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

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

Milnex CC was contracted by **NVW Boerdery (Pty) Ltd** as the independent environmental consultant to undertake the Scoping and EIA process for a Prospecting Right application to prospect for Diamonds Alluvial (DA), Diamonds General (D) and Diamonds (DIA) near Wolmaransstad on Portion 8, 16, 19, 21, 22 and 27 of the farm Katboschfontein 164, Registration Division: HO, North West province. The property is located approximately 40km East of Schweizer-Reneke on route to Wolmaransstad in the North West Province. The property is located approximately 40km East of Schweizer-Reneke on route to Wolmaransstad in the North West 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 experience in environmental impact assessment and environmental management, especially in the mining industry.

Milnex CC has experience consulting in the environmental field. Their key focus is on environmental assessment, advice and management and ensuring compliance to legislation and guidelines. They are currently involved in undertaking EIAs for several projects across the country (refer to **Appendix 2** for CV).

B. DESCRIPTION OF THE PROPERTY

Farm Name:	1) Portion 8 of the farm Katboschfontein 164 Extent: 352.1303 hectares Title Deed: T13861/2009 2) Portion 16 of the farm Katboschfontein 164 Extent: 454.6757 hectares Title Deed: T109467/2002 3) Portion 19 of the farm Katboschfontein 164 Extent: 171.3064 hectares Title Deed: T109470/2002 4) Portion 21 of the farm Katboschfontein 164 Extent: 98.5012 hectares Title Deed: T14834/2002 5) Portion 22 of the farm Katboschfontein 164 Extent: 85.6532 hectares Title Deed: T109467/2002 6) Portion 27 of the farm Katboschfontein 164 Extent: 171.3064 Title Deed: T148340/2002
Application area (Ha)	1333.5732 hectares
Magisterial district:	Dr Kenneth Kaunda District Municipality Maquassi - Hills Local Municipality
Registration division:	HO
Distance and direction from nearest town	The property is located approximately 40km East of Schweizer-Reneke on route to Wolmaransstad in the North West Province.
21 digit Surveyor General Code for each farm portion	1) T0HO00000000016400008 2) T0HO00000000016400016 3) T0HO00000000016400019 4) T0HO00000000016400021 5) T0HO00000000016400022 6) T0HO00000000016400027
Minerals applied for	Diamonds Alluvial (DA) Diamonds General (D) Diamonds (DIA)
Locality map	Attach a locality map at a **scale not smaller than 1:250000 and attach as Appendix 2**

iii. Farm co-ordinates

Farms	Longitude	Latitude	Longitude	Latitude
1) Portion 8 of the farm Katboschfontein 164	27° 8' 25,335"" S	25° 43' 49,472"" E	25° 41' 16,446"" E	27° 7' 47,696"" S
2) Portion 16 of the farm Katboschfontein 164	27° 9' 18,636"" S	25° 42' 54,043"" E	25° 41' 33,756"" E	27° 7' 32,417"" S
3) Portion 19 of the farm Katboschfontein 164	27° 9' 21,391"" S	25° 42' 46,458"" E	25° 41' 46,748"" E	27° 7' 19,144"" S
4) Portion 21 of the farm Katboschfontein 164	27° 9' 32,631"" S	25° 42' 13,837"" E	25° 41' 56,996"" E	27° 7' 8,643"" S
5) Portion 22 of the farm Katboschfontein 164	27° 9' 46,677"" S	25° 41' 34,563"" E	25° 41' 57,727"" E	27° 7' 19,507"" S
6) Portion 27 of the farm Katboschfontein 164	27° 8' 50,994"" S	25° 41' 11,841"" E	25° 42' 36,359"" E	27° 7' 7,155"" S
	27° 8' 37,118"" S	25° 41' 9,685"" E	25° 42' 47,506"" E	27° 7' 10,936"" S
	27° 8' 6,127"" S	25° 40' 58,384"" E	25° 42' 43,351"" E	27° 7' 30,316"" S
	27° 7' 51,824"" S	25° 41' 12,159"" E	25° 42' 49,765"" E	27° 7' 32,153"" S
	27° 7' 53,789"" S	25° 41' 14,761"" E	25° 43' 14,708"" E	27° 7' 36,773"" S
	27° 7' 49,660"" S	25° 41' 19,177"" E	25° 43' 4,486"" E	27° 8' 12,991"" 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.

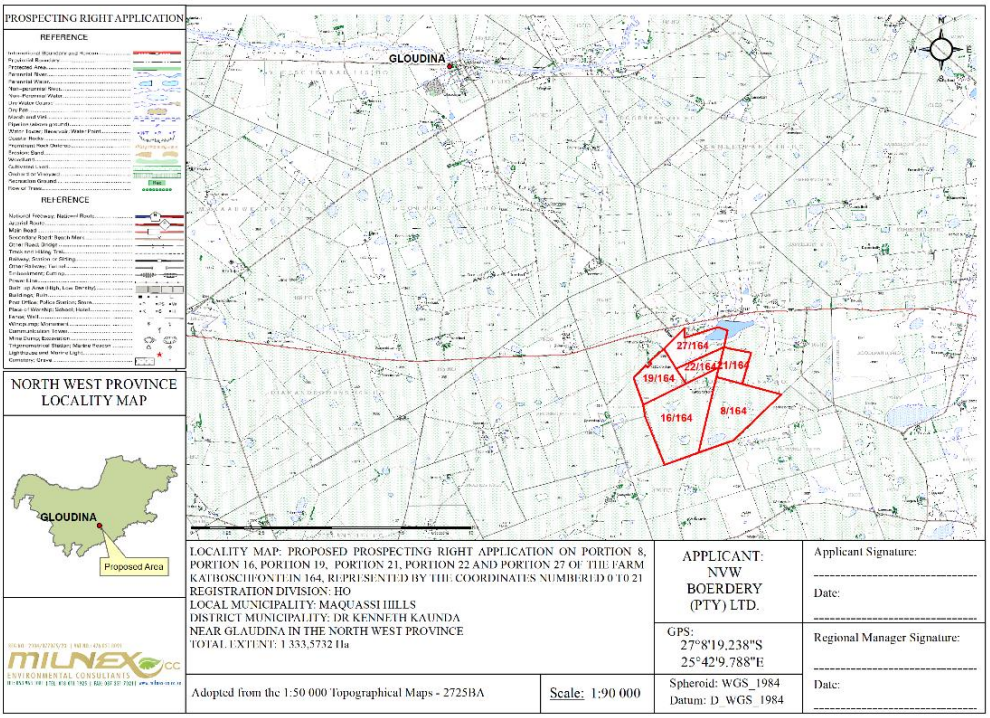

Figure 1: Locality Map of the proposed area

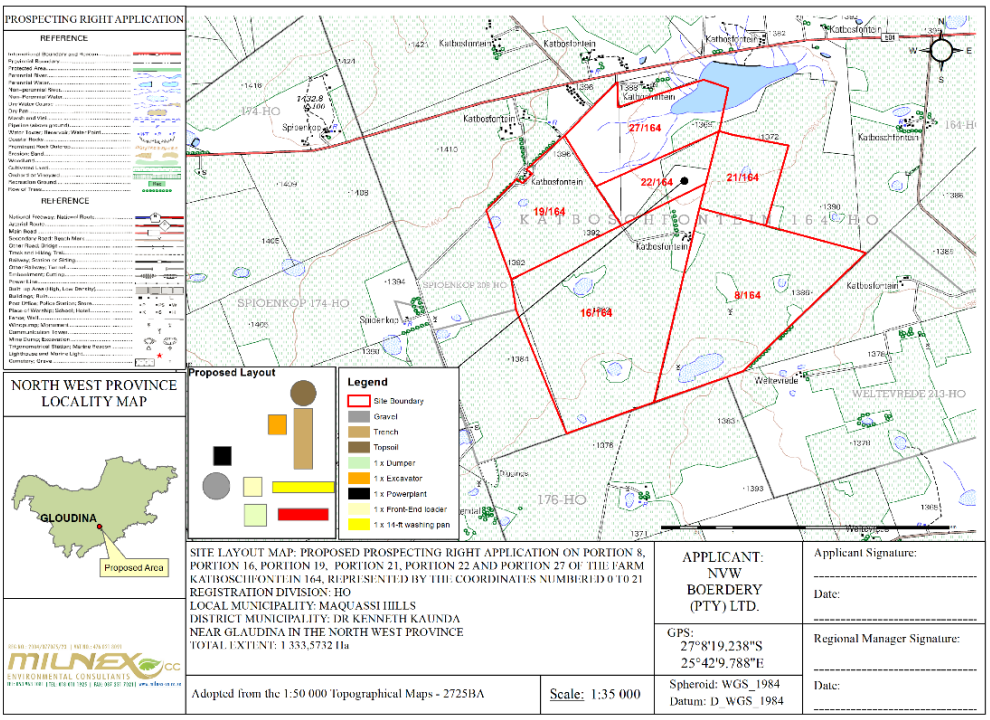

Figure 2: Site Plan

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 a watercourse;* **2) Listing Notice 1, GNR 327, Activity 20 (As amended GNR 517: 2021):** *"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, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the prospecting right"* **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 (As amended GNR 517: 2021):** *"The removal and disposal of minerals which requires permission contemplated in terms of section 20 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice, Listing Notice 1 of 2014 or in Listing Notice 3 of 2014, required to exercise the permission.* ***5)* Listing Notice 3 GNR 324, Activity 4:** *The development of a road wider than 4 metres with a reserve less than 13,5 metres.* ***(h) North West (ii)*** *Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* ***(iv)*** *Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority;*

	6) **Listing Notice 3 GNR 324, Activity 10:** *The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.* ***(h) North West (iv)*** *Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority;* ***(vi)*** *Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.* ***7)*** **Listing Notice 3 GNR 324, Activity 12:** *The clearance of an area of 300 square metres or more of indigenous vegetation;* ***(h) North West (v)*** *Within critical biodiversity areas identified in systematic biodiversity plans adopted by the competent authority or* ***(vi)*** *Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland* Prospecting right with bulk samples for the prospecting of **Diamonds Alluvial (DA), Diamonds General (D) and Diamonds (DIA)** including associated infrastructure, structure and earthworks. **Please note the establishment or reclamation of residue stockpiles or residue deposits will still take place, but is now exempt from the list of Waste Management Activities (GNR 921, as amended)**

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: 97 200 tonnes</u>** 1333.5732 ha **Pits:** 100 pits with dimensions of (3m x 3m x4m) **Trenches:** 30 trenches with dimensions (30m x 30m x4m) ***Listing Notice 1, (GNR327), 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 a watercourse;*	Extent of the proposed portions is 1333.5732 ha Concurrent backfilling will take place in order to rehabilitate.	X	Listing Notice 1: (GNR327), Activity 19	
Prospecting Right: **<u>BULK SAMPLING: 97 200 tonnes</u>** 1333.5732 ha **Pits:** 100 pits with dimensions of (3m x 3m x4m) **Trenches:** 30 trenches with dimensions (30m x 30m x4m) **Listing Notice 1 (GNR 327), Activity 20 (Amended GNR 517: 2021): "***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, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the prospecting right"*	Extent of the proposed portions is 1333.5732 ha Concurrent backfilling will take place in order to rehabilitate.	X	Listing Notice 1 (GNR 327), Activity 20 (Amended GNR 517: 2021)	

Clearance of indigenous vegetation: **<u>BULK SAMPLING: 97 200 tonnes</u>** 1333.5732 ha **Pits:** 100 pits with dimensions of (3m x 3m x4m) **Trenches:** 30 trenches with dimensions (30m x 30m x4m) **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 is 1333.5732 ha Concurrent backfilling will take place in order to rehabilitate.	X	Listing Notice 1, (GNR 327), Activity 27	-
Prospecting: **<u>BULK SAMPLING: 97 200 tonnes</u>** 1333.5732 ha **Pits:** 100 pits with dimensions of (3m x 3m x4m) **Trenches:** 30 trenches with dimensions (30m x 30m x4m) **Listing Notice 2, GNR 325, Activity 19 (As amended GNR 517: 2021):** *"The removal and disposal of minerals which requires permission contemplated in terms of section 20 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice, Listing Notice 1 of 2014 or in Listing Notice 3 of 2014, required to exercise the permission.*	Extent of the proposed portions is 1333.5732 ha Concurrent backfilling will take place in order to rehabilitate.	X	Listing Notice 2, GNR 325, Activity 19 (As amended GNR 517: 2021)	-
Clearance of indigenous vegetation: **<u>BULK SAMPLING: 97 200 tonnes</u>** 1333.5732 ha **Pits:** 100 pits with dimensions of (3m x 3m x4m) **Trenches:** 30 trenches with dimensions (30m x 30m x4m) **Listing Notice 3 GNR 324, Activity 4:** *The development of a road wider than 4 metres with a reserve less than 13,5 metres.* ***(h) North West (iv)*** *Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority;*	Extent of the proposed portions is 1333.5732 ha Concurrent backfilling will take place in order to rehabilitate.	X	Listing Notice 3 GNR 324, Activity 4 (h)(iv)	

Prospecting equipment: **Listing Notice 3 GNR 324, Activity 10:** *The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.* ***(h) North West (iv)*** *Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority; or* ***(vi)*** *Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.*	Extent of the proposed portions is 1333.5732 ha Concurrent backfilling will take place in order to rehabilitate.	X	Listing Notice 3 GNR 324, Activity 10 (h)(iv)(vi)	
Clearance of indigenous vegetation: **<u>BULK SAMPLING: 97 200 tonnes</u>** 1333.5732 ha **Pits:** 100 pits with dimensions of (3m x 3m x4m) **Trenches:** 30 trenches with dimensions (30m x 30m x4m) **Listing Notice 3 GNR 324, Activity 12:** *The clearance of an area of 300 square metres or more of indigenous vegetation;* ***(h) North West (iv)*** *Within critical biodiversity areas identified in systematic biodiversity plans adopted by the competent authority; or* ***(vi)*** *Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland*	Extent of the proposed portions is 1333.5732 ha Concurrent backfilling will take place in order to rehabilitate.	X	Listing Notice 3 GNR 324, Activity 12 (h)(iv)(vi)	-

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

NVW Boerdery (Pty) Ltd has embarked on a process for applying for a Prospecting Right application to prospect for Diamonds Alluvial (DA), Diamonds General (D) and Diamonds (DIA) near Wolmaransstad on Portion 8, 16, 19, 21, 22 and 27 of the farm Katboschfontein 164, Registration Division: HO, North West province. The property is located approximately 40km East of Schweizer-Reneke on route to Wolmaransstad in the North West Province. **NVW Boerdery (Pty) Ltd** requires a prospecting right in terms of NEMA and the Mineral and Petroleum Resources Development Act to prospect for Diamonds Alluvial (DA), Diamonds General (D) and Diamonds (DIA) within the Maquassi Hills Local Municipality, North West 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

DESCRIPTION OF PLANNED NON-INVASIVE ACTIVITIES:
(These activities do not disturb the land where prospecting will take place e.g. aerial photography, desktop studies, aeromagnetic surveys, etc)

Phase 3 – Consolidation and Interpretation of Results Data (2 Months)

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, Dr. Deon Vermaakt, 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 DMRE 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.

DESCRIPTION OF PLANNED INVASIVE ACTIVITIES:

(These activities result in land disturbances e.g. sampling, drilling, bulk sampling, etc)

Phase 1 – Pitting (10 Months)

A trial pit / test pit or inspection pit investigation is a highly effective way of obtaining data on the sub surface soil and rock conditions which underlie a prospecting sight. It allows for the various soils and rock types to be locked, the soil to be sampled and a preliminary assessment to be made.

Pits will be dug, locked, sampled and backfilled. To dig the pits the applicant will make use of the systems of Dr. Deon Vermaakt, 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 10 months once the prospecting right has been granted.

Calculations

It is planned that 100 pits will be dug (it may be less depending on the results) at an extent of 3m (length) x 3m (width) x 4m (depth).

Timeframe: 10 months (month 0 -10)		
Pits per year	100 pits / 1 years =	100 pits dug per year
Total area to be disturbed per year:	100 pits x (3m x 3m) / 10 000 =	0.09 Ha disturbed per year

Phase 2 – Trenches (24 Months)

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 97 200 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. Top soil will then be removed and stored separately for later used for rehabilitation.

The bulk samples will be made in the form of box cuts the dimensions of these individual box cuts will on average be 30m long x 30m wide. It is estimated that the bulk samples will be 4m in depth.

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

It is estimated that pitting and trenching will take approximately 34 months.

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

Timeframe: 24 months (month 10 - 34)		
Trenches per year	30 trenches / 2 years =	15 trenches dug per year
Total area to be disturbed per year:	15 trenches x (30m x 30m) / 10 000 =	1.35 Ha disturbed per year
Total area disturbed for 24 months	30 trenches x (30m x 30m) / 10 000 =	2.7 Ha disturbed

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

Water uses:
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).

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)
14	15	150	40	400

Since 1 x 14 feet washing pan will be used, the amount of water for the pans will be 15 000 L/hour from which 30% is re-used.

Dust suppression
Unacceptable levels of dust fallout can be determined by implementing dust management by 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.

Types of lubricants should be dependent on the machines used, this will include diesel, fuel and oil. It should be noted that no more than 80 000 cubes metres of diesel may be stored on site.

List of equipment's & infrastructure

List of equipment
1 x Excavator
1 x Front-end Loader
1 x Dumper
1 x 14 feet Washing pan
1 x Powerplant

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:
Constitution of South Africa Act 108 of 1996	National	18 December 1996
National Environmental Management Act No. 107 of 1998	National	29 January 1999
EIA regulations under NEMA	National	14 December 2014
Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)	National	1 May 2004
Mineral and Petroleum Resources Development Regulations, 2014.	National	23 April 2004
The National Heritage Resources Act (Act No. 25 of 1999)	National & Provincial	1 April 2000
National Environmental Management Waste Act, 2008 (Act No. 59 of 2008)	National	1 July 2009
NEM:WA (Act No. 59 of 2008) Regulations regarding the Planning & Management of Residue Stockpiles & Residue Deposits from a Prospecting, Mining, Exploration or Production Operation	National & Provincial	24 July 2015
National Environmental Management: Biodiversity Act No. 10 of 2004	National	1 September 2004
National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004).	National and Provincial	11 September 2005
National Water Act, 1998 (Act No. 36 of 1998).	National	6 December 1999
National Forest Act (Act 84 of 1998) (NFA)	National	1 April 1999
National Veld & Forest Fires Act (Act 101 of 1998)	National	27 November 1998
Conservation of Agricultural Resources Act,1983 (Act No. 43 of 1983)	National	1 June 1984
National Infrastructure Plan	National	11 March 2022
National Environmental Management: Protected Areas Act 57 of 2003	National	1 November 2004
Hazardous Substances Act (No. 15 of 1979), Amended	National	4 April 1973
Subdivision of Agricultural Land Act (No. 70 of 1970)	National	2 January 1971
Occupational Health and Safety Act (No. 85 of 1993)	National	
Mine Health and Safety Act (No. 29 of 1996)	National	15 January 1997
NWA: Regulations on use of Water for Mining and Related Activities aimed at the Protection of Water Resources	National	4 June 1999.
Dr Kenneth Kaunda District Municipality Integrated Development Plan (IDP)	Municipal	

Maquassi Hills Local Municipality Integrated Development Plan (IDP)	Municipal	

Policy and Legislative Context

Title of legislation, policy or guideline:	Reference where applied	How does this development comply with and respond to the legislation and policy context.	Reference where applied
Constitution of South Africa Act 108 of 1996	Section 24	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 of the Constitution of the Republic of South Africa (Act 108 of 1996) states the following: *"Everyone has the right –* *(a) to 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.	Throughout the EIA process
National Environmental Management Act No. 107 of 1998 as amended.	S24(1) of NEMA S28(1) of NEMA	In order to give effect to the general objectives of integrated environmental management laid down in this Chapter, the potential consequences for or impacts on the environment of listed activities or specified activities must be considered, investigated, assessed and reported on to the competent authority or the Minister responsible for mineral resources, as the case may be, except in respect of those activities that may commence without having to obtain an environmental authorisation in terms of this Act. Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.	Throughout the EIA process
EIA regulations as amended under NEMA	Listing notice 1 Listing notice 2 Listing Notice 3	The National Environmental Management Act107 of 1998 (NEMA), as amended, makes provision for the identification and assessment of activities that are potentially detrimental to the environment. These activities are detailed in Listing Notice 1 (as amended by GNR 327 of 7 April 2017), Listing Notice 2 (as amended by GNR325 of 7 April 2017) and Listing Notice 3 (as amended by GNR324 of 7 April 2017). Undertaking activities specified in the Listing Notices are only allowed once Environmental Authorisation has been obtained from the competent authority. Such Environmental Authorisation will only be considered once there has been compliance with the EIA Regulations, 2014. The Environmental Authorisation which may be granted subject to conditions.	Throughout the EIA process

Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)	Section 10, 16, 22, 27, 38A and 48	Any person who wishes to apply to the Minister for a prospecting right, mining right or mining permit must simultaneously apply for an environmental authorisation and must lodge the application - Once the application is accepted, an Environmental Impact Assessment (BAR or EIR process), including stakeholder consultation and reporting, must be conducted as per Chapter 5 of the National Environmental Management Act, 1998 (NEMA).	Throughout the EIA process
Mineral and Petroleum Resources Development Regulations, 2014.	Regulations 3, 5, 10 and 14	MPRDA Regulations prescribe how an application for a permit or right must be lodged.	Throughout the EIA process
The National Heritage Resources Act (Act No. 25 of 1999)	Section 35 Section 38	The National Heritage Resources Act (Act No 25 of 1999, Section 35) protects South Africa's unique and non-renewable archaeological and palaeontological heritage sites. These sites may not be disturbed without a permit from the relevant heritage resources authority. Section 38 of the NHRA provides guidelines for Cultural Resources Management and proposed developments:	Throughout the EIA process
National Environmental Management Waste Act, 2008 (Act No. 59 of 2008)	Category A Category B Category C	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)). The National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM:WA) regulates waste management in all aspects and created a list of waste management activities that have, or are likely to have, a detrimental effect on the environment, which requires an impact assessment and licensing process. Activities listed in Category A require a Basic Assessment process, activities listed in Category B require a Scoping and EIA process and activities under Category C must comply with the relevant requirements or standards, in order for competent authorities to consider an application in terms of NEM:WA.	Throughout the EIA process
NEM:WA (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.	Throughout the entire EIA process.

National Environmental Management: Biodiversity Act No. 10 of 2004	Chapter 4 Chapter 5	The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) is part of a suite of legislation falling under NEMA. The Act provides for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; the protection of species and ecosystems that warrant protection; the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute; and for matters connected therewith (SANBI). Chapter 4 of NEMBA deals with threatened and protected ecosystems and species to ensure the maintenance of their ecological integrity, their survival in the wild, the utilisation of biodiversity is managed in an ecologically sustainable way and to regulate international trade in specimens of endangered species. Chapter 5 of NEMA deals with species and organisms posing potential threats to biodiversity. The purpose of this chapter is to prevent the introduction and spread of alien species and invasive species, also to manage, control and eradicate alien species and invasive species	Throughout the EIA process
National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004).	Section 21	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.	Throughout the EIA process
National Water Act, 1998 (Act No. 36 of 1998).	Section 21	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.	Throughout the EIA process

National Forest Act (Act 84 of 1998) (NFA)	Regulation 7	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). Regulation 7 from the Act states the following: **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.	Throughout the EIA process
National Veld & Forest Fires Act (Act 101 of 1998)	Regulation 13 Chapter 5	The purpose of the Act is to prevent and combat veld, forest and mountain fires throughout the Republic and provides for a variety of institutions, methods and practices for achieving the purpose. Regulations 13 provides the requirement for firebreaks. Chapter 5 places a duty on all owners to acquire equipment and have available personnel to fight fires.	Throughout the EIA process
Conservation of Agricultural Resources Act (Act No. 85 of 1983)		The purpose 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. The objects of this Act are to provide for the conservation of the natural agricultural resources of the Republic by the maintenance of the production potential of land, by the combating and prevention of erosion and weakening or destruction of the water sources, and by the protection of the vegetation and the combating of weeds and invader plants.	Throughout the EIA process
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. This mining activity will indirectly contribute to the growing of the South African economy.	Throughout the EIA process
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.	Throughout the EIA process
Hazardous Substances Act (No. 15 of 1979)		The object of the Act is inter alia to 'provide for the control of substances which may cause injury or ill health to, or death of, human beings by reason of their toxic, corrosive, irritant, strongly sensitising or flammable nature or the generation of pressure thereby in certain circumstances; for the control of electronic products; for the division of such substances or products into groups in relation to the degree of danger; for the prohibition and control of such substances.' In terms of the Act, substances are divided into schedules, based on their relative degree of toxicity, and the Act provides for the control of importation, manufacture, sale, use, operation, application, modification, disposal and dumping of substances in each schedule.	Throughout the EIA process

Subdivision of Agricultural Land Act (No. 70 of 1970)		This Act regulates the subdivision of agricultural land and its use for purposes other than agriculture. The Directorate of Resource Conservation is responsible for the enforcement thereof. Investigations are done by the Provincial Department in support of the execution of the Act. The Act also deals with aspects associated with rezoning land.	Throughout the EIA process
Occupational Health and Safety Act (No. 85 of 1993)		The Occupational Health and Safety Act (No. 85 of 1993) (OHSA) provides a legislative framework for the provision of reasonably healthy and safe conditions in the workplace. It also places extensive legal duties on employees and users of machinery and makes major inroads on employers' and employees' common law rights. The OHSA is applicable and states that any person involved with construction, upgrades or developments for use at work or on any premises shall ensure as far as reasonably practicable that nothing about the manner in which it is installed, erected or constructed makes it unsafe or creates a risk to health when properly used	EMPr.
Mine Health and Safety Act (No. 29 of 1996)		The Mine Health and Safety Act (No. 29 of 1996) (MHSA) aims to protect and promote the health and safety of employees and persons that may be affected by the activities at a mine and outlines both the rights and responsibilities of an employer, as well as the obligations of employees working thereat. The following principles are considered applicable to the Proposed Project and are detailed below: • The primary responsibility for ensuring a health and safe working environment in the mining site is placed on the mine owner. The Act sets out in detail the steps that employers must take to identify, assess records and control health and safety hazards in the mine; • The right of workers to participate in health and safety decisions, the right to receive health and safety information, the right to training and the right to withdraw from the workplace in face of danger; • The Act requires the establishment of institutions to promote a culture of health and safety and develop policy, legislation and regulations; and • The responsibility for enforcing MHSA lies with the Mine Health and Safety Inspectorate. The Inspectorate's powers are recast and include the power to impose administrative fines upon employers who contravene the MHSA. The Act also contains innovative approaches to the investigation of accidents, diseases and other occurrences that threaten health and safety.	EMPr.
Regulations on use of Water for Mining and Related Activities aimed at the Protection of Water Resources		GNR.704 of 1999 under the NWA provides regulations on the use of water for mining and related activities aimed at the protection of water resources (requirements for clean and dirty water separation). GNR.704 requires inter alia the following: • Separation of clean (unpolluted) water from dirty water; • Collection and confinement of the water arising within any dirty area into a dirty water system; • Design, construction, maintenance and operation of the clean water and dirty water management systems so that it is not likely for either system to spill into the other more than once in 50 years; • Design, construction, maintenance and operation of any dam that forms part of a dirty water system to have a minimum freeboard of 0.8m above full supply level, unless otherwise specified in terms of Chapter 12 of the Act; and	Throughout the EIA process

		• Design, construction, and maintenance of all water systems in such a manner as to guarantee the serviceability of such conveyances for flows up to and including those arising as a result of the maximum flood with an average period of recurrence of once in 50 years. <u>GNR.704 also stipulates that no person in control of a mine or activity may:</u> Locate or place any residue deposit, dam, reservoir, together with any associated structure or any other facility within the 1:100 year flood line or within a horizontal distance of 100m from any watercourse or estuary, borehole or well, excluding boreholes or wells drilled specifically to monitor the pollution of groundwater, or on water-logged ground, or on ground likely to become water-logged, undermined, unstable or cracked; Place or dispose of any residue or substance which causes or is likely to cause pollution of a water resource, in the workings of any underground or opencast mine excavation, prospecting diggings, pit or any other excavation; or Use any area or locate any sanitary convenience, fuel depots, reservoir or depots for any substance which causes or is likely to cause pollution of a water resource within the 1:50 year flood line of any watercourse or estuary.	
District Municipality Integrated Development Plan (IDP)		The IDP and SDFs of the relevant municipalities was examined and relevant information was included in the EIA report.	EIA report.
Local Municipality Integrated Development Plan (IDP)		The IDP and SDFs of the relevant municipalities was examined and relevant information was included in the EIA report.	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;).

Mineral rights have been applied for all around the proposed site, and the outcome of that studies suggest the possibility of encountering further diamond deposits.

Economic activity in modern-day South Africa has been centred on mining activities, their ancillary services and supplies. The country's stock exchange in Johannesburg was established in 1887, a decade after the first diamonds were discovered on the banks of the Orange River, and almost simultaneously with the gold rush on the world-famous Witwatersrand.

In many ways, South Africa's political, social and economic landscape has been dominated by mining, given that, for so many years, the sector has been the mainstay of the South African economy. Although gold, diamonds, platinum and coal are the most well-known among the minerals and metals mined, South Africa also hosts chrome, vanadium, titanium and a number of other lesser minerals.

In 2018 the mining sector contributed R351 billion to the South African gross domestic product (GDP). A total of 456,438 people were employed in the mining sector in 2018. Each person employed in the mining sector has up to nine indirect dependents. The mining sector has, for many years, attracted valuable foreign direct investment to South Africa. (Mineral Council, 2021)

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.

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 possible presence of shallow diamond. Access will be obtained from existing gravel roads off the R504.

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 for Diamonds Alluvial (DA), Diamonds General (D) and Diamonds (DIA) near Wolmaransstad on Portion 8, 16, 19, 21, 22 and 27 of the farm Katboschfontein 164, Registration Division: HO in the North West province, were identified.

The property has existing two trace gravel roads that traverse the area. The proposed area is also mostly transformed to agricultural fields.

Preferred activity

The prospecting of diamonds is the optimum preferred activity for the site for the applicant. The shallow diamond deposits make the site ideal for alluvial diamond mining. The mine will provide significantly more job opportunities than what is providing currently.

Crop farming is currently practiced on the proposed area and it should be noted that the applicant is also the landowner.

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. It is expected that the Diamonds Alluvial (DA), Diamonds General (D) and Diamonds (DIA) been deposited on this farm and therefore the applicant would like to commence with their prospecting activities.

The proposed area also does not have existing mineral rights allocated to it as the prospecting right application was accepted by the DMRE.

- **Activity alternatives**

  The environmental impact assessment process also needs to consider if the development of an alluvial diamond 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 alluvial diamond.

  Crop farming is currently practiced on the proposed area and it should be noted that the applicant is also the landowner.

- **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 exact layout will only be determined after a formal site visit and desktop study, which will only occur after the Environmental Authorisation (EA) is granted and the mineral right issued. (see **Appendix 9** for the PWP).

  The layout follows the limitations of the site and aspects such as, roads, site offices and workshop area. All infrastructure will be temporary and/or mobile.

  According to the map below (**Figure 21 and Figure 22**), the proposed area is largely covered with farmlands and used for the cultivation of crops, there are natural area and waterbodies as well.

  From google earth (**Figure 23**) the farmlands and natural areas are visible.

  If applicable a Water Use License Application will be launched for conducting prospecting operations.

- **Operational alternatives**

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

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

  Based on the outcome of the desktop studies and site investigation, pits will be dug by an excavator for the purpose of soil sampling. If gravel is found, the applicant will determine the 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 a 10-18 feet washing pan 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. The site is currently zoned for agricultural land uses. 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 do pitting and trenching, remove the diamond bearing gravel with an excavator, depositing it in the 10 – 18 feet rotary pan(s) to be washed and sorted. Please find the Prospecting Work Programme attached as **Appendix 9**.

  Dense Media Separation (DMS)

  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. Waste water 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.

Rotary Pan Plants

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.

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

Dust Suppression

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.

Disclaimer:

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.

NEWSPAPER ADVERTISEMENT

An advertisement was placed in English in the local newspaper (**Stellalander**) on the **19 April 2023** (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.

19 APRIL 2023 STELLALANDER BLADSY 7

Rugbytoer na Oakdale

Hanco Halgryn van Hoërskool Vryburg is tydens die Oakdale rugbyweek gekies vir die Klein Karoo Saadproduksiespan, wat gekies word uit die top rugbyskole in die land. (Foto: verskaf)

Die eerste rugbyspan van Hoërskool Vryburg het op Vrydag, 31 Maart die oggend 3:00 met 'n groot opgewondenheid vertrek na Oakdale. Saterdag, 1 April het VHS vir HS Swartland die stryd aangesê. VHS stap weg met 'n oorwinning van 24-15. Sondag, 2 April was die span in Hartenbos bederf deur Tokkie Ferreira, PJ Pretorius en JD van der Vyver wat vir die span gebraai het. Op Maandag, 3 April het VHS weer die voorreg kry om met 'n oorwinning weg te stap toe hulle vir HS Sentraal 24-10 wen. Op Woensdag, 5 April, het VHS hulle grootste uitdaging teen Langenhoven Gim in die gesig gestaar. VHS het ongelukkig 29-10 verloor teen hulle. (Foto: verskaf)

Hokkie-en netbalspelers toer na Wallis

Die volgende netbalspelers van Hoërskool Vryburg is tydens hulle onlangse netbaltoer na Mosselbaai gekies om deel te vorm van die toergroep na Wallis, Verenigde Koningkryke. Vlnr is Annika du Toit, Lea-Mae Niemann, Ande Mayathula, Phemelo Bodike en (Foto: verskaf)

Anne-Marie Coetzee, Chestair-Lean Jansen, Merichen Meyer, Mariza Oosthuizen, Joané Mouton, Zandri Grobler en Leanri Jansen is van Hoërskool Vryburg se hokkiespelers wat tydens hulle toer in Mosselbaai gekies is om deel te vorm van die span wat gaan toer na Wallis. (Foto: verskaf)

Die volgende seuns-hokkiespelers van Hoërskool Vryburg, Elyah Sheba, Ofentse Kola is gekies om deel te wees van die toerspan na Wallis. (Foto: verskaf)

ATTENTION

MAPOHO CASH FUNERAL POLICIES

We would like to let you know that as of **19 May 2023**, Old Mutual will no longer be the underwriter for **Mapoho Cash Funeral Policies**.

If you are a **Mapoho Cash Funeral Policies** member and have any queries, please contact your scheme directly on **064 538 6553**.

If you require additional information please contact Old Mutual via email at GSFMQueries@oldmutual.com or call us on 021 503 0424.

If your query is still not dealt with to your satisfaction, you can contact the Ombudsman for Long Term Insurance on 0860 10 32 36 or the FAIS Ombudsman on 012 762 5000.

OLDMUTUAL

DO GREAT THINGS EVERY DAY

Old Mutual Life Assurance Company (SA) Limited is a licensed FSP and Life Insurer.

ATTENTION

O'LE-THABO BURIAL SOCIETY

We would like to let you know that as of **19 May 2023**, Old Mutual will no longer be the underwriter for **O'le-Thabo Burial Society.**

If you are a **O'le-Thabo Burial Society** member and have any queries, please contact your scheme directly on **071 372 8897.**

If you require additional information please contact Old Mutual via email at GSFMQueries@oldmutual.com or call us on 021 503 0424.

If your query is still not dealt with to your satisfaction, you can contact the Ombudsman for Long Term Insurance on 0860 10 32 36 or the FAIS Ombudsman on 012 762 5000.

OLDMUTUAL

DO GREAT THINGS EVERY DAY

Old Mutual Life Assurance Company (SA) Limited is a licensed FSP and Life Insurer.

NOTICE OF A PROSPECTING RIGHT APPLICATION AND SUBSEQUENT ENVIRONMENTAL IMPACT ASSESSMENT (SR & EIA-PROCESS) AND WATER USE LICENCE

Notice is given in terms of Section 16 and 10 of the Mineral and Petroleum Resources Development Act (Act 28 of 2002) and Regulations 3, 5 & 51 of the Regulations published in Government Notice GN R527. Notice is also given, in terms of the EIA Regulations published in Government Notice no. 326 under Section 39-44 of the National Environmental Management Act (Act no. 107 of 1998), of the intent to carry out an **Environmental Impact Assessment** (i.t.o. Listing Notice 1 of 2017, GNR 327 [Activity 19, 20 & 27 (as amended, GNR517)] in Gazette No. 40772, Listing Notice 2 of 2017, GNR 325 [Activity 19, (as amended, GNR517)] in Gazette no. 40772 & Listing Notice 3 of 2017, GNR 324 [Activity 4 & 12] in Gazette No. 40772 of the intent to carry out the activity mentioned above

Notice is also given in terms of Section 41(4) of the National Water Act (Act no. 36 of 1998) and in terms of Section 21 of the National Water Act (Act no. 36 of 1998) of the intent to carry out the above-mentioned activity.

Project title:

Environmental Impact Assessment (Scoping & EIR-process) for the proposed Prospecting Right application of NVW Diamante (Pty) Ltd for the prospecting for Diamonds Alluvial (DA), Diamonds General (D) and Diamonds (DIA) including associated infrastructure, structure and earthworks.

Project description:

Environmental Impact Assessment (Scoping & EIR-process) for the proposed Prospecting Right application to prospect for Diamonds Alluvial (DA), Diamonds General (D) and Diamonds (DIA) on the following properties:

Application Area:

Portion 8, 16, 19, 21, 22 and 27 of the farm Katboschfontein 164 near Wolmaransstad, Registration Division: HO, North West province. The property is located approximately 40km East of Schweizer-Reneke on route to Wolmaransstad in the North West Province.

Size of site:	1333.5732 hectares
Proponent:	NVW Diamante (Pty) Ltd
DMRE ref:	NW30/5/1/1/2/13724PR

Co-ordinates	
27° 8' 25,335" S	25° 43' 49,472" E
27° 7' 10,936" S	25° 42' 47,506" E
27° 7' 8,643" S	25° 41' 56,996" E
27° 8' 6,127" S	25° 40' 58,384" E
27° 9' 46,677" S	25° 41' 34,563" E
27° 9' 18,636" S	25° 42' 54,043" E

Any inquiries/objections must be lodged in writing or verbally if unable to write to the below-mentioned consultants:

Environmental Consultant:	Milnex CC
	Ms. Lizanne Esterhuizen (EIA) & Mr. Marco Morelli (WULA)
Tel:	018 011 1925
Fax:	087 231 7021
E-mail:	lizanne@milnex-sa.co.za (EIA) / marco@milnex-sa.co.za (WUL)
Postal Address:	PO Box 1086, Schweizer-Reneke, 2780

A meeting will be conducted upon request by the I&APs, by means of a virtual (Zoom or Microsoft Teams) or a physical meeting, whichever is preferred.

The Environmental Impact Assessment reports (SR and EIR&EMPr) will be submitted to the Department of Mineral Resources and Energy (DMRE). A Water Use Licence Application (WULA) is submitted to the Department of Water and Sanitation (DWS). To ensure that you are identified as an interested and/or affected party please submit your name, contact information and interest in the matter, in writing or verbally to the contact persons given above **within 30 days of this advertisement for the EIA & 60 days for a WULA.**

Uitsoek-wooneenheid in Pretoria te koop

St Peter's

Garden Estate | Lifestyle Village

'n eenheid in "mid care - assisted living" met uiters professionele versorging en uitsoek-personeel NOU beskikbaar in die hierdie uiters gesogte aftreeoord in Garsfontein in die Ooste van Pretoria.

Menlyn en verskeie inkoopsentrums en baie goeie hospitale is net 'n klipgooi ver.

Eenheid geskik vir 'n enkeling of egpaar.

Moenie hierdie unieke geleentheid deur u vingers laat glip nie!

Skakel Lynette op 082 877 0231

SITE NOTICES

Site notices were placed (as anticipated on the coordinates below) near 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 will be included in **Appendix 6**.

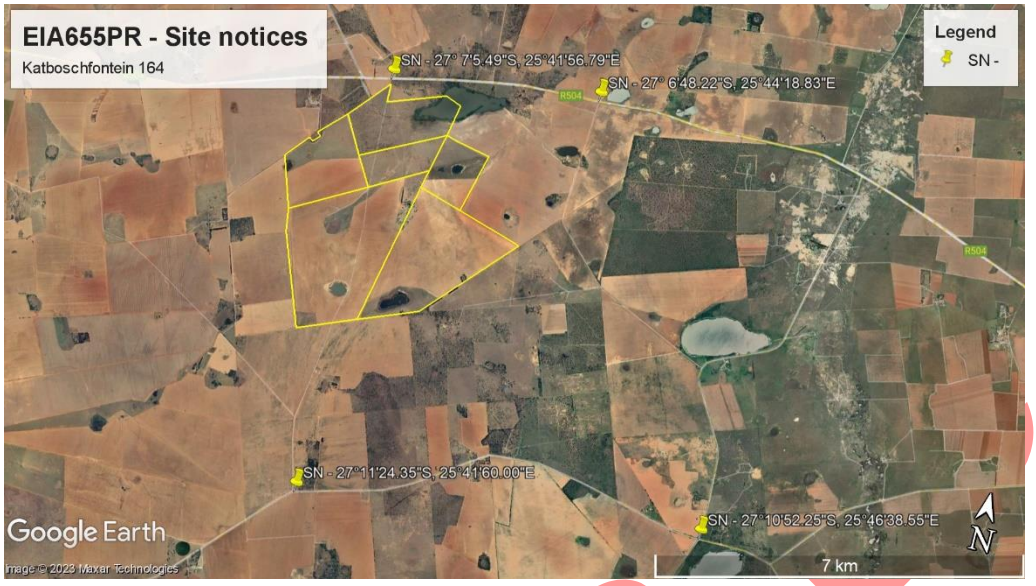

Figure 3: Site notices placement

DIRECT NOTIFICATION AND CIRCULATION OF SCOPING REPORT TO IDENTIFIED I&APS, SURROUNDING LANDOWNERS AND OCCUPIERS

Identified I&APs, including key stakeholders representing various sectors, are directly informed of the proposed development and the availability of the Scoping Report via registered post on **24 April 2023** and were requested to submit comments by **26 May 2023.** 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**. The consultees included:

LIST OF STAKEHOLDERS, LANDOWNERS, & SURROUNDING LANDOWNERS

Stakeholders
Department of Economic Development, Environment, Conservation & Tourism (DEDECT)
Department of Water & Sanitation (DWS)
Department of Agriculture, Forestry & Fisheries (DAFF)
Provincial Heritage Resources Agency (PHRA) North-West
Department of Public Works and Roads (DPWR)
Department of Mineral Resources & Energy (DMRE)
Department of Agriculture & Rural Development (DARD)
Department of Environment, Forestry & Fisheries (DEFF)
Department: Cooperative Governance and Traditional Affairs (DCGTA)
Department: Community Safety and Transport Management
Department of Human Settlements (DHS)
Dr Kenneth Kaunda District Municipality: Municipal manager
Maquassi Hills Local Municipality: Municipal manager
Maquassi Hills Local Municipality: Ward 5 Councillor

WESSA
Landowner
NVW Boerdery (Pty) Ltd
Surrounding landowners
Pieter Daniel Eugene Gildenhuys & Sylvia Gildenhuys
Willem Gerhardus van Wyk
Gert Janse van Rensburg
Swakwyk Trust
Gerhard Petrus du Plessis and Lucille du Plessis
Bernelee Coen Trust
Waldeck Huibrecht
Annamart Nieman
Su-Marie van Wyk Trust
AP Olivier Trust

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 and/or email on **11 August 2023** and were requested to submit comments by **11 September 2023.** 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**. The consultees included:

LIST OF STAKEHOLDERS, LANDOWNERS, & SURROUNDING LANDOWNERS

Stakeholders
Department of Economic Development, Environment, Conservation & Tourism (DEDECT)
Department of Water & Sanitation (DWS)
Department of Agriculture, Forestry & Fisheries (DAFF)
Provincial Heritage Resources Agency (PHRA) North-West
Department of Public Works and Roads (DPWR)
Department of Mineral Resources & Energy (DMRE)
Department of Agriculture & Rural Development (DARD)
Department of Environment, Forestry & Fisheries (DEFF)
Department: Cooperative Governance and Traditional Affairs (DCGTA)
Department: Community Safety and Transport Management
Department of Human Settlements (DHS)
Dr Kenneth Kaunda District Municipality: Municipal manager
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Maquassi Hills Local Municipality: Ward 5 Councillor
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Swakwyk Trust

Gerhard Petrus du Plessis and Lucille du Plessis
Bernelee Coen Trust
Waldeck Huibrecht
Annamart Nieman
Su-Marie van Wyk Trust
AP Olivier Trust

MEETINGS

NB: The interested and affected parties were given an opportunity to register by circulating, registered letters, press advert and letters.

We received no request from an I&AP that there is a need for a meeting.

LANDOWNER CONSULTATION

The applicant is also the landowner.

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**			
Landowners				
Katboschfontein 8/164, 16/164, 19/164, 21/164, 22/164 & 27/164				Appendix 6(3)
Surrounding Landowners				
Katboschfontein RE/1/164				
Katboschfontein RE/4/164, 23/164, 24/164, 25/164				
Katboschfontein 12/164				
Katboschfontein RE/13/164				

Weltevrede RE/213				
Weltevrede 1/213				
Spioenkop 208				
Weltevreden 12/176				
Katboschfontein RE/164, 7/164, 26/164				
Katboschfontein 9/164, 14/164				
The Municipality in which jurisdiction the development is located				
Maquassi Hills Local Municipality	Municipal Manager			
Municipal councilor of the ward in which the site is located				
Maquassi Hills Local Municipality	Ward 5 Councillor			
Organs of state having jurisdiction				
Department of Economic Development, Environment, Conservation & Tourism (DEDECT)				

Department of Water & Sanitation (DWS)				
Department of Agriculture, Forestry & Fisheries (DAFF)				
Provincial Heritage Resources Agency (PHRA) North-West				
Department of Public Works and Roads (DPWR)				
Department of Mineral Resources & Energy (DMRE)				
Department of Agriculture & Rural Development (DARD)				
Department of Environment, Forestry & Fisheries (DEFF)				
Department: Cooperative Governance and Traditional Affairs (DCGTA)				
Department: Community Safety and Transport Management (DCSTM)				
Department of Human Settlements (DHS)				
Department of Rural Development and Land reform: Land Claims Commission				
Other–				
Dr Kenneth Kaunda District Municipality	Municipal Manager	No comments received		

WESSA	John Wesson	No comments received		

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

BASELINE ENVIRONMENT

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

DFFE Screening Report

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

No nearby wind or solar developments found.

Environmental Management Frameworks relevant to the application

No intersections with EMF areas found.

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.

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			

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

5. SENSITIVITY ANALYSIS

Most of the study site is comprised of agricultural land, and this together with the small homestead area present a low ecological sensitivity. Due to widespread agricultural disturbance within this application area and its surrounds, the natural areas on site present a High sensitivity, as these areas provide an important biodiversity corridor and hotspot for wildlife (especially avifauna) within the area. Furthermore, these natural vegetation units are part of an Endangered vegetation type (Western Highveld Sandy grassland) (SANBI). The wetland areas and their associated buffer zones (wetland and avifaunal buffers) present a Very High Sensitivity and should not be disturbed.

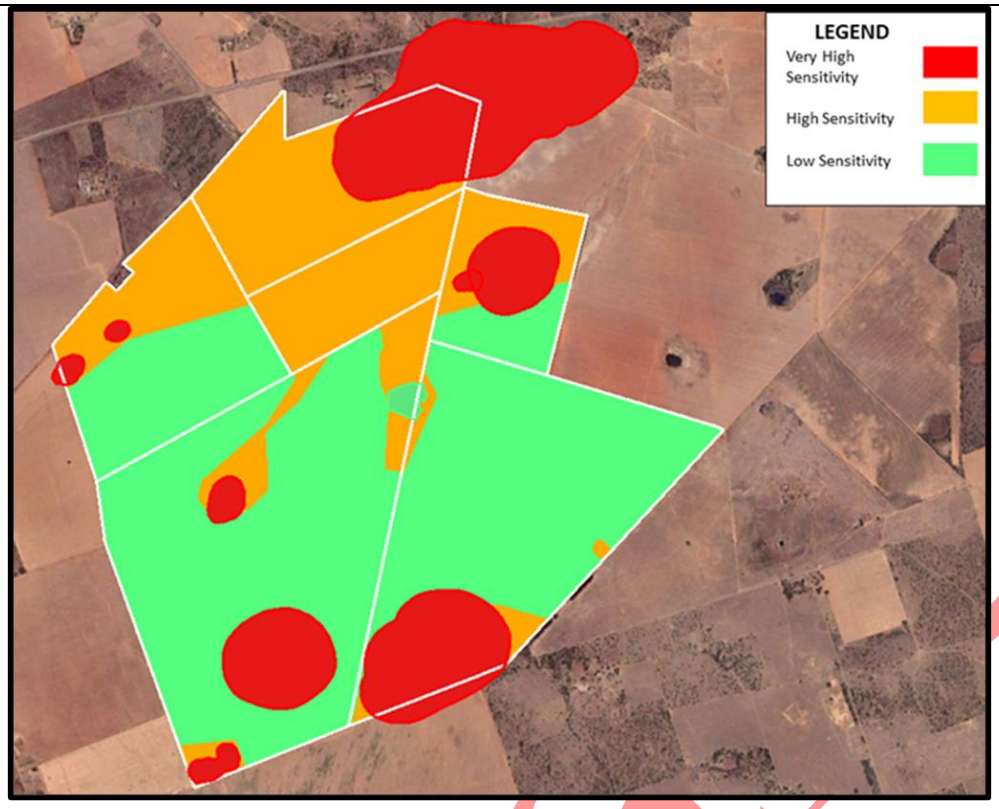


Figure 17: Sensitive areas identified on site.

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

GEOLOGY AND SOILS

Ra: Tholelitic and calc-alkaline basalt and andesite; tuff and pyroclastic breccia

Classification

The allanridge formation underlies the Bothaville Formation conformably but where the latter pinches out the Allanridge verstemps onto diverse older lithologies.

The formation consists mainly of two types of lava, i.e. a dark-green amygdaloidal lava and light green-grey porphyritic lava.

Mineralogy

The dark-green lava, which is by far the most prominent unit in the Allanridge formation, also constitutes the greater part of the Ventersdorp supergrouop in the area. The lava is fine to medium grained in texture and the plagioclase and augite in it have been replaced by secondary minerals, such as chlorite, eqidote, calcite sericite and uralite. The amygdales in the lava consist of quartz, chalcedony, calcite, chlorite or eqidote, or any combination of these minerals. Where more than one mineral makes up an amygdale, the minerals commonly form concetric zones.

Sedimentary Rocks

The sedimentary rocks of the Allanridge formation consist of a mixture of tuff, agglomerate and volcanic breccia occur interbedded with the lava towards the top of the formation.

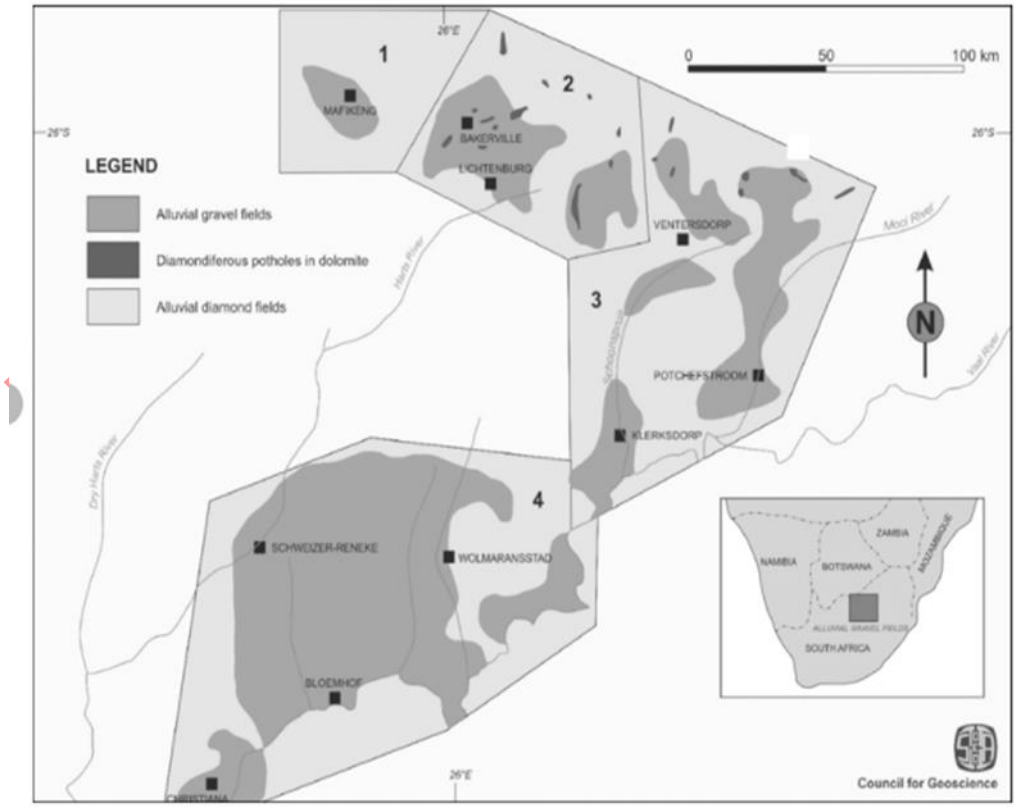
Distribution of Diamondiferous Gravels

According to the Council of Geoscience study "The diamondiferous gravels are distributed predominantly in three major areas, namely the area underlain by dolomite from the east of Ventersdorp towards Lichtenburg and Bakerville and beyond (VLB), the Lichtenburg–Delareyville–Bloemhof–Klerksdorp–Lichtenburg area (LDBKL), which is mostly underlain by Ventersdorp Supergroup basalt and Dwyka Group tillite and the area associated with the Vaal River terraces and gravels.

Diamondiferous gravels are concentrated along straight and meandering runs, sinkholes and dolines in the VLB area. In the LDBKL area, the diamonds are present in ancient and current river channels, terraces or banks and as elluvial and colluvial deposits. Along the Vaal River, the diamonds occur along the gravels of the current river and along the older gravels present along ancient terraces."

Up to 1984, the total alluvial diamond from secondary deposits in the North-West Province was about 14.4 million carats however the Small scale production persists today. The deposits lie within three geographical areas: The Lichtenburg field (67.8% of total production); the Ventersdorp field (18.6%) and the Schweizer-Reneke-Wolmaransstad-Bloemhof field (13.6%).

There are various operational alluvial diamond mines adjacent to these properties on which applications for prospecting rights have been lodged. In house information exist which substantiate the reasons for this application.



ECOLOGICAL HABITAT AND LANDSCAPE FEATURES

REGIONAL VEGETATION ASSESSMENT

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

3.3 Regional Vegetation Assessment

The proposed site for prospecting overlaps completely with the Grassland Biome (Mucina & Rutherford, 2006). Biomes are further divided into bioregions, which are spatial terrestrial units possessing similar biotic and physical features, and processes at a regional scale. The study site overlaps with the Dry Highveld Grassland Bioregion and, more specifically, the Western Highveld Sandy Grassland (Gh14) vegetation type, with a small area of Highveld Salt Pan (Azi10) predicted to occur on the Northeastern corner of the application area. The Western Highveld Sandy Grassland vegetation type associated with this application area is classified as Endangered by Mucina & Rutherford (2006) as well as SANBI (2023). Table 6 below provides an overview of the vegetation types associated with the study site.

Table 6: *Vegetation types and their ecological importance*

Vegetation Type	Biome	Bioregion	Conservation Status
Western Highveld Sandy Grassland (Gh14)	Grassland	Dry Highveld Grassland	Endangered 24% Target >60% Transformed Very small portion formally protected.
Highveld Salt Pan (AZi10)	Savanna	Eastern Kalahari Bushveld	Endangered 24% Target 4% Transformed Very small portion formally protected.

4.2.1 Desktop Terrestrial Vegetation

According to Mucina & Rutherford (2006), the study area overlaps with the Western Highveld Sandy Grassland (Gh14) vegetation type, with a small area of Highveld Salt Pan (Azi10) predicted to occur on the Northeastern corner of the application area. Plant species expected to occur within these vegetation types are listed in Table 9, whilst the species observed on site are listed in Table 10.

Table 9: Flora species expected to occur according to Mucina and Rutherford (2006)

Western Highveld Sandy Grassland (Gh 14)
Tall Shrubs: *Vachellia hebeclada, Diospyros lycioides* subsp. *lycioides.* **Low Shrubs**: *Anthospermum rigidum* subsp. *pimilum (d), Aptosimum elongatum, Felicia muricata, Gnidia capitata, Helichrysum paronychioides, Indigofera comosa, Leucas capensis, Polygala hottentotta, Sida dregei, Solanum panduriforme, Stoebe plumose.* **Herbs**: *Gazania Krebsiana* subsp. *krebsiana* (d), *Stachys spathulata* (d), *Barleria macrostegia, Berkheya onopordifolia* var. *onopordifolia, Chamaecrista mimosoides, Euphorbia inaequilatera, Dicoma anomala, D. macrocephala, Helichrysum callicomum, Hermannia depressa, H. tomentosa, Kyphocarpa angustifolia, Lippia scaberrima, Monsonia burkeana, Nolletia ciliaris, Osteospermum muricatum* subsp. *longiradiatum, Pollichia campestris, Rhynchosia adenodes, Sebaea grandis, Trichodesma angustifolium* subsp. *angustifolium, Vernonia oligocephala* **Geophytic Herb**: *Boophone disticha.* **Graminoids**: *Anthephora pubescens (d), Aristida congesta (d), A. diffusa (d), Cymbopogon pospischilii (d), Cynodon dactylon (d), Eragrostis lehmanniana (d), E. trichophora (d), Panicum coloratum (d), Pogonarthria squarrosa (d), Setaria sphacelata (d), Sporobolus africanus (d),*

	Themeda triandra (d), Aristida adscensionis, A. canescens, A. stipitata subsp. *graciliflora, Brachiaria serrata, Digitaria argyrograpta, D. eriantha, Diheteropogon amplectens, Elionurus muticus, Eragrostis chloromelas, E. curvula, E. gummiflua, E. racemose, Eustachys paspaloides, Heteropogon contortus, Melinis nerviglumis, Sporobolus discosporus, S. fimbriatus, Trichoneura grandiglumis, Triraphis andropogonoides.*
Upper Gariep Alluvial vegetation (AZa4)	
Low Shrubs: *Atriplex vestita, Felicia filifolia, F. muricata, Nenax microphylla, Nestlera conferta, Pentzia globosa, P. incana.* **Megagraminoids:** *Cyperus congestus, Phragmites australis, Typha latifolia.* **Graminoids:** *Chloris virgata* (d), *Cynodon dactylon* (d), *C. transvaalensis* (d), *Cyperus laevigatus* (d), *C. marginatus* (d), *Diplachne fusca* (d), *Eragrostis bicolor* (d), *E. chloromelas* (d), *E. plana* (d), *Hemarthria altissima* (d), *Juncus rigidus* (d), *Panicum coloratum* (d), *P. laevifolium* (d), *P. schinzii* (d), *Setaria incrassate* (d), *Andropogon eucomus, Aristida adscensionis, Brachiaria marlothii, Cyperus longus, C. rigidifolius, Echinochloa holubii, Eleocharis palustris, Enneapogon desvauxii, Eragrostis curvula, E. micrantha, E. obtusa, E. stapfii, Fuirena coerulescens, F. pubescens, Juncus exsertus, Scirpoides dioecus, Sporobolus albicans, S. fimbriatus, S. ioclados, S. tenellus, Tragus berteronianus, T. racemosus.* **Herbs:** *Alternanthera sessilis, Amaranthus praetermissus, Aponogeton rehmannii, Astriplex suberecta, Chenopodium mucronatum, Gnaphalium declinatum, Mollugo cerviana, Phyla nodiflora, Platycarpha parvifolia, Pterodiscus speciosus, Senecio reptans.* **Succulent Shrubs:** *Salsola glabrescens* (d), *Lycium cinereum, Malephora herrei, Suaeda fruticosa, Titanopsis hugoschlechteri.* **Succulent Herb:** *Zygophyllum simplex.*	

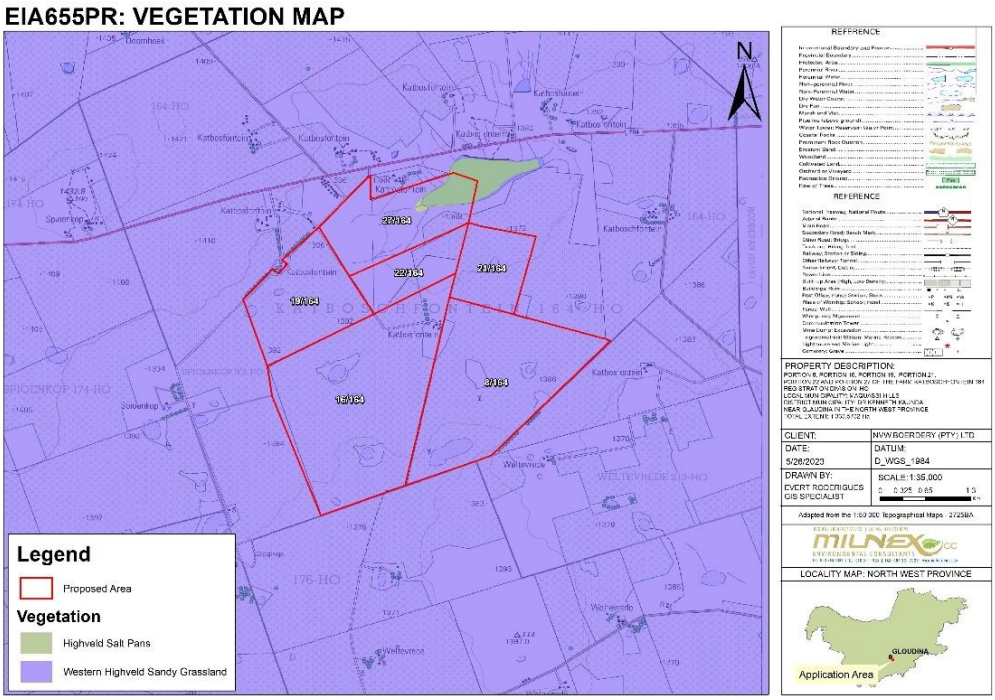


Figure 4: Vegetation Unit Map

VEGETATION UNITS AND SENSITIVE AREAS

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

The Study site can be divided into different vegetation units (Figure 13) based on land use, wetness, and vegetation structure. The vegetation units identified on site were divided, grouped, and discussed below.

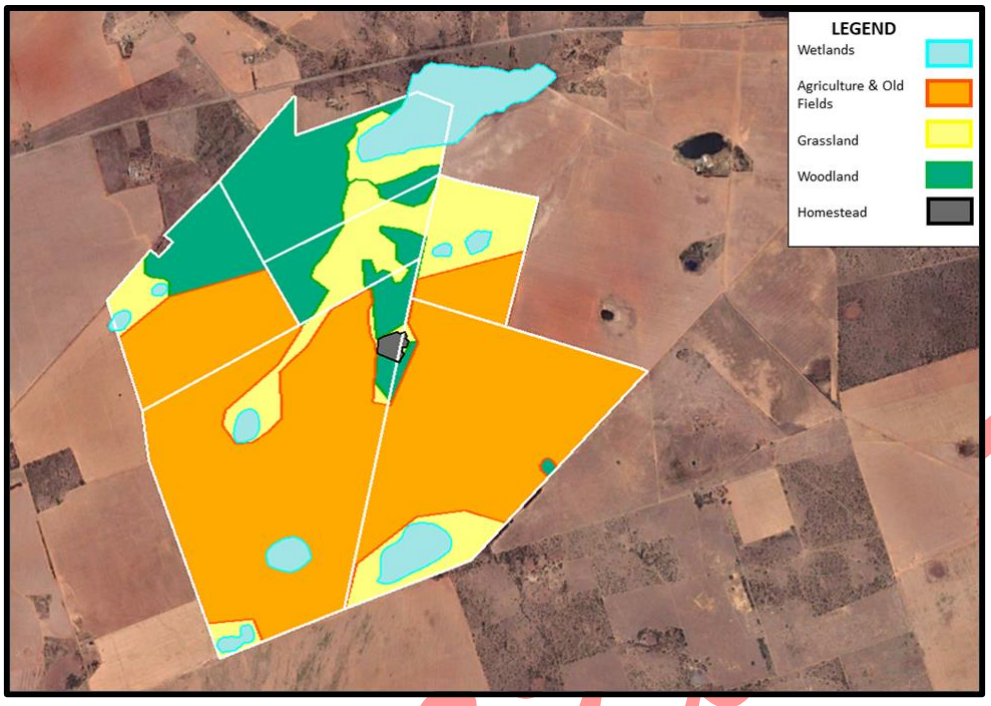


Figure 14: Vegetation units identified on site.

Agricultural land

Large areas of the application area are currently disturbed and void of natural vegetation as a result of agricultural activities.

Open Woodland

The natural vegetation of the entire application area is represented by open, thorny, woody bush dominated by Vachellia karoo (Sweet Thorn), Asparagus burchellii, and Searsia lancea. Other dominant tree species include Vachellia luderitzii, Vachellia robusta, Prosopis glandulosa, scattered Tarconanthus camphoratus, and scattered Ziziphus mucronata. The undergrowth of this vegetation unit is slightly disturbed by Pseudognaphalium luteoalbum *and some Tagetes minuta. Cover by graminoids is extensive, including species such as Eragrostis lehmanniana, Themeda triandra, Cynodon dactylon, Eragrostis rigidior, Cymbopogon pospischilii, Aristida adscensionis, Aristida diffusa, Eragrostis truncata, Sporobolus fimbriatus, Stipagrostis obtusa, and Fingerhuthia africana. The soil throughout this vegetation unit is very sandy. Some areas of the soil within this vegetation unit have eroded under rainfall conditions, creating narrow gullies leading down to the lowest point of the unit in the Northeastern corner.*

Figure 5: Open Woody Bush

Grassland

Bordering some of the wetlands within the application area are open areas of grassland, dominated by similar graminoids as those mentioned in Section 4.1.2 (E.g. Eragrostis lehmanniana, Themeda triandra, Eragrostis rigidior, Cymbopogon pospischilii, Aristida adscensionis, Aristida diffusa, Eragrostis truncata, Sporobolus fimbriatus, Stipagrostis obtusa, Fingerhuthia africana) as well as many Searsia lancea saplings. The grasslands are also disturbed by Pseudognaphalium luteoalbum *and some Tagetes minuta, likely the consequences of grazing.*

Figure 6: Open grassland of the application area

PLANT SPECIES OBSERVED ON SITE

According to the DFFE Screening Report the Plant Species theme sensitivity of the proposed area falls within Low sensitivity. Please see **Appendix 7** for the colour map.

Figure 5: Plant Species Combined Sensitivity

Sensitive features according to the DFFE Screening report:

Sensitivity	Feature(s)
Low	Low Sensitivity

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

Table 10: Dominant plant species expected to occur and observed on the study site.

Plant species list			
Trees and Shrubs			
Scientific Name	***Common Name***	***Redlist Status***	***Invader category (NEMBA 2020)***
Asparagus burchellii	*Wild asparagus*	*LC, endemic*	
**Eucalyptus camaldulensis*	*River red gum*	*Exotic, declared invader*	*1b*
Prosopis glandulosa	*Honey mesquite*	*Exotic, declared invader*	*2*
Searsia lancea	*Karree*	*LC*	
Tarchonanthus camphoratus	*Wild Camphor bush*	*LC*	
Vachellia robusta	*Broadpod robust thorn*	*LC*	
Vachellia karoo	*Sweet thorn*	*LC*	
Ziziphus mucronata	*Buffalo-thorn*	*LC*	
Graminoids			

Aristida adscensionis	*Annual Three-awn*	*LC*	
Aristida congesta	*Tassel Three awn*	*LC*	
Aristida diffusa	*Iron grass*	*LC*	
Cynodon dactylon	*Scutch grass*	*LC*	
Cymbopogon pospischilii	*Turpentine grass*	*LC*	
Eragrostis lehmanniana	*Lehmann's Love grass*	*LC*	
Eragrostis rigidior	*Curly leaf*	*LC*	
Eragrostis truncata	*Bloupolgras*	*LC*	
Sporobolus fimbriatus	*Dropseed grass*	*LC*	
Stipagrostis obtusa	*Tall bushman grass*	*LC*	
Themeda triandra	*Red grass*	*LC*	
Fingerhuthia africana	*Thimble grass*	*LC*	
Forbs			
Bidens pilosa	*Blackjack*	*Not listed*	
Pseudognaphalium luteoalbum	*Jersey Cudweed*	*Not listed*	
Tagetes minuta	*Khakibos*	*Not listed*	
Conyza sp.	*Skraalhanse*	*Not listed*	

P - Protected Species

** - Alien and Invasive Species*

 # - Naturalized exotic weeds (Not assessed for National Red List)

No Species of Conservation Concern (SCC) were flagged by the screening tool as occurring in the study area, nor were any SCC observed during the site visit.

LAND CAPABILITY AND AGRICULTURAL POTENTIAL

According to an article on the Grain SA website by Garry Paterson from ARC-Institute for Soil, Climate and Water on the Grain SA website, agriculture rests on three pillars where natural resources are concerned. These are the soil (comprising the growth medium for the plant), the climate conditions (which supply the plant with sufficient water and heat) and the terrain (enabling the crop to be physically planted, to grow and to be harvested sustainably).

The concept of land capability combines the three natural resource elements or factors listed above (soil, climate and terrain) and uses set parameters to determine a specific class for a given area. The basis of the land capability assessment in South Africa is the well-known Land Type Survey, which is a country-wide inventory of natural resources, i.e. soil pattern, macroclimate and terrain type, carried out between 1972 and 2002 by the ARC-Institute for Soil, Climate and Water.

Each unique land type is allocated to one of eight land capability classes. These classes are based on the original USDA land capability system, whereby Classes I and II comprise areas with little or no limitations to rainfed agriculture, Classes III and IV comprise those areas which are still considered arable, but with moderate to severe restrictions. Classes V to VIII comprise non-arable land with increasingly serious restrictions, either in terms of restricted soil, steep terrain, rockiness and/or an unfavourable climatic regime. (Garry Paterson, ARC-Institute for Soil, Climate and Water, November 2014.)

The proposed area falls within Land in Class 4 (refer to Land capability map on **figure 8** and attached as **Appendix 5**).

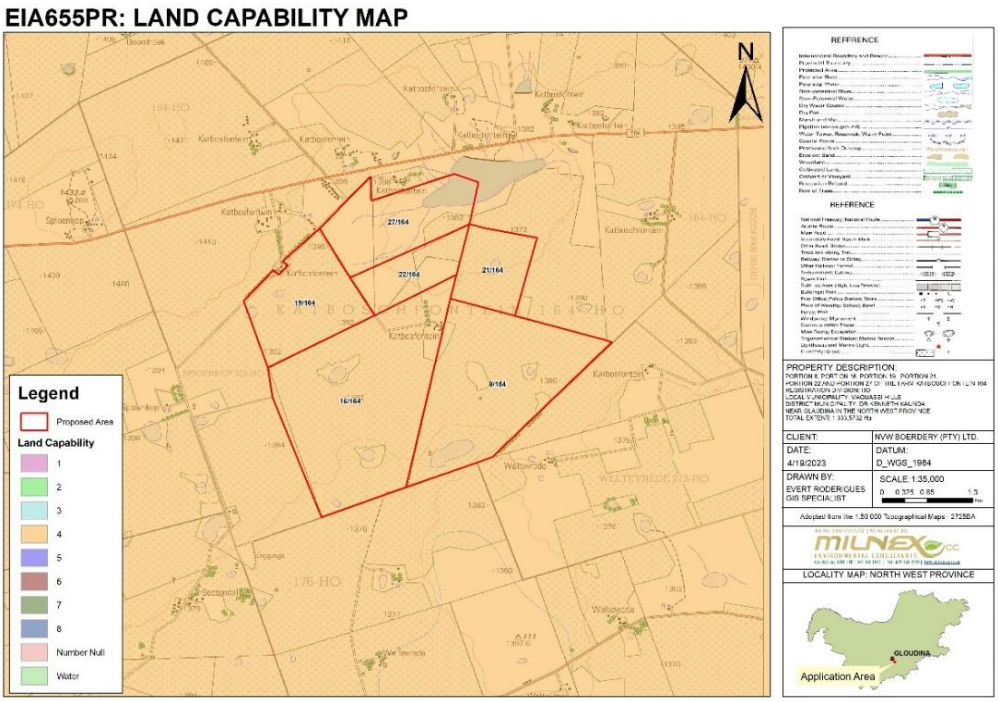


Figure 6: Land capability

According to the DFFE Screening Report the Agriculture theme sensitivity of the proposed area fall within High sensitivity. Please see **Appendix 7** for the colour map.

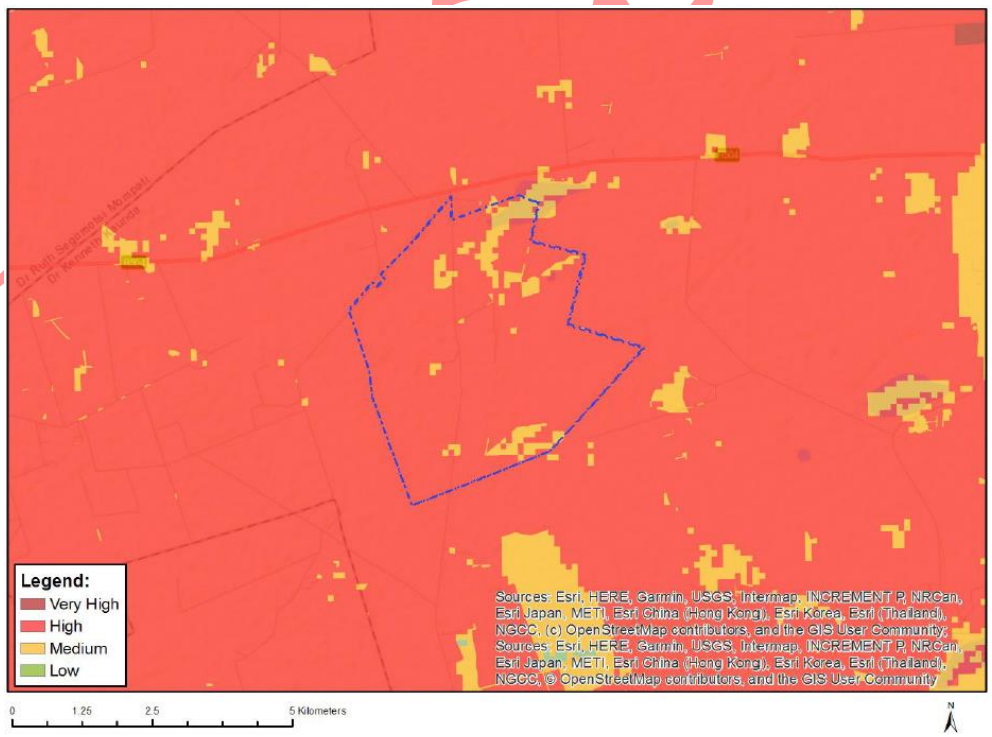


Figure 7: Agriculture Combined Sensitivity

Sensitive features according to the DFFE Screening report:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

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.

The proposed area does not fall within a threatened ecosystem according to **Figure 10**.

PROTECTED AREAS

According to the data for protected areas (**Figure 10**), the proposed area does not fall withing a protected area.

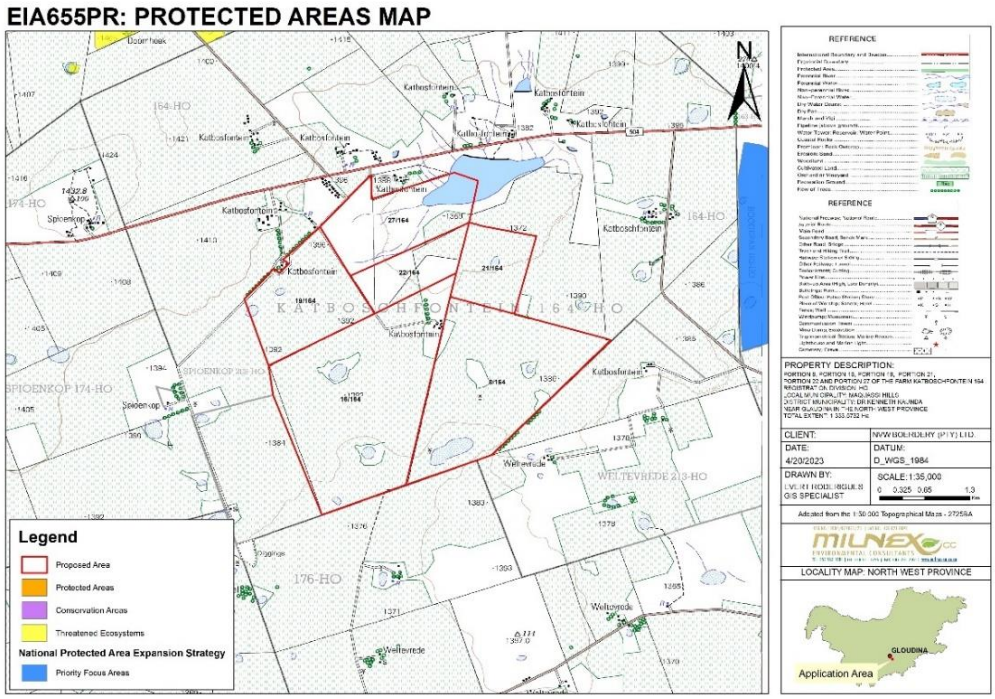


Figure 8: Threatened and Protected Areas Map

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

Formally protected areas are protected either by national or provincial legislation. Based on the SAPAD (2022) Protected Areas Map, and the Northern Cape Biodiversity sector plan and map (2015), the study site does not overlap with any formally Protected Areas (Figure 10).

The National Protected Area Expansion Strategy (NPAES) sets targets for protected area expansion, provides maps of the most important areas for protected area expansion, and makes recommendations on mechanisms

for protected area expansion. According to the National Protected Area Expansion Strategy (2018), the project area does not overlap any Priority Focus Area for expansion or Protected areas. (Figure 10). The study site is, however, located within a Critically endangered ecosystem, namely the western Highveld Sandy grassland vegetation type.

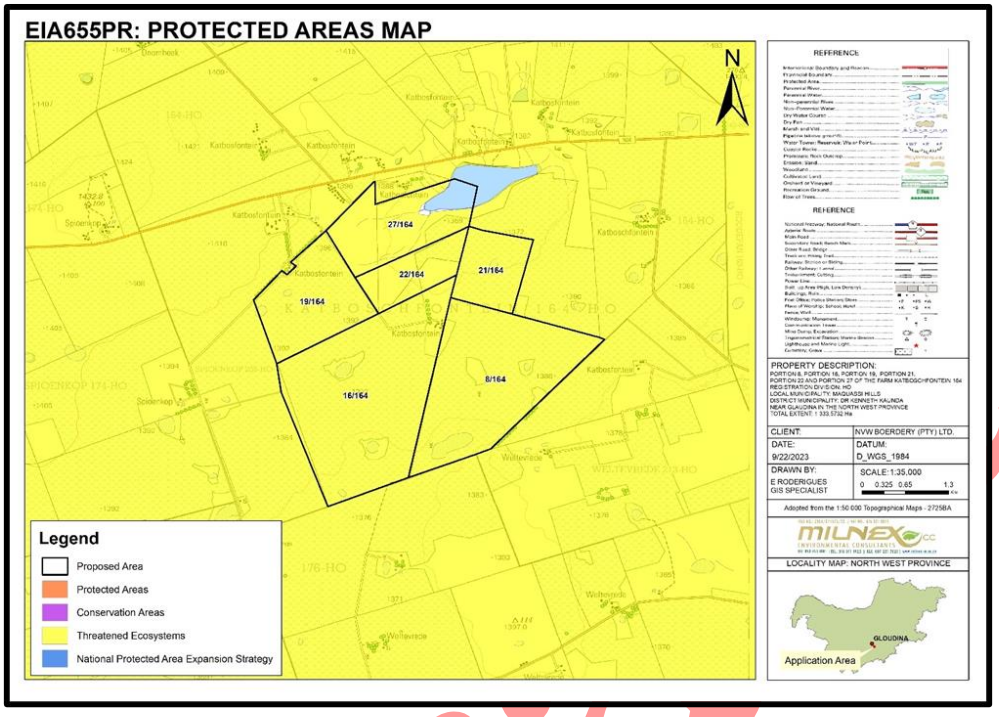


Figure 10: Threatened Ecosystems and Formally Protected Areas associated with the study site and surroundings.

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., 2012). Datasets have been developed 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. According to data sourced from South African National Biodiversity Institute (SANBI), the study overlaps with a Nationally Threatened Ecosystem, namely the Western Highveld Sandy Grassland (Figure 10).

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 9**), certain areas of the proposed area fall within CBA 1.

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

Based on the desktop information (Figure 11), the study area overlaps and borders some CBA 1 areas. According to a matrix of recommended land use zones and associated activities in relation to the CBA map categories (READ, 2015 and MPTA, 2014), prospecting is not permitted, and actively discouraged in CBA 1 and CBA 2 areas. In ESA areas, prospecting is restricted to compulsory, site specific conditions and controls. When these conditions are unavoidable, prospecting is not permitted. Due to the prospecting method proposed in the PWP, and the scale of the operations, the proposed activities are categorised as open-cast mining and therefore actively discouraged in CBA 1, CBA 2, ESA 1, and ESA 2 areas.

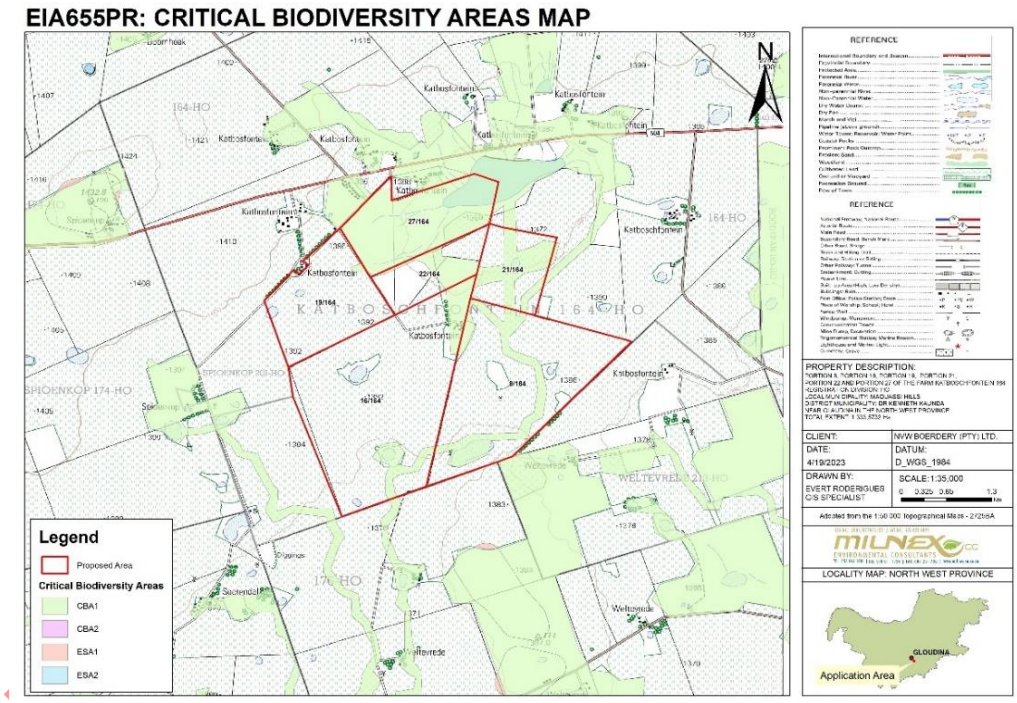


Figure 9: Critical Biodiversity Areas Map.

FAUNAL ASSESSMENT

According to the DFFE Screening Report the Relative Terrestrial Biodiversity Theme Sensitivity of the proposed area falls within very High sensitivity. Please see **Appendix 7** for the colour map.

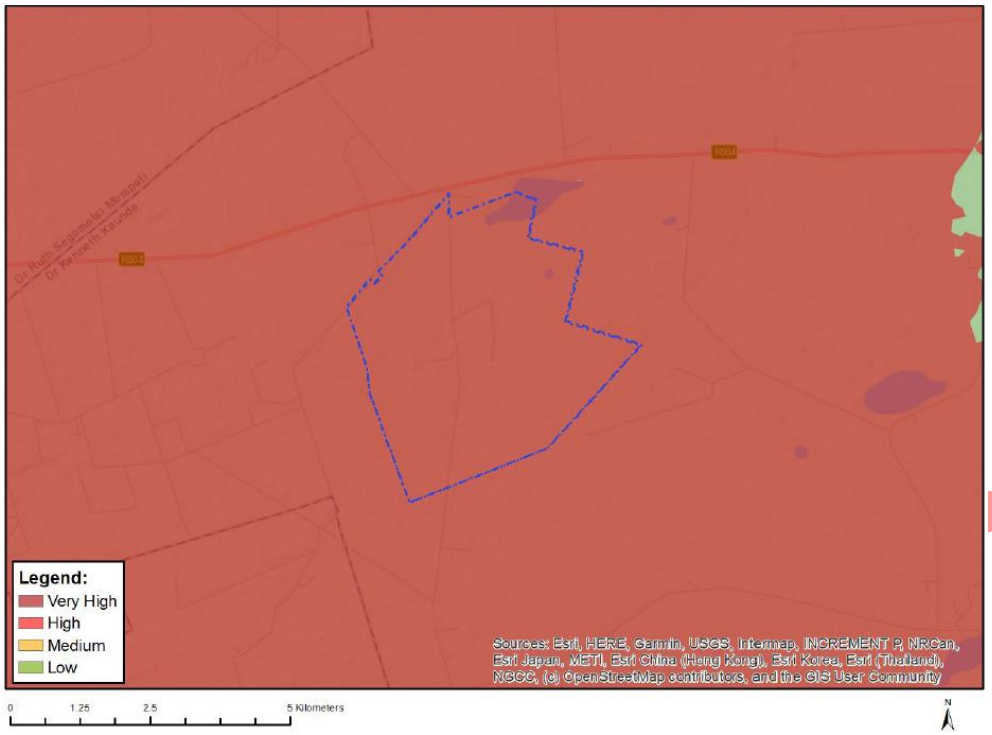


Figure 10: Terrestrial Biodiversity Combined Sensitivity

Sensitive features according to the DFFE Screening Report:

Sensitivity	Feature(s)
Very High	Critical biodiveristy area 1
Very High	Critically endangered ecosystem

According to the DFFE Screening Report the Relative Animal Species Theme Sensitivity of the proposed area falls within Low and Medium sensitivity. Please see **Appendix 7** for the colour map.

Sensitive features according to the DFFE Screening Report:

Sensitivity	Feature(s)
Low	Subject to confirmation
Medium	Aves-Hydroprogne caspia

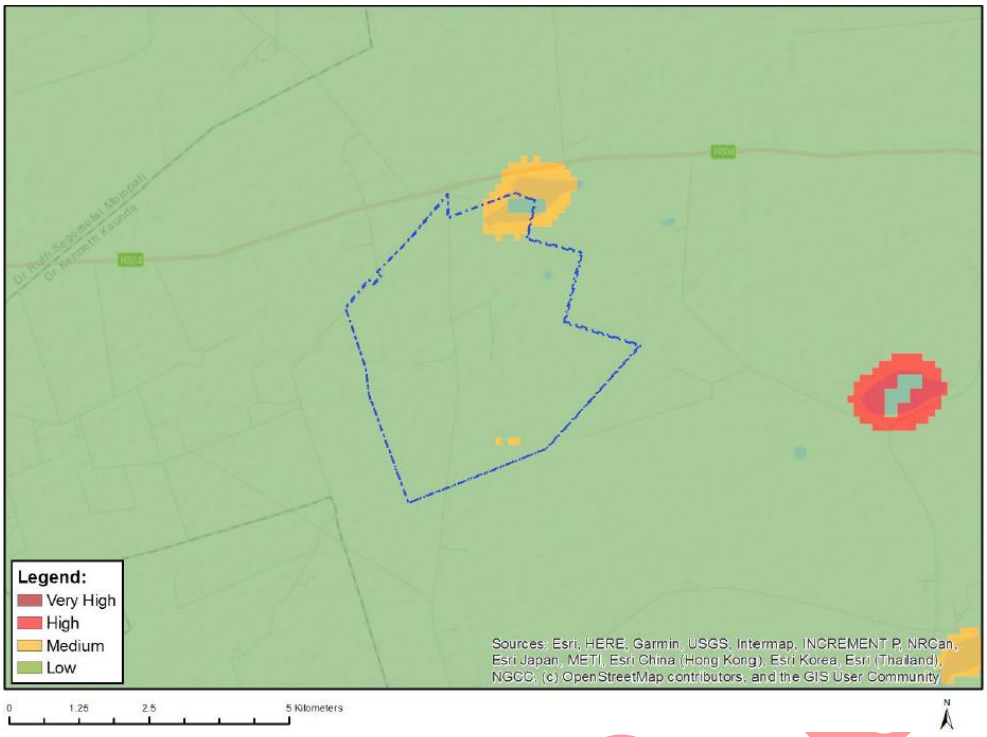


Figure 11: Animal Species theme sensitivity

According to the DFFE Screening Report the Relative Aquatic Biodiversity Theme Sensitivity of the proposed area falls within Very High, High and Low sensitivity. Please see **Appendix 7** for the colour map.

Figure 12: Aquatic Biodiversity Combined Sensitivity

Sensitive features according to the DFFE Screening Report:

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	Aquatic CBAs
Very High	Wetlands and Estuaries

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

4.3.2 Mammals

Table 12 below lists the mammal species possibly occurring on the proposed site according to the Animal Demography Unit (2019) alongside the designated statuses of those species in the South African Red list of Mammals (2012) and the Threatened or Protected Species (ToPS) List (NEMBA, 10 of 2004). Several species potentially occurring on site are protected under NEMBA (See species in bold), whilst species whose presence were confirmed at the study area (both by anecdotal evidence as well as observations by the specialist) are highlighted in green. Droppings of Black-backed jackal were encountered on site, whilst Aardvark excavations were encountered in a natural area around one of the wetlands located within the application area.

Table 12: List of Mammals Possibly Occurring on Site (ADU, 2019)

Scientific name	Common name	IUCN and SA Redlist Status	ToPS
Aethomys ineptus	Karoo Rock Rat	LC	N
Atelerix frontalis	Southern African Hedgehog	LC	N
Atilax paludinosus	Marsh Mongoose	LC	N
Canis mesomelas	Black-Backed Jackal	LC	N
Caracal caracal	Caracal	LC	N
Chlorocebus pygerythrus	Vervet Monkey	LC	N
Crocidura cyanea	Lesser Dwarf Shrew	LC	N
Crocidura fuscomurina	Dark Shrew	LC	N
Crocidura maquassiensis	**Maquassie Musk Shrew**	**V**	**Y**
Cynictis penicillata	Yellow Mongoose	LC	N
Desmodillus auricularis	Cape Dune Mole Rat	LC	N
Eidolon helvum	Straw-Colored Fruit Bat	NT	N
Elephantulus myurus	Eastern Rock Elephant Shrew	LC	N
Eptesicus hottentotus	Hottentot Serotine	LC	N
Felis lybica	African Wildcat	LC	N
Felis nigripes	**Black-Footed Cat**	**V**	**N**
Genetta genetta	Common Genet	LC	N
Gerbilliscus brantsii	Brants's Whistling Rat	LC	N
Gerbilliscus leucogaster	Pygmy Gerbil	LC	N
Gerbillurus paeba	Bushveld Gerbil	LC	N
Herpestes sanguineus	Slender Mongoose	LC	N
Hystrix africaeaustralis	Cape Porcupine	LC	N
Ichneumia albicauda	White-Tailed Mongoose	LC	N
Ictonyx striatus	Striped Polecat	LC	N
Lepus capensis	Cape Hare	LC	N
Lepus victoriae	African Savanna Hare	LC	N
Malacothrix typica	Gerbil Mouse	LC	N

Mastomys coucha	Multimammate Mouse	LC	N
Mellivora capensis	Honey Badger	LC	N
Micaelamys namaquensis	Namaqua Rock Rat	LC	N
Mus musculus	House Mouse	LC	N
Mystromys albicaudatus	White-Tailed Rat	V	Y
Neoromicia capensis	Cape Serotine Bat	LC	N
Neoromicia zuluensis	Zulu Serotine Bat	LC	Y
Nycteris thebaica	Egyptian Slit-Faced Bat	LC	Y
Orycteropus afer	**Aardvark**	**LC**	**Y**
Otocyon megalotis	**Bat-Eared Fox**	**LC**	**Y**
Otomys auratus	Vlei Rat	NT	N
Panthera pardus	Leopard	V	N
Papio ursinus	Chacma Baboon	LC	N
Pedetes capensis	South African Springhare	LC	N
Phacochoerus africanus	Common Warthog	LC	N
Poecilogale albinucha	African Striped Weasel	LC	N
Procavia capensis	Rock Hyrax	LC	N
Proteles cristata	Aardwolf	LC	N
Raphicerus campestris	Steenbok	LC	N
Rattus rattus	Black Rat	LC	N
Rhabdomys bechuanae	Bechuana Gerbil	LC	N
Rhabdomys dilectus	Four-Striped Grass Mouse	LC	N
Rhinolophus clivosus	Geoffroy's Horseshoe Bat	LC	Y
Rhinolophus darlingi	Darling's Horseshoe Bat	LC	Y
Rhinolophus denti	Dent's Horseshoe Bat	LC	Y
Saccostomus campestris	South African Field Mouse	LC	N
Scotophilus dinganii	Wahlberg's Epauletted Fruit Bat	LC	Y
Smutsia temminckii	Temminck's Ground Pangolin	V	N
Steatomys krebsii	Krebs's Fat Mouse	LC	N
Suncus varilla	Lesser Dwarf Shrew	LC	N
Suricata suricatta	Meerkat	LC	N
Sylvicapra grimmia	Common Duiker	LC	N
Tadarida aegyptiaca	Egyptian Free-Tailed Bat	LC	Y
Vulpes chama	Cape Fox	LC	N
Xerus inauris	South African Ground Squirrel	LC	N

4.3.3 Herpetofauna

The local occurrences of reptiles and amphibians (collectively known as Herpetofauna) are closely dependent on broadly defined habitat types, terrestrial, arboreal (tree-living), rupicolous (rock dwelling) and wetland-associated vegetation cover. Based on the DFFE Screening tool, no Herpetofauna SCC are expected to occur on site. A list of expected species for the study site (Table 13) was created using data from the IUCN (2023). Of the species expected to occur, the Giant Bullfrog (Pyxicephalus adspersus) is an SCC (NT) and, although it wasn't encountered (this species hibernates during the winter) may well occur on the study site. It is possible for other herpetofaunal SCC to occasionally occur on site, and their presence on the application area may be confirmed in the future.

Table 13: List of Herpetofauna Possibly Occurring on site (IUCN, 2023)

Class	Order	Family	Genus	species	Red list	ToPS
AMPHIBIA	ANURA	BREVICIPITIDAE	*Breviceps*	*adspersus*	LC	
AMPHIBIA	ANURA	BUFONIDAE	*Schismaderma*	*carens*	LC	
AMPHIBIA	ANURA	BUFONIDAE	*Sclerophrys*	*capensis*	LC	
AMPHIBIA	ANURA	BUFONIDAE	*Sclerophrys*	*garmani*	LC	
AMPHIBIA	ANURA	BUFONIDAE	*Sclerophrys*	*gutturalis*	LC	
AMPHIBIA	ANURA	BUFONIDAE	*Sclerophrys*	*poweri*	LC	
AMPHIBIA	ANURA	HYPEROLIIDAE	*Kassina*	*senegalensis*	LC	
AMPHIBIA	ANURA	MICROHYLIDAE	*Phrynomantis*	*bifasciatus*	LC	
AMPHIBIA	ANURA	PHRYNOBATRACHIDAE	*Phrynobatrachus*	*natalensis*	LC	
AMPHIBIA	ANURA	PIPIDAE	*Xenopus*	*laevis*	LC	
AMPHIBIA	ANURA	PYXICEPHALIDAE	*Amietia*	*delalandii*	LC	
AMPHIBIA	ANURA	PYXICEPHALIDAE	*Cacosternum*	*boettgeri*	LC	
AMPHIBIA	**ANURA**	**PYXICEPHALIDAE**	***Pyxicephalus***	***adspersus***	**NT**	**Schedule 1**
AMPHIBIA	ANURA	PYXICEPHALIDAE	*Tomopterna*	*cryptotis*	LC	
AMPHIBIA	ANURA	PYXICEPHALIDAE	*Tomopterna*	*natalensis*	LC	
AMPHIBIA	ANURA	PYXICEPHALIDAE	*Tomopterna*	*tandyi*	LC	
REPTILIA	SQUAMATA	AGAMIDAE	*Agama*	*aculeata*	LC	
REPTILIA	SQUAMATA	AGAMIDAE	*Agama*	*atra*	LC	
REPTILIA	SQUAMATA	AMPHISBAENIDAE	*Dalophia*	*pistillum*	LC	
REPTILIA	SQUAMATA	AMPHISBAENIDAE	*Monopeltis*	*capensis*	LC	
REPTILIA	SQUAMATA	AMPHISBAENIDAE	*Monopeltis*	*infuscata*	LC	
REPTILIA	SQUAMATA	AMPHISBAENIDAE	*Zygaspis*	*quadrifrons*	LC	
REPTILIA	SQUAMATA	ATRACTASPIDIDAE	*Aparallactus*	*capensis*	LC	
REPTILIA	SQUAMATA	ATRACTASPIDIDAE	*Atractaspis*	*bibronii*	LC	
REPTILIA	SQUAMATA	ATRACTASPIDIDAE	*Atractaspis*	*duerdeni*	LC	
REPTILIA	SQUAMATA	ATRACTASPIDIDAE	*Xenocalamus*	*bicolor*	LC	
REPTILIA	SQUAMATA	CHAMAELEONIDAE	*Chamaeleo*	*dilepis*	LC	
REPTILIA	SQUAMATA	GEKKONIDAE	*Lygodactylus*	*capensis*	LC	
REPTILIA	SQUAMATA	GEKKONIDAE	*Pachydactylus*	*capensis*	LC	
REPTILIA	SQUAMATA	GERRHOSAURIDAE	*Gerrhosaurus*	*flavigularis*	LC	
REPTILIA	SQUAMATA	LACERTIDAE	*Meroles*	*squamulosus*	LC	
REPTILIA	SQUAMATA	LACERTIDAE	*Nucras*	*holubi*	LC	
REPTILIA	SQUAMATA	LACERTIDAE	*Nucras*	*intertexta*	LC	
REPTILIA	SQUAMATA	LACERTIDAE	*Pedioplanis*	*lineoocellata*	LC	
REPTILIA	SQUAMATA	SCINCIDAE	*Acontias*	*gracilicauda*	LC	
REPTILIA	SQUAMATA	SCINCIDAE	*Acontias*	*occidentalis*	LC	
REPTILIA	SQUAMATA	SCINCIDAE	*Panaspis*	*wahlbergii*	LC	
REPTILIA	SQUAMATA	SCINCIDAE	*Trachylepis*	*capensis*	LC	
REPTILIA	SQUAMATA	SCINCIDAE	*Trachylepis*	*punctatissima*	LC	
REPTILIA	SQUAMATA	SCINCIDAE	*Trachylepis*	*punctulata*	LC	
REPTILIA	SQUAMATA	SCINCIDAE	*Trachylepis*	*varia*	LC	
REPTILIA	SQUAMATA	VARANIDAE	*Varanus*	*albigularis*	LC	
REPTILIA	SQUAMATA	VARANIDAE	*Varanus*	*niloticus*	LC	
REPTILIA	SQUAMATA	COLUBRIDAE	*Crotaphopeltis*	*hotamboeia*	LC	

REPTILIA	SQUAMATA	COLUBRIDAE	*Dasypeltis*	*scabra*	LC	
REPTILIA	SQUAMATA	COLUBRIDAE	*Dispholidus*	*typus*	LC	
REPTILIA	SQUAMATA	COLUBRIDAE	*Philothamnus*	*semivariegatus*	LC	
REPTILIA	SQUAMATA	COLUBRIDAE	*Telescopus*	*semiannulatus*	LC	
REPTILIA	SQUAMATA	CORDYLIDAE	*Cordylus*	*vittifer*	LC	
REPTILIA	SQUAMATA	CORDYLIDAE	*Karusasaurus*	*polyzonus*	LC	
REPTILIA	SQUAMATA	ELAPIDAE	*Elapsoidea*	*sundevallii*	LC	
REPTILIA	SQUAMATA	ELAPIDAE	*Hemachatus*	*haemachatus*	LC	
REPTILIA	SQUAMATA	ELAPIDAE	*Naja*	*nivea*	LC	
REPTILIA	SQUAMATA	LAMPROPHIIDAE	*Boaedon*	*capensis*	LC	
REPTILIA	SQUAMATA	LAMPROPHIIDAE	*Lamprophis*	*aurora*	LC	
REPTILIA	SQUAMATA	LAMPROPHIIDAE	*Lycophidion*	*capense*	LC	
REPTILIA	SQUAMATA	LEPTOTYPHLOPIDAE	*Leptotyphlops*	*scutifrons*	LC	
REPTILIA	SQUAMATA	PROSYMNIDAE	*Prosymna*	*bivittata*	LC	
REPTILIA	SQUAMATA	PROSYMNIDAE	*Prosymna*	*sundevallii*	LC	
REPTILIA	SQUAMATA	PSAMMOPHIIDAE	*Psammophis*	*brevirostris*	LC	
REPTILIA	SQUAMATA	PSAMMOPHIIDAE	*Psammophis*	*leightoni*	LC	
REPTILIA	SQUAMATA	PSAMMOPHIIDAE	*Psammophylax*	*tritaeniatus*	LC	
REPTILIA	SQUAMATA	PSEUDASPIDIDAE	*Pseudaspis*	*cana*	LC	
REPTILIA	SQUAMATA	TYPHLOPIDAE	*Afrotyphlops*	*bibronii*	LC	
REPTILIA	SQUAMATA	TYPHLOPIDAE	*Indotyphlops*	*braminus*	LC	
REPTILIA	SQUAMATA	TYPHLOPIDAE	*Rhinotyphlops*	*lalandei*	LC	
REPTILIA	SQUAMATA	VIPERIDAE	*Bitis*	*arietans*	LC	
REPTILIA	TESTUDINES	PELOMEDUSIDAE	*Pelomedusa*	*galeata*	LC	
REPTILIA	TESTUDINES	TESTUDINIDAE	*Stigmochelys*	*pardalis*	LC	

BIODIVERSITY PRIORITY AREAS FOR MINING

According to the Mining and Biodiversity Guidelines (2013), biodiversity priority areas sensitive to the impacts of mining are divided into four categories (Table below). The purpose is to identify and categorise biodiversity priority areas sensitive to the impacts of mining, to support mainstreaming of biodiversity issues in decision making in the mining sector.

Table: Four categories of biodiversity priority areas

Category	Description
A	Legally protected
B	Highest biodiversity importance
C	High biodiversity importance
D	Moderate biodiversity importance

Based on **Figure 15,** the area overlaps with areas that fall within Category B: Highest Biodiversity Importance.

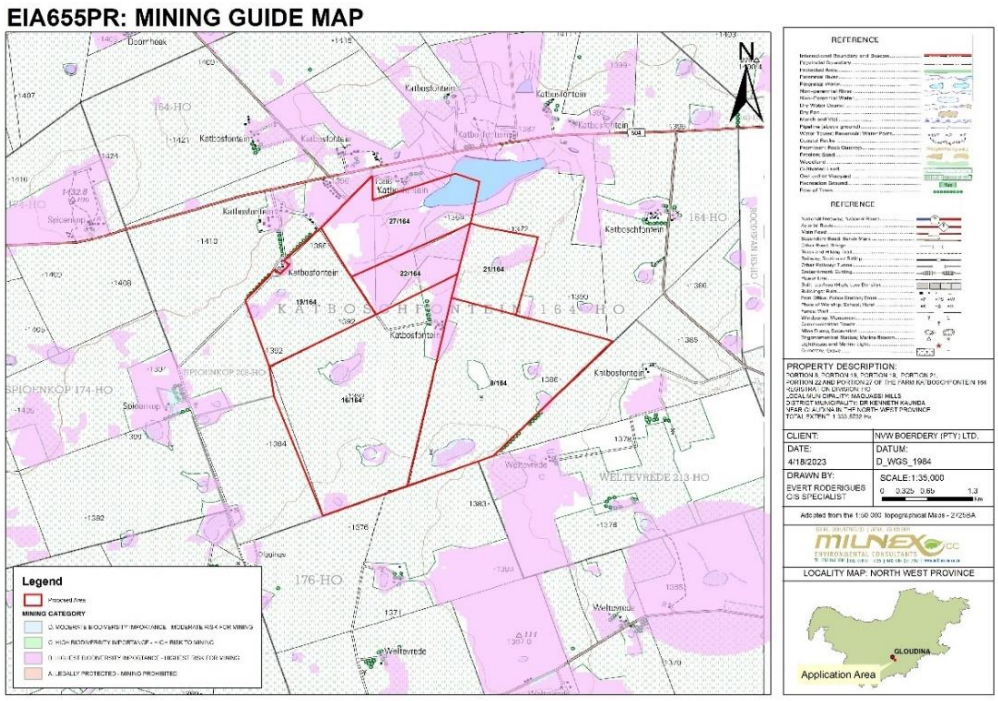


Figure 13: Biodiversity priority areas, in accordance with the Mining of Biodiversity Guidelines, associated with the study site.

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

> *According to the mine guide map (Figure 12); the proposed area overlaps some Category B: Highest biodiversity importance areas. An assessment of the biodiversity content is required, along with the application of a mitigation hierarchy to reduce or prevent impacts on the biodiversity in the specified area.*

QUATERNARY CATCHMENTS AND ASSOCIATED WATERCOURSES

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

> *The study site falls within the C25E Quaternary Catchment and forms part of the Middle Vaal Water Management Area (WMA). The Middle Vaal WMA covers a total catchment area of 52 636 km2, with its major rivers being the Mooi, Vet, and Vaal Rivers*

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).

The National Freshwater Ecosystem Priority Areas (NFEPA) project provides strategic spatial priorities for conserving South Africa's freshwater ecosystems and supports sustainable use of water resources. These priority areas are called Freshwater Ecosystem Priority Areas, or 'FEPAs'. These areas were identified based on representation of ecosystem types and flagship free-flowing rivers, maintenance of water supply areas in areas with high water yield, identification of connected ecosystems and, representation of threatened and near-threatened fish species and associated migration corridors (Nel et al., 2011).

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.
t
Figure 14 illustrates all wetland types associated with the study area. According to the Wetland areas map there are Depression on the proposed area.

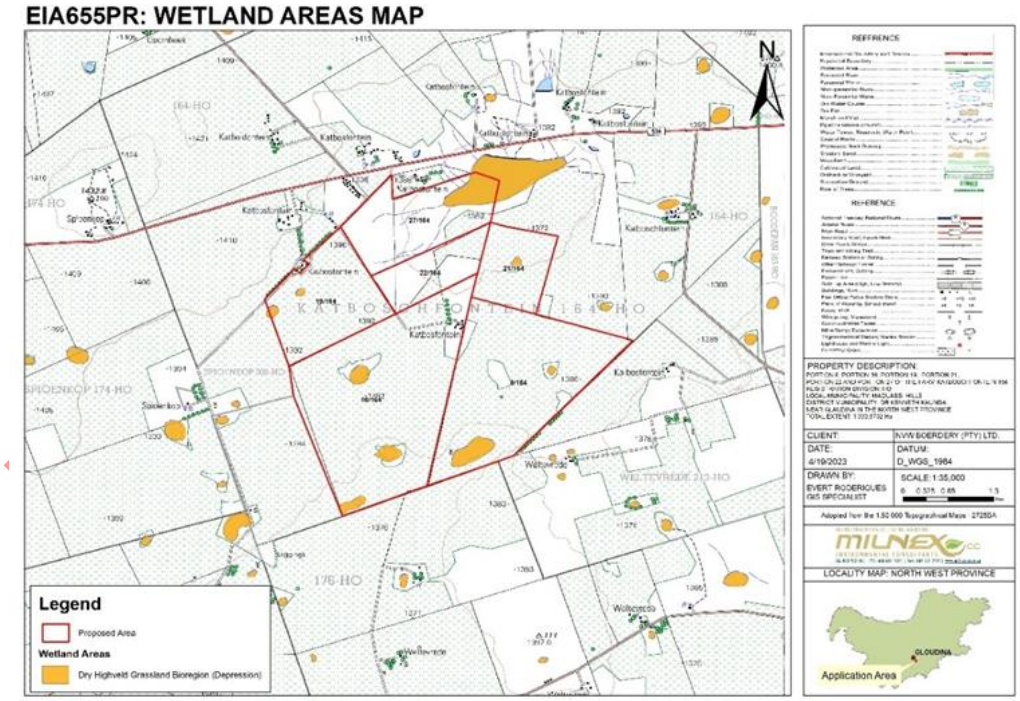


Figure 14: Wetland types located within or near the study site.

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

6.1 Wetland Habitat Description and System Characterisation

From the desktop assessment, one wetland type was expected to occur within and around the study area, this being Dry Highveld Grassland Bioregion Depressions (Figure 18). A site visit was conducted to confirm the desktop findings and are discussed below.

Nine wetlands were assessed and delineated during the site visit, all of them being Depression wetlands.

6.1.1 Filled Depressions

Four of the assessed Depressions were filled with water and likely are permanently filled. All of these wetlands supported a high biodiversity of avifaunal species (Ducks, Geese, Plovers, Grebes, Flamingos etc.). Two of the waterlogged wetlands (D2 & D8) are in the middle of agricultural fields and completely void of vegetation, whilst two (D3 & D9) are located within grasslands and densely vegetated around the border by graminoids, Sedges and Rushes (Cyperaceae), and other wetland vegetation such as Typha capensis. The catchments of all these depressions are disturbed by extensive agricultural activities, including grazing.

6.1.2 Dry Depressions

The remaining five Depressions (D1, D4, D5, D6, D7) were completely dry. The presence of Sedges and Rushes (Cyperaceae) as well as gleyic hydrogeomorphic soil confirmed these depressions as seasonal wetlands. Similarly disturbed by agriculture within the catchments, these wetlands were also disturbed by the presence of Pseudognaphalium luteoalbum, Tagetes minuta, and scattered Skraalhanse. Dominant vegetation comprised the Sedges and Rushes, as well as similar graminoids as the grasslands they are located within.

6.2 Wetland Habitat and System Characterisation

6.2.1 Assessment of the wetlands and Riparian areas

The study focused on features which were potentially most at risk as a result of the prospecting and associated activities (Table 14). The potential impacts of activities such as farming, prospecting, drought, erosion and clearing of natural vegetation within the greater catchment were taken into consideration during the assessment.

Table 14: Description of the assessed wetland areas on site.

Feature	D2, D8	D3, D9	D1, D4, D5, D6, D7
Catchment Features and Current Impacts	Endoreic. Surface water drains from the catchment to the lowest point of the unit, where water drains into the ground. Impacts within the catchment include widespread agriculture and grazing by cattle.	Endoreic. Surface water drains from the catchment to the lowest point of the unit, where water drains into the ground. Impacts within the catchment include widespread agriculture and grazing by cattle.	Endoreic. Surface water drains from the catchment to the lowest point of the unit, where water drains into the ground. Impacts within the catchment include widespread agriculture and grazing by cattle.
Wetland Type	Depression	Depression	Depression
Downstream Features	System is endoreic	System is endoreic	System is endoreic
Vegetation Characteristics	Void of vegetation	Discussed in Section 6.1.1	Discussed in Section 6.1.2
Algae Presence	None observed	Present in D3	No surface water present
Aquatic Faunal Impacts	Major impacts would be on macroinvertebrate assemblage and aquatic dependent animals such as frogs and especially avifaunal species.	Major impacts would be on macroinvertebrate assemblage and aquatic dependent animals such as frogs and especially avifaunal species.	Major impacts would be on macroinvertebrate assemblage and aquatic dependent animals such as frogs and avifaunal species in the wet

			season when such species may be present.
Depth Characteristics	Shallow (wading birds standing in the centre of the wetland).	Shallow (wading birds standing in the centre of the wetland).	No surface water present
Flow Conditions	None	None	No surface water present
Water Clarity	Turbid, likely due to suspended sediments.	Turbid, likely due to suspended sediments.	No surface water present
Water Odour	None	None	No surface water present
Erosion Impacts	High erosion potential due to soil composition and lack of vegetation.	Low erosion potential due to dense vegetation cover.	Low erosion potential due to dense vegetation cover.
Soil characteristics	Very saturated grey sand comprises the banks of these wetlands. Mottling observed at 15cm.	Very saturated grey sand comprises the banks of these wetlands. Mottling observed at 15cm.	Brown sand at the centre and border of these wetlands Mottling observed at 15 – 20cm.

6.2.2 WET-Health Assessment

The overall PES category for all the Depression wetlands was calculated to be B-Slightly modified. This is mainly as a result of all of the Wetlands bordering extensive agricultural fields, affecting runoff water accumulating within these wetlands, as well as the quality thereof. The vegetation module of D1, D4, D5 and D6 is also slightly affected as these wetlands are dominated by some invasive Exotics such as Tagetes minuta & Verbena bonariensis. The PES is likely to deteriorate over the next few years if the prospecting activities occur within the exclusion zones, and if degradation occurs due to human activities.

6.4.1 Ecological Importance and Sensitivity

Depressions 2, 3, 8, and 9 was calculated to fall within EIS Category B- High. The importance of the services supplied by this wetland is High relative to that supplied by other wetlands. It possesses features that are ecologically important and sensitive at a local to national scale, and the functioning and/or biodiversity of these features are considered sensitive to anthropogenic disturbances. Wetlands in this category typically play a role in providing goods and services at a local or regional level.

Depressions 1, 4, 5, 6, and 7 were calculated to fall within category D- Low/marginal Features regarded as somewhat ecologically important and sensitive at a local scale. The functioning and/or biodiversity features have a low-medium sensitivity to anthropogenic disturbances. They typically play a very small role in providing ecological services at the local scale.

Table 19: Summary of the REC categories assigned to all wetland features.

Features	REC Category
D2, D8	A/B Improve
D3, D9	A/B Improve
D1, D4, D5, D6, D7	B

	Maintain

6.5 Buffer Zone Determination

The buffer zones (Figure 30-33) for wetlands were based on prospecting operations and were calculated using the Site-Based Tool: Determination of buffer zone requirements for wetland ecosystems (Macfarlane et al., 2010). The recommended/exclusion buffer zones were calculated to be 25m (D2, D8), 18m (D3, D9), and 16m (D1, D4, D5, D6, D7). Due to the protected avifaunal species Phoeniconaias minor and Phoenicopterus roseus occurring in D2, D3, D8, and D9, these wetlands will receive a 200m buffer as well as the wetland buffers.

6.6 Summary of Results

The results recorded for the wetlands potentially affected by the prospecting activities are summarised in Table 20 below.

Classification	Scientific Buffer	PES	EIS	REC
D2, D8	25m	B	High	A/B Improve
D3, D9	18m	B	High	A/B Improve
D1, D4, D5, D6, D7	16m	B	Low	B Maintain

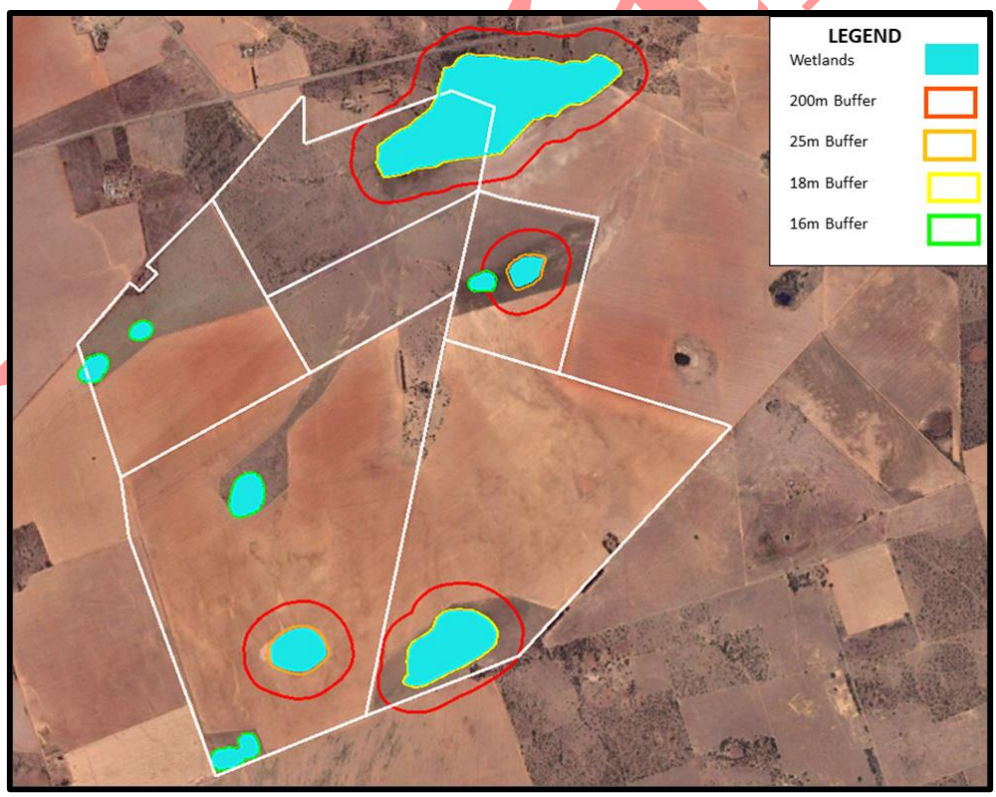


Figure 30. Wetlands and their associated buffers

The Wetland vegetation that the site has been associated with is the Dry Highveld Grassland Group 5, as depicted in the figure below.

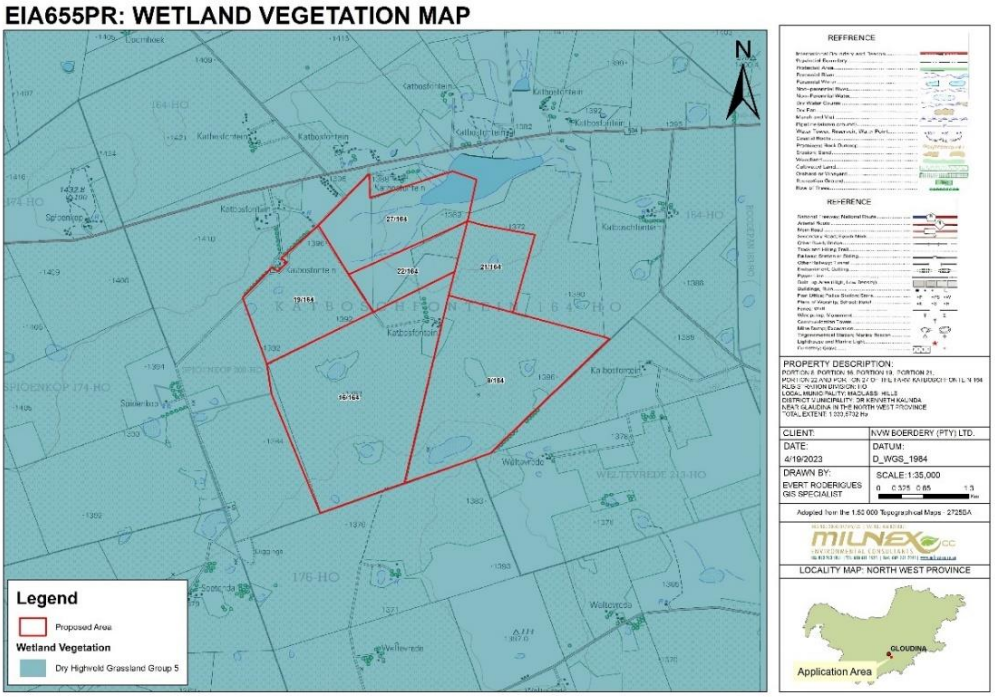


Figure 15: Wetland vegetation type

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 16**).

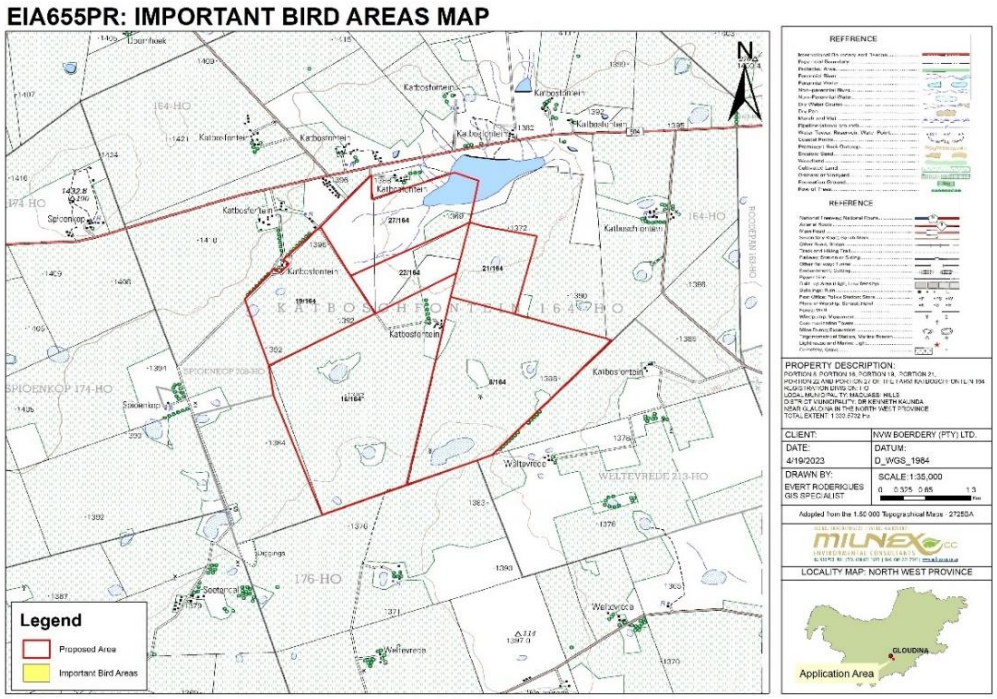


Figure 16: Important Bird and Biodiversity Areas associated with the study site.

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

4.3.1 Avifauna

Many avifaunal species are adaptable as they are habitat generalists and can therefore accommodate a certain degree of habitat degradation and transformation (Harrison et al., 1997). Other species are extremely habitat specific and have to rely on certain habitat units for breeding, hunting or foraging and roosting. It is the survival of these species that become threatened as they cannot adapt to habitat changes. Habitat-specific species are sensitive to environmental change, with destruction of habitat being the leading cause of species decline worldwide (Barnes, 2000).

It is widely accepted that vegetation structure, rather than the actual plant species, influences bird species' distribution and abundance (Harrison et al., 1997). Therefore, the vegetation description used in the Bird Atlas does not focus on lists of plant species, but rather on factors which are relevant to bird distribution.

A non-comprehensive bird list of the application area was created (Table 11) by combining occurrence data from SABAP2 with species observed by the specialist on site (highlighted in green). Both the NT and provincially protected Greater Flamingo (Phoenicopterus roseus) and Lesser Flamingo (Phoeniconaias minor) were encountered at all the permanent waterbodies located on the application area. The protected and Vulnerable Blue Crane (Grus paradisea) was encountered on the application area within agricultural land bordering one of

the water-filled pans. Lastly, whilst it was not encountered during the site visit, the NT and protected Maccoa Duck (Oxyura maccoa) has been encountered within the pentad this application is in (SABAP2) and there is suitable habitat for it on site, making it likely to occur on the application area.

Table 11: List of Birds Possibly Occurring on Site (SABAP2, 2023)

Common group	Common species	Genus	Species	IUCN and SA Redlist status	ToPS
Pied	Avocet	Recurvirostra	avosetta	LC	No
Acacia Pied	Barbet	Tricholaema	leucomelas	LC	No
African Red-eyed	Bulbul	Pycnonotus	nigricans	LC	No
Black-throated	Canary	Crithagra	atrogularis	LC	No
Yellow	Canary	Crithagra	flaviventris	LC	No
Ant-eating	Chat	Myrmecocichla	formicivora	LC	No
Red-knobbed	Coot	Fulica	cristata	LC	No
Reed	Cormorant	Microcarbo	africanus	LC	No
White-breasted	Cormorant	Phalacrocorax	lucidus	LC	No
Zitting	Cisticola	Cisticola	juncidis		
Blue	Crane	Grus	paradisea	V	Y
Pied	Crow	Corvus	albus	LC	No
Cape Turtle	Dove	Streptopelia	capicola	LC	No
Laughing	Dove	Spilopelia	senegalensis	LC	No
Namaqua	Dove	Oena	capensis	LC	No
Red-eyed	Dove	Streptopelia	semitorquata	LC	No
African Black	Duck	Anas	Sparsa		
Maccoa	Duck	Oxyura	maccoa	NT	No
White-faced Whistling	Duck	Dendrocygna	viduata	LC	No
Yellow-billed	Duck	Anas	undulata	LC	No
Western Cattle	Egret	Bubulcus	ibis	LC	No
Southern	Fiscal	Lanius	collaris	LC	No
Greater	**Flamingo**	**Phoenicopterus**	**roseus**	**NT**	**Yes**
Lesser	**Flamingo**	**Phoeniconaias**	**minor**	**NT**	**Yes**
Fiscal	Flycatcher	Melaenornis	silens	LC	No
Egyptian	Goose	Alopochen	aegyptiaca	LC	No
Spur-winged	Goose	Plectropterus	gambensis	LC	No
Black necked	Grebe	Podiceps	nigricollis	LC	Yes
Little	Grebe	Tachybaptus	ruficollis	LC	No
Helmeted	Guineafowl	Numida	meleagris	LC	
Black Headed	Heron	Ardea	melanocephala		
Grey	Heron	Ardea	cinerea	LC	No
African Sacred	Ibis	Threskiornis	aethiopicus	LC	No
Glossy	Ibis	Plegadis	falcinellus		
Hadeda	Ibis	Bostrychia	hagedash	LC	No
Pied	Kingfisher	Ceryle	rudis	LC	No

Black-winged	*Kite*	*Elanus*	*caeruleus*	*LC*	*No*
Northern Black	*Korhaan*	*Afrotis*	*afraoides*	*LC*	*No*
Blacksmith	*Lapwing*	*Vanellus*	*armatus*	*LC*	*No*
Crowned	*Lapwing*	*Vanellus*	*coronatus*	*LC*	*No*
Rufous-naped	*Lark*	*Mirafra*	*africana*	*LC*	*No*
Common	*Moorhen*	*Gallinula*	*chloropus*		
Red-faced	*Mousebird*	*Urocolius*	*indicus*	*LC*	*No*
Common	*Myna*	*Acridotheres*	*tristis*	*LC*	*No*
Common	*Ostrich*	*Struthio*	*camelus*	*LC*	*No*
Marsh	*Owl*	*Asio*	*capensis*	*LC*	*No*
African	*Pipit*	*Anthus*	*cinnamomeus*	*LC*	*No*
Three-banded	*Plover*	*Charadrius*	*tricollaris*	*LC*	*No*
Southern	*Pochard*	*Netta*	*erythrophthalma*	*LC*	*No*
Black-chested	*Prinia*	*Prinia*	*flavicans*	*LC*	*No*
Red-billed	*Quelea*	*Quelea*	*quelea*	*LC*	*No*
Cape	*Sparrow*	*Passer*	*melanurus*	*LC*	*No*
House	*Sparrow*	*Passer*	*domesticus*	*LC*	*No*
Southern Grey-headed	*Sparrow*	*Passer*	*diffusus*	*LC*	*No*
Chestnut-backed	*Sparrow-Lark*	*Eremopterix*	*leucotis*	*LC*	*No*
White-browed	*Sparrow-Weaver*	*Plocepasser*	*mahali*	*LC*	*No*
African	*Spoonbill*	*Platalea*	*alba*	*LC*	*No*
Swainson's	*Spurfowl*	*Pternistis*	*swainsonii*	*LC*	*No*
Pied	*Starling*	*Lamprotornis*	*bicolor*	*LC*	*No*
Wattled	*Starling*	*Creatophora*	*cinerea*	*LC*	*No*
Black-winged	*Stilt*	*Himantopus*	*himantopus*	*LC*	*No*
Greater Striped	*Swallow*	*Cecropis*	*cucullata*	*LC*	*No*
Red-breatsed	*Swallow*	*Cecropis*	*semirufa*		
South African Cliff	*Swallow*	*Petrochelidon*	*spilodera*	*LC*	*No*
African	*Swamphen*	*Porphyrio*	*madagascariensis*		
African Black	*Swift*	*Apus*	*barbatus*	*LC*	*No*
Little	*Swift*	*Apus*	*affinis*	*LC*	*No*
White-rumped	*Swift*	*Apus*	*caffer*	*LC*	*No*
Red-billed	*Teal*	*Anas*	*erythrorhyncha*	*LC*	*No*
Cape	*Wagtail*	*Motacilla*	*capensis*	*LC*	*No*
Chestnut-vented	*Warbler*	*Curruca*	*subcoerulea*	*LC*	*No*
Blue	*Waxbill*	*Uraeginthus*	*angolensis*		
Sociable	*Weaver*	*Philetairus*	*socius*	*LC*	*No*
Southern Masked	*Weaver*	*Ploceus*	*velatus*	*LC*	*No*
Long-tailed Paradise	*Whydah*	*Vidua*	*paradisaea*	***LC***	***Yes***
Pin-tailed	*Whydah*	*Vidua*	*macroura*	*LC*	*No*
Long-tailed	*Widowbird*	*Euplectes*	*progne*	*LC*	*No*

One avifaunal SCC was flagged by the DFFE Screening tool as possibly occurring on site: Hydroprogne caspia (Caspian tern). This species was not encountered on site.

Hydroprogne caspia (Caspian tern) favours open habitat adjacent large lakes and wetlands, as well as ocean coasts. There is no suitable habitat for this species on the application area, as most of the wetlands within the application area are directly bordered and disturbed by agricultural land whilst the bank of the largest lake is densely vegetated. Furthermore, this species is quite rare inland in South Africa.

The wetlands within the application area support hundreds of waterbirds and act as a biodiversity hotspot amongst the disturbed agricultural lands on and around the application area. Whilst buffer zones for the benefit of protecting the Blue Crane would be impractical (these species are nomadic and likely don't nest on the application area), all of the wetlands inhabited by Flamingos will be given a 200m buffer to protect their habitat and avoid disturbing them by the noise and dust of the proposed activities.

RIVER ECOSYSTEM STATUS

According to **Figure 17**, there a no rivers close to the proposed area.

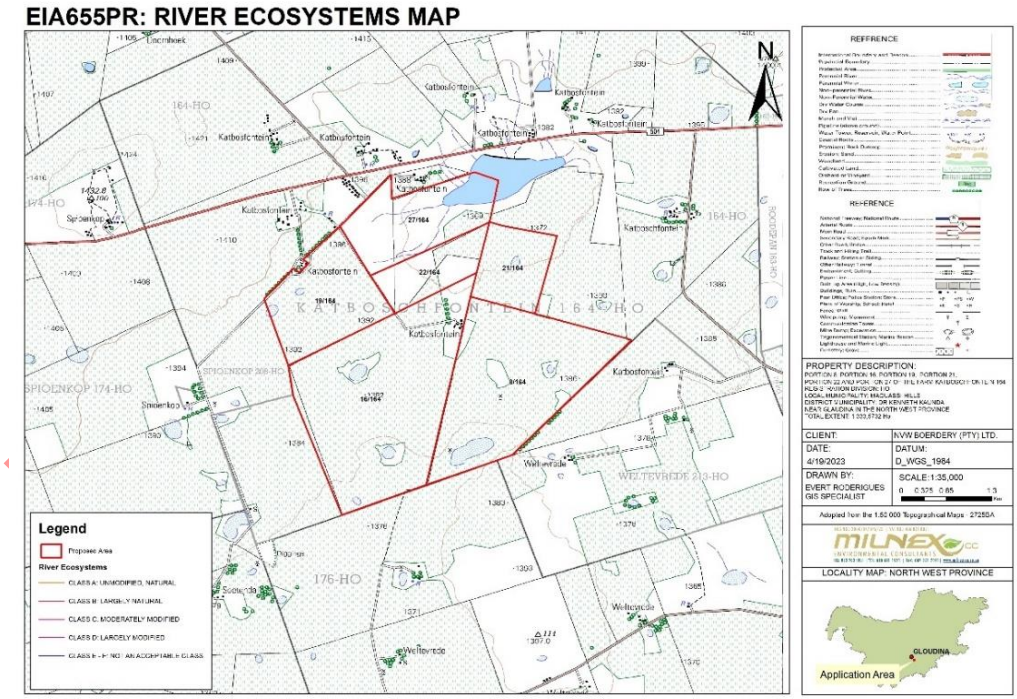


Figure 17: Ecosystem status of the rivers occurring in close proximity to the study site.

STRATEGIC WATER SOURCE AREA

Water source areas are those areas that supply a disproportionate amount of mean annual runoff to a geographical region of interest. Strategic water source areas are those that supply substantial downstream economies and urban centres. These water source areas are vital to the national economy (Nel et al., 2013).

According to **Figure 18**, the proposed area does not fall within a Strategic Water Source Area.

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

According to desktop results, the study area does not overlap any of the strategic water source areas.

EIA655PR: STRATEGIC WATER SOURCE AREA MAP

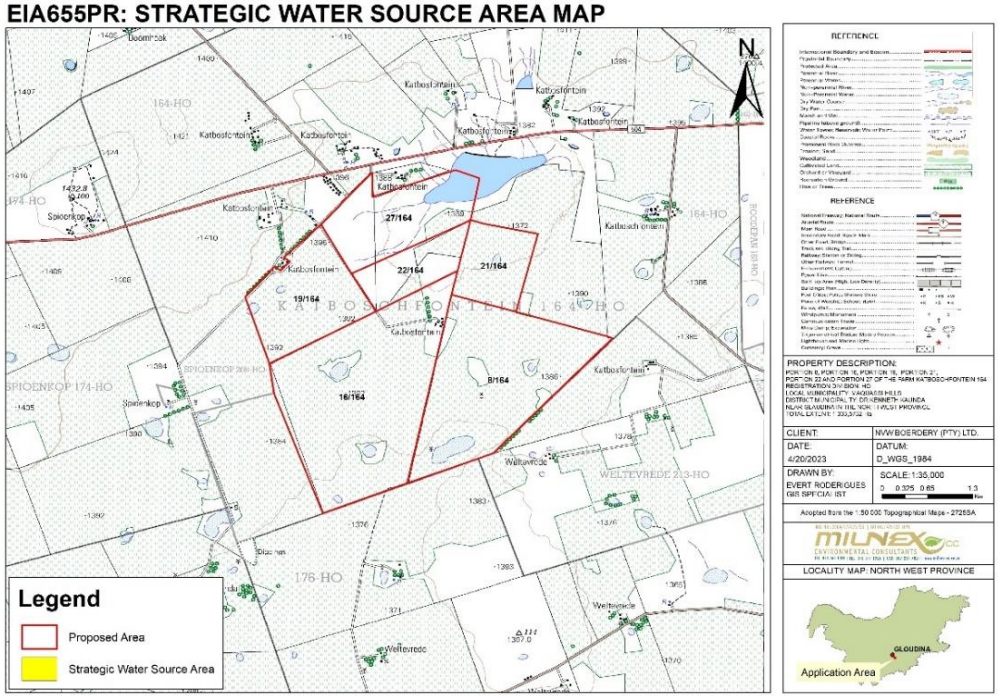


Figure 18: Strategic Water Source Area map

DESCRIPTION OF THE SOCIO-ECONOMIC ENVIRONMENT

Brief Description of the District Municipality

The Dr Kenneth Kaunda DM is situated at the southern part of the North West province and borders both the Gauteng and Free State provinces. It consists of three (3) local municipalities i.e. Maquassi Hills, Matlosana and JB Marks. Between 2006 and 2009 the district municipality comprised of five local municipalities which included Merafong City Council, which has since been re-demarcated to the Gauteng province. After the 2016 Local Government elections, Tlokwe City Council and Ventersdorp Local Municipality were redemarcated and renamed JB Marks Local Municipality.

The area covered by the District Municipality appears on the map (Figure B.2.1), and according to Statistics South Africa (Community Survey, 2016, Mid-year Population Estimates), the population of the entire DM was about 803 301, when considering the boundaries of 2021. According to STATSSA publication, the total population of the Dr. Kenneth Kaunda District, increased from 742 822 in 2016 (Consider Table B.1). The population is unevenly

distributed among the four Local Municipalities and the average annual growth rate of the district was 1.07% between 2016 and 2021.

The majority of households (estimated at 253 901) in the district (87%) have access to safe drinking water either inside or outside the dwelling and about 95% access to electricity in general. Significant improvements have been made in the area of service delivery in general and this information is available in sections of Municipal Dermographics and Social and Economic Analyses (Chapter B).

The major causes of death indicate that, with the exception of other combination of causes, non-natural causes are the leading vice in taking the lives of the people of the district at 9.5%, followed by tuberculosis (the original leader) at 8.9% (Fig B.4.2 (a)). The income levels and unemployment rates as provided by the 2016 Community Survey are provided for under sections B.4.4, B.4.5 and B.4.6, in order to assist in future planning. The annual GDP growth in the DM (on average -1.2% between 2011 and 2016) broadly follows the national trend, though it is generally lower than both the national and provincial averages (Section B.4.4). There was an increase in the GDP between 2017 and 2019 in the district, the highest being at an average of 3.5% in 2017, followed by a decline of 3.4% in the district in 2020. The unemployment rate of the district was 21.3%, with the youth unemployment rate (ages 15 to 24) at 50.1% in 2020.

The Municipal Demographics

Total Population

According to Statistics South Africa (Community Survey 2016 and Mid-year Population Estimates 2021), the population of the Dr. Kenneth Kaunda District in 2021 (based on 2016 municipal boundaries) was 803 301, having increased from 742 822 in 2016 (Consider Table B.2.1). The population is unevenly distributed among the three (3) Local Municipalities and the average annual growth rate of the district is 1.07% between 2016 and 2021, expected to stay the same between 2021 and 2026.

Table B.2.1: *Dr Kenneth Kaunda District Population Figures*

MUNICIPALITY	TOTAL POPULATION				POPULATION (%)				ANNUAL GROWTH (%)	
	CENSUS 2011	CS 2016	2021 MYE	2026 MYE	2011	2016	2021	2026	2016-21	2021-26
JB Marks	219463	243528	265843	291083	31,3	32,2	33,1	34	1,09	1,09
City of Matlosana	398676	417281	450629	474131	57,5	56,8	56,1	55	1,08	1,05
Maquassi Hills	77794	82013	86828	90457	11,2	11	10,8	11	106	1.04
Dr Kenneth Kaunda	695933	742822	803301	855671	100	100	100	100	1,07	1,07

The majority of the Dr. Kenneth Kaunda District population reside within the City of Matlosana LM (56.1, down from 56.8% in 2016), followed by JB Marks LM (33.1 up from 32.2% in 2016). The Local Municipality with the lowest population in the Dr. Kenneth Kaunda District is Maquassi Hills (10.8, down from 11.0%). The number of wards per local municipality is Matlosana (39), JB Marks (34) and Maquassi Hills (11) for a total of 84 in the DM, as on September 2016 (Statistics SA, Census 2011, Community Survey 2016, Mid-year Population Estimates 2021). The number of households within the Dr. Kenneth Kaunda District was estimated at 253 901 in 2021, from 223 358 in 2016, and 198 784 in 2011 (Mid-year Population Estimates 2021).

Table B.2.2: *Household Numbers and Estimates*

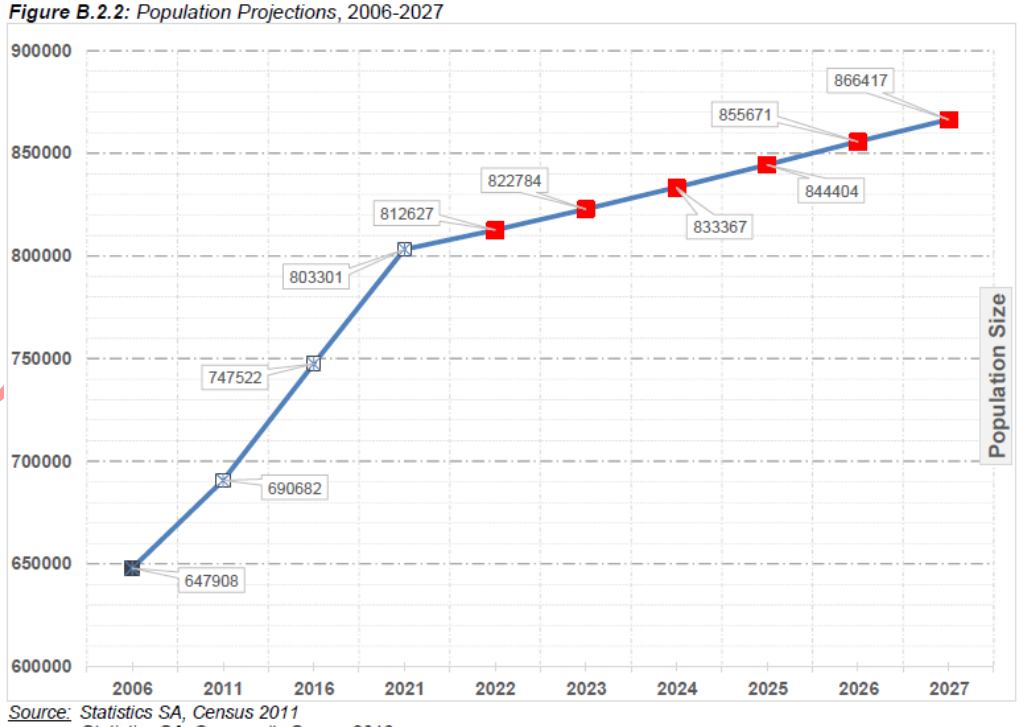
	2006	2011	2016	2021	2026	2031
National	12658068	14076373	16061483	18575346	21314230	24099042
NW Province	796393	796393	796393	796393	796393	796393
Dr Kenneth Kaunda DM	183587	198784	223358	253901	286313	319369
Matlosana LM	109286	114955	125448	138469	151874	165326
Maquassi Hills LM	18560	20104	22597	25639	28724	31613
JB Marks LM	55740	63725	75313	89793	105715	122430

Population Growth Rate

The population growth figures for the district between 2011 and 2016 are summarized in Table B.2.1 and Figure B.2.2. According to the official Statistics SA data, the total population have increased from 742822 in 2016 to 803 301 in 2021. The average annual growth rate has stayed relatively stable at 1.07% between 2011 to 2016, increasing slightly at 1.08% between 2016 and 2021. This growth rate is significantly lower than 2.1% which is necessary to maintain the current population levels constant in the district.

Various population growth rates are being utilized for the purpose of population projections in various existing policy documents and plans. STATSSA assumed a constant growth of 1.07% from 2021 to 2026 to project the growth rate between the two years in the district. The projected population figures, based on this scenario will be 812627 in 2022 and 855671 respectively by 2026.

Figure B.2.2: *Population Projections, 2006-2027*



Source: *Statistics SA, Census 2011*
Statistics SA, Community Survey 2016
StatsSA, Mid-year Population Estimates, 2021

Social and Economic Analysis of Patterns, Trends and Risks

The analyses that follow are mainly derived from statistical information provided by Statistics SA, 2016 Community Survey and IHS Markit Regional eXplorer:

Access to Basic Services and Backlogs

The following table indicate the access to basic services for households within the DM, according to the Statistics SA, 2016 Community Survey.

Table B.4.1 (a): *Access to Basic Services*

	Percentage Access to Basic Services								
Municipality	Electricity: Cooking	Electricity: Lighting	Electricity: Space Heating	Electricity: Water Heating	Electricity: General	Formal Refuse Removal	Access to Safe Drinking Water	Sanitation (Connected to a public sewerage system)	Formal Dwelling
City of Matlosana	90.9	95.7	69.6	91.5	96.0	95	85.4	95.4	91.6
Maquassi Hills	90.4	96.6	53.1	87.9	94.5	76.8	92.2	87.9	87.3
JB Marks	82.9	91.4	52.1	85.2	92.9	79.6	89.9	77	85.5
Dr Kenneth Kaunda	88.2	83.3	62	89	94.8	87.9	87.6	88.6	89.1

Source: Statistics SA, Community Survey 2016

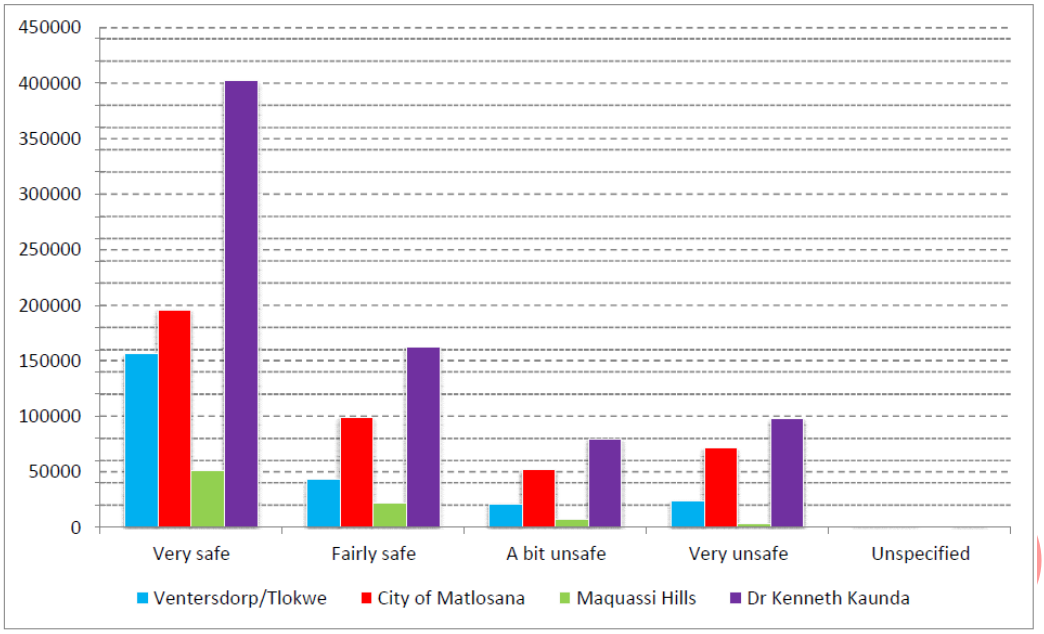
The majority of households in the DM (87.6%) have access to piped water either inside the dwelling, inside the yard or from an access point outside the yard. About 87.9% have access to refuse removal for at least once a week, while almost 88.6% have sanitation that is connected to a formal sewage system. Almost 89.1% of the population stay in formal dwellings and about 95% have access to one or another form of access to electricity access (Table 4.1 (a).

Crime and Perception of Safety

The largest number of people who feel safe during the day the district (with 54%), is highest in Ventersdorp/Tlokwe at about 64%, with less than 50% of people who feel safe are located in Matlosana (lowest at 47%). (Consider Fig B.4.3 (a)). The converse is also replicated where the highest number of people (17%) in Matlosana feel very unsafe during the day, followed by Ventersdorp/Tlokwe at 10% and the least at Maquassi Hills (4%).

At least 60% of people feel very unsafe in the dark, with an average of 64% across the district. Maquassi Hills and Matlosana share the highest percentage, per population number of people who feel very unsafe in the dark at 67% and Ventersdorp/Tlokwe at 60%. An average of people who feel very safe in the dark is 13% across the district, with 15% in Ventersdorp/Tlokwe and the lowest number being found in Maquassi Hills at 9% per total municipality population. (Consider Fig B.4.3(b)).

Fig B.4.3(a): *Perception of Safety during the Day*



Source: Statistics SA, Community Survey, 2016

Economic Performance and Trends

Growth Domestic Product

Annual GDP growth in the DM broadly follows the national trend. DM GDP growth is generally lower than both the national and provincial averages. The next tables (B.4.4.1 (a)-(c)) indicate annual GDP growth rates for the local municipalities within the DM over the periods 2006-2011, 2011-2016 and 2011-2023 (with estimates of the three years beyond 2020).

Table B.4.4.1 (a): *Average Growth Rate for Dr Kenneth Kaunda Municiplities, 2006-2016*

		Dr Kenneth Kaunda	City of Matlosana	Maquassi Hills	JB Marks
Gross Domestic Product by Region (GDP-R)					
	Average annual growth (Constant 2010 Prices)				
	2006-2011	-0.8%	-2.5%	2.7%	2.1%
	2011-2016	-1.2%	-2.4%	-0.1%	0.7%

Source: IHS Markit Regional eXplorer version 1181

Table B.4.4.1 (c): *Gross Domestic Product by Region (GDP-R)-Dr KK DM, and Local Municipalities-2011-2023*

Average annual growth (Constant 2015 Prices)				
Year	**Dr Kenneth Kaunda**	**Matlosana**	**Maquassi Hills**	**JB Marks**
2011	3,9%	3,4%	5,4%	4,8%
2012	-4,2%	-5,6%	-1,3%	-2,0%
2013	5,1%	4,8%	4,7%	5,8%
2014	-0,2%	-1,1%	0,6%	1,2%
2015	-0,6%	-1,2%	-0,5%	0,4%
2016	-0,6%	-1,9%	0,2%	1,5%
2017	2,2%	2,2%	2,8%	2,2%
2018	3,5%	3,3%	3,9%	3,9%
2019	1,3%	1,2%	1,1%	1,7%
2020	-3,4%	-3,3%	-3,1%	-3,5%
2021	6,3%	6,7%	5,4%	5,9%
2022	1,7%	1,5%	1,5%	2,0%
2023	1,8%	1,7%	1,5%	2,0%

Source: IHS Markit Regional eXplorer version 1160

Table B.4.4.1 (c) depicts an updated version of the GDP of the region as a whole with its family of local municipalities beyond 2016. In addition, the table makes a projection of the GDP between 2021 and 2023, showing a positive growth across the board. There was an increase in the GDP between 2017 and 2019 in the district, the highest being at an average of 3.5% in 2017. This positive growth was followed by a decline of 3.4% in the district in 2020. Projections are that later data will show a significant increase in growth of 6.3% in 2021 (contributed mainly by Matlosana at 6.7%) an average increase of about 2% (1.7 and 1.8%) in 2022 and 2023.

Sectoral Comparative Advantage

The comparative advantage of an area indicates a relatively more competitive production function for a product or service in that specific economy, than in the aggregate economy. The economy therefore produces the product or renders the service more efficiently. The location quotient is an indication of the comparative advantage of an economy. A location quotient of larger than one (1) indicates a relative (favourable) comparative advantage in that sector. The Location Quotient of Dr Kenneth Kaunda DM and its family of local municipalities in 2020 is given in Table B.4.4.2. It shows that Maquassi Hills and JB Marks have a favourable comparative advantage in Agriculture. Matlosana still has a relative comparative advantage in Mining, while all a doing well in community services. Trade can be considered also for investment purposes across the distric, as well as construction.

Table B.4.4.2: *Location Quotients for Dr Kenneth Kaunda Municiplities, 2020*

	Dr Kenneth Kaunda	Matosana	Maquassi Hills	JB Marks
Agriculture	1,45	0,65	6,14	2,08
Mining	1,19	1,50	0,64	0,77
Manufacturing	0,40	0,34	0,40	0,50
Electricity	1,11	1,13	0,33	1,18
Construction	0,95	0,94	1,36	0,91
Trade	1,08	1,17	1,03	0,94
Transport	0,87	0,95	0,83	0,74
Finance	0,87	0,92	0,66	0,81
Community services	1,31	1,22	1,23	1,46

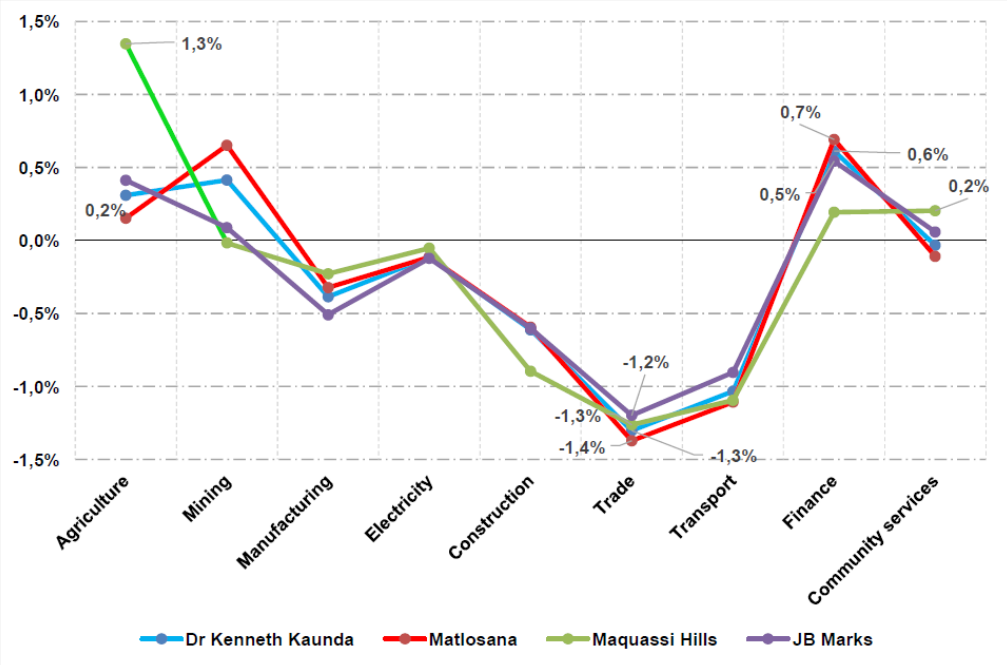
Source: IHS Markit Regional eXplorer Version 1160

Sectoral Contribution to Economic Growth

As outlined in Figure B.4.6.3 (a) the largest in the sectoral contribution to economic growth (Constant 2015 Prices) in 2020 was in the Finance (0.7%) and Mining (0.4%) sectors the in Dr Kenneth Kaunda district and its locals. The municipality that experienced the largest growth is Maquassi Hills in agriculture and Matlosana experienced the biggest loss in trade at -1.4%. A similar pattern is followed by all sectors, differing in values only. The largest proportional gains in employment was achieved in the Community Services (33%) , Trade (22%) and Finance (15%) in 2020 (Figure B.4.6.3 (b)).

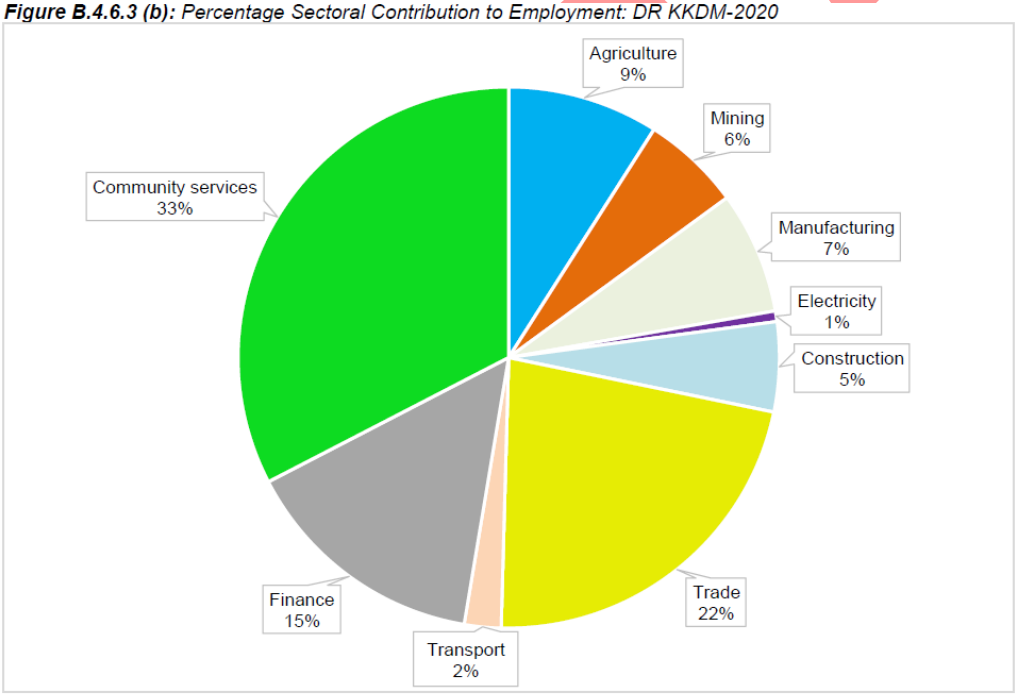
The decline in total employment was experienced in mining whivh used to be the main employer in the district, contributing only 6% to the overall employment, while the least contributor is Electricity Services at 1%. The combined growth in total tourism (domestic and international using bednights) between 2011 and 2020 is depicted in Figure B.4.6.3 (c). The data shows that tourism was declining by an average of 3.5 per annum from 2011 to 2015 and increased sharply to 6.6% in 2016. The highest average tourism achieved was in 2019 (12.1%), influenced mainly by international tourism. The decline of 70.3% in 2020 was due to the onset of the Covid-19 pandemic which restricted both domestic and international travel. Dr KKDM Local Economic Development ("LED") Strategy identified three priority sectors earmarked for growth and development (Tourism, Agriculture and Manufacturing). The municipalities in the district need to invest more in these priority areas.

Figure B.4.6.3 (a): *Sectoral Contribution to Economic Growth (%): DR KKDM and Locals-2020*



Source: IHS Markit Regional eXplorer

Figure B.4.6.3 (b): *Percentage Sectoral Contribution to Employment: DR KKDM-2020*



Source: IHS Markit Regional eXplorer

CULTURAL AND HERITAGE ASPECTS

A Palaeontological Desktop Assessment was conducted by Elize Butler from Banzai Environmental (Pty) Ltd and a Phase 1 Cultural Heritage Impact Assessment was conducted by J A van Schalkwyk. The reports are available under **Annexure 12**.

According to the DFFE Screening Report the Relative Archaeological and Cultural Heritage Theme Sensitivity of the proposed area falls within Low sensitivity. Please see map colour map under **Appendix 7.**

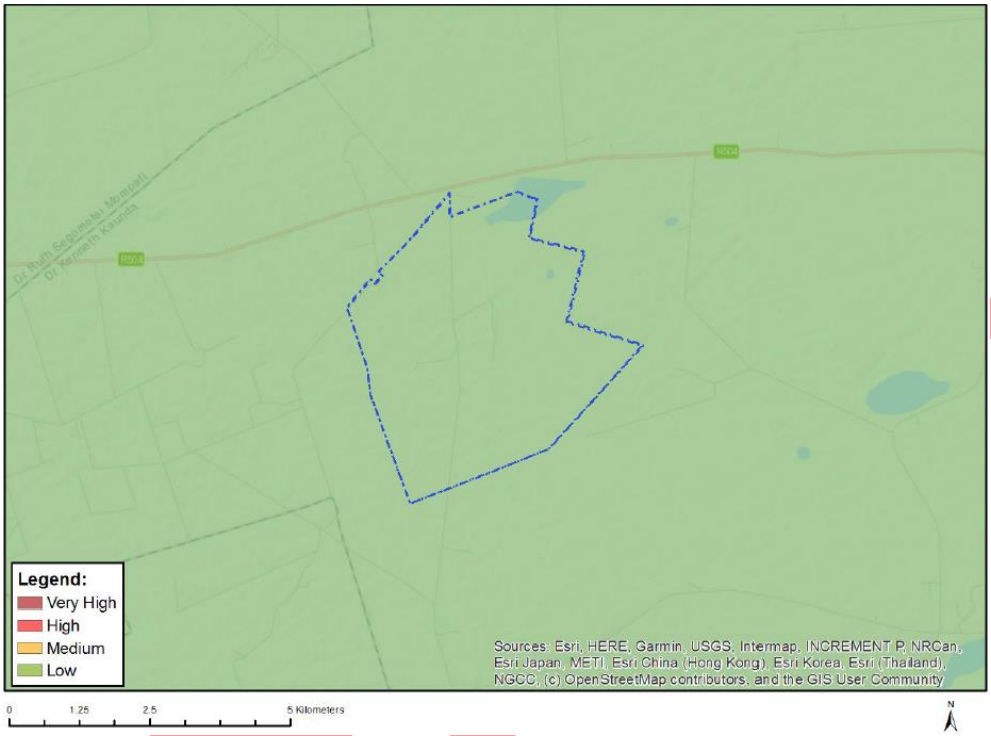


Figure 19: Archaeological and Cultural Heritage Combined Sensitivity

A Phase 1 Cultural Heritage Impact Assessment was conducted by J A van Schalkwyk. The report is available under **Appendix 12.2**. Please see the findings below:

9.3 Site specific review

From a study of old maps and aerial photographs (Fig. 8 to 12), it can be seen that the project area has always largely been open space, probably used for agricultural purposes – planting and grazing.

The Deed of Grant (Fig. 8) indicates that the farm was first granted to JC Meyer in July 1869. However, starting in 1903, it was subdivided into various portions with different owners.

From early aerial photographs (Fig. 9) and topographic maps (Fig. 10) it can be seen that the farmstead is still located in the original position, but it has been upgraded and expanded over the years. On the early map (Fig. 10) at least three clusters of farm labourer homesteads are indicated. However, by 2001 (Fig. 11), these have disappeared. This is in line with other changes that took place on the farm, for example, changes in internal roads, and expansion of agricultural fields.

9.4 Site Assessment Results

During the survey, the following sites, features and objects of cultural significance were identified in the project area (Fig. 13).

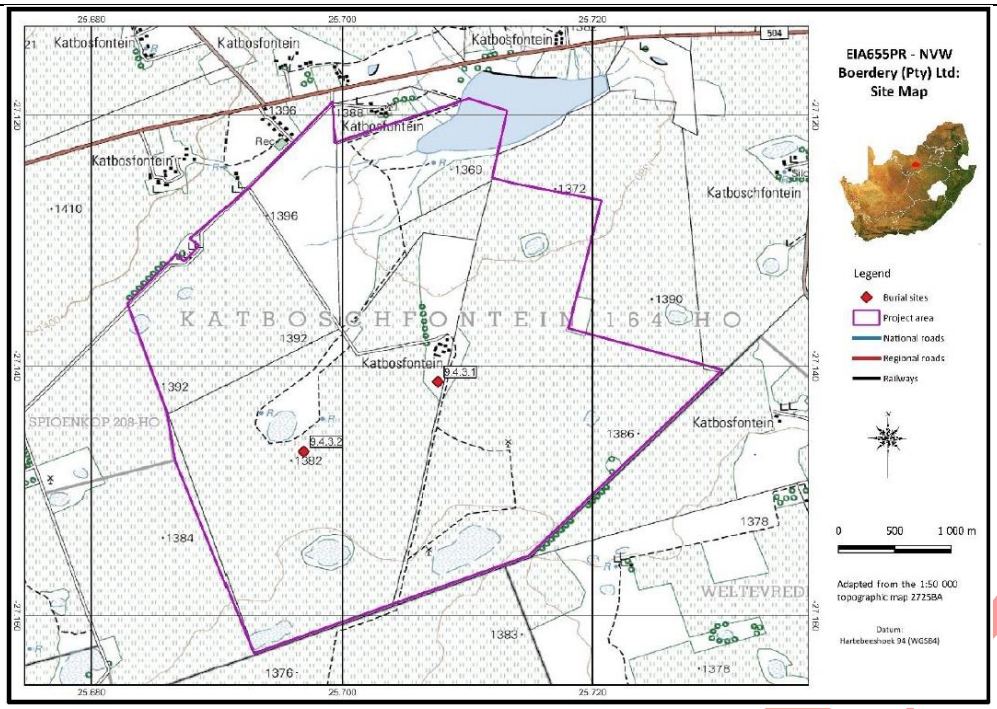


Figure 13. Location of heritage sites in the project area

9.4.1 Stone Age

- *No sites, features or objects of cultural significance dating to the Stone Age were identified in the project area.*

9.4.2 Iron Age

- *No sites, features or objects of cultural significance dating to the Iron Age were identified in the project area.*

9.4.3 Historic period

NHRA Category	**Graves, Cemeteries and Burial Grounds - Section 36**
9.4.3.1. Type: Burial site. **Farm**: Katboschfontein 164HO. **Coordinates**: S 27,14128; E 25,70764	
Description: Formal cemetery with a single grave of the former landowner. It is well fenced off and maintained. It is situated in close proximity of the farmstead.	
Significance of site/feature	Generally protected 4A: High/medium significance.
Reasoned opinion: Burial sites are viewed as having high emotional and sentimental value. However, mitigation is possible if proper procedures have been followed.	
References: -	
 Overview of the site	 View of the grave

Figure 14. Views of the burial site

NHRA Category	Graves, Cemeteries and Burial Grounds - Section 36
9.4.3.2. Type: Burial site. **Farm**: Katboschfontein 164HO. **Coordinates**: S 27,14686; E 25,69692	
Description: A much neglected informal cemetery with approximately 10 graves – most gravestones have been destroyed. Names and dates that are still legible indicate that it is graves from former farm labourers who lived in the vicinity. The dates on the gravestones range between 1978 and 1985.	
Significance of site/feature	Generally protected 4A: High/medium significance.
Reasoned opinion: Burial sites are viewed as having high emotional and sentimental value. However, mitigation is possible if proper procedures have been followed.	
References: -	

Overview of the site

Some of the graves

Figure 15. Views of the burial site

9.5 Verified Site Sensitivity

Based on the screening assessment, i.e. a review of available databases, publications, as well as available heritage impact assessments done for the purpose of developments in the region, see list of references in Section 13 below, and supported by the field survey, it was determined that the project area is located in an area with a very low presence of heritage sites and features.

Heritage resources are sparsely distributed on the wider landscape with highly significant (Grade 1) sites being rare.

- *Most of the archaeological remains recorded in the larger region of the project area consist of a background scatter of weathered and patinated, typologically mixed Middle Stone Age (MSA) artefacts.*
- *Formal and informal burial sites are scattered haphazardly over the larger landscape.*

For the project area, the impacts to heritage sites are expected to be of low significance. This can be further ameliorated by implementing mitigation measures, include isolating sites, relocating sites (e.g. burials) and excavating or sampling any significant archaeological material found to occur within the project area during the project development phases. The chances of such material being found, however, are negligible. After mitigation, the overall impact significance would stay low.

According to the DFFE Screening Report the Relative Paleontology Theme Sensitivity of the proposed area falls within High sensitivity. Please see map colour map under **Appendix 7**

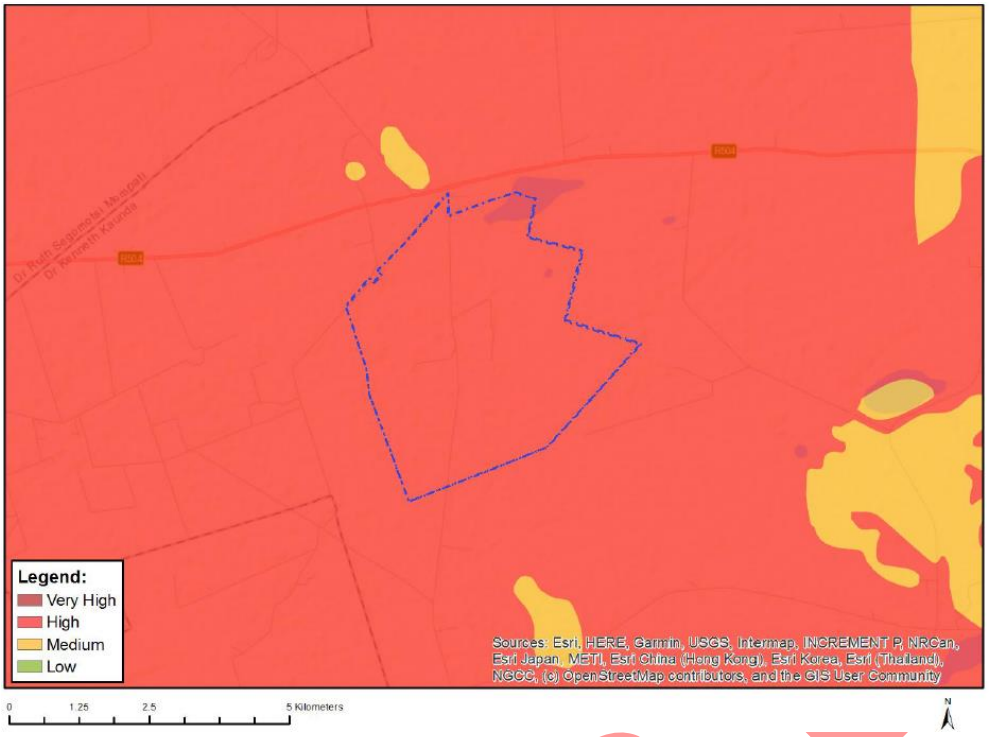


Figure 20: Relative Paleontology Theme Sensitivity

Sensitive features according to the DFFE Screening Report:

Sensitivity	Feature(s)
High	Features with a High paleontological sensitivity
Medium	Features with a Medium paleontological sensitivity

A Palaeontological Desktop Assessment was conducted by Elize Butler from Banzai Environmental (Pty) Ltd. The report is available under **Appendix 12.3**. Please see the findings below:

5 GEOLOGICAL AND PALAEONTOLOGICAL HISTORY

The proposed Katboschfontein Prospecting Right Application is depicted on the 1: 250 000 Christiana 2724 Geological Map (Council for Geosciences, Pretoria) (Figure 3, Table 2). This map indicates that the proposed Prospecting Right Application is underlain by the undifferentiated Ecca Group (Karoo Supergroup), that is represented by the Volksrust and Vryheid Formations in this area.

The Palaeontological Sensitivity generated by the National Environmental Web-Based Screening (depicted in Figure 4) indicates that the Palaeontological Sensitivity of the proposed development is High (red) and corresponds with the SAHRIS PalaeoMap (Figure 5, Table 3).

The Volksrust Formation consists of basinal grey to black, silty shale with thin, usually bioturbated, siltstone or sandstone lenses and beds, particularly towards its upper and lower boundaries. Thin phosphate and carbonate beds and concretions are relatively common. These deposits may also be lacustrine or even lagoonal (Cairncross et al 1998). Fossils from the Volksrust Formation include rare temnospondyl amphibian remains, invertebrates, petrified wood, and low-diversity marine to non-marine trace fossil assemblages. Minor coals with plant remains have also been found in this Formation. The bivalve Megadesmus has been documented from the Volksrust Formation (Bamford 2011).

The Permian Vryheid Formation is internationally renowned for its coal deposits and is known for its rich assemblage of Glossopteris flora which is the source vegetation for this formation. The depth of the Vryheid Formation in the main Karoo Basin may be up to 500 m near Vryheid and New Castle in Kwazulu-Natal (type-locality), where the basin was at its deepest. The Vryheid Formation thins from the north-eastern part of the

basin and finally wedges out towards the west, southwest and south (Johnson 2009). This formation forms a part of the Middle Ecca (Kent 1980) and contains the largest coal reserves in South Africa.

The Vryheid Formation comprises mudrock, rhythmite, siltstone and fine- to coarse-grained sandstone (pebbly in places). The Formation contains up to five (mineable) coal seams. The different lithofacies are mainly arranged in upward-coarsening deltaic cycles (up to 80m thick in the southeast). Fining-upward fluvial cycles, of which up to six are present in the east, are typically sheet-like in geometry, although some form valley-fill deposits. They comprise coarse-grained to pebbly, immature sandstones - with an abrupt upward transition into fine-grained sediments and coal seams (Hancox and Götz, 2014). This formation is known to contain a rich assemblage of Glossopteris flora which is the source vegetation for the Vryheid Formation. Gymnospermous glossopterids dominated the peat and non-peat accumulating of Permian wetlands after continental deglaciation took place (Falcon, 1986c, Greb et al., 2006).

Recent palaeobotanical studies in the Vryheid Formation include that of Adenforff (2005), Bordy and Prefect (2008) and Prefect et al. (2008, 2009, 2010) and Prevec, (2011). Bamford (2011) described numerous plant fossils from this formation (e.g., Azaniodendron fertile, Cyclodendron leslii, Sphenophyllum hammanskraalensis, Annularia sp., Raniganjia sp., Asterotheca spp., Liknopetalon enigmata, Hirsutum sp., Scutum sp., Ottokaria sp., Estcourtia sp., Arberia sp., Lidgetonnia sp., Noeggerathiopsis sp., Podocarpidites sp as well as more than 20 Glossopteris species.

Palynological studies focussing on the coal bearing successions of the Vryheid Formation and include articles by Aitken (1993, 1994, 1998), and Millsteed (1994, 1999), while recent studies were conducted by Götz and Ruckwied (2014). To date no fossil vertebrates have been collected from the Vryheid formation. The occurrence of fossil insects is rare, while palynomorphs are diverse. Non-marine bivalves and fish scales have also been reported from this formation. Trace fossils are abundantly found but the diversity is low. The mesosaurid reptile, Mesosaurus has been found in the southern parts of the basin but may also be present in other areas of the Vryheid formation. Regardless of the rare occurrence of fossils in this biozone a single fossil may be scientifically important as several fossil taxa are known from a single fossil.

The National Palaeontological Databases show no fossil findings in the development area

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

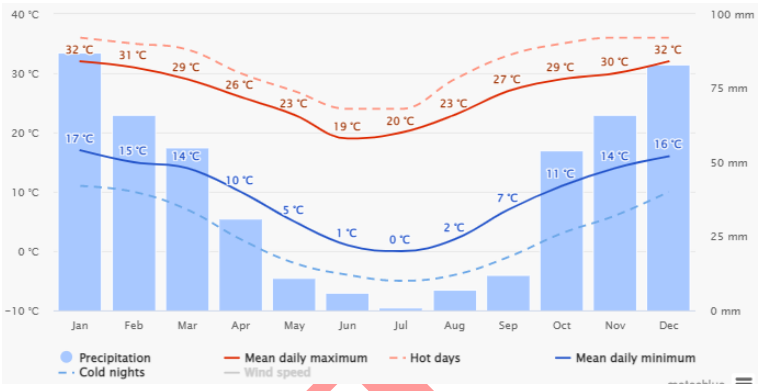
- If a chance find is made the person responsible for the find must immediately stop working and all work that could impact that finding must cease in the immediate vicinity of the find.
- The person who made the find must immediately report the find to his/her direct supervisor which in turn must report 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.
- If the fossil cannot be stabilized the fossil may be collected with extreme care by the ESO. 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 the Heritage Agency has issued the written authorization, the developer may continue with the development on the affected area.

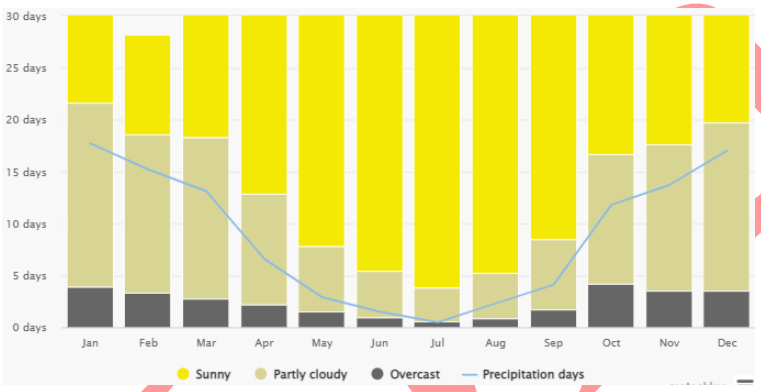
CLIMATE

The meteoblue climate diagrams are based on 30 years of hourly weather model simulations and available for every place on Earth. They give good indications of typical climate patterns and expected conditions (temperature, precipitation, sunshine and wind). The simulated weather data have a spatial resolution of approximately 30 km and may not reproduce all local weather effects, such as thunderstorms, local winds, or tornadoes, and local differences as they occur in urban, mountainous, or coastal areas.

Average temperatures and precipitation

The "mean daily maximum" (solid red line) shows the maximum temperature of an average day for every month for Wolmaransstad. Likewise, "mean daily minimum" (solid blue line) shows the average minimum temperature. Hot days and cold nights (dashed red and blue lines) show the average of the hottest day and coldest night of each month of the last 30 years

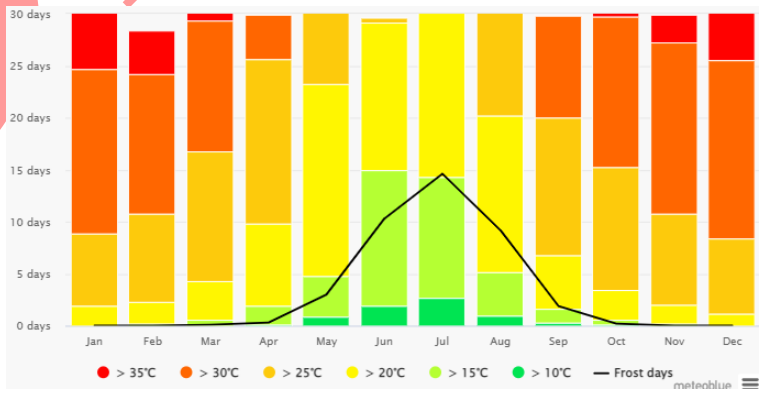


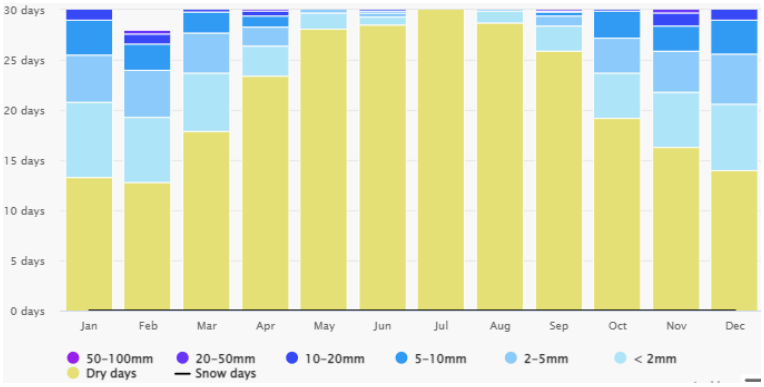


Cloudy, sunny, and precipitation days

Maximum temperatures

The maximum temperature diagram for Wolmaransstad displays how many days per month reach certain temperatures.



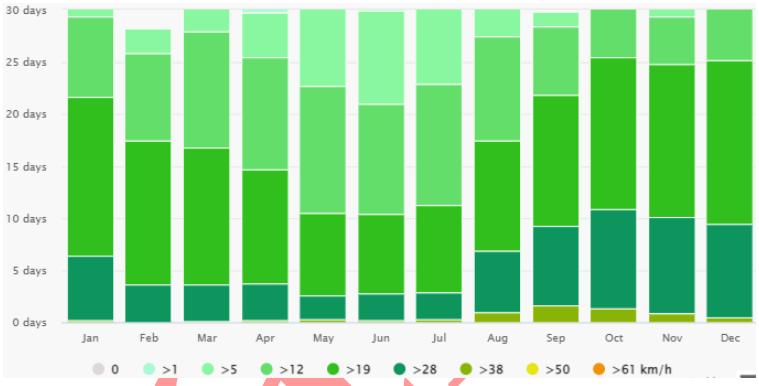


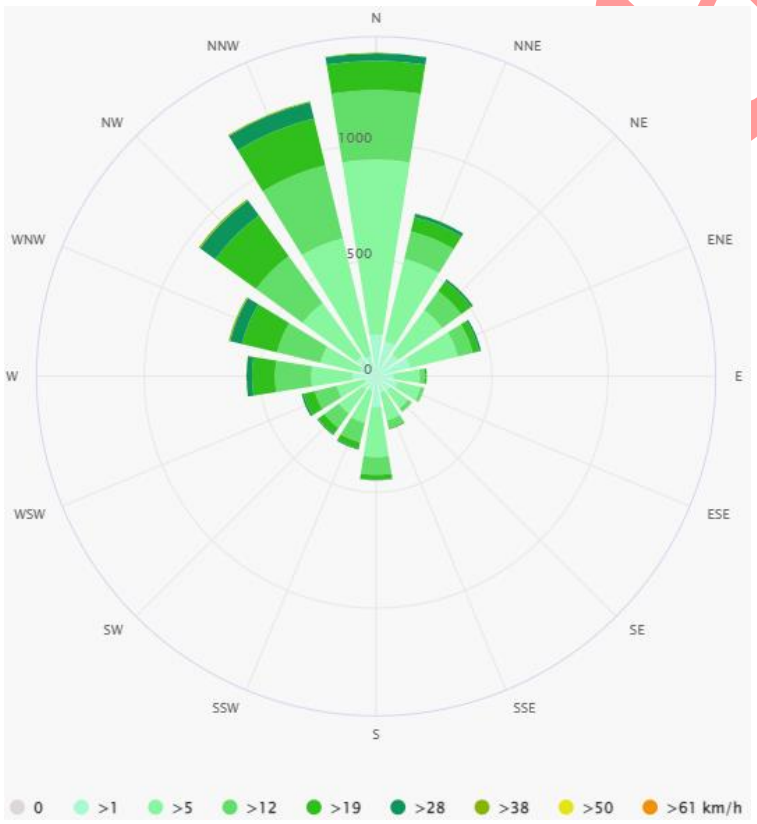
Precipitation amounts

The precipitation diagram for Wolmaransstad shows on how many days per month, certain precipitation amounts are reached.

Wind speed

The diagram for Wolmaransstad shows the days per month, during which the wind reaches a certain speed.





Wind rose

The wind rose for Wolmaransstad shows how many hours per year the wind blows from the indicated direction.

(b) Description of the current land uses.

According to the map below (**Figure 21** and **Figure 22**), the proposed area is largely covered with farmlands and used for the cultivation of crops, there are natural area and waterbodies as well.

From google earth (**Figure 23**) the farmlands and natural areas are visible.

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

The majority of the natural areas of the study area is comprised of Woodland/Open Bush with some areas of Low Shrubland. Most of the application area is transformed by cultivated land (medium, low, and tall cultivated fields)

If applicable a Water Use License Application will be launched for conducting prospecting operations.

All infrastructure will be temporary and/or mobile.

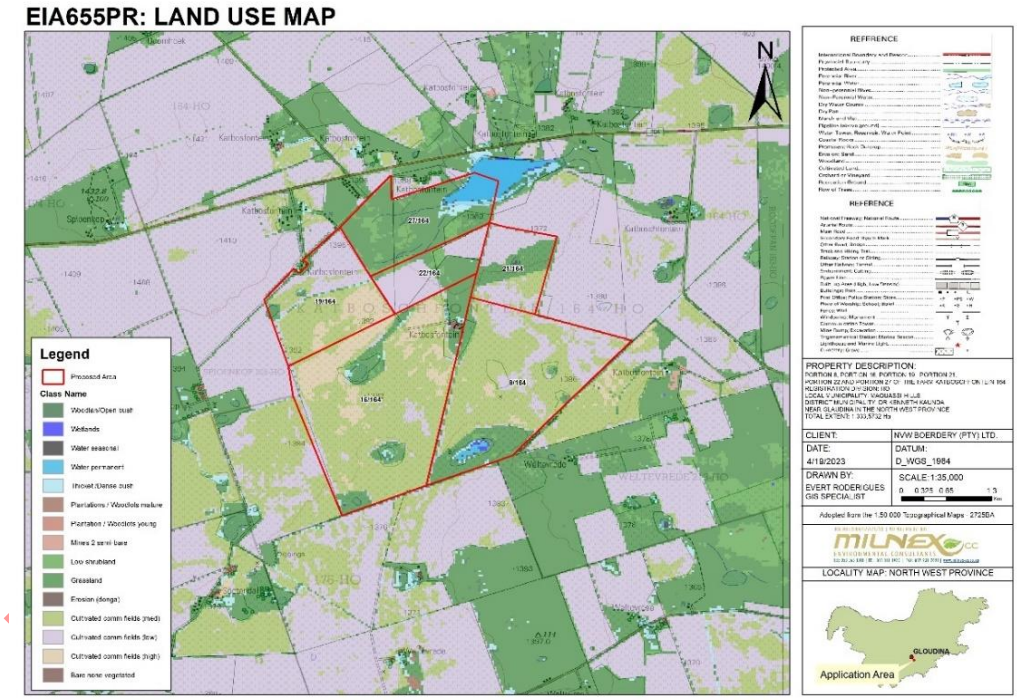


Figure 21: Land use map associated with study site and surrounding areas.

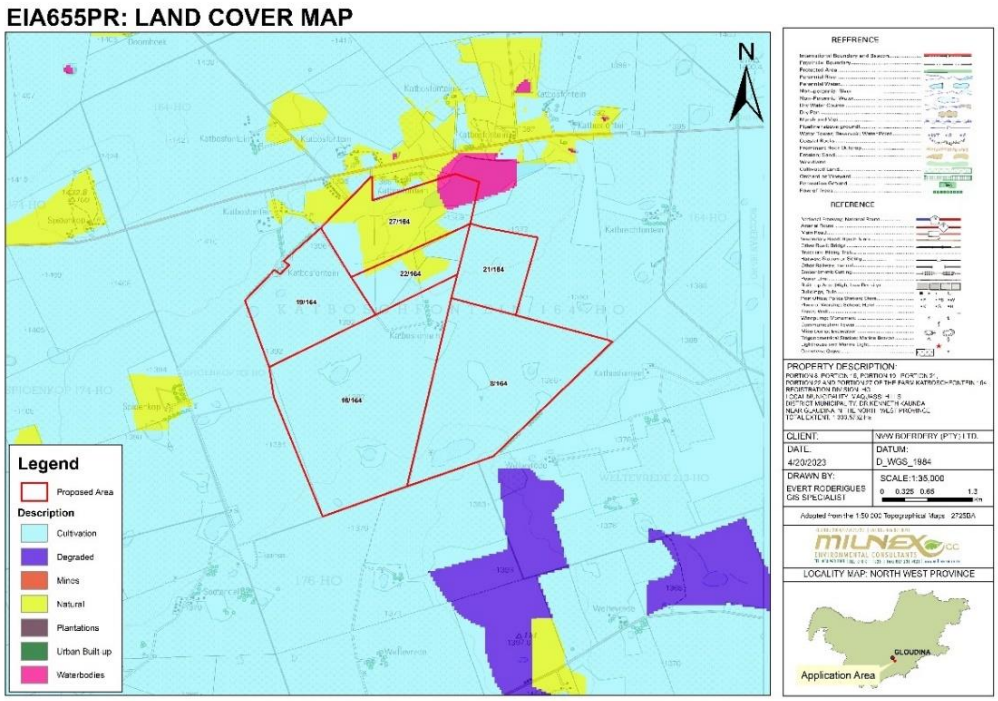


Figure 22: Landcover map associated with study site and surrounding areas.

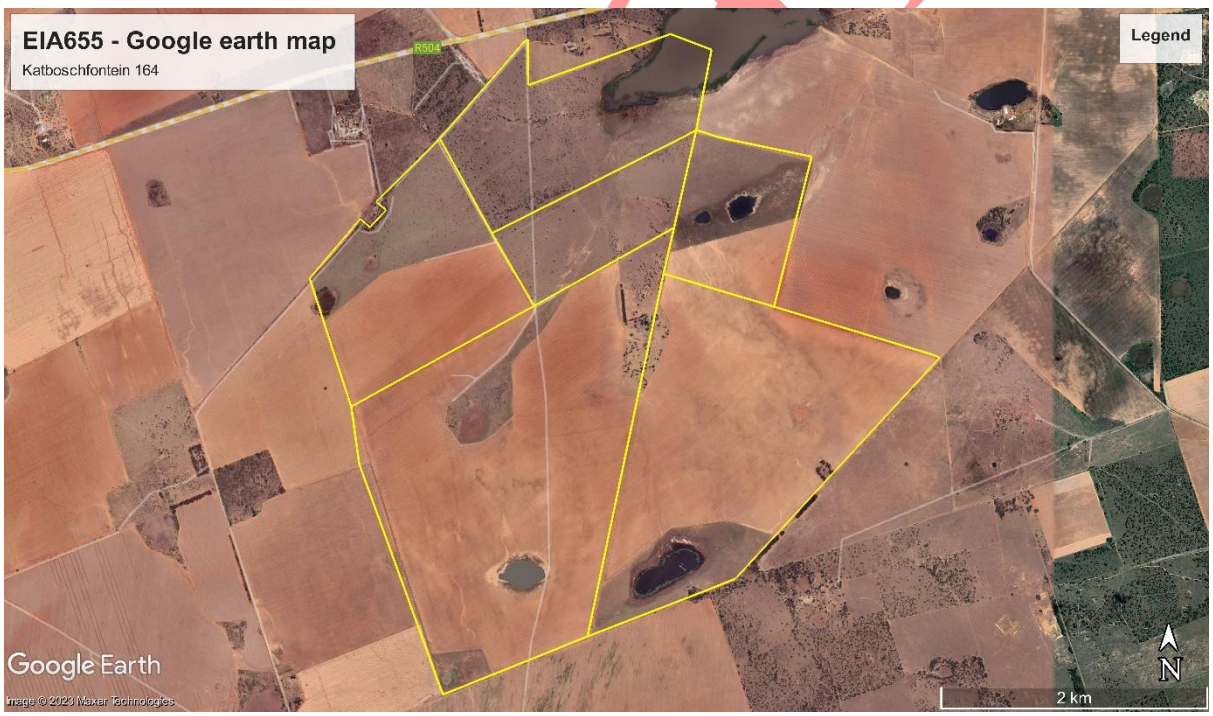


Figure 23: Google earth map

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 see 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;

ACTIVITY	PHASE	POTENTIAL NEGATIVE IMPACTS
Site preparation Site Clearance, establishing construction area	Construction Operation Decommissioning	Physical destruction and disturbance of: • Biodiversity (thicket is mostly invasive tree species and area is already disturbed by agricultural activities) • Air pollution • Disturbing noise • Visual impacts
Earthworks	Construction Operation Decommissioning	Excavations: • Loss of soil resources and land capability • Physical destruction and disturbance of biodiversity (thicket is mostly invasive tree species and area is already disturbed by agricultural activities) • Possible pollution of surface water resources • Possible alteration of natural drainage patterns • Possible contamination of groundwater • Air pollution • Disturbing noise • Visual impacts
Civil works Erection of structures, concrete work, steel work, electrical installation, establishing pipelines (if any)	Construction Operation Decommissioning	• Loss of mineral reserves • Hazardous structures/excavations/surface subsidence • Loss of soil resources and land capability • Possible pollution of surface water resources • Possible contamination of groundwater • Air pollution • Disturbing noise

		• Visual impacts
Open-pit mining Mining, load, and hauling	Construction Operation	• Loss of mineral resources • Loss of soil resources and land capability
		Physical destruction and disturbance of: • Biodiversity (thicket is mostly invasive tree species and area is already disturbed by agricultural activities) • Air pollution • Disturbing noise • Visual impacts • Possible pollution of surface water resources • Possible contamination of groundwater • Dewatering impacts
Waste rock management Storage, stockpile or final disposal	Operation Decommissioning Closure (final land form)	• Loss of soil resources and land capability • Disturbance of biodiversity (thicket is mostly invasive tree species and area is already disturbed by agricultural activities) • Possible pollution of surface water resources • Possible contamination of groundwater • Air pollution • Disturbing noise • Negative landscape and visual impact
Dirty water management Collection, storage of dirty water for re-use, recycling	Construction Operation Decommissioning	• Possible pollution of surface water resources • Possible contamination of groundwater • Disturbing noise
Stormwater management Stormwater channels and berms, collection of dirty water, storage for re- use	Construction Operation Decommissioning	• Possible alteration of drainage patterns • Possible pollution of surface water resources • Possible contamination of groundwater
Transport systems Use of access points, road transport to and from site for employees and supplies, movement within site boundary (haul roads, conveyors, pipelines), taxi areas	Construction Operation Decommissioning	• Disturbance of biodiversity • Noise • Traffic impacts • Visual impacts
Storage and maintenance services/ facilities Washing vehicles and machinery, storage and handling non-process materials	Construction Operation Decommissioning	• Possible pollution of surface water resources • Possible contamination of groundwater resulting from hydrocarbon spills and soil erosion • Disturbing noise
Demolition Dismantling, demolition, removal of equipment	Operation (as part of maintenance) Decommissioning	• Hazardous structures (e.g., fuel tanks) • Loss of soil resources and land capability • Disturbance of biodiversity • Air pollution

		• Disturbing noise • Visual impacts
Non-mineralized waste management Transportation of waste materials to waste facility	Construction Operation Decommissioning Closure (limited)	• Pollution if not managed and stored properly
Rehabilitation Replacing soil, slope stabilization, landscaping, re- vegetation, restoration	Construction Operation Decommissioning Closure	• Disturbance of biodiversity • Alteration of natural drainage patterns • Contamination of groundwater • Air pollution • Visual impacts

ACTIVITY	PHASE	POTENTIAL POSITIVE IMPACTS
Job creation	Construction Operation	• Temporary employment and other economic benefits
Maintenance and aftercare Inspection and maintenance of remaining facilities and rehabilitated areas	Closure	• Re-establishment of biodiversity

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 EIR report, as well as response provided is captured and recorded within the Comments and Response Report and will be attached to the final EIR.

POTENTIAL IMPACT	POSSIBLE MITIGATION MEASURES
Influx of persons (job seekers)	• Establish and maintain site security measures. • Control site and facility access
Hazardous waste pollution	• Implement hazardous waste, dirty water and mineralised and non-mineralised waste management procedures
Loss of soil resources and land capability through physical disturbance	• Implementation of a soil management plan • Limit disturbance of soil to what is necessary. • Stripping, storing, maintenance and replacement of topsoil in accordance with soil management procedures
Physical destruction or disturbance of biodiversity	• Implement a biodiversity management plan. • Restrict project footprint. • Provide alternative habitat (where appropriate and necessary)

	• Implement a monitoring programme. • Rehabilitate disturbed areas. • Prevention of the killing of animal species and harvesting of plant species • Implementation of dust control measures • Pollution prevention measures (water, soil etc.) • Prevention of the disturbance of ecosystems as far as possible.
Surface water pollution	• Appropriate design of polluting facilities and pollution prevention facilities • Implement and maintain stormwater controls that meet regulatory requirements. • Implement a monitoring programme (water use, process water quality, rainfall-related discharge quality) • Implement emergency response. • Authorise all water uses as defined in the NWA
Groundwater contamination	• Appropriate design of polluting facilities (by qualified person) • Correct handling of hazardous wastes, mineralised and non-mineralised wastes • Compensation for loss • Implementation of a monitoring programme
Dewatering	• Authorise all water uses as defined in the NWA Compliance with relevant license requirements
Air pollution	• Implementation of air quality management plan • Implementation of an air quality monitoring plan • Control dust plumes • Implementation of an air complaints procedure • Maintenance of abatement equipment Implement an emergency response
Noise pollution	• Maintenance of equipment and machinery in good working order • Equip machinery with silencers. • Construction of noise attenuation measures (if complaints received) • Implementation of noise monitoring programme (if complaints received)
Visual impacts	• Limit the clearing of vegetation as far as possible. • Limit the emissions of visual dust plumes. • Use of screening berms Concurrent rehabilitation • Painting infrastructure to compliment the surrounding environment Implementation of a closure plan. • Management through care and aftercare
Traffic increases	• Implement speed allaying measures where appropriate, e.g. speed humps where necessary • Education and awareness training of workers • Enforce strict speed limits on mine access roads
Heritage and cultural	• Avoid heritage and cultural resources as far as practically possible. • Apply for the relevant permits to remove or destroy heritage sites (if applicable) • Exhumation and relocation of graves according to legal requirements (if applicable)

	• Mark remaining heritage sites on plan
Economic impact	• Hire people from closest communities as far as practically possible. • Local procurement of goods and services as far as practically possible • Compensation for loss of land use • Closure planning will consider skills, economic consideration, and the needs of future farming
Land uses	• Implementation of EMPr commitments that focus on environmental and social impacts. • Take necessary steps to prevent negative impact on surrounding land. • Compensation for loss • Closure planning to incorporate measures to achieve future land use plans

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, high volumes of Diamonds Alluvial (DA), Diamonds General (D) and Diamonds (DIA) near Wolmaransstad on Portion 8, 16, 19, 21, 22 and 27 of the farm Katboschfontein 164, Registration Division: HO, North West province, is expected.

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)

The layout follows the limitations of the site and aspects such as, roads, site offices and workshop area as well as fencing. However, the exact layout will only be determined after a formal site visit and desktop study, which will only occur after the Environmental Authorisation (EA) is granted and the mineral right issued.

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

<u>Process for the identification of key issues</u>

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	X			According to the wetland areas map there are depressions on the proposed area.
II. A conservation or open space area		X		
III. An area that is of cultural importance			X	According to the DFFE Screening Report the Relative Archaeological and Cultural Heritage Theme Sensitivity of the proposed area falls within Low sensitivity. Please see map colour map under **Appendix 7**.
IV. Site of geological significance			X	According to the DFFE Screening Report the Relative Paleontology Theme Sensitivity of the proposed area falls within High sensitivity (**Appendix 7**).
V. Areas of outstanding natural beauty			X	
VI. Highly productive agricultural land	X			According to the Land Capability map the proposed area falls within land capability Class 4 (**Appendix 5**). The area is mostly covered in farmlands for cultivation of crops. According to the DFFE Screening Report the Agriculture theme sensitivity of the proposed area fall within High sensitivity (**Appendix 7**).
VII. Floodplain		X		

VIII. Indigenous forest		X		According to the map below (**Figure 21** and **Figure 22**), the proposed area is largely covered with farmlands and used for the cultivation of crops, there are natural area and waterbodies as well.
IX. Grass land			X	According to the map below (**Figure 21** and **Figure 22**), the proposed area is largely covered with farmlands and used for the cultivation of crops, there are natural area and waterbodies as well.
X. Bird nesting sites		X		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			X	According to the map below (**Figure 21** and **Figure 22**), the proposed area is largely covered with farmlands and used for the cultivation of crops, there are natural area and waterbodies as well.
XII. Tourist resort		X		
2. Will the project potentially result in potential?				
I. Removal of people		X		None.
II. Visual Impacts	X			Visual impacts will be managed.
III. Noise pollution	X			The noise impact will be limited to working hours.
IV. Construction of an access road		X		Access will be obtained from existing gravel roads off the R504.
V. Risk to human or valuable ecosystems due to explosion/fire/ discharge of waste into water or air.		X		None.
VI. Accumulation of large workforce (>50 manual workers) into the site.		X		Employment opportunities will be created during the construction and operational phase of the project.
VII. Utilisation of significant volumes of local raw materials such as water, wood etc.	X			Water will be used during the washing of the gravel and for dust suppression. The amount of water for the pans will be 15 000 L/hour from which 30% is re-used.
VIII. Job creation	X			Employment opportunities will be created during the construction and operational phase of the project.
IX. Traffic generation		X		None.
X. Soil erosion	X			Only areas earmarked for mining will be cleared. prospecting will be phased and the topsoil stockpiled separately. Concurrent rehabilitation will take place.
XI. Installation of additional bulk telecommunication transmission lines or facilities		X		None.
3. Is the proposed project located near the following?				

I. A river, stream, dam or wetland	X			According to the wetland areas map there are depressions in the surrounding area.
II. A conservation or open space area		X		
III. An area that is of cultural importance			X	According to the DFFE Screening Report the Relative Archaeological and Cultural Heritage Theme Sensitivity of the surrounding area falls within Low sensitivity. Please see map colour
IV. A site of geological significance			X	According to the DFFE Screening Report the Relative Paleontology Theme Sensitivity of the surrounding area falls within High and Medium sensitivity (**Appendix 7**).
V. An area of outstanding natural		X		
VI. Highly productive agricultural land		X		According to the Land Capability map the surrounding area falls within land capability Class 4 (**Appendix 5**). The surrounding area is mostly covered in farmlands for cultivation of crops. According to the DFFE Screening Report the Agriculture theme sensitivity of the surrounding area fall within High and Medium sensitivity (**Appendix 7**).
VII. A tourist resort			X	
VIII. A formal or informal settlement		X		

Matrix analysis

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

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

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

ii) An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;

LISTED ACTIVITY (The Stressor)	ASPECTS OF THE DEVELOPMENT /ACTIVITY	POTENTIAL IMPACTS			SIGNIFICANCE AND MAGNITUDE OF POTENTIAL IMPACTS			MITIGATION OF POTENTIAL IMPACTS	SPECIALIST STUDIES / INFORMATION
			Receptors	Impact description	Minor	Major	Duration	Possible Mitigation	
CONSTRUCTION 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 a watercourse;* **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 4:** *"The development of a road wider than 4 metres with a reserve less than 13,5 metres,* ***(h) North West (ii)*** *Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* ***(iv)*** *Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority;* ***Listing Notice 3 GNR 324, Activity 10:*** *The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.* ***(h) North West (iv)*** *Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority;* ***(vi)*** *Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.* ***Listing Notice 3 (GNR 324), Activity 12:*** *The clearance of an area of 300 square metres or more of indigenous vegetation;* ***(h) North West (v)*** *Within critical biodiversity areas identified in systematic biodiversity plans adopted by the competent authority or* ***(vi)*** *Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland*	<u>Site clearing and preparation</u> 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/wetlands).	-		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 is a tourism facility in close proximity to the site, the construction activities may have an impact on tourism in the area.	-		M	Yes	-

			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 a watercourse;* **Listing Notice 1 (GNR 327), Activity 20 (Amended GNR 517: 2021):** *"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, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the prospecting right"* **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 2 (GNR 325), Activity 19 (Amended GNR 517: 2021):** *"The removal and disposal of minerals which requires permission contemplated in terms of section 20 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice, Listing Notice 1 of 2014 or in Listing Notice 3 of 2014, required to exercise the permission.* **Listing Notice 3 (GNR 324), Activity 4:** *"The development of a road wider than 4 metres with a reserve less than 13,5 metres,* ***(h) North West (ii)*** *Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* ***(iv)*** *Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority;* ***Listing Notice 3 GNR 324, Activity 10:*** *The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.* ***(h) North***	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 gravel roads off the R504.. • <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 (medium - high 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/wetlands). • 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 /ECON	Local unemployment rate	• Job creation. Security guards will be required for 24 hours every day of the week. • Skills development.		+	L	Yes	-

West (iv) *Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority;* ***(vi)*** *Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.* ***Listing Notice 3 (GNR 324), Activity 12:*** *The clearance of an area of 300 square metres or more of indigenous vegetation;* ***(h) North West (v)*** *Within critical biodiversity areas identified in systematic biodiversity plans adopted by the competent authority or* ***(vi)*** *Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland*			Visual landscape	• The proposed portions are used for livestock grazing and cultivation 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 is a tourism facility in close proximity to the site, the operational activities may have an impact on tourism in the area.	-		M	Yes	-
			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									
-	<u>Mine closure</u> During the mine closure the Mine and its associated infrastructure will be dismantled. <u>Rehabilitation of biophysical environment</u> 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/wetlands).	-		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	+		L	Yes	-

				an increase in crime levels as a result of influx of people in the rural area.					
			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 is a tourism facility in close proximity to the site, the decommissioning activities may have an impact on tourism in the area.	+		S	Yes	-
			Heritage resources	• It is not foreseen that the decommissioning phase will impact on any heritage resources.	N/A	N/A	N/A	N/A	-

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

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

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

Significance of potential impacts

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

INITIAL CLEARANCE AND SITE PREPARATION PHASE

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

- Loss or fragmentation of indigenous natural fauna and flora:

The proposed area falls within vegetation unit Gh 14 and AZi 10, which are known as the Western Highveld Sandy Grassland and Highveld Salt Pans. The Western Highveld Sandy Grassland is part of the Dry Highveld Grassland, which is a sub-bioregion of the Grassland Biome. The Highveld Salt Pans is part of the Inland Saline Vegetation, which is a sub-bioregion of the Inland Azonal Vegetation.

Highveld Salt Pans

Mucina and Rutherford (2006:651) also states that the conservation of this pan type has a target of 24%. There is only a very small portion statorily conserved in the Vaalbos National Park and in the Bloemhof Dam, Soetdoring, Willem Pretorius, Barberspan (a Ramsar site) and S.A. Lombard Nature Reserves. About 4% has been transformed so far, but threats by agriculture , mining, road building and urbanisation are still increasing. Alien plants such as Atriplex semibaccata, Conyza albida, Flaveria bidentis, Salsola kali, Schkuhria pinnata, Sonchus oleraceus, Spergularia rubra, Tagetes minuta, Verbena brasiliensis and Xanthium species have been recorded in the vegetation of these salt pans.

Western Highveld Sandy Grassland

Mucina and Rutherford (2006:388) also states that the conservation is endangered with a target of 24%. Only a very small portion statutorily conserved (Barberspan Nature Reserve). More than 60% has been ploughed. Non-arable parts are on shallow Aeolian soils which become easily over-utilised through grazing. This vegetation type has very low erosion and about 95% of this land is suitable for cultivation. However, low rainfall makes it a high-risk area for agriculture. Therefore, the natural vegetation is often restricted to non-arable bush clumps, shallow soils, Aeolian sands and pans.

DEA Screening Report findings:

- ***Plant Species theme sensitivity:*** Low
- ***Aquatic Biodiversity sensitivity:*** Very High and Low
- ***Terrestrial Biodiversity sensitivity:*** Very High
- ***Animal Species sensitivity:*** Low and Medium

PWP

The Prospecting Work Programme (PWP) states 100 pits [3m (length) x 3m (width) x 4m (depth)] and 30 trenches [30m (length) x 30m (width) x 4m (depth)] will be dug. This calculates to a disturbance of ± 2.79ha. The whole application area is 1333.5732ha, thus the ±2.79ha disturbance is small compared to the size of the application area.

Mitigation measures as in the EMPr will be implemented. Concurrent backfilling will also take place in order to rehabilitate which means only 0.315ha will be disturbed at any given time.

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	Possible (2)	Possible (2)
Duration	Long term (3)	Medium (2)
Magnitude	Medium (2)	Low (1)
Reversibility	Barely reversible (3)	Partly reversible (2)
Irreplaceable loss of resources	Marginal loss of resource (2)	Marginal loss of resource (2)
Cumulative impact	Low cumulative impacts (2)	
Significance	**Negative low (26)**	**Negative low (11)**
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

  According to the map below (**Figure 21** and **Figure 22**), the proposed area is largely covered with farmlands and used for the cultivation of crops, there are natural area and waterbodies as well.

  From google earth (**Figure 23**) the farmlands and natural areas are visible.

  If water uses under section 21 a-k of the NWA are triggered for the proposed prospecting right, a Water Use Licence Application (WULA) are needed and must be lodged with the department of Water & Sanitation (DWS).

DFFE Screening Report findings:

- ***Plant Species theme sensitivity:*** Low
- ***Aquatic Biodiversity sensitivity:*** Very High and Low
- ***Terrestrial Biodiversity sensitivity:*** Very High
- ***Animal Species sensitivity:*** Low and Medium

PWP

The Prospecting Work Programme (PWP) states 100 pits [3m (length) x 3m (width) x 4m (depth)] and 30 trenches [30m (length) x 30m (width) x 4m (depth)] will be dug. This calculates to a disturbance of ± 2.79ha. The whole application area is 1333.5732ha, thus the ±2.79ha disturbance is small compared to the size of the application area.

Mitigation measures as in the EMPr will be implemented. Concurrent backfilling will also take place in order to rehabilitate which means only 0.315ha will be disturbed at any given time.

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	Possible (2)	Unlikely (1)
Duration	Long term (3)	Medium (2)
Magnitude	Medium (2)	Medium (2)
Reversibility	Barely reversible (3)	Partly reversible (2)
Irreplaceable loss of resources	Marginal loss of resource (2)	Marginal loss of resource (2)
Cumulative impact	Medium cumulative impacts (2),	
Significance	**Negative low (26)**	**Negative low (22)**
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.	

- Impacts on the Terrestrial Biodiversity and Wetland:

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

The prospecting activities will result in a disturbance of the wetland systems and vegetation habitats during the construction, operation, and decommissioning phases. During rainfall events, the wetland areas will receive an influx of sediment and possible toxic pollutants. See Table 21 below for a list of expected impacts.

Table 21: Summary of potential

Construction Phase
Changing the physical structure within a water resource (habitat)
Alteration of the amount of sediment entering the water resource and associated change in turbidity
Alteration of water quality (during rainfall events)
Loss of aquatic and terrestrial habitat
Loss of Aquatic Biota
Loss of Terrestrial Fauna
Loss of Terrestrial Flora
Introduction and spread of alien vegetation

INDIRECT AND CUMULATIVE IMPACTS

- Increased impact on the remaining catchment due to changes in run-off characteristics;
- Habitat changes due to sediment-size changes;
- Loss of floristic and faunistic biodiversity; and
- Changes to in situ chemical parameters (temperature and dissolved oxygen).

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

Table 25: Construction Phase Impact Assessment

Potential Environmental Impact	Environmental Impact Before Mitigation						Environmental Impact After Mitigation					
	Frequency of Impact	Frequency of Activity	Severity	Spatial Scale	Duration	Significance	Frequency of Impact	Frequency of Activity	Severity	Spatial Scale	Duration	Significance
Changing the physical structure within a water resource (habitat)	5	5	5	1	5	110 High	2	4	2	2	3	42 Low
Alteration of the amount of sediment entering the water resource and associated change in turbidity	5	5	5	1	5	110 High	3	4	2	3	2	49 Low
Alteration of water quality (during rainfall events)	5	5	5	1	5	110 High	3	4	1	3	2	42 Low
Loss of terrestrial habitat	5	5	5	1	5	110 High	3	4	2	2	2	42 Low
Loss of Aquatic Biota	5	5	5	1	5	110 High	2	3	1	2	1	20 Very Low
Loss of Terrestrial Fauna	5	5	5	1	5	110 High	2	3	1	1	1	15 Very Low
Loss of Terrestrial Flora	5	5	5	1	5	110 High	3	4	2	1	1	28 Low
Introduction and spread of alien vegetation	3	3	3	2	5	60 Medium - Low	3	3	2	2	2	36 Low

Specialist recommended mitigation measure are included in the Environmental Management Programme (EMPr) under Part B of this report.

- 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	Medium term (2)	Medium term (2)
Magnitude	High (3)	Medium (2)
Reversibility	Barley reversible (3)	Completely reversible (1)
Irreplaceable loss of resources	Significant (3)	Marginal (2)
Cumulative impact	Medium cumulative impact (3).	
Significance	**Negative Medium (45)**	**Negative Low (20)**
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 medium to high due to a lack of vegetation cover however the slope gradient is low. Soil erosion may have a negative impact on wetlands, tributaries and river bordering in the proposed area.

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)	Possible (2)
Duration	Long term (3)	Medium term (2)
Magnitude	High (3)	Medium (2)
Reversibility	Barely reversible (3)	Partly reversible (2)
Irreplaceable loss of resources	Marginal (2)	Marginal (2)
Cumulative impact	Medium cumulative impact (2).	
Significance	**Negative Medium (42)**	**Negative low (22)**
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 likely to be significant; but activities should be limited to normal working days and hours.

Community Noise

Community noise impacts should not exceed the levels presented in Table below of South African Standards or result in a maximum increase above background levels of 3 dBA at the nearest receptor location off-site.

- The noise levels are relevant to noise impacts beyond the property boundary of the facility. However, noise prevention and mitigation measures should be applied where predicted or measured noise impacts from a

project facility or operations exceed the applicable noise level guideline at the most sensitive point of reception. A point of reception or receptor may be defined as any point on the premises occupied by persons where extraneous noise and/or vibration are received.

- South African National Standard (SANS) 10103 (2008) provides a guideline for estimating community response to an increase in the general ambient noise level caused by intruding noise.

SITE	WHO / IFC LAEQ (1H) DBA		SOUTH AFRICAN STANDARDS	
	DAY 07:00 – 19:00	NIGHT 19:00 – 07:00	DAY 07:00 – 19:00	NIGHT 19:00 – 07:00
Residential; Institutional; Educational	55	45	55	45
Industrial, Commercial	70	70	70	60

The possible noise can however be controlled by means of approved acoustic screening measures, state of the art equipment, proper noise management principles, compliance to the Local Noise Regulations, and the International Finance Corporation's Environmental Health and Safety Guidelines.

Temporary noise disturbance	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)	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 (9)**
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. The applicant will need to ensure that general waste is appropriately disposed of i.e. taken to the nearest licensed landfill.

Sanitation for mine employees will consists of sufficient ablution facilities by means of portable toilets serviced by one septic tank which is pumped out regularly of chemical toilets which is pumped out regularly. No further sanitation infrastructure is envisioned for the proposed prospecting activities.

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	Medium (2)	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 if services become unstable or unavailable, which in turn would negatively impact on the local community. However, this is smalls scale mining and impact is expected to be low.	
Significance	**Negative low (26)**	**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.	

- Groundwater: Prospecting activities may adversely affect possible shallow groundwater and contaminate the quality of the local water resource and its beneficial use. Potential impacts may be from contamination from hydrocarbon spills.

Groundwater	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local/district (2)	Local/district (2)
Probability	Probable (3)	Possible (2)
Duration	Short term (1)	Short term (1)
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)	
Significance	**Negative medium (42)**	**Negative low (24)**
Can impacts be mitigated?	• All vehicles must be regularly inspected for leaks. • Re-fuelling must take place on a sealed surface area to prevent hydrocarbon pollution. • All spills should be cleaned up immediately and disposed of. • A credible company should remove used oil from the workshops; • Spill kits should be readily available and easily accessible throughout the site. • All chemicals must be stored safely on site, outside the buffer areas and surrounded by bunds. Chemical storage containers must be regularly inspected for early leak detection. • An emergency spill procedure should be developed and implemented.	

- **Impacts on heritage objects:**

  According to the DFFE Screening Report the proposed area falls within low Archaeological and Cultural Heritage Theme Sensitivity.

  A Phase 1 Cultural Heritage Impact Assessment was conducted by J A van Schalkwyk. The report is available under **Appendix 12.2**. Please see the findings below:

10. IMPACT ASSESSMENT RATINGS AND MITIGATION MEASURES

10.1 Impact assessment

Heritage impacts are categorised as:

- *Direct or physical impacts, implying alteration or destruction of heritage features within the project boundaries;*
- *Indirect impacts, e.g. restriction of access or visual intrusion concerning the broader environment;*
- *Cumulative impacts that are combinations of the above.*

Impact analysis of cultural heritage resources under threat of the proposed development, is based on the present understanding of the development and is summarised in Table 2 below:

Table 2: Calculating the impact assessment

9.4.3.1 – 9.4.3.2 Type: Burial sites		
Impact assessment		
This site is located on the border of the project area, but on the adjacent property. Due to its 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	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.		

10.2 Mitigation measures

- *For the current study, as sites, features or objects of cultural significance were identified, the following mitigation measures are proposed.*

9.4.3.1 – 9.4.3.2 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. • If it is decided to retain the burial sites, it should be fenced off permanently by means of a wire fence or brick wall, with a buffer zone of at least 100m.
Requirements: In the event of an impact occurring on the identified burial sites, a permit for mitigation and/or destruction must be obtained from SAHRA/PHRA prior to any work being carried out. • The appropriate steps to take are indicated in Section 9 of the report, as well as in the **Management Plan: Burial Grounds and Graves, with reference to general heritage sites**, in the Addendum, Section 12.5.

- Impact on Fossil heritage

  According to the DFFE Screening Report the proposed area falls mostly within High Paleontology Theme Sensitivity.

  According to the Palaeontological Desktop Assessment (**Appendix 12.3**):

  Loss of fossil heritage will be a negative impact. Only the site will be affected by the proposed development. The expected duration of the impact is assessed as potentially permanent to long term. In the absence of mitigation procedures, the damage or destruction of any palaeontological materials will be permanent. Impacts on palaeontological heritage during the construction phase could potentially occur but are regarded as having a Low probability. As fossil heritage will be destroyed the impact is irreversible. The significance of the impact occurring will be low.

  Table 7: Summary of Impact Tables

IMPACTS	Site	Probability	Duration	Magnitude	Reversibility	Irreplicable Loss	Cumulative Effect	Significance
	1	2	4	2	4	4	2	17

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 have the potential to damage local roads and create dust and safety impacts for other road users in the area.

  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 gravel roads off the R504. The volume of traffic along the R504 road is medium and along the gravel roads is low, but the movement of heavy vehicles along this road is likely to damage the road surface and impact on few other road users.

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)	Possible (2)
Duration	Short term (1)	Short term (1)
Magnitude	Medium (2)	Low (1)
Reversibility	Barely reversible (3)	Completely reversible (1)

Irreplaceable loss of resources	Marginal loss of resource (2)	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 (28)**	**Negative low (10)**
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)	Possible (2)
Duration	Long term (3)	Short term (1)
Magnitude	High (3)	Medium (2)
Reversibility	Barely reversible (3)	Completely reversible (1)
Irreplaceable loss of resources	Marginal resource (2)	Marginal resource (2)
Cumulative impact	Medium cumulative effects (3), provided losses are compensated for, but should be noted that the applicant is also the landowner.	
Significance	**Negative Medium (48)**	**Negative low (24)**
Can impacts be mitigated?	Key mitigation measures include: • **NVW Boerdery (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 **NVW Boerdery (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; • **NVW Boerdery (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 **NVW Boerdery (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 **NVW Boerdery (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, crops 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)	Possible (2)
Duration	Medium term (2)	Medium term (2)
Magnitude	Very High (3)	Medium (2)
Reversibility	Irreversible (4)	Partly reversible (2)
Irreplaceable loss of resources	Significant loss of resource (3)	Marginal of resource (2)
Cumulative impact	Negligible cumulative effects (1), provided losses are compensated for.	
Significance	**Negative High (64)**	**Negative low (22)**
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 permanent employment opportunities and facilitating a positive economic growth. The abovementioned impacts are discussed in more detail below:

- Impacts on the Terrestrial Biodiversity and Wetlands:

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

The prospecting activities will result in a disturbance of the wetland systems and vegetation habitats during the construction, operation, and decommissioning phases. During rainfall events, the wetland areas will receive an influx of sediment and possible toxic pollutants. See Table 21 below for a list of expected impacts.

Table 21: Summary of potential

Operational Phase
Changing the physical structure within a water resource (habitat)
Alteration of the amount of sediment entering the water resource and associated change in turbidity
Alteration of water quality (during rainfall events)
Loss of aquatic and terrestrial habitat
Loss of Aquatic Biota
Loss of Terrestrial Fauna
Loss of Terrestrial Flora
Introduction and spread of alien vegetation

INDIRECT AND CUMULATIVE IMPACTS

- Increased impact on the remaining catchment due to changes in run-off characteristics;
- Habitat changes due to sediment-size changes;
- Loss of floristic and faunistic biodiversity; and
- Changes to in situ chemical parameters (temperature and dissolved oxygen).

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

Table 26: Operational Phase Impact Assessment

Potential Environmental Impact	Environmental Impact Before Mitigation						Environmental Impact After Mitigation					
	Frequency of Impact	Frequency of Activity	Severity	Spatial Scale	Duration	Significance	Frequency of Impact	Frequency of Activity	Severity	Spatial Scale	Duration	Significance
Changing the physical structure within a water resource (habitat)	5	5	5	1	5	110 High	4	4	3	3	3	72 Medium – Low
Alteration of the amount of sediment entering the water resource and associated change in turbidity	5	5	5	1	5	110 High	4	4	2	3	2	56 Medium – Low
Alteration of water quality (during rainfall events)	5	5	5	1	5	110 High	4	4	2	3	2	56 Medium – Low
Loss of terrestrial habitat	5	5	5	1	5	110 High	4	4	2	2	4	64 Medium – Low
Loss of Aquatic Biota	5	5	5	1	5	110 High	3	3	2	2	4	48 Low
Loss of Terrestrial Fauna	5	5	5	1	5	110 High	3	3	2	2	3	42 Low
Loss of Terrestrial Flora	5	5	5	1	5	110 High	4	4	2	2	3	56 Medium – Low
Introduction and spread of alien vegetation	3	3	3	2	5	60 Medium - Low	2	3	2	1	3	30 Low

Specialist recommended mitigation measure are included in the Environmental Management Programme (EMPr) under Part B of this report.

- 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)	Medium term (2)
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 (24)**
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 land use activities on most of the portions as both will be done concurrently. It should also be noted that the applicant is also the landowner.

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)	Unlikely (1)
Duration	Medium term (2)	Medium term (2)
Magnitude	Medium (2)	Low (1)
Reversibility	Barely reversible (3)	Completely reversible (1)
Irreplaceable loss of resources	Significant loss of resource (3)	Marginal loss of resource (2)
Cumulative impact	Low cumulative impacts (2).	
Significance	**Negative medium (28)**	**Negative Low (10)**
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.	

- Generation of alternative land use income – Income generated through the diamond mine will provide the farming enterprise with increased cash flow and rural livelihood, and thereby improve the financial sustainability of farming on site.

Generation of alternative land use income	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Positive	Positive
Geographical extent	Site (1)	Site (1)
Probability	Definite (4)	Definite (4)
Duration	Medium term (2)	Medium term (2)
Magnitude	Medium (2)	High (3)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	No loss of resources (1)	No loss of resources (1)
Cumulative impact	Medium cumulative impact (3).	
Significance	**Positive Low (24)**	**Positive medium (36)**
Can impacts be mitigated?	No mitigation required.	

- 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)	site (2)
Probability	Probable (3)	Unlikely (1)
Duration	Long term (3)	Medium 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 1 x 14 feet washing pan will be used, the amount of water for the pans will be 15 000 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	Local (2)	Local (2)
Probability	Definite (4)	Definite (4)
Duration	Long term (3)	Long term (3)
Magnitude	Medum (2)	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 medium impact (40)**	**Negative medium (38)**
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 during working hours, 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	Medium term (2)	Medium term (2)
Magnitude	Medium (2)	Low (1)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	Marginal loss of resource (2)	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 medium (30)**	**Negative low (14)**
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)	Site (2)
Probability	Possible (2)	Unlikely (1)
Duration	Long term (3)	Medium term (3)
Magnitude	High (3)	Medium (2)
Reversibility	Barely reversible (3)	Partly reversible (2)
Irreplaceable loss of resources	Significant loss of resource (3)	Marginal loss of resource (2)
Cumulative impact	The impact would result in low cumulative effects (2)	
Significance	**Negative medium (35)**	**Negative low (24)**
Can impacts be mitigated?	Yes. To manage these impacts all staff and supervisors at workshops and fuel storage areas should be trained in hydrocarbon spill response and each of these areas should be equipped with the appropriate spill response kits and any contaminated soil must be disposed of correctly at a suitable location. 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. The noise impact is unlikely to be significant as the closest town or community is approximately 5km south of the proposed area.

  The following three primary variables should be considered when designing acoustic screening measures for the control of sound and/or noise:

  - The source – Reduction of noise at the source;
  - The transmission path – Reduction of noise between the source and the receiver;
  - The receiver – Reduction of the noise at the receiver.

  Increased noise levels are directly linked with the various activities associated with the construction of the proposed facility and related infrastructure, as well as the operational phase of the activity.

  Community Noise

  Community noise impacts should not exceed the levels presented in Table below of South African Standards or result in a maximum increase above background levels of 3 dBA at the nearest receptor location off-site.

  - The noise levels are relevant to noise impacts beyond the property boundary of the facility. However, noise prevention and mitigation measures should be applied where predicted or measured noise impacts from a project facility or operations exceed the applicable noise level guideline at the most sensitive point of reception. A point of reception or receptor may be defined as any point on the premises occupied by persons where extraneous noise and/or vibration are received.
  - South African National Standard (SANS) 10103 (2008) provides a guideline for estimating community response to an increase in the general ambient noise level caused by intruding noise.

SITE	WHO / IFC LAEQ (1H) DBA		SOUTH AFRICAN STANDARDS	
	DAY 07:00 – 19:00	NIGHT 19:00 – 07:00	DAY 07:00 – 19:00	NIGHT 19:00 – 07:00
Residential; Institutional; Educational	55	45	55	45
Industrial, Commercial	70	70	70	60

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	Medium term (2)	Medium term (2)
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 low cumulative effects (2).	
Significance	**Negative low (22)**	**Negative Low (10)**
Can impacts be mitigated?	Yes, management actions related to noise pollution are included in section (f) of the EMPr.	

- Contamination from tailings material – the washing process of the mineral only uses water. Tailing is non-hazardous and should be pumped into open pits and trenches as part of concurrent rehabilitation.

Contamination from tailings material	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Site (1)	Site (1)
Probability	Unlikely (1)	Unlikely (1)
Duration	Medium term (2)	Short term (1)
Magnitude	Medium (2)	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	Low cumulative impact (2)	
Significance	**Negative low (18)**	**Negative low (8)**
Can impacts be mitigated?	• Tailings material must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds • Proper storm water management should be implemented. Berms should also be constructed to ensure separation of clean water and dirty water areas; • Concurrent rehabilitation should be conducted; • The monitoring results must be interpreted annually, and network audited annually as well to ensure compliance with regulations.	

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 tourism – The impact of the proposed prospecting of Diamonds Alluvial (DA), Diamonds General (D) and Diamonds (DIA) on the areas sense of place with mitigation is likely to be low. In addition, the site will only be visible from the gravel roads.

Potential impacts on tourism	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	Low (1)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	No loss of resources (1)	No loss of resources (1)
Cumulative impact	Medium cumulative impacts (3)	
Significance	**Negative low (11)**	**Negative low (11)**
Can impacts be mitigated?	No mitigation required	

- Impacts on heritage objects:
  According to the DFFE Screening Report the proposed area falls within low Archaeological and Cultural Heritage Theme Sensitivity.

  A Phase 1 Cultural Heritage Impact Assessment was conducted by J A van Schalkwyk. The report is available under **Appendix 12.2**. Please see the findings below:

10. IMPACT ASSESSMENT RATINGS AND MITIGATION MEASURES

10.1 Impact assessment

Heritage impacts are categorised as:

- *Direct or physical impacts, implying alteration or destruction of heritage features within the project boundaries;*
- *Indirect impacts, e.g. restriction of access or visual intrusion concerning the broader environment;*
- *Cumulative impacts that are combinations of the above.*

Impact analysis of cultural heritage resources under threat of the proposed development, is based on the present understanding of the development and is summarised in Table 2 below:

Table 2: Calculating the impact assessment

9.4.3.1 – 9.4.3.2 Type: Burial sites		
Impact assessment		
This site is located on the border of the project area, but on the adjacent property. Due to its 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	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.		

10.2 Mitigation measures

- *For the current study, as sites, features or objects of cultural significance were identified, the following mitigation measures are proposed.*

9.4.3.1 – 9.4.3.2 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. • If it is decided to retain the burial sites, it should be fenced off permanently by means of a wire fence or brick wall, with a buffer zone of at least 100m.
Requirements: In the event of an impact occurring on the identified burial sites, a permit for mitigation and/or destruction must be obtained from SAHRA/PHRA prior to any work being carried out. • The appropriate steps to take are indicated in Section 9 of the report, as well as in the **Management Plan: Burial Grounds and Graves, with reference to general heritage sites**, in the Addendum, Section 12.5.

- <u>Impact on Fossil heritage</u>

According to the DFFE Screening Report the proposed area falls mostly within High Paleontology Theme Sensitivity.

According to the Palaeontological Desktop Assessment (**Appendix 12.3**):

Loss of fossil heritage will be a negative impact. Only the site will be affected by the proposed development. The expected duration of the impact is assessed as potentially permanent to long term. In the absence of mitigation procedures, the damage or destruction of any palaeontological materials will be permanent. Impacts on palaeontological heritage during the construction phase could potentially occur but are regarded as having a Low probability. As fossil heritage will be destroyed the impact is irreversible. The significance of the impact occurring will be low.

Table 7: Summary of Impact Tables

IMPACTS	Site	Probability	Duration	Magnitude	Reversibility	Irreplicable Loss	Cumulative Effect	Significance
	1	2	4	2	4	4	2	17

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 closely 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	Probable (3)	Definite (4)
Duration	Long term (3)	Permanent (4)
Magnitude	Medium (2)	High (3)
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 (16)**	**Positive Medium (30)**
Can impacts be mitigated?	No mitigation measures required.	

- Impacts on the Ecological aspects:

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

The prospecting activities will result in a disturbance of the wetland systems and vegetation habitats during the construction, operation, and decommissioning phases. During rainfall events, the wetland areas will receive an influx of sediment and possible toxic pollutants. See Table 21 below for a list of expected impacts.

Table 21: Summary of potential

Decommissioning Phase
Loss of aquatic and terrestrial habitat
Changing the physical structure within a water resource (habitat)
Introduction and spread of alien vegetation

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

Table 27: Decommissioning Phase Impact Assessment

Potential Environmental Impact	Environmental Impact Before Mitigation						Environmental Impact After Mitigation					
	Frequency of Impact	Frequency of Activity	Severity	Spatial Scale	Duration	Significance	Frequency of Impact	Frequency of Activity	Severity	Spatial Scale	Duration	Significance
Loss of terrestrial habitat	4	4	2	2	3	56 Medium – Low	3	4	2	1	2	35 Low
Loss of terrestrial habitat	4	4	2	2	3	56 Medium – Low	3	4	2	1	2	35 Low
Loss of Terrestrial Flora	4	4	2	2	3	56 Medium – Low	3	4	2	1	2	35 Low
Changing the physical structure within a water resource (habitat)	5	5	5	1	5	110 High	3	4	2	2	2	42 Low
Introduction and spread of alien vegetation	4	3	3	3	3	63 Medium – Low	3	3	2	1	2	30 Low

Specialist recommended mitigation measure are included in the Environmental Management Programme (EMPr) under Part B of this report.

- Loss of employment - Employed will be lost during the decommissioning of the facility and 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	Definite (4)	Definite (4)
Duration	Medium term (2)	Medium term (2)
Magnitude	High (3)	High (3)
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 (36)**	**Negative Medium (36)**
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; • **NVW Boerdery (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.
Terrestrial Biodiversity and Wetland Impact Assessment conducted by Reuben van Breda	**CONCLUSION** According to the DFFE screening tool report in terms of National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998), the site has the following sensitivities: • Animal Species Theme: **Medium Sensitivity** • Aquatic Biodiversity Theme: **Low Sensitivity** • Plant Species Theme: **Low Sensitivity**. • Terrestrial Biodiversity Theme: **Very High Sensitivity.** A post-screening site visit was therefore conducted to determine the accuracy of the generated information, and if the studies recommended should be conducted. After the site visit the following was concluded: The site presented a **Very High Sensitivity for the Animal Species Theme.** The SCC *Hydroprogne caspia* was flagged as potentially occurring by the DFFE screening tool. There is no suitable habitat for either *Hydroprogne caspia* on the application area. The Near Threatened and Protected Greater Flamingo (*Phoenicopterus roseus*) and Lesser Flamingo (*Phoeniconaias minor*)	**X**	Pages: 44-45, 47-52, 59-67, 69-73, 88, 108-109, 119-120, 129-130, 141, 143-144, 163-167, 184-189, 193-197

	were encountered at all the permanent waterbodies located on the application area. To avoid disturbing these species by the proposed activities, a 200m buffer is put in place around their resident waterbodies. The Protected and Vulnerable Blue Crane (*Grus paradisea*) was encountered on the application area. Lastly, whilst it was not encountered during the site visit, the Near Threatened and protected Maccoa Duck (*Oxyura maccoa*) has been encountered within the pentad this application is located in, and there is suitable habitat for it on site, making it likely to occur on the application area. • The site presented a **Very High Sensitivity for the Aquatic Species Theme** due to the multiple seasonal and permanent Depression Wetlands encountered on site. • The site presented a **Low Plant Species Sensitivity Theme**. The DFFE screening tool did not flag any sensitive plant species as potentially occurring on site, nor were any encountered. • The site has a **Very High Sensitivity for the Terrestrial biodiversity Theme**. The application area overlaps CBA 1 areas, as well as an Endangered vegetation Type (Western Highveld Sandy grassland). The information below concludes the Desktop findings supported by field verifications. • According to the National Threatened Ecosystem database (2011), the application area is located within a Critically Endangered Ecosystem, namely the Western Highveld Sandy Grassland vegetation type. • According to the South African Protected and Conservation Areas Database (SAPAD, 2022) the application area does not overlap, nor is located near, any formally protected areas or conservation areas. • According to the North West Biodiversity sector plan and map (2015), the study area overlaps Critical Biodiversity Area one (CBA1) areas. • According to the National Freshwater Ecosystem Priority Areas Database (NFEPA, 2011), one wetland type is expected to occur on site, this being Depression wetlands. The site visit confirmed the presence of four permanent and five seasonal Depression Wetlands. • The study area is not found in a Strategic Water Source Area (SWSA).		

- For Avifaunal species potentially occurring on site, and that enjoy conservation status in the Eskom Red Data Book, kindly refer to Section 4.3.1 (**Table 11**) for a species list.
- For Mammal species potentially occurring on site, and that enjoy conservation status in the Eskom Red Data Book, kindly refer to Section 4.3.2 (**Table 12**) for a species list.
- For Herpetofauna species potentially occurring on site, and that enjoy conservation status in the Eskom Red Data Book, kindly refer to Section 4.3.3 (**Table 13**) for a species list.
- Results for wetlands recorded are summarised in the table below:

Wetland Assessment:

Classification	Scientific Buffer	PES	EIS
D2, D8	25m	B	High
D3, D9	18m	B	High
D1, D4, D5, D6, D7	16m	B	Low

Sensitivity and Impact Assessment:

NEMA Impact assessment	Most of the impacts associated with the prospecting activities range from Medium/Low to High prior to mitigation taking place. With mitigation fully implemented, the significance of most impacts can be reduced to Very Low to Low
DWS Risk assessment	Risks associated with the proposed activities range from Medium to High
Mitigation Measures	Refer to Section 8.2

	It is imperative that an effective management plan is implemented to ensure that all mitigation measures discussed in the report are adhered to. Three important factors contribute to the exclusion zone recommendations for this application area: 1) Critical Biodiversity areas, 2) Exclusion zones (Buffers) for wetlands and for identified faunal habitats, and 3) Sensitive areas. It is important for the operations to be conducted outside of the recommended exclusion buffers (wetland buffers and 200m faunal buffers), and that no operations take place within CBA1 or CBA2 areas. Lastly, it is recommended that operations not take place within areas of High or Very High sensitivity. It is recommended that sites providing high mineral yield outside the exclusion zones (outside Buffers, High and Very High Sensitivity areas, CBA1 and CBA2 areas) be investigated. During the construction, operational and decommissioning phases all recommendations made, and concerns raised in this document, should be taken into consideration. A good closure and rehabilitation plan should be in place to rehabilitate the habitat for faunal and floral species and active alien and invasive vegetation removal and monitoring should take place in accordance with an Alien Invasive Vegetation Management Plan		
Phase 1 Cultural Heritage Impact Assessment conducted by J A van Schalkwyk	**CONCLUSIONS AND RECOMMENDATIONS** 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 investigation consisted of a desktop study (archival sources, database survey, maps and aerial imagery) and a physical survey that also included the interviewing of relevant people. It should be noted that the implementation of the mitigation measures is subject to SAHRA/PHRA's approval. Verified Site Sensitivity Based on the screening assessment, i.e. a review of available databases, publications, as well as available heritage impact assessments done for the purpose of developments in the region, see list of references in Section 13 below, and supported by the field survey, it was determined that the project area, is located in an area with a very low presence of heritage sites and features. • For the project area, the impacts to heritage sites are expected to be of low significance. This can be further ameliorated by implementing mitigation measures, include isolating sites, relocating sites (e.g. burials) and excavating or sampling any significant	**X**	Pages: 80-82, 114, 126-127, 142, 144-145, 176-178, 199-200

archaeological material found to occur within the project area during the project development phases. The chances of such material being found, however, are negligible. After mitigation, the overall impact significance would stay low.

Identified sites

- 9.4.3.1: Formal cemetery with a single grave of the former landowner. It is well fenced off and maintained. It is situated in close proximity of the farmstead.
- 9.4.3.2: A much neglected informal cemetery with approximately 10 graves – most gravestones have been destroyed. Names and dates that are still legible indicate that it is graves from former farm labourers who lived in the vicinity. The dates on the gravestones range between 1978 and 1985.

Impact assessment and proposed mitigation measures

Impact analysis of cultural heritage resources under threat of the proposed development, is based on the present understanding of the development:

Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
9.4.3.1 - 9.4.3.2	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 sites for the duration of the prospecting 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, if there is an impact on these sites, relevant permits would be required from SAHRA or the PHRA
- If heritage features are identified during construction, 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 Project be allowed to continue on acceptance of the mitigation measures presented above and the conditions proposed below. <u>Conditions for inclusion in the environmental authorisation:</u> • The Palaeontological Sensitivity Map (http://www.sahra.org.za/sahris/map/palaeo) indicate that the project area has a high sensitivity of fossil remains to be found and therefore desktop assessment is required. Based on the outcome of that, a field assessment is likely. • Should archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made. The appropriate steps to take are indicated in Section 9 of the report, as well as in the Management Plan: Burial Grounds and Graves, with reference to general heritage sites, in the Addendum, Section 12.4.		
Palaeontological Desktop Assessment conducted by Elize Butler	**FINDINGS AND RECOMMENDATIONS** The proposed Prospecting Right Application is underlain by the undifferentiated Ecca Group (Karoo Supergroup), that is represented by the Volksrust and Vryheid Formations in this area. The Palaeontological Sensitivity generated by the National Environmental Web-Based Screening indicates that the Palaeontological Sensitivity of the proposed development is high, and corresponds with the PalaeoMap of SAHRIS (Almond et al, 2013; SAHRIS website). However, fossils are very rare in this region and it is thus considered that the proposed development will not lead to damaging impacts on the palaeontological resources of the area. From a Palaeontological perspective the proposed mining development may thus be permitted in its whole extent, as the development footprint is not considered sensitive in terms of palaeontological resources. However, if fossil remains are discovered during any phase of construction, either on the surface or exposed by excavations the ECO/site manager in charge of these developments must be informed immediately. These discoveries ought to be protected (if possible, in situ) and the ECO/site manager must report to SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637,	**X**	Pages: 83-84, 115, 127-128, 142-143, 176-178

	Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that mitigation (recording and collection) can be carry out by a paleontologist. Preceding any collection of fossil material, the specialist would need to apply for a collection permit from SAHRA. Fossil material must be curated in an accredited collection (museum or university collection), while all fieldwork and reports should meet the minimum standards for palaeontological impact studies suggested by SAHRA.		

See **Appendix 12** for the specialist report.

According to the DFFE Screening Report, nine (9) specialist assessments needs to be conducted, please see the table below for the list of these studies and also our response.

Specialist study according to DEA Screening tool		Response
Agriculture Impact Assessment		The land capability for the proposed area and surrounding area also falls within Land in Class 4. According to the DFFE Screening Report the Agriculture theme sensitivity of the proposed area fall within High sensitivity. However we do not see a need for this study. The prospecting activity will not disturb existing activities on the portions as both (existing activities and prospecting activities) can be done concurrently. The proposed area is currently being used crop farming. The applicant is also the landowner. The Prospecting Work Programme (PWP) states 100 pits [3m (length) x 3m (width) x 4m (depth)] and 30 trenches [30m (length) x 30m (width) x 4m (depth)] will be dug. This calculates to a disturbance of ± 2.79ha. The whole application area is 1333.5732ha, thus the ±2.79ha disturbance is small compared to the size of the application area. Mitigation measures as in the EMPr will be implemented. Concurrent backfilling will also take place in order to rehabilitate which means only 0.315ha will be disturbed at any given time. Due to the low disturbance (±2.79ha over a 1333.5732ha area) the impact is expected to be low, since mitigation measures will be implemented and concurrently rehabilitation will take place.
Biodiversity study	**Animal Species Assessment** **Aquatic Biodiversity Impact Assessment** **Plant Species Assessment** **Terrestrial Biodiversity Impact Assessment**	Specialist studies were conducted, please see the table above. The studies are available under **Appendix 12.1.** **<u>Finding of the DEA Screening Report (Appendix 7):</u>** • ***Plant Species theme sensitivity:*** Low • ***Aquatic Biodiversity sensitivity:*** Very High and Low • ***Terrestrial Biodiversity sensitivity:*** Very High • ***Animal Species sensitivity:*** Low and Medium The proposed area is mostly cover with farmlands.

		The Prospecting Work Programme (PWP) states 100 pits [3m (length) x 3m (width) x 4m (depth)] and 30 trenches [30m (length) x 30m (width) x 4m (depth)] will be dug. This calculates to a disturbance of ± 2.79ha. The whole application area is 1333.5732ha, thus the ±2.79ha disturbance is small compared to the size of the application area. Mitigation measures as in the EMPr will be implemented. Some of the mitigation measure include: ○ No animals may be hunted or killed during the prospecting phase. ○ 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. ○ No protected trees may be removed without a permit.
Archaeological and Cultural Heritage Impact Assessment		According to the DFFE Screening Report the proposed area falls within low Archaeological and Cultural Heritage Theme Sensitivity and mostly within High Paleontology Theme Sensitivity. Specialist studies were conducted. Please see **Appendix 12.**
Palaeontology Impact Assessment		
Noise Impact Assessment		The EAP do not see the need for this study as noise is limited to working hours, mitigation measure outlined in this report will be sufficient to address noise impacts
Radioactivity Impact Assessment		This study is not necessary since the process of prospecting Diamonds does not have any radioactive effects.

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 Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

Wetland Assessment:

Classification	Scientific Buffer	PES	EIS	REC
D2, D8	25m	B	High	A/B Improve
D3, D9	18m	B	High	A/B Improve
D1, D4, D5, D6, D7	16m	B	Low	B Maintain

Sensitivity and Impact Assessment:

NEMA Impact assessment	Most of the impacts associated with the prospecting activities range from Medium/Low to High prior to mitigation taking place. With mitigation fully implemented, the significance of most impacts can be reduced to Very Low to Low
DWS Risk assessment	Risks associated with the proposed activities range from Medium to High
Mitigation Measures	Refer to Section 8.2

It is imperative that an effective management plan is implemented to ensure that all mitigation measures discussed in the report are adhered to. Three important factors contribute to the exclusion zone recommendations for this application area: 1) Critical Biodiversity areas, 2) Exclusion zones (Buffers) for wetlands and for identified faunal habitats, and 3) Sensitive areas. It is important for the operations to be conducted outside of the recommended exclusion buffers (wetland buffers and 200m faunal buffers), and that no operations take place within CBA1 or CBA2 areas. Lastly, it is recommended that operations not take place within areas of High or Very High sensitivity. It is recommended that sites providing high mineral yield outside the exclusion zones (outside Buffers, High and Very High Sensitivity areas, CBA1 and CBA2 areas) be investigated. During the construction, operational and decommissioning phases all recommendations made, and concerns raised in this document, should be taken into consideration. A good closure and rehabilitation plan should be in place to rehabilitate the habitat for faunal and floral species and active alien and invasive vegetation removal and monitoring should take place in accordance with an Alien Invasive Vegetation Management Plan

➢ Potential impact on palaeontological, heritage and cultural resources:

A Palaeontological Desktop Assessment was conducted by Elize Butler from Banzai Environmental (Pty) Ltd and a Phase 1 Cultural Heritage Impact Assessment was conducted by J A van Schalkwyk. The reports are available under **Annexure 12**.

Findings of the Phase 1 Cultural Heritage Impact Assessment was conducted by J A van Schalkwyk (**Appendix 12.2**):

Verified Site Sensitivity

Based on the screening assessment, i.e. a review of available databases, publications, as well as available heritage impact assessments done for the purpose of developments in the region, see list of references in Section 13 below, and supported by the field survey, it was determined that the project area, is located in an area with a very low presence of heritage sites and features.

- For the project area, the impacts to heritage sites are expected to be of low significance. This can be further ameliorated by implementing mitigation measures, include isolating sites, relocating sites (e.g. burials) and excavating or sampling any significant archaeological material found to occur within the project area during the project development phases. The chances of such material being found, however, are negligible. After mitigation, the overall impact significance would stay low.

Identified sites

- 9.4.3.1: Formal cemetery with a single grave of the former landowner. It is well fenced off and maintained. It is situated in close proximity of the farmstead.
- 9.4.3.2: A much neglected informal cemetery with approximately 10 graves – most gravestones have been destroyed. Names and dates that are still legible indicate that it is graves from former farm labourers who lived in the vicinity. The dates on the gravestones range between 1978 and 1985.

Impact assessment and proposed mitigation measures

Impact analysis of cultural heritage resources under threat of the proposed development, is based on the present understanding of the development:

Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
9.4.3.1 - 9.4.3.2	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 sites for the duration of the prospecting operations.				

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

- From a heritage point of view, it is recommended that the Proposed Project be allowed to continue on acceptance of the mitigation measures presented above and the conditions proposed below.

Findings of the Palaeontological Desktop Assessment conducted by Elize Butler from Banzai Environmental (Pty) Ltd (**Appendix 12.3**):

The proposed Prospecting Right Application is underlain by the undifferentiated Ecca Group (Karoo Supergroup), that is represented by the Volksrust and Vryheid Formations in this area. The Palaeontological Sensitivity generated by the National Environmental Web-Based Screening indicates that the Palaeontological Sensitivity of the proposed development is high, and corresponds with the PalaeoMap of SAHRIS (Almond et al, 2013; SAHRIS website). However, fossils are very rare in this region and it is thus considered that the proposed development will not lead to damaging impacts on the palaeontological

resources of the area. From a Palaeontological perspective the proposed mining development may thus be permitted in its whole extent, as the development footprint is not considered sensitive in terms of palaeontological resources.

However, if fossil remains are discovered during any phase of construction, either on the surface or exposed by excavations the ECO/site manager in charge of these developments must be informed immediately. These discoveries ought to be protected (if possible, in situ) and the ECO/site manager 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 (recording and collection) can be carry out by a paleontologist.

Preceding any collection of fossil material, the specialist would need to apply for a collection permit from SAHRA. Fossil material must be curated in an accredited collection (museum or university collection), while all fieldwork and reports should meet the minimum standards for palaeontological impact studies suggested by SAHRA.

➢ **Potential social impacts**:

The presence of construction / operational workers poses a potential risk to family structures and social networks.

While the presence of construction / operational 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 impacts on land use**:

According to the map below (**Figure 21** and **Figure 22**), the proposed area is largely covered with farmlands and used for the cultivation of crops, there are natural area and waterbodies as well.

From google earth (**Figure 23**) the farmlands and natural areas are visible.

According to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.3**):

The natural areas of the application area are comprised of open thorny woodland and open grassland, with large areas of the site having been cultivated. Land use on site and the surrounding areas is dominated by some residential areas and widespread agriculture.

➢ **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 prospecting of 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.

Wetlands are present in the proposed area, please see the below maps. These wetlands should be avoided and buffered.

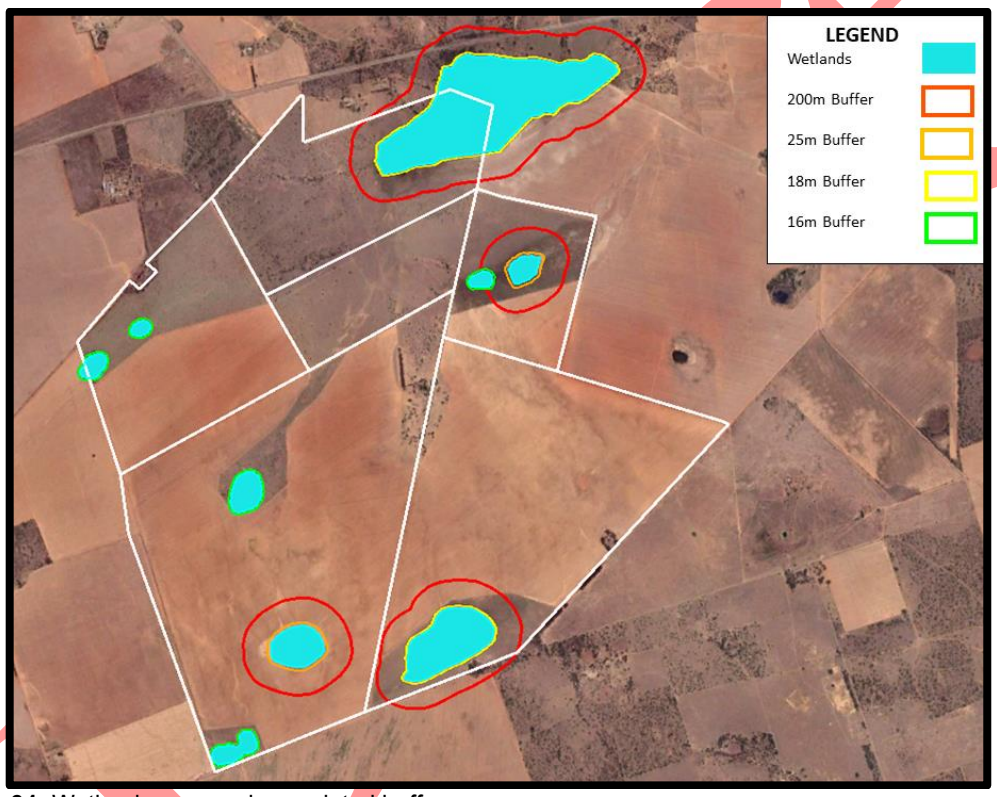


Figure 24: Wetland areas and associated buffers.

Two burial sites were identified, a minimum buffer of 100m must be established around the burial sites for the duration of the prospecting operations.

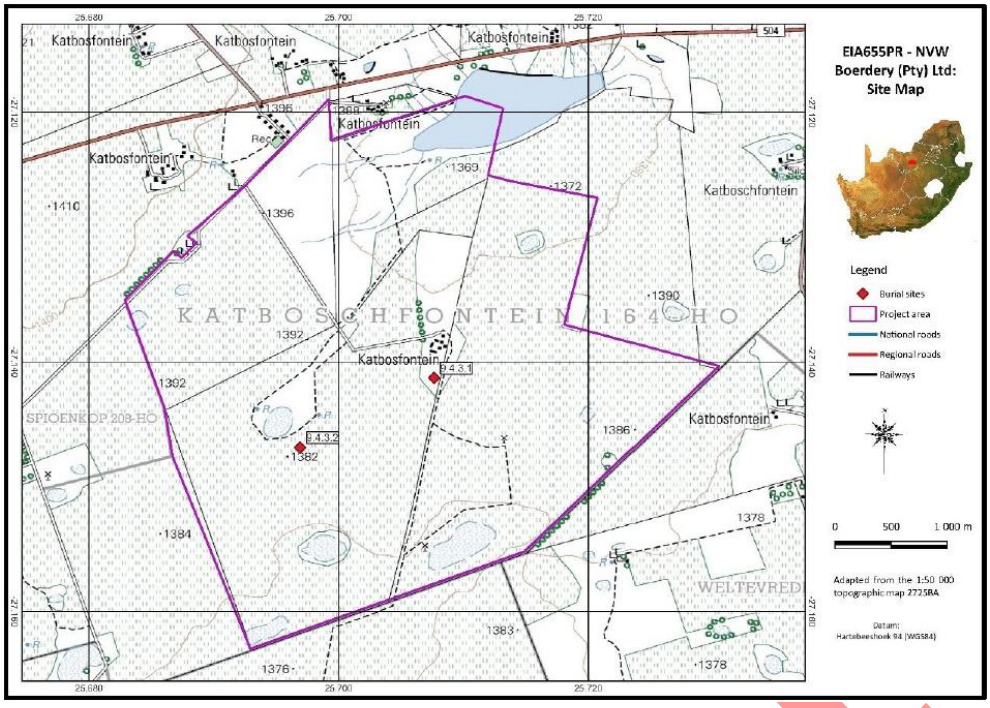


Figure 25: Location of heritage sites in the project area

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

There is regional socio-economic benefits due to the diamonds being prospected in the North West 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 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. Scoping and EIA process for a Prospecting Right of Diamonds Alluvial (DA), Diamonds General (D) and Diamonds (DIA) near Wolmaransstad on Portion 8, 16, 19, 21, 22 and 27 of the farm Katboschfontein 164, Registration Division: HO, North West province is preferred due to the sites possible underlying diamond 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 provides 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 alluvial diamond occurrences are known in the area, and a number of these have been exploited in the past.

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 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.

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, the specialist reports and the requirements/conditions thereof.

The applicant is also the landowner which makes the proposed activity one of the preferred activities.

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:

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, Ms. Lizanne Esterhuizen, Reg EAP (EAPASA) Pr. Sci. Nat. 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

Name of company:

27 September 2023

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;)

XXXX

Calculations

PITS		
Timeframe: 1 years (month 10)		
Number of pits per year according to the timeframe		
1st year (10 month) =	100 pits	
Disturbance for each year according to timeframes		
Total disturbance for 10 months	100 pits x (3m x 3m) / 10 000 =	0.09ha disturbed

TRENCHES:	
Timeframe: 2 years (24 months)	
Concurrent backfilling will take place in order to rehabilitate trenches:	
The area to be disturbed for 1 trench	1 trench x (30m x 30m) / 10 000 = 0.09ha
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	0.09ha x 2 trenches = 0.18ha 0.2ha / 2 = 0.045ha
The area to be disturbed at any given time	0.18ha + 0.045ha = 0.225ha
After the trench is backfilled and rehabilitated only then will another trench be opened.	
Total	0.315ha

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.

A. Explain how the aforesaid amount was derived.

The closure cost estimate provided above is aligned with the National Environmental Management Act: Regulations: Financial Provisioning for Mitigation and Rehabilitation of Environmental Damage Caused by Reconnaissance, Prospecting, Exploration, Mining or Production Operations. 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 **NVW Boerdery (Pty) Ltd** will be submitted

Rehabilitation Fund

NVW Boerdery (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 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 (DA), Diamonds General (D) and Diamonds (DIA) 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 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).

A Palaeontological Desktop Assessment was conducted by Elize Butler from Banzai Environmental (Pty) Ltd and a Phase 1 Cultural Heritage Impact Assessment was conducted by J A van Schalkwyk. The reports are available under **Annexure 12**.

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

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

Portion 8, 16, 19, 21, 22 and 27 of the farm Katboschfontein 164 are preferred due to the sites underlying geology and the possible shallowness of the diamond bearing gravel to the surface as well as site access (i.e. to facilitate the movement of machinery, equipment, infrastructure and people). The specific site has been chosen for its possible mineral resources thus making an alternative site selection null and void.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

A. DETAILS OF–

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

Name of Practitioner	Qualifications	Contact details
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

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 4**.

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 alluvial diamond 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 **NVW Boerdery (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 8.**

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

XXXX

Calculations

PITS		
Timeframe: 1 years (month 10)		
Number of pits per year according to the timeframe		
1st year (10 month) =	100 pits	
Disturbance for each year according to timeframes		
Total disturbance for 10 months	100 pits x (3m x 3m) / 10 000 =	0.09ha disturbed

TRENCHES:	
Timeframe: 2 years (24 months)	
Concurrent backfilling will take place in order to rehabilitate trenches:	
The area to be disturbed for 1 trench	1 trench x (30m x 30m) / 10 000 = 0.09ha
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	0.09ha x 2 trenches = 0.18ha 0.2ha / 2 = 0.045ha
The area to be disturbed at any given time	0.18ha + 0.045ha = 0.225ha
After the trench is backfilled and rehabilitated only then will another trench be opened.	
Total	0.315ha

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.

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

Financial Guarantee

The financial guarantee for the rehabilitation for land disturbed **NVW Boerdery (Pty) Ltd** will be submitted.

Rehabilitation Fund

NVW Boerdery (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 prospecting as the case may be.
Clearance of vegetation	Pitting and trenching phase- (construction and operation phase)	**Pits:** 100 pits with dimensions of (3m x 3m x4m) **Trenches:** 30 trenches with dimensions (30m x 30m x4m)	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.	Compliance with Duty of Care as detailed within NEMA	Duration of operations on the prospecting activities.

			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.		
Construction of roads	Pitting and trenching phase- (construction and operation phase)	+- 500m	1. Planning of access routes to the site for construction/prospecting purposes shall be done in conjunction with the Contractor 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 N8 is repaired	Compliance with Duty of Care as detailed within NEMA	Duration of operations on the prospecting activities.

			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 (DA), Diamonds General (D) and Diamonds (DIA) – Soils and geology	Pitting and trenching phase- (construction and operation phase)	**Pits:** 100 pits with dimensions of (3m x 3m x4m) **Trenches:** 30 trenches with dimensions (30m x 30m x4m)	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 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.	Compliance with Duty of Care as detailed within NEMA	Duration of operations on the mine

			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 (DA), Diamonds General (D) and Diamonds (DIA) – excavations and blasting	Pitting and trenching phase- (construction and operation phase)	**Pits:** 100 pits with dimensions of (3m x 3m x4m) **Trenches:** 30 trenches with dimensions (30m x 30m x4m)	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. 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.		

Mitigation measures according to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

Impact	Source of Impact	Recommended Mitigation Measures
Changing the physical structure within a water resource (habitat)	**Construction:** • Infrastructure development within wetlands. • Loss of vegetation. • Erosion **Operational:** • Excavation from the wetlands leading to degraded wetlands. • Removal of substrate within wetlands. • Clearing of vegetation – vegetation loss. • Loss of biodiversity. • Vehicles driving in and through wetlands. **Decommissioning:** • Damage to vegetated areas. • Ineffective rehabilitation measures • Vehicles driving in and through wetlands	• Other than approved and authorised structures, no other development or maintenance infrastructure is allowed within the delineated wetlands and their associated buffer zones. • Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat. • Monitor the occurrence of erosion during the rainy season and take immediate corrective action where needed. • No stockpiling should take place within a wetland or the calculated buffers. • All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds. • All maintenance within wetlands must be restricted to the dry season. • Maintenance activities should not impact on rehabilitated or naturally vegetated areas. • The duration of impacts on the wetland systems should be minimised as far as possible by ensuring that the duration of time in which habitat alteration and sedimentation will take place is minimised. • Rehabilitation must ensure that wetland structure and function are reinstated in such a way as to ensure the ongoing functionality of the systems at pre-prospecting levels.

Alteration of the amount of sediment entering the water resource and associated change in turbidity	**Construction:** • Vegetation clearance causing sedimentation. • Earthworks activities. • Disturbance of soil surface and runoff characteristics. • Erosion **Operational:** • Removal of substrate within wetlands. • Clearing of vegetation – vegetation loss. • Loss of biodiversity. • Vehicles driving in and through wetlands. **Decommissioning:** • Damage to vegetated areas. • Ineffective rehabilitation measures • Vehicles driving in and through wetlands.	• Buffer zones should be maintained, in order to minimise sedimentation of the wetland areas. • No stockpiling should take place within wetlands or the calculated buffers. • Ensure that erosion management and sediment controls are strictly implemented from the beginning of site clearing activities. • All areas should be re-sloped and top-soiled where necessary and reseeded with indigenous grasses to stabilise the loose material. • All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds. • Erosion and sedimentation into wetlands must be minimised through the effective stabilisation and the re-vegetation of any disturbed catchment areas. • As far as possible the existing road network should be utilised, minimising the need to develop new access routes resulting in an increased impact on the local environment. • Erosion control measures, such as berms, must be implemented to manage runoff from roads to prevent erosion and pollution. • Rehabilitation of disturbed areas as a result of construction must be implemented immediately upon completion of construction. • Rehabilitation must ensure that wetland structure and functions are reinstated in such a way as to ensure the ongoing functionality of the systems at pre-prospecting levels. • The duration of impacts on the wetland systems should be minimised as far as possible by ensuring that the duration of time in which habitat alteration and sedimentation will take place is minimised.
Alteration of water quality (during rainfall events)	**Construction:** • Runoff from road surfaces. • Discharge of solvents, chemicals, and hydrocarbons. **Operational:** • Maintenance of vehicles and machinery. • Runoff from road surfaces. • Discharge of sewage. • Discharge of solvents, chemicals, and hydrocarbons.	• Re-fuelling must take place on a sealed surface area, outside the delineated buffers, to prevent hydrocarbon pollution. • All spills should be cleaned up immediately and disposed of. • Spill kits should be readily available and easily accessible throughout the site. • All chemicals must be stored safely on site, outside the buffer areas and surrounded by bunds. Chemical storage containers must be regularly inspected for early leak detection. • Littering must be prevented by effective site management and the provision of bins. • Provision of adequate sanitation facilities located outside of the delineated buffer zones. • An emergency spill procedure should be developed and implemented.

	• Excavation from the wetlands and the release of pollutants from disturbed soils. • Removal of substrate within wetlands. **Decommissioning:** • Damage to vegetated areas. • Ineffective rehabilitation measures. • Vehicles driving in and through wetlands.	• No stockpiling should take place within wetlands. • All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds. • Stockpiles must be located away from wetlands. • Erosion and sedimentation into wetlands must be minimised through the effective stabilisation and the re-vegetation of any disturbed natural vegetation.
Loss of terrestrial habitat	**Construction:** • Clearing of vegetation – vegetation loss. **Operational:** • Removal of substrate within watercourses. • Clearing of vegetation during prospecting operations. **Decommissioning:** • Damage to vegetated areas. • Ineffective rehabilitation measures. • Vehicles driving in and through wetlands.	• No prospecting or mining activities are to occur in any CBA 1 or CBA 2 areas. • Areas that are stripped during construction and operation should be re-vegetated with indigenous vegetation. • It is recommended that areas to be developed be specifically demarcated so that during the construction phase, only the demarcated areas be impacted upon (including fencing off the defined project area) and preventing movement of workers into natural areas. • The duration of the prospecting should be minimised to as short term as possible, in order to reduce the period of disturbance on fauna and flora. • Areas of indigenous vegetation should under no circumstances be fragmented or disturbed or used as an area for dumping of waste. • As far as possible the existing road network should be utilised, minimising the need to develop new access routes resulting in an increased impact on the local environment. • All staff and visitors to the site must undergo an induction process and must be made aware of the sensitive nature of the environment. • The area must be re-vegetated with plant species which are indigenous to the exact vegetation types. • Rehabilitation measures that are implemented must be continually monitored to ensure that proper succession has occurred and that there is no erosion occurring. • An alien invasive vegetation management plan should be developed and implemented. • Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat.

Loss of Aquatic Biota	**Construction:** • Runoff from road surfaces • Sedimentation • Discharge of solvents, chemicals, and hydrocarbons. **Operational:** • Maintenance of vehicles and machinery. • Runoff from road surfaces. • Discharge of solvents, chemicals, and hydrocarbons. • Excavation from the wetlands and the release of nutrients and pollutants from disturbed soils. • Removal of substrate within wetlands. • Sedimentation	• Identification, and if necessary, biomonitoring of aquatic organisms (Macroinvertebrates, Diatoms, and amphibian species) within the wetland systems is essential.
Loss of Terrestrial Fauna	**Construction and Operational:** • Vegetation loss and disturbance – clearing of vegetation. • Excessive noise disturbances • Illegal hunting. • Habitat fragmentation and destruction. • Vehicles driving through natural vegetated areas.	• No prospecting or mining activities are to occur in any CBA 1 or CBA 2 areas. • Site clearing to take place in a phased manner (where possible) to allow for any faunal species present to move away from the study site to the surrounding open space areas. • Prior and during vegetation clearance any larger fauna species noted should be given the opportunity to move away from the construction machinery. • Fauna species such as frogs and reptiles that have not moved away should be carefully and safely removed to a suitable location beyond the extent of the development footprint by a suitably qualified ECO trained in the handling and relocation of animals. • Fencing should be erected around the project area to prevent workers and members of the public from entering the surrounding environments. This fence should have small openings to allow wildlife to pass through. • Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site. • Should any sensitive or Red Data animal or bird species be encountered during the construction, operation, and decommissioning activities, these should be relocated to

		natural areas in the vicinity. Any sensitive fauna that are inadvertently killed during earthmoving operations should be preserved as museum voucher specimens. • No hunting, trapping, or killing of fauna is allowed. • Any lizards, snakes, or monitors encountered should be allowed to escape to a suitable habitat away from disturbance. • General avoidance of snakes is the best policy if encountered. Snakes should not be intentionally harmed or killed and allowed free movement away from the area. • Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench.
Loss of Terrestrial Flora	**Construction and Operational:** • Vegetation clearance. • Vehicles driving through natural vegetated areas. • Habitat fragmentation and destruction.	• No prospecting or mining activities are to occur in any CBA 1 or CBA 2 areas. • Areas that are stripped during construction and operation should be re-vegetated with indigenous vegetation as soon as possible. This will also reduce the likelihood of encroachment by alien invasive plant species. • Protected trees and plants shall not be removed or damaged without prior approval, permits or licenses from the relevant authority.
Introduction and spread of alien vegetation	**Construction:** • Clearing of vegetation **Operational:** • Removal of substrate within watercourses. • Clearing of vegetation during prospecting operations. • Vehicles driving in and through watercourses. **Decommissioning:** • Damage to vegetated areas. • Ineffective rehabilitation measures • Vehicles driving in and through watercourses.	• No prospecting or mining activities are to occur in any CBA 1 or CBA 2 areas. • Proliferation of alien and invasive species is expected within any disturbed areas, particularly as there are some alien and invasive species present within the study site. These species should be eradicated and controlled to prevent further spread beyond. • An alien invasive vegetation management plan should be developed and implemented. • Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat. • Monitoring and management of invasive species should continue for at least two years after all prospecting and mining activities have ceased. • Footprint areas should be kept as small as possible when removing alien plant species. • No vehicles should be allowed to drive through designated sensitive drainage and wetlands areas during the eradication of alien and weed species.

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.	Minimisation of impacts to acceptable limits

				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. **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 (DA), Diamonds General (D) and Diamonds (DIA) – 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 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.	Minimisation of impacts to acceptable limits

				• 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: ○ Brush packing with cleared vegetation ○ Mulch or chip packing ○ Planting of vegetation ○ 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.	Minimisation of impacts to acceptable limits

				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. 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.	Minimisation of impacts to acceptable limits

				Rehabilitation 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. 14. Firebreaks must be created around the perimeter of the farm portions (prospecting area) for the duration of the prospecting activities.	
	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	Minimisation of impacts to acceptable limits

				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. 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 and heritage artefacts	Heritage	Pitting and trenching phase-(construction and operation phase)	Cultural Heritage in South Africa (includes all heritage resources) is protected by the National Heritage Resources Act (Act No 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 • 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	Minimisation of impacts to acceptable limits

				palaeontological artefacts, as set out in the NHRA (Act No. 25 of 1999), Section 51. (1).	
	Impact on potential fossils	Palaeontology	Pitting and trenching phase-(construction and operation phase)	The following procedure will only be followed if fossils are uncovered during the excavation phase of the development. Palaeontological heritage is unique and non-renewable and is protected by the NHRA and are 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 thereof) of plants or animals embedded in rock. These organisms lived 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. This informational document is intended for workmen and foremen on construction sites. 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. **Chance Find Procedure**	Minimisation of impacts to acceptable limits

				• 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. • If the fossil cannot be stabilized the fossil may be collected with extreme care by the ESO. 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 the Heritage Agency has issued the written authorization, the developer may continue with the development on the affected area. <u>Heritage Impact Assessment (**Appendix 12.2**):</u> Two (2) burial sites were identified • A minimum buffer of 100m must be established around the burial sites for the duration of the prospecting operations. • Should archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made. The appropriate steps to take are indicated in Section 9 of the report, as well as in the Management Plan: Burial Grounds and Graves, with reference to general heritage sites, in the Addendum, Section 12.4. • Known sites should be clearly marked, so 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 (ECO) 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 ECO 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 NHRA, Section 51(1).	

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 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.	Minimisation of impacts to acceptable limits

				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 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. 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. 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** 14. 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. 15. Prevent dirty water runoff from leaving the general mining area; 16. 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; 17. Enough supply of absorbent fibre should be kept at the site to contain accidental spills; 18. Contain dirty water in return water dams and re-use dirty water for dust suppression and make up water in the plant; 19. Proper storm water management should be implemented. Berms should also be constructed to ensure separation of clean water and dirty water areas; 20. 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** 21. Adequate sanitary facilities and ablutions must be provided for construction workers (1 toilet per every 15 workers). 22. The facilities must be regularly serviced to reduce the risk of surface or groundwater pollution. **Concrete mixing** 23. 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**	

				24. 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. 25. 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. 26. No washing or servicing of vehicles on site. **Infrastructure** 27. 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.	

Mitigation measures according to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

Impact	Source of Impact	Recommended Mitigation Measures
Changing the physical structure within a water resource (habitat)	**Construction:** • Infrastructure development within wetlands. • Loss of vegetation. • Erosion **Operational:** • Excavation from the wetlands leading to degraded wetlands. • Removal of substrate within wetlands. • Clearing of vegetation – vegetation loss. • Loss of biodiversity. • Vehicles driving in and through wetlands. **Decommissioning:**	• Other than approved and authorised structures, no other development or maintenance infrastructure is allowed within the delineated wetlands and their associated buffer zones. • Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat. • Monitor the occurrence of erosion during the rainy season and take immediate corrective action where needed. • No stockpiling should take place within a wetland or the calculated buffers. • All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds. • All maintenance within wetlands must be restricted to the dry season. • Maintenance activities should not impact on rehabilitated or naturally vegetated areas.

	• Damage to vegetated areas. • Ineffective rehabilitation measures • Vehicles driving in and through wetlands	• The duration of impacts on the wetland systems should be minimised as far as possible by ensuring that the duration of time in which habitat alteration and sedimentation will take place is minimised. • Rehabilitation must ensure that wetland structure and function are reinstated in such a way as to ensure the ongoing functionality of the systems at pre-prospecting levels.
Alteration of the amount of sediment entering the water resource and associated change in turbidity	**Construction:** • Vegetation clearance causing sedimentation. • Earthworks activities. • Disturbance of soil surface and runoff characteristics. • Erosion **Operational:** • Removal of substrate within wetlands. • Clearing of vegetation – vegetation loss. • Loss of biodiversity. • Vehicles driving in and through wetlands. **Decommissioning:** • Damage to vegetated areas. • Ineffective rehabilitation measures • Vehicles driving in and through wetlands.	• Buffer zones should be maintained, in order to minimise sedimentation of the wetland areas. • No stockpiling should take place within wetlands or the calculated buffers. • Ensure that erosion management and sediment controls are strictly implemented from the beginning of site clearing activities. • All areas should be re-sloped and top-soiled where necessary and reseeded with indigenous grasses to stabilise the loose material. • All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds. • Erosion and sedimentation into wetlands must be minimised through the effective stabilisation and the re-vegetation of any disturbed catchment areas. • As far as possible the existing road network should be utilised, minimising the need to develop new access routes resulting in an increased impact on the local environment. • Erosion control measures, such as berms, must be implemented to manage runoff from roads to prevent erosion and pollution. • Rehabilitation of disturbed areas as a result of construction must be implemented immediately upon completion of construction. • Rehabilitation must ensure that wetland structure and functions are reinstated in such a way as to ensure the ongoing functionality of the systems at pre-prospecting levels. • The duration of impacts on the wetland systems should be minimised as far as possible by ensuring that the duration of time in which habitat alteration and sedimentation will take place is minimised.
Alteration of water quality (during rainfall events)	**Construction:** • Runoff from road surfaces. • Discharge of solvents, chemicals, and hydrocarbons.	• Re-fuelling must take place on a sealed surface area, outside the delineated buffers, to prevent hydrocarbon pollution. • All spills should be cleaned up immediately and disposed of. • Spill kits should be readily available and easily accessible throughout the site.

	Operational: • Maintenance of vehicles and machinery. • Runoff from road surfaces. • Discharge of sewage. • Discharge of solvents, chemicals, and hydrocarbons. • Excavation from the wetlands and the release of pollutants from disturbed soils. • Removal of substrate within wetlands. **Decommissioning:** • Damage to vegetated areas. • Ineffective rehabilitation measures. • Vehicles driving in and through wetlands.	• All chemicals must be stored safely on site, outside the buffer areas and surrounded by bunds. Chemical storage containers must be regularly inspected for early leak detection. • Littering must be prevented by effective site management and the provision of bins. • Provision of adequate sanitation facilities located outside of the delineated buffer zones. • An emergency spill procedure should be developed and implemented. • No stockpiling should take place within wetlands. • All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds. • Stockpiles must be located away from wetlands. • Erosion and sedimentation into wetlands must be minimised through the effective stabilisation and the re-vegetation of any disturbed natural vegetation.
Loss of terrestrial habitat	**Construction:** • Clearing of vegetation – vegetation loss. **Operational:** • Removal of substrate within watercourses. • Clearing of vegetation during prospecting operations. **Decommissioning:** • Damage to vegetated areas. • Ineffective rehabilitation measures. • Vehicles driving in and through wetlands.	• No prospecting or mining activities are to occur in any CBA 1 or CBA 2 areas. • Areas that are stripped during construction and operation should be re-vegetated with indigenous vegetation. • It is recommended that areas to be developed be specifically demarcated so that during the construction phase, only the demarcated areas be impacted upon (including fencing off the defined project area) and preventing movement of workers into natural areas. • The duration of the prospecting should be minimised to as short term as possible, in order to reduce the period of disturbance on fauna and flora. • Areas of indigenous vegetation should under no circumstances be fragmented or disturbed or used as an area for dumping of waste. • As far as possible the existing road network should be utilised, minimising the need to develop new access routes resulting in an increased impact on the local environment. • All staff and visitors to the site must undergo an induction process and must be made aware of the sensitive nature of the environment. • The area must be re-vegetated with plant species which are indigenous to the exact vegetation types.

		• Rehabilitation measures that are implemented must be continually monitored to ensure that proper succession has occurred and that there is no erosion occurring. • An alien invasive vegetation management plan should be developed and implemented. • Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat.
Loss of Aquatic Biota	**<u>Construction:</u>** • Runoff from road surfaces • Sedimentation • Discharge of solvents, chemicals, and hydrocarbons. **<u>Operational:</u>** • Maintenance of vehicles and machinery. • Runoff from road surfaces. • Discharge of solvents, chemicals, and hydrocarbons. • Excavation from the wetlands and the release of nutrients and pollutants from disturbed soils. • Removal of substrate within wetlands. • Sedimentation	• Identification, and if necessary, biomonitoring of aquatic organisms (Macroinvertebrates, Diatoms, and amphibian species) within the wetland systems is essential.
Loss of Terrestrial Fauna	**<u>Construction and Operational:</u>** • Vegetation loss and disturbance – clearing of vegetation. • Excessive noise disturbances • Illegal hunting. • Habitat fragmentation and destruction. • Vehicles driving through natural vegetated areas.	• No prospecting or mining activities are to occur in any CBA 1 or CBA 2 areas. • Site clearing to take place in a phased manner (where possible) to allow for any faunal species present to move away from the study site to the surrounding open space areas. • Prior and during vegetation clearance any larger fauna species noted should be given the opportunity to move away from the construction machinery. • Fauna species such as frogs and reptiles that have not moved away should be carefully and safely removed to a suitable location beyond the extent of the development footprint by a suitably qualified ECO trained in the handling and relocation of animals. • Fencing should be erected around the project area to prevent workers and members of the public from entering the surrounding environments. This fence should have small openings to allow wildlife to pass through.

		• Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site. • Should any sensitive or Red Data animal or bird species be encountered during the construction, operation, and decommissioning activities, these should be relocated to natural areas in the vicinity. Any sensitive fauna that are inadvertently killed during earthmoving operations should be preserved as museum voucher specimens. • No hunting, trapping, or killing of fauna is allowed. • Any lizards, snakes, or monitors encountered should be allowed to escape to a suitable habitat away from disturbance. • General avoidance of snakes is the best policy if encountered. Snakes should not be intentionally harmed or killed and allowed free movement away from the area. • Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench.
Loss of Terrestrial Flora	**<u>Construction and Operational:</u>** • Vegetation clearance. • Vehicles driving through natural vegetated areas. • Habitat fragmentation and destruction.	• No prospecting or mining activities are to occur in any CBA 1 or CBA 2 areas. • Areas that are stripped during construction and operation should be re-vegetated with indigenous vegetation as soon as possible. This will also reduce the likelihood of encroachment by alien invasive plant species. • Protected trees and plants shall not be removed or damaged without prior approval, permits or licenses from the relevant authority.
Introduction and spread of alien vegetation	**<u>Construction:</u>** • Clearing of vegetation **<u>Operational:</u>** • Removal of substrate within watercourses. • Clearing of vegetation during prospecting operations. • Vehicles driving in and through watercourses. **<u>Decommissioning:</u>**	• No prospecting or mining activities are to occur in any CBA 1 or CBA 2 areas. • Proliferation of alien and invasive species is expected within any disturbed areas, particularly as there are some alien and invasive species present within the study site. These species should be eradicated and controlled to prevent further spread beyond. • An alien invasive vegetation management plan should be developed and implemented. • Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat. • Monitoring and management of invasive species should continue for at least two years after all prospecting and mining activities have ceased.

	• Damage to vegetated areas. • Ineffective rehabilitation measures • Vehicles driving in and through watercourses.	• Footprint areas should be kept as small as possible when removing alien plant species. • No vehicles should be allowed to drive through designated sensitive drainage and wetlands areas during the eradication of alien and weed species.

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:-.. Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or prospecting as the case may be.	**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)
Clearance of vegetation	Loss or fragmentation of habitats	**Existing vegetation** 1. Vegetation removal must be limited to the prospecting site.	Duration of operation	The implementation of the recommended mitigation measures will result in the

		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. **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.		minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.

		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.		

Mitigation measures according to the Terrestrial Biodiversity and Wetland Impact Assessment (**Appendix 12.1**):

Impact	Source of Impact	Recommended Mitigation Measures
Changing the physical structure within a water resource (habitat)	**Construction:** • Infrastructure development within wetlands. • Loss of vegetation. • Erosion **Operational:** • Excavation from the wetlands leading to degraded wetlands. • Removal of substrate within wetlands. • Clearing of vegetation – vegetation loss. • Loss of biodiversity. • Vehicles driving in and through wetlands. **Decommissioning:** • Damage to vegetated areas. • Ineffective rehabilitation measures • Vehicles driving in and through wetlands	• Other than approved and authorised structures, no other development or maintenance infrastructure is allowed within the delineated wetlands and their associated buffer zones. • Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat. • Monitor the occurrence of erosion during the rainy season and take immediate corrective action where needed. • No stockpiling should take place within a wetland or the calculated buffers. • All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds. • All maintenance within wetlands must be restricted to the dry season. • Maintenance activities should not impact on rehabilitated or naturally vegetated areas. • The duration of impacts on the wetland systems should be minimised as far as possible by ensuring that the duration of time in which habitat alteration and sedimentation will take place is minimised. • Rehabilitation must ensure that wetland structure and function are reinstated in such a way as to ensure the ongoing functionality of the systems at pre-prospecting levels.
Alteration of the amount of sediment entering the water resource and associated change in turbidity	**Construction:** • Vegetation clearance causing sedimentation. • Earthworks activities. • Disturbance of soil surface and runoff characteristics. • Erosion	• Buffer zones should be maintained, in order to minimise sedimentation of the wetland areas. • No stockpiling should take place within wetlands or the calculated buffers. • Ensure that erosion management and sediment controls are strictly implemented from the beginning of site clearing activities. • All areas should be re-sloped and top-soiled where necessary and reseeded with indigenous grasses to stabilise the loose material.

	Operational: • Removal of substrate within wetlands. • Clearing of vegetation – vegetation loss. • Loss of biodiversity. • Vehicles driving in and through wetlands. **Decommissioning:** • Damage to vegetated areas. • Ineffective rehabilitation measures • Vehicles driving in and through wetlands.	• All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds. • Erosion and sedimentation into wetlands must be minimised through the effective stabilisation and the re-vegetation of any disturbed catchment areas. • As far as possible the existing road network should be utilised, minimising the need to develop new access routes resulting in an increased impact on the local environment. • Erosion control measures, such as berms, must be implemented to manage runoff from roads to prevent erosion and pollution. • Rehabilitation of disturbed areas as a result of construction must be implemented immediately upon completion of construction. • Rehabilitation must ensure that wetland structure and functions are reinstated in such a way as to ensure the ongoing functionality of the systems at pre-prospecting levels. • The duration of impacts on the wetland systems should be minimised as far as possible by ensuring that the duration of time in which habitat alteration and sedimentation will take place is minimised.
Alteration of water quality (during rainfall events)	**Construction:** • Runoff from road surfaces. • Discharge of solvents, chemicals, and hydrocarbons. **Operational:** • Maintenance of vehicles and machinery. • Runoff from road surfaces. • Discharge of sewage. • Discharge of solvents, chemicals, and hydrocarbons. • Excavation from the wetlands and the release of pollutants from disturbed soils. • Removal of substrate within wetlands. **Decommissioning:** • Damage to vegetated areas.	• Re-fuelling must take place on a sealed surface area, outside the delineated buffers, to prevent hydrocarbon pollution. • All spills should be cleaned up immediately and disposed of. • Spill kits should be readily available and easily accessible throughout the site. • All chemicals must be stored safely on site, outside the buffer areas and surrounded by bunds. Chemical storage containers must be regularly inspected for early leak detection. • Littering must be prevented by effective site management and the provision of bins. • Provision of adequate sanitation facilities located outside of the delineated buffer zones. • An emergency spill procedure should be developed and implemented. • No stockpiling should take place within wetlands. • All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds. • Stockpiles must be located away from wetlands. • Erosion and sedimentation into wetlands must be minimised through the effective stabilisation and the re-vegetation of any disturbed natural vegetation.

	• Ineffective rehabilitation measures. • Vehicles driving in and through wetlands.	
Loss of terrestrial habitat	**<u>Construction:</u>** • Clearing of vegetation – vegetation loss. **<u>Operational:</u>** • Removal of substrate within watercourses. • Clearing of vegetation during prospecting operations. **<u>Decommissioning:</u>** • Damage to vegetated areas. • Ineffective rehabilitation measures. • Vehicles driving in and through wetlands.	• No prospecting or mining activities are to occur in any CBA 1 or CBA 2 areas. • Areas that are stripped during construction and operation should be re-vegetated with indigenous vegetation. • It is recommended that areas to be developed be specifically demarcated so that during the construction phase, only the demarcated areas be impacted upon (including fencing off the defined project area) and preventing movement of workers into natural areas. • The duration of the prospecting should be minimised to as short term as possible, in order to reduce the period of disturbance on fauna and flora. • Areas of indigenous vegetation should under no circumstances be fragmented or disturbed or used as an area for dumping of waste. • As far as possible the existing road network should be utilised, minimising the need to develop new access routes resulting in an increased impact on the local environment. • All staff and visitors to the site must undergo an induction process and must be made aware of the sensitive nature of the environment. • The area must be re-vegetated with plant species which are indigenous to the exact vegetation types. • Rehabilitation measures that are implemented must be continually monitored to ensure that proper succession has occurred and that there is no erosion occurring. • An alien invasive vegetation management plan should be developed and implemented. • Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat.
Loss of Aquatic Biota	**<u>Construction:</u>** • Runoff from road surfaces • Sedimentation • Discharge of solvents, chemicals, and hydrocarbons. **<u>Operational:</u>** • Maintenance of vehicles and machinery.	• Identification, and if necessary, biomonitoring of aquatic organisms (Macroinvertebrates, Diatoms, and amphibian species) within the wetland systems is essential.

	• Runoff from road surfaces. • Discharge of solvents, chemicals, and hydrocarbons. • Excavation from the wetlands and the release of nutrients and pollutants from disturbed soils. • Removal of substrate within wetlands. • Sedimentation	
Loss of Terrestrial Fauna	**<u>Construction and Operational:</u>** • Vegetation loss and disturbance – clearing of vegetation. • Excessive noise disturbances • Illegal hunting. • Habitat fragmentation and destruction. • Vehicles driving through natural vegetated areas.	• No prospecting or mining activities are to occur in any CBA 1 or CBA 2 areas. • Site clearing to take place in a phased manner (where possible) to allow for any faunal species present to move away from the study site to the surrounding open space areas. • Prior and during vegetation clearance any larger fauna species noted should be given the opportunity to move away from the construction machinery. • Fauna species such as frogs and reptiles that have not moved away should be carefully and safely removed to a suitable location beyond the extent of the development footprint by a suitably qualified ECO trained in the handling and relocation of animals. • Fencing should be erected around the project area to prevent workers and members of the public from entering the surrounding environments. This fence should have small openings to allow wildlife to pass through. • Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site. • Should any sensitive or Red Data animal or bird species be encountered during the construction, operation, and decommissioning activities, these should be relocated to natural areas in the vicinity. Any sensitive fauna that are inadvertently killed during earthmoving operations should be preserved as museum voucher specimens. • No hunting, trapping, or killing of fauna is allowed. • Any lizards, snakes, or monitors encountered should be allowed to escape to a suitable habitat away from disturbance. • General avoidance of snakes is the best policy if encountered. Snakes should not be intentionally harmed or killed and allowed free movement away from the area.

		• Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench.
Loss of Terrestrial Flora	**Construction and Operational:** • Vegetation clearance. • Vehicles driving through natural vegetated areas. • Habitat fragmentation and destruction.	• No prospecting or mining activities are to occur in any CBA 1 or CBA 2 areas. • Areas that are stripped during construction and operation should be re-vegetated with indigenous vegetation as soon as possible. This will also reduce the likelihood of encroachment by alien invasive plant species. • Protected trees and plants shall not be removed or damaged without prior approval, permits or licenses from the relevant authority.
Introduction and spread of alien vegetation	**Construction:** • Clearing of vegetation **Operational:** • Removal of substrate within watercourses. • Clearing of vegetation during prospecting operations. • Vehicles driving in and through watercourses. **Decommissioning:** • Damage to vegetated areas. • Ineffective rehabilitation measures • Vehicles driving in and through watercourses.	• No prospecting or mining activities are to occur in any CBA 1 or CBA 2 areas. • Proliferation of alien and invasive species is expected within any disturbed areas, particularly as there are some alien and invasive species present within the study site. These species should be eradicated and controlled to prevent further spread beyond. • An alien invasive vegetation management plan should be developed and implemented. • Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat. • Monitoring and management of invasive species should continue for at least two years after all prospecting and mining activities have ceased. • Footprint areas should be kept as small as possible when removing alien plant species. • No vehicles should be allowed to drive through designated sensitive drainage and wetlands areas during the eradication of alien and weed species.

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 Declared invader plant species	• 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 (DA), Diamonds General (D) and Diamonds (DIA) – excavations	Loss of topsoil Erosion Air Pollution Noise Impact on potential cultural and heritage artefacts Declared invader plant species	• 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.

Management Measures according to the Phase 1 Cultural Heritage Impact Assessment (**Appendix 12.2**):

Control

- *A person or entity, e.g. the ECO, should be tasked to take responsibility for the heritage sites and 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 ECO 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.*

Table 3A: Construction Phase: Environmental Management Programme for the project

Action required	Protection of heritage sites, features and objects		
Potential Impact	The identified risk is damage or changes to resources that are generally protected in terms of Sections 27, 28, 31, 32, 34, 35, 36 and 37 of the NHRA that may occur in the Project Area.		
Risk if impact is not mitigated	Loss or damage to sites, features or objects of cultural heritage significance		
Activity / issue	**Mitigation: Action/control**	**Responsibility**	**Timeframe**
1. Removal of Vegetation 2. Construction of required infrastructure, e.g. access roads, water pipelines	See discussion in Section 9.1 above	Environmental Control Officer	During construction only
Monitoring	See discussion in Section 9.2 above		

Table 3B: Operation Phase: Environmental Management Programme for the project

Action required	Protection of heritage sites, features and objects		
Potential Impact	It is unlikely that the negative impacts identified for pre-mitigation will occur if the recommendations are followed.		
Risk if impact is not mitigated	Loss or damage to sites, features or objects of cultural heritage significance		
Activity / issue	**Mitigation: Action/control**	**Responsibility**	**Timeframe**
1. Additional construction of required infrastructure, e.g. access roads, water pipelines	See discussion in Section 9.1 above	Environmental Control Officer	During construction only
Monitoring	See discussion in Section 9.2 above		

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, if there is an impact on these sites, relevant permits would be required from SAHRA or the PHRA.

•

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.

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.

NVW Boerdery (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.

NVW Boerdery (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************