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ENVIRONMENTAL IMPACT ASSESSMENT REPORT & ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT FOR:

**ENVIRONMENTAL AUTHORIZATION FOR THE PROPOSED
PROSPECTING RIGHT APPLICATION FOR DIAMONDS ALLUVIAL (DA),
DIAMONDS GENERAL (D) AND DIAMONDS (DIA) INCLUDING
ASSOCIATED INFRASTRUCTURE, AND EARTHWORKS ON PORTION 9 &
PORTION 10 OF THE FARM VUURFONTEIN 117, REGISTRATION
DIVISION: HO, NORTH WEST PROVINCE.**

NAME OF APPLICANT	Blaze Mineral Mining (Pty) Ltd
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Portion 9 and 10 of the farm Vuurfontein 117, Registration Division, HO, North West Province has a history of mining/prospecting activities. It must be noted that Blaze Mineral Mining (Pty) Ltd will not take responsibility for any existing/open disturbances. The current disturbances have been surveyed by drone has been mapped. All maps in this document have been amended accordingly, and any current disturbances have thus been excluded from this application in terms of existing environmental liability

PROJECT INFORMATION

Project Name: Application for an Environmental Authorisation for the proposed Prospecting Right of Diamonds (Alluvial) & Diamonds (General) and Diamonds (DIA) on Portion 9 & Portion 10 (excluding the 5ha mining permit area) of the Farm Vuurfontein 117, Registration Division: HO, North West Province.

Report Title: Environmental Impact Assessment Report & Environmental Management Programme

Prepared By: Milnex CC

Date: October 2023

QUALITY CONTROL:

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

Signature:

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

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

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

Milnex CC was contracted by **Blaze Mineral Mining (Pty) Ltd** as the independent environmental consultant to undertake the Scoping and EIA process for a Prospecting Right of Diamonds (Alluvial) & Diamonds (General) and Diamonds (DIA) on Portion 9 and Portion 10 of the Farm Vuurfontein 117. The property is located approximately 12.7km NE of Schweizer-Reneke on the R504 towards Wolmaransstad in the North West Province.

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 extensive experience in the environmental consulting 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:	<p>1) Portion 9 of the farm Vuurfontein 117 Title deed: T35812/1997 Extent: 510.4931 hectares</p> <p>2) A certain portion of portion 10 (excluding the 5ha mining permit) of the farm Vuurfontein 117 Title Deed: T35812/1997 Extent: 665.6646 hectares (670.6646 hectares – 5ha mining permit)</p>
Application area (Ha)	1176.1577 hectares
Magisterial district:	Dr Ruth Segomotsi Mompoti District Municipality Lekwa – Teemane Local Municipality
Registration division:	HO
Distance and direction from nearest town	The property is located approximately 12.7km NE of Schweizer-Reneke on the R504 towards Wolmaransstad in the North West Province
21 digit Surveyor General Code for each farm portion	T0HO00000000011700010 T0HO00000000011700009
Minerals:	Diamonds Alluvial (DA) Diamonds General (D) Diamonds (DIA)

Farm co-ordinates

FID	X	Y	X2	Y2
0	25° 17' 2.543" E	27° 25' 27.815" S	25.28404	-27.424393
1	25° 17' 6.250" E	27° 25' 18.798" S	25.285069	-27.421888
2	25° 17' 19.879" E	27° 25' 4.984" S	25.288855	-27.418051
3	25° 17' 21.827" E	27° 25' 3.569" S	25.289396	-27.417658
4	25° 17' 56.354" E	27° 24' 30.831" S	25.298987	-27.408564
5	25° 18' 25.154" E	27° 24' 31.665" S	25.306987	-27.408796
6	25° 19' 50.921" E	27° 24' 34.831" S	25.330811	-27.409675
7	25° 19' 1.075" E	27° 25' 42.652" S	25.316965	-27.428515
8	25° 18' 49.140" E	27° 25' 59.512" S	25.31365	-27.433198
9	25° 17' 53.030" E	27° 27' 18.393" S	25.298064	-27.455109
10	25° 17' 47.776" E	27° 27' 6.985" S	25.296604	-27.45194
11	25° 17' 40.475" E	27° 26' 50.845" S	25.294576	-27.447457
12	25° 17' 33.834" E	27° 26' 36.519" S	25.292732	-27.443477
13	25° 17' 34.085" E	27° 26' 36.339" S	25.292802	-27.443427
14	25° 17' 32.543" E	27° 26' 33.266" S	25.292373	-27.442574
15	25° 17' 32.389" E	27° 26' 33.401" S	25.29233	-27.442611
16	25° 17' 31.118" E	27° 26' 30.659" S	25.291977	-27.44185
17	25° 17' 31.394" E	27° 26' 30.621" S	25.292054	-27.441839
18	25° 17' 30.336" E	27° 26' 27.879" S	25.29176	-27.441078
19	25° 17' 29.878" E	27° 26' 27.982" S	25.291633	-27.441106
20	25° 17' 16.981" E	27° 26' 0.156" S	25.28805	-27.433377

Excluding below Co-ordinates

Name	X	Y	X2	Y2
a	25° 17' 33.360" E	27° 25' 33.132" S	25.2926	-27.42587
b	25° 17' 30.984" E	27° 25' 35.220" S	25.29194	-27.42645
c	25° 17' 28.644" E	27° 25' 33.060" S	25.29129	-27.42585
d	25° 17' 31.020" E	27° 25' 31.008" S	25.29195	-27.42528
e	25° 17' 35.160" E	27° 25' 32.808" S	25.2931	-27.42578
f	25° 17' 35.376" E	27° 25' 32.700" S	25.29316	-27.42575
g	25° 17' 35.484" E	27° 25' 32.880" S	25.29319	-27.4258
h	25° 17' 35.304" E	27° 25' 32.988" S	25.29314	-27.42583

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.

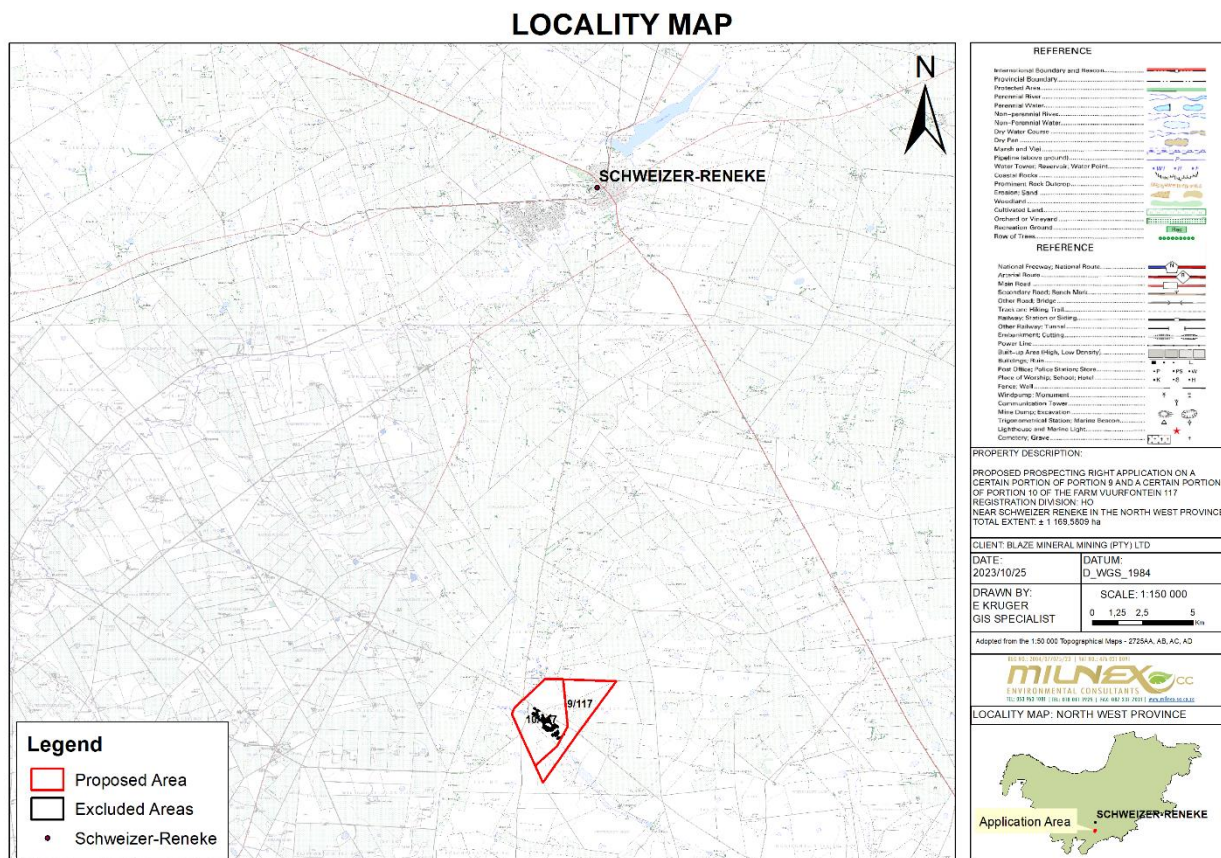


Figure 1: Locality Map

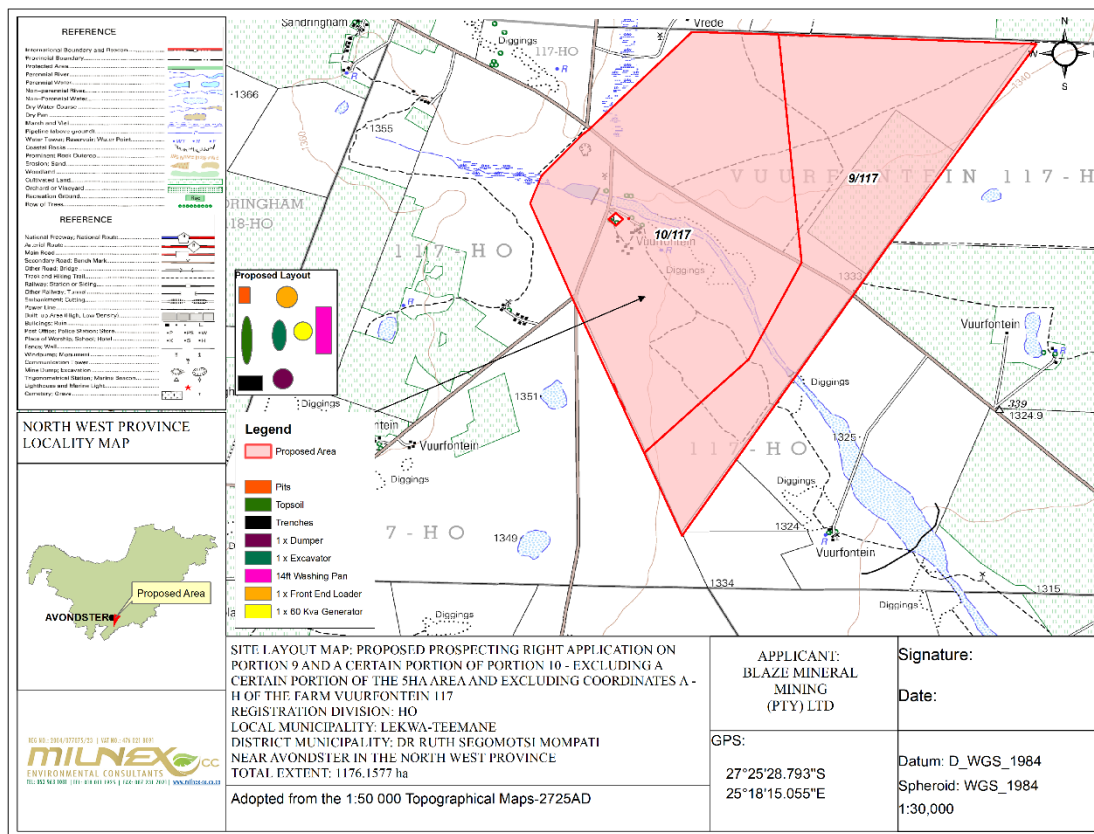


Figure 2: Site Plan

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

i) LISTED AND SPECIFIED ACTIVITIES

Listing Notices: 2017 Regulations as amended

<p>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)</p>	<ol style="list-style-type: none"> 1) Listing Notice 1, (GNR 327), Activity 19: The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from: (i) a watercourse; 2) Listing Notice 1 (GNR 327), Activity 20 (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 (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, 2002, 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.
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	<p>5) Listing Notice 3 (GNR 324), Activity 4: <i>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;</i></p> <p>6) Listing Notice 3 (GNR 324), Activity 12: <i>The clearance of an area of 300 square metres or more of indigenous vegetation. (h) North West, (iv). Within critical biodiversity areas identified in bioregional plans; (v) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as 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.</i></p> <p>Prospecting right with bulk samples for the prospecting of Diamonds Alluvial (DA), Diamonds General (D) & Diamonds (DIA) including associated infrastructure, structure and earthworks.</p> <p>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)</p>
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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 m ²	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: BULK SAMPLING: 216 000 tonnes 1176.1577 Ha Pits: 100 pits, with dimensions of 3m x 2m x 3m each. Trenches: 50 trenches with dimensions of 40m x 30m x 3m each. Listing Notice 1, (GNR327), Activity 19: <i>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from:</i> (i) a watercourse;	Random indigenous vegetation clearance of over a 1176.1577 hectares area. Concurrent backfilling will take place in order to rehabilitate	X	Listing Notice 1, (GNR327), Activity 19	-
Prospecting Right: BULK SAMPLING: 216 000 tonnes 1176.1577 Ha Pits: 100 pits, with dimensions of 3m x 2m x 3m each. Trenches: 50 trenches with dimensions of 40m x 30m x 3m each. Listing Notice 1 (GNR 327), Activity 20 (Amended GNR 517: 2021): <i>“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”</i>	Random indigenous vegetation clearance of over a 1176.1577 hectares area. Concurrent backfilling will take place in order to rehabilitate	X	Listing Notice 1 (GNR 327), Activity 20 (Amended GNR 517: 2021)	-

<p>Clearance of indigenous vegetation:</p> <p><u>BULK SAMPLING: 216 000 tonnes</u> 1176.1577 Ha Pits: 100 pits, with dimensions of 3m x 2m x 3m each. Trenches: 50 trenches with dimensions of 40m x 30m x 3m each.</p> <p>Listing Notice 1 (GNR 327), Activity 27: <i>"The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation."</i></p>	<p>Random indigenous vegetation clearance of over a 1176.1577 hectares area.</p> <p>Concurrent backfilling will take place in order to rehabilitate</p>	<p>X</p>	<p>Listing Notice 1 (GNR 327), Activity 27</p>	<p>-</p>
<p>Prospecting:</p> <p><u>BULK SAMPLING: 216 000 tonnes</u> 1176.1577 Ha Pits: 100 pits, with dimensions of 3m x 2m x 3m each. Trenches: 50 trenches with dimensions of 40m x 30m x 3m each.</p> <p>Listing Notice 2 (GNR 325), Activity 19 (Amended GNR 517: 2021): <i>"The removal and disposal of minerals which requires permission contemplated in terms of section 20 of the Mineral and Petroleum Resources Development Act, 2002, 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."</i></p>	<p>Random indigenous vegetation clearance of over a 1176.1577 hectares area.</p> <p>Concurrent backfilling will take place in order to rehabilitate</p>	<p>X</p>	<p>Listing Notice 2 (GNR 325), Activity 19 (Amended GNR 517: 2021)</p>	<p>-</p>
<p>Clearance of indigenous vegetation:</p> <p><u>BULK SAMPLING: 216 000 tonnes</u> 1176.1577 Ha Pits: 100 pits, with dimensions of 3m x 2m x 3m each. Trenches: 50 trenches with dimensions of 40m x 30m x 3m each.</p> <p>Listing Notice 3 (GNR 324), Activity 4: <i>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;</i></p>	<p>Random indigenous vegetation clearance of over a 1176.1577 hectares area.</p> <p>Concurrent backfilling will take place in order to rehabilitate</p>	<p>X</p>	<p>Listing Notice 3 (GNR 324), Activity 4: (h) (ii) & (iv).</p>	

<p>Clearance of indigenous vegetation:</p> <p><u>BULK SAMPLING: 216 000 tonnes</u> 1176.1577 Ha Pits: 100 pits, with dimensions of 3m x 2m x 3m each. Trenches: 50 trenches with dimensions of 40m x 30m x 3m each.</p> <p>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 bioregional plans; (v) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as 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.</p>	<p>Random indigenous vegetation clearance of over a 1176.1577 hectares area.</p> <p>Concurrent backfilling will take place in order to rehabilitate</p>	<p>X</p>	<p>Listing Notice 3 (GNR 324), Activity 12: (h) (iv), (v) & (vi)</p>	<p>-</p>
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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)

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

DESCRIPTION OF ACTIVITIES:

SITE VISIT

The applicant will appoint Pierre de Jager as the project geologist to conduct the site visit. A formal site visit will be done within 90 days after the prospecting right has been executed. It is foreseen that more than one site visit will be conducted on the farms.

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

DESKTOP STUDIES

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

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

PITTING

The prospecting shall begin by pitting programme. The pits to be dug shall be positioned as determined by the Geologist. 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 shall be dug, locked, sampled and backfilled.

To dig the pits, the applicant shall make use of the systems of Pierre de Jager, the appointed project geologist.

The applicant shall 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 geologist and conditions in the vicinity of the test pit.

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 2m (breath) x 3m (depth).

Timeframe: 24 months (month 7-30)		
Pits	100 pits	
Total area disturbed for 10 months	100 pits x (3m x 2m) / 10 000 =	0.06 Ha disturbed

TRENCHES

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

Bulk samples shall 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.

The applicant has extensive experience in conducting prospecting and mining activities. During these activities the applicant will then find out the size of valued distribution from stone to stone is erratic and is possible that the majority of the value of a parcel as mined is tribute to a single stone. 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.

The applicant shall after the pitting exercise commence with bulk sampling activities. Given the extent of the area and the grades expected to be very low, the applicant shall have to process bulk samples of approximately 216 000 tons.

The appointed geologist shall advise where the samples shall be taken. Bulk samples shall 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 shall 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 shall be that of a typical South African alluvial diamond mining operation. The method is a strip mining process with oversize material and tailings recovered from the plant will be used as backfill material prior to final rehabilitation. Gravels are excavated, loaded and transported to the treatment facility using dump trucks.

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

Before excavation commences vegetation shall be cleared from the proposed bulk sampling block. These shall 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 boxcuts the dimensions of these individual boxcuts will on average be 40m wide x 30m long.

It is estimated that the bulk samples will be 3m in depth.

Gravel will be removed by excavators and will be loaded directly into dump trucks. Ore will be hauled to the screening plant. The material will be screened where after the screened material will be moved to the processing plant where the gravel will be processed. Concentrate will be moved to the sorting plant were the concentrate will be sorted. It is estimated that the bulk sampling shall take approximately 24 months.

The screened gravel will be concentrated to eliminate oversize and undersize clasts as well as material which are too light or too heavy to contain diamonds. This will be followed by a physical separation of diamonds.

Screening plants to be employed shall either be static or vibrating single or double deck systems to remove oversize and undersize material to allow a sized material stream to be fed to the processing and the concentration plant.

Calculations

It is planned that 50 trenches will be dug at an extent of 40m (length) x 30m (width) x 3m (depth).

CONSOLIDATION AND INTERPRETATION OF RESULTS DATA

The prospecting activities will be conducted to determine an inferred diamond resource and an indicated diamond resource. An inferred diamond resource has a lower level of confidence than that applying to an indicated diamond resource. The inferred resource indication shall be where the geological and or grade continuity could not be confidently interpreted. It cannot be assumed that an inferred resource will necessarily be upgraded to an indicated resource. Such a resource is normally also not sufficient to enable an evaluation of economic viability.

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

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

Each physical phase of prospecting shall 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 shall be consolidated and processed to determine the diamond bearing resource on the property and it will be done within the period of 6 months.

Timeframe: 24 months (month 31-54)		
Trenches	50 trenches	
Total area disturbed for 20 months	50 trenches x (40m x 30m) / 10 000 =	6 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. If needed a WULA will be lodged with the department of Water & Sanitation (DWS).

In terms of the National Water Act the following water uses will be applied for:

- 21a - Taking Water from a Water
- 21b – The storing of water
- 21c – Impeding or diverting the flow of a watercourse
- 21g – Disposing of waste
- 21i – Altering the beds or banks of a water course.

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 pans 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 2. Acceptable dust fall rates

Restriction Areas	Dustfall rate (D) (mg/m ² /day, 30-day average)	Permitted frequency of exceeding dust fall rate
Residential Area	$D < 600$	Two within a year, not sequential months
Non-residential Area	$600 < D < 1200$	Two within a year, not sequential months

Ablution

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

Storage of dangerous goods

During the prospecting activities, limited quantities of diesel and fuel, oil and lubricants if any will be stored on site. These goods should be placed in a bunded area one and a half times the volume of the total amount of goods to be stored.

List of equipment’s & infrastructure

List of equipment
14ft Washing Pans 1 x Dumper 1 x Excavator 1 x Front End Loader 1 x 60Kva Generator

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:
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National Environmental Management Act No. 107 of 1998 as amended.	Department of Environmental Affairs	27 November 1998
Constitution of South Africa Act 108 of 1996	National	18 December 1996
The National Heritage Resources Act (Act No. 25 of 1999)	SAHRA	1999
Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)	Department of Mineral Resources & Energy (DMRE)	2002
National Infrastructure Plan	National	
National Environmental Management: Biodiversity Act No. 10 of 2004	Department of Environmental Affairs	7 June 2004
National Environmental Management Waste Act, 2008 (Act No. 59 of 2008)	National & Provincial	1 July 2009
EIA regulations under NEMA	Department of Environmental Affairs	14 December 2014
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	Department of Agriculture Forestry and Fisheries	1 June 1984
National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004).	National and Provincial	11 September 2004
National Water Act, 1998 (Act No. 36 of 1998).	National	20 August 1998
North West Province Growth and Development Strategy	Provincial	11 August 2013
Dr Ruth Segomotsi Mompati District Municipality Integrated Development Plan (IDP)	Municipal	March 2016 Term 2016/2017
Mamusa Local Municipality Integrated Development Plan (IDP) Review (Draft)	Municipal	Term 2018/2019
National Forest Act (Act 84 of 1998) (NFA)	National	30 October 1998
National Veld & Forest Fires Act (Act 101 of 1998)	National	27 November 1998

Policy and Legislative Context

Title of legislation, policy or guideline:	Reference where applied	How does this development comply with and respond to the legislation and policy context.
Constitution of South Africa Act 108 of 1996	Section 24	<p>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:</p> <p><i>“Everyone has the right –</i></p> <p><i>(a) to an environment that is not harmful to their health or well-being; and</i></p> <p><i>(b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –</i></p> <p><i>i) prevent pollution and ecological degradation;</i></p> <p><i>ii) promote conservation; and</i></p> <p><i>iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”</i></p> <p>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.</p>
National Environmental Management Act No. 107 of 1998 as amended.	S24(1) of NEMA S28(1) of NEMA	<p>NEMA provides for co-operative governance by establishing principles and procedures for decision-makers on matters affecting the environment. An important function of the Act is to serve as an enabling Act for the promulgation of legislation to effectively address integrated environmental management. Some of the principles in the Act are accountability; affordability; cradle to grave management; equity; integration; open information; polluter pays; subsidiary; waste avoidance and minimisation; co-operative governance; sustainable development; and environmental protection and justice.</p> <p>The mandate for EIA lays with the National Environmental Management Act (107 of 1998) and the EIA Regulations No. 326, 327, 325, and 324, as amended promulgated in terms of Section 24 of NEMA. The EIA Regulations determine that an Environmental Authorisation is required for certain listed activities, which might have a detrimental effect on the environment.</p>
EIA regulations as amended under NEMA	Listing notice 1 Listing notice 2 Listing Notice 3	<p>The National Environmental Management Act 107 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.</p>
Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)	Section 10, 16, 22, 27 and 48	<p>The Minerals and Petroleum Resources Development Act identifies the state as the official custodian of South Africa’s Mineral and Petroleum Resources. Therefore, all activities relating to the reconnaissance, prospecting rights, mining rights, mining permits and retention permits are regulated by the State. One of the objectives of the Act is to give effect to section 24 of the Constitution by ensuring that the nation’s mineral and petroleum resources are developed in an orderly and ecologically sustainable manner while promoting justifiable social and economic development.</p>

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.
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:
National Environmental Management Waste Act, 2008 (Act No. 59 of 2008)	Category A Category B Category C	<p>Section 24S of NEMA deals with the management of residue stockpiles and residue deposits and provides that Residue stockpiles and residue deposits must be deposited and managed in accordance with the provisions of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), on any site demarcated for that purpose in the environmental management plan or environmental management programme in question.</p> <p>The management of residue stockpiles and residue deposits must be done in accordance with any conditions set out and any identified measures in the environmental authorisation issued in terms of NEMA, an environmental management programme and a waste management licence issued in terms of NEMA (Regulation 3(2)).</p> <p>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.</p>
National Environmental Management: Biodiversity Act No. 10 of 2004	Chapter 4 Chapter 5	<p>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).</p> <p>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</p>

<p>National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004).</p>	<p>Section 21</p>	<p>The object of this Act is to protect the environment by providing reasonable measures for the protection and enhancement of the quality of air in the Republic; the prevention of air pollution and ecological degradation; and securing ecologically sustainable development while promoting justifiable economic and social development.</p> <p>Regulations No. R248 (of 31 March 2010) promulgated in terms of Section 21(1) (a) of the National Environmental Management Act: Air Quality Act (39 of 2004) determine that an Atmospheric Emission License (AEL) is required for certain listed activities, which result in atmospheric emissions which have or may have a detrimental effect on the environment. The Regulation also sets out the minimum emission standards for the listed activities. It is not envisaged that an Atmospheric Emission License will be required for the proposed development.</p>
<p>National Water Act, 1998 (Act No. 36 of 1998).</p>	<p>Section 21</p>	<p>Sustainability and equity are identified as central guiding principles in the protection, use, development, conservation, management and control of water resources. The intention of the Act is to promote the equitable access to water and the sustainable use of water, redress past racial and gender discrimination, and facilitate economic and social development. The Act provides the rights of access to basic water supply and sanitation, and environmentally, it provides for the protection of aquatic and associated ecosystems, the reduction and prevention of pollution and degradation of water resources.</p> <p>As this Act is founded on the principle that National Government has overall responsibility for and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest, a person can only be entitled to use water if the use is permissible under the Act. Chapter 4 of the Act lays the basis for regulating water use.</p>
<p>National Forest Act (Act 84 of 1998) (NFA)</p>	<p>Regulation 7</p>	<p>The protection, sustainable management and use of forests and trees within South Africa are provided for under the National Forests Act (Act 84 of 1998).</p> <p>Regulation 7 from the Act states the following:</p> <p>Prohibition on destruction of trees in natural forests.</p> <p>(1) No person may -</p> <p>(a) cut, disturb, damage or destroy any indigenous tree in a natural forest; or</p> <p>(b) possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any tree, or any forest product derived from a tree contemplated in paragraph (a), except in terms of-</p> <p>(i) a licence issued under subsection (4) or section 23; or</p> <p>(ii) an exemption from the provisions of this subsection published by the Minister in the Gazette on the advice of the Council.</p>
<p>National Veld & Forest Fires Act (Act 101 of 1998)</p>	<p>Regulation 13 Chapter 5</p>	<p>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.</p>

Conservation of Agricultural Resources Act (Act No. 85 of 1983)		<p>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.</p> <p>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.</p>
National Infrastructure Plan		<p>The National Government adopted a National Infrastructure Plan in 2012. With the plan they aim to transform the South African economic landscape while simultaneously creating significant numbers of new jobs, and strengthening the delivery of basic services.</p> <p>Government will over the three years from 2013/14 invest R827 billion in building and upgrading existing infrastructure.</p> <p>These investments will improve access by South Africans to healthcare facilities, schools, water, sanitation, housing and electrification. On the other hand, investments in the construction of ports, roads, railway systems, electricity plants, hospitals, schools and dams will contribute to faster economic growth.</p> <p>This mining activity will indirectly contribute to the growing of the South African economy by supplying SANRAL with material to build and upgrade road infrastructure.</p>
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.
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.
National Environmental Management: Protected Areas Act 57 of 2003		This Act provides for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes. It also seeks to provide for the sustainable utilization of protected areas and to promote participation of local communities in the management of protected areas.
National Environmental Management: Waste Act, 2008 (Act No. 59 Of 2008) 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.
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.
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.
Occupational Health and Safety Act (No. 85 of 1993)		<p>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.</p> <p>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</p>
Mine Health and Safety Act (No. 29 of 1996)		<p>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.</p> <p>The following principles are considered applicable to the Proposed Project and are detailed below:</p> <ul style="list-style-type: none"> • 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. <p>The Act also contains innovative approaches to the investigation of accidents, diseases and other occurrences that threaten health and safety.</p>
Government Notice Regulation 704 of 1999		<p>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:</p> <ul style="list-style-type: none"> • 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 • 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.

		<p><u>GNR.704 also stipulates that no person in control of a mine or activity may:</u></p> <p>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 100 m 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;</p> <p>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</p> <p>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.</p>
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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;).

Economic activity in modern-day South Africa has been centered 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 possibility of shallow diamonds. There are remnants of previous mining activities on the proposed areas with certain areas being unrehabilitated. In house information exist which substantiate the reasons for this application.

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 of Diamonds (Alluvial) & Diamonds (General) and Diamonds (DIA) on Portion 9 & Portion 10

(excluding the 5ha mining permit area) of the Farm Vuurfontein 117, Registration Division: HO, North West Province were anticipated.

The location of the activities will be determined based on the location of the prospecting activities, which will only be determined during phase 1 and 2 of the Prospecting Work Programme (see **Appendix 9** for the Programme).

Portion 9 and 10 of the farm Vuurfontein 117, Registration Division, HO, North West Province has a history of mining/prospecting activities. It must be noted that Blaze Mineral Mining (Pty) Ltd will not take responsibility for any existing/open disturbances. The current disturbances have been surveyed by drone has been mapped. All maps in this document have been amended accordingly, and any current disturbances have thus been excluded from this application in terms of existing environmental liability

According to the map (Figure 51 and Figure 52), the proposed area is covered with largely with grasslands, some cultivated areas are also present. The map also indicates that some degraded areas are present, largely due to historical mining/prospecting activities

In terms of the National Water Act the following water uses will be applied for:

- 21a - Taking Water from a Water
- 21b – The storing of water
- 21c – Impeding or diverting the flow of a watercourse
- 21g – Disposing of waste
- 21i – Altering the beds or banks of a water course.

Preferred activity

The prospecting of Diamonds Alluvial (DA), Diamonds General (D) & Diamonds (DIA) is the optimum preferred activity for the site. The shallow diamond deposits make the site ideal for alluvial diamond mining. There are remnants of previous mining activities on the proposed area with certain areas being unrehabilitated. In house information exist which substantiate the reasons for this application.

According to the map (Figure 51 and Figure 52), the proposed area is covered with largely with grasslands, some cultivated areas are also present. The map also indicates that some degraded areas are present, largely due to historical mining/prospecting activities

In terms of the National Water Act the following water uses will be applied for:

- 21a - Taking Water from a Water
- 21b – The storing of water
- 21c – Impeding or diverting the flow of a watercourse
- 21g – Disposing of waste
- 21i – Altering the beds or banks of a water course.

Technology

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.

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) & Diamonds (DIA) been deposited on this farm and therefore the applicant would like to commence with their prospecting activities. There are remnants of previous mining activities on the proposed area with certain areas being unrehabilitated. In house information exist which substantiate the reasons for this application.

According to the map (Figure 51 and Figure 52), the proposed area is covered with largely with grasslands, some cultivated areas are also present. The map also indicates that some degraded areas are present, largely due to historical mining/prospecting activities

In terms of the National Water Act the following water uses will be applied for:

- 21a - Taking Water from a Water
- 21b – The storing of water
- 21c – Impeding or diverting the flow of a watercourse
- 21g – Disposing of waste
- 21i – Altering the beds or banks of a water course.

Land capability

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 & 5 (refer to Land capability map on **figure 9** and attached as **Appendix 5**).

• **Activity alternatives**

The environmental impact assessment process also needs to consider if the development of a mine would be the most appropriate land use for the particular site.

According to the map (Figure 51 and Figure 52), the proposed area is covered with largely with grasslands, some cultivated areas are also present. The map also indicates that some degraded areas are present, largely due to historical mining/prospecting activities

In terms of the National Water Act the following water uses will be applied for:

- 21a - Taking Water from a Water
- 21b – The storing of water
- 21c – Impeding or diverting the flow of a watercourse
- 21g – Disposing of waste
- 21i – Altering the beds or banks of a water course.

- **Design and layout alternatives**

The location of the activities will be determined based on the location of the prospecting activities, which will only be determined during phase 1 of the Prospecting Work Programme (see **Appendix 9** for the PWP).

The layout follows the limitations of the site and aspects such as, roads, site offices and workshop area.

- **Operational alternatives**

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

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 pitting/trenching method, simultaneously or after pitting depending on the information obtained from the earlier work done. The trenches will be dug to remove and process the gravel. 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.

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

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

- **No-go alternative**

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

- **Technology alternatives**

In terms of the technologies proposed, these have been chosen based on the long-term success of their prospecting history. The prospecting activities proposed in the Prospecting Works Programme (**Appendix 9**) is dependent on the preceding phase as previously discussed, therefore no alternatives are indicated, but rather a phased approach of trusted prospecting techniques.

The preferred technology for the proposed mining activity, will be to do pitting and trenching, remove the diamond bearing gravel with an excavator, depositing it in the 1 x 14 feet rotary pan 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.

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**) (see **Appendix 6**) notifying the public of the EIA process and requesting Interested and Affected Parties (I&APs) to register with, and submit their comments to Milnex CC. I&APs were given the opportunity to raise comments within 30 days of the advertisement.

Site notices

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

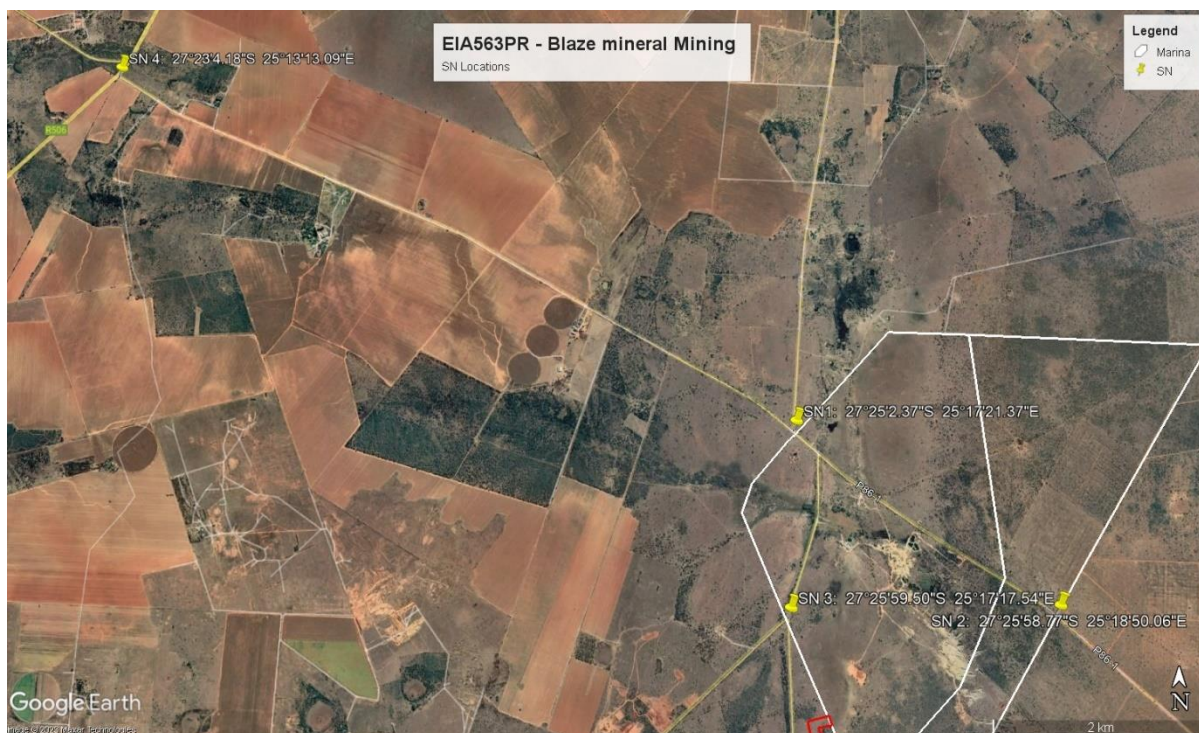


Figure 3: Site notice co-ordinates

Direct notification and circulation of Scoping Report to identified I&APs (stakeholder, landowners, 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 15 May 2023 and were requested to submit comments by 14 June 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:

Table 3: List of Stakeholders, Landowners, & surrounding landowners

Stakeholders	Land owners	Surrounding Land owners
Department of Economic Development, Environment, Conservation and Tourism	Frederick Francois Deyssel	Paul Coetzer Pretorius Trust No info
Department of Agriculture and Rural Development		Deyssel Frederick Francois – Trustees Frederick Francois Deyssel
Department of Community Safety and Transport Management		No available on searchworks
Department of Cooperative Governance and Traditional Affairs		Chris-Sal Boerdery Sarel Potgieter
Department of Human Settlements		JacoDanie Trust No info
Department of Public Works and Roads		Henko Badenhorst Trust

Stakeholders	Land owners	Surrounding Land owners
		No info
Department of Water and Sanitation		Grensplaas Landgoed (Pty) Ltd Lodewikus Gerhardus Mostert
Provincial Heritage Resources Agency		Department of Rural Development & Land Reform Mr Moduku Khwene
Department of Mineral Resources and Energy		Ms Nomfundo Ntloko-Gobodo
Department of Agriculture, Forestry, and Fisheries		
Department of Environment, Forestry, and Fisheries		
Department of Agriculture, Land Reform and Rural Development (DALRRD)		
DALRRD: Land Claims Commission		
Lekwa-Teemane Local Municipality		
Dr. Ruth Segomotsi Mompati District Municipality		
WESSA		

Direct notification and circulation of EIR & EMPr to identified I&APs (stakeholder, landowners, surrounding landowners, occupiers & I&APs)

Identified I&APs, including key stakeholders representing various sectors, are directly informed of the proposed development and the availability of the EIR & EMPr via registered post on **26 September 2023** and were requested to submit comments by **26 October 2023** (30 days).

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**.

Table 4: List of Stakeholders, Landowners, & surrounding landowners

Stakeholders	Land owners	Surrounding Land owners
Department of Economic Development, Environment, Conservation and Tourism	Frederick Francois Deyssel	Paul Coetzer Pretorius Trust No info

Stakeholders	Land owners	Surrounding Land owners
Department of Agriculture and Rural Development		Deysel Frederick Francois – Trustees Frederick Francois Deysel
Department of Community Safety and Transport Management		No available on searchworks
Department of Cooperative Governance and Traditional Affairs		Chris-Sal Boerdery Sarel Potgieter
Department of Human Settlements		JacoDanie Trust No info
Department of Public Works and Roads		Henko Badenhorst Trust No info
Department of Water and Sanitation		Grensplaas Landgoed (Pty) Ltd Lodewikus Gerhardus Mostert
Provincial Heritage Resources Agency		Department of Rural Development & Land Reform Mr Moduku Khwene
Department of Mineral Resources and Energy		Ms Nomfundo Ntloko-Gobodo
Department of Agriculture, Forestry, and Fisheries		
Department of Environment, Forestry, and Fisheries		
Department of Agriculture, Land Reform and Rural Development (DALRRD)		
DALRRD: Land Claims Commission		
Lekwa-Teemane Local Municipality		
Dr. Ruth Segomotsi Mompati District Municipality		
WESSA		

Public meeting

Please note that the Stakeholders & Interested and Affected Parties (I&APs) were informed about the proposed project with the use of press advertisement, registered letters and site notices. Any meetings will be conducted in person or virtually via Zoom or Microsoft Teams upon request by the I&APs.

No meeting was requested by stakeholders and/or I&APs.

Issues Raised by Interested and Affected Parties

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

iii) Summary of Issues Raised by I&APs

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

INTERESTED AND AFFECTED PARTIES		ISSUES RAISED	EAPS RESPONSE TO ISSUES AS MANDATED BY THE APPLICANT	SECTION AND PARAGRAPH REFERENCE IN THIS REPORT WHERE THE ISSUE AND OR RESPONSE WHERE INCORPORATED
LIST THE NAMES OF PERSONS CONSULTED IN THIS COLUMN, AND MARK WITH AN X WHERE THOSE WHO MUST BE CONSULTED WERE IN FACT CONSULTED.				
ORGANISATION	CONTACT PERSON			
LAND OWNER				
Vuurfontein 9 & 10/117	Frederick Francois Deysel	Consent Signed on 20 June 2023. See consent letter attached in Appendix 6		
SURROUNDING LAND OWNERS				
Vuurfontein 117/6&12	Paul Coetzer Pretorius Trust No info			
Vuurfontein 117/11	Deysel Frederick Francois – Trustees Frederick Francois Deysel			
Vuurfontein 117/18	No available on searchworks			
Vuurfontein 117/0-RE	Chris-Sal Boerdery Sarel Potgieter			
Vuurfontein 117/7	JacoDanie Trust No info			
Vuurfontein 117/16 Homansvley110	Henko Badenhorst Trust No info			
Vuurfontein 117/13	Grensplaas Landgoed (Pty) Ltd Lodewikus Gerhardus Mostert			
Vuurfontein 117/1	Department of Rural Development & Land Reform Mr Moduku Khwene			

	Ms Nomfundo Ntloko-Gobodo		
THE MUNICIPALITY IN WHICH JURISDICTION THE DEVELOPMENT IS LOCATED			
Lekwa-Teemane Local Municipality	Municipal Manager: Mr Ndoda Mgengo	No comments received yet	
MUNICIPAL COUNCILOR OF THE WARD IN WHICH THE SITE IS LOCATED			
Lekwa-Teemane Local Municipality	Ward 6 Councillor	No comments received yet	
ORGANS OF STATE HAVING JURISDICTION			
Department of Economic Development, Environment, Conservation and Tourism	Ouma Skosana	No comments received yet	
Department of Agriculture and Rural Development	Head of Department: Mr Dipepeneng Serage (Acting)	No comments received yet	
Department of Community Safety and Transport Management	Head of Department: Ms Botlhale Mofokeng	No comments received yet	
Department of Cooperative Governance and Traditional Affairs	Head of Department: Mr Pihadu Ephraim Motoko	No comments received yet	
Department of Human Settlements	Head of Department: Adv Neo Sephoti	No comments received yet	
Department of Public Works and Roads	Head of Department: Mr Pakiso Mothupi	No comments received yet	
Department of Water and Sanitation	Moalosi Kelebogile	No comments received yet	
Provincial Heritage Resources Agency	Mr. Motlhabane Mosiane	No comments received yet	
Department of Mineral Resources and Energy	J.H Makhubela	Letter received and signed on 12/05/23 Your application has been accepted In terms of section 12 (d) of the Act, you are required to consult in the prescribed manner with the landowner, lawful occupier and any I&AP and include the result of the consultation in the relevant environmental report. In light of the minimum requirements as stipulated in Reg 16(1) and 16(2) of the EIA Regulations, your application for an EA was incomplete as it was not accompanied by this acceptance letter. You are hereby required to submit	

		<p>the documents as stipulated in Regulation 19(1) to 19(8) of the EIA regulations. Please ignore the submission of this report in case you have already submitted. All timeframes are effective from the date of this letter.</p> <p>You are required to consult with the Department of Land Affairs if the land is state owned and in the event that the land is subject to restitution, to consult with the Commission on Restitution of Land Rights and submit online and hard copy to this regional office the results of such consultation on or before the 13th of June 2023 (30 days).</p> <p>You are hereby requested in terms of section 17(4) of the act to give effect to the objects referred to in section 2 (d) of the Act (BEE). In this regard you are required to submit online and hard copy to this Regional office by not later than 26 July 2023 (60 days), the following documents:</p> <p>Your attention is drawn to the provision of Section 17(1) (e) of the MPRDA. You are therefore reminded to ensure that payment of all PR fees for PR's that you hold are up to date, failing which this may have a negative impact on the outcome of your current application</p> <p>Acceptance of your application does not grant you the right to commence with activities. Your application will be evaluated/processed and a recommendation on the granting/refusal of the right will be forwarded to the Minister or her delegate.</p> <p>Take note further that failure to submit the documents as requested and failure to adhere to the timeframes as stipulated above amounts to non compliance with the provision of the Act and will therefore lead to your</p>		
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		application being recommended for refusal without further notification to you.		
	Tshisikhawe Tshisevhe	<p>Email received on 14/07/2023</p> <p>Your Scoping Report submitted to this office on 22 June 2023.</p> <p>Your Scoping has been Accepted.</p> <p>You are requested to proceed with the EIAR and EMPR which must be submitted to this office within 106 days from date of acceptance of your scoping report. The following information should be addressed accordingly in the EIAR phase of this project:</p> <ul style="list-style-type: none"> - You are requested to specify the area of disturbance in terms of number of trenches, drill holes and pits together with their dimension. This information is crucial to determine the required FP to be provided. - You are requested to undertake all relevant specialist studies as specified in the screening tool report submitted which are Terrestrial Biodiversity Impact Assessment. The reports of the mentioned studies must be appended in the EIAR and EMPR to be submitted. Please note that the appointed specialists must meet the requirement as stipulated in terms of Regulation 13 of NEMA: EIA Regulations, 2017. Further note that Desktop Studies will not be accepted. - Furthermore, you are requested to consult with South African Heritage Resources Agency (SAHRA) through their online system (SAHRIS) and submit proof of consultation. 	<p>EAP response on the Scoping Acceptance received on 14/07/2023.</p> <ul style="list-style-type: none"> - The number of pits and trenches throughout the respective phases are indicated on page 17 – 19 of this document. - A Terrestrial Biodiversity, Phase 1 Heritage Impact Assessment and Paleontological Desktop Assessment have been conducted as part of the assessment. The assessment and findings have been incorporated into the Final EIR & EMPR. The full studies have been attached as Appendix 12 - Proof of consultation is provided in Appendix 6. Once comments are received it will be forwarded to your offices. - In terms of the National Water Act the following water uses will be applied for: <ul style="list-style-type: none"> 21a - Taking Water from a Water 21b – The storing of water 21c – Impeding or diverting the flow of a watercourse 21g – Disposing of waste 21i – Altering the beds or banks of a water course. 	

		<ul style="list-style-type: none"> - This office also noted that there is a stream which is traversing through the prospecting area. Although consultation of scoping was done with DWS, you are required to do further engagements in order to obtain their comments on this application which must be forwarded to this office. Please note that DWS comments are crucial for this office to take decision on this application - The EIAR and EMPR must be compiled in line with the guideline as stipulated in Appendix 3 & Appendix 4 of NEMA: EIA Regulations, 2017 as amended. 	<p>See attached in appendix 6 the appointment letter.</p> <p>Emails with a soft copy to the Draft scoping Report and the draft Environmental Management Report inclusive of specialist studies have been communicated via email to the Department of Water and Sanitation. However no responses were received by the Department. See Appendix 6.2 as proof of correspondence.</p>	
Department of Agriculture, Forestry, and Fisheries	Mr. Maurice Vukeya & Mrs Mpho Gumula	No comments received yet		
Department of Environment, Forestry, and Fisheries	To whom it may concern			
Department of Agriculture, Land Reform and Rural Development (DALRRD)	<p>Deputy Directors General:</p> <p>Mr Terries Ndove (<i>Land Redistribution and Tenure Reform</i>); Nontuthuzelo Ntshabele (<i>Acting DDG: Spatial Planning and Land Use Management</i>) and Mr Mmuso Riba (<i>Chief Surveyor General</i>)</p>			
DALRRD: Land Claims Commission	<p>Agnes Montwedi</p> <p>Makagiso shuping</p>		<p>Email sent on 22/05/23</p> <p>Dear Everyone I trust all is well with you.</p> <p>Respond Letter: Lekwa Teemane Local Municipality</p> <p>May your office kindly assist us with the land claim enquiry on the following property:</p>	

			<p>Portion 9 of the Farm Vuurfontein 117; Title Deed: T35812/1997; Registration Division: HO.</p> <p>A Certain portion of portion 10 (excluding the 5ha mining permit) of the Farm Vuurfontein 117 Title deed: T35812) 1997.</p> <p>Please find Title Deed attached.</p> <p>Kind regards</p>	
		<p>Email received on 17/10/2023, with the following attachment</p> <p>We confirm that there is an existing land claim against Vuurfontein. The claim was lodged under Mamusa Local municipality within Dr Ruth Segomotsi Mompoti. The information reflects on the database of claims lodged between 1 July 2004 and 27 July 2016 in terms of the Restitution of Land Rights Amendment Act of 2014.</p>		
OTHER-				
Dr Ruth Segomotsi Mompoti District Municipality	Municipal Manager: Mr Jerry Mononela	No comments received yet		
WESSA (National Office)	John Wesson	No comments received yet		

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

Proposed Development Area Environmental Sensitivity

According to the **DEA Screening Report** the Environmental Sensitivity of the proposed area is as follows:

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

THEME	VERY HIGH SENSITIVITY	HIGH SENSITIVITY	MEDIUM SENSITIVITY	LOW SENSITIVITY
Agriculture Theme		X		
Animal Species Theme				X
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme				X
Defence Theme				X
Paleontology Theme			X	
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

(a) Type of environment affected by the proposed activity.

(its current geographical, physical, biological, socio- economic, and cultural character).

GEOLOGY AND SOILS

Geological formation

Zg – Light-coloured fine- to medium-grained granite; gneiss

The *Council for Geo Science* describes the gravel found in the area under application as follows:

Classification

The Kraaipan Group, most commonly found in the districts of the Northwest Province, consists of 3 groups namely the Gold Ridge Formation, Ferndale Formation and theKhunwana Formation.

The Kraaipan rocks are extensively folded, sheared and veined. The Kraaipan Formation are subdivided into a lower group, which consisted of magnetite-quartzite, a middle group comprising cherty rocks, and an upper group consisting of magnetic slate, cherty rock, pyllite and schist.

Gold Ridge Formation:

The Gold Ridge Formation comprises mainly banded ironstone with subordinate interbedded mica schist, pyrophyllite schist, and quartz-chlorite schist, amphibolite and dolomite.

The schists are fine grained and deeply weathered, which makes identification of minerals difficult. The mica- and pyrophyllite schists are monomineralic rocks; the latter show some secondary iron enrichment along the foliation planes. Quartz-chlorite schists comprise equal amounts of quartz and chlorite, with some subordinate muscovite.

The dolomite consists mainly of impure siderite which contains magnesium and calcium. Magnetite is a common secondary constituent. In all cases it shows a rhombohedral habit, and is probably pseudomorphous after siderite. Both primary and secondary quartz occur and in places the latter replaces the carbonate minerals.

Ferndale Formation:

The Ferndale Formation comprises mainly variegated banded jaspilite. The colour of this well-banded rock varies from red to yellow, white, grey, brown and black, depending on the extent and oxidation state of impurities. Microscopically the rock consists of cryptocrystalline quartz with poorly defined magnetite layers.

Khunwana Formation:

The Khunwana Formation conformably overlies the Gold Ridge Formation except where the Ferndale Jaspilite is developed. It consists mainly of banded grey recrystallised chert and/or brown jaspilite grading laterally into banded white and grey chert. Amphibolite and lava occur interbedded in the chert.

Qa: River-terrace gravel; diamondiferous in places

The *Council for Geo Science* describes the gravel found in the area under application as follows:

Gordonia formation

It is practically impossible to define the eastern limit of the Gordonia formation in the Vryburg area. The formation thins towards the east and there appears to be a transition from it to the other Quaternary deposits (sand and soil). The boundary shown on the Vryburg sheet is thus largely arbitrary.

The Gordonia Formation comprises red and yellow fine-grained sand. Although the formation is an Aeolian deposit no dunes are present in the area. Any dunes that might have been present must have become destroyed during reworking of the sand.

Mineralogy

The original mineralogy of the lava consisted of lath-like feldspar and pyroxene set in a glassy groundmass, but this composition has been fundamentally changed to a mineralogy comparable to that of a greenschist. The feldspars have been partly or completely saussuritised. The pyroxene, which probably consisted of augite has been uralitised and the glassy groundmass has been devitrified. Thus the rocks now chiefly consist of secondary minerals such as chlorite, epidote, clinozoisite, calcite, sericite and uralite.

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.

During the study, it was found that the processes, structures and deposits associated with the Dwyka Group, karst formation, erosion and fluvial activity since the Cretaceous period associated with the uplift and erosion of the African surfaces and pedogenesis played a major role in the transportation, concentration and confinement of the alluvial diamonds. It is now hypothesised that some diamonds were transported by ice sheets and glaciers during Dwyka Group deposition and may have concentrated along eskers and/or drumlins and/or as a thin sheet of moraine on the Chuniespoort Group dolomite. The directions of movement of the glaciers and preferred orientations of the eskers and possibly drumlins suggest that the 1 180 Ma, 32 hectare Cullinan kimberlite pipe may have been a major source of alluvial diamonds in the North West Province. Relatively thicker deposits of moraine and end-moraine were deposited by fluvio-glacial streams and during the melting of ice sheets in the areas predominantly underlain by the Ventersdorp Supergroup (LDBKL area). The extent of underlying moraine in the LDBKL area is inferred from tillite exposed in excavations, erratics on surface and small round pans possibly related to kettles. The eskers and drumlins were possibly the forerunners of the straight and meandering runs which were later deepened by karstic processes as the dolomite was exhumed during uplift and related African erosion cycles. These deeper runs with sinkholes and isolated sinkholes formed concurrently as they were progressively filled with the resistant remains of the Dwyka Group and Karoo rocks, including

the Drakensberg basalt. The autochthonous weathering and dissolution of the dolomite account for the large percentage of locally derived chert in some of these gravels.

It is also possible that some diamonds were transported from Cretaceous diamond-bearing pipes along streams formed during the uplift and buckling of the Kaapvaal Craton. The Vaal River formed an early barrier for the transportation of diamonds to the south and north. The current river shows downcutting of at least 550 m along the Vredefort Dome which suggests that it was already in existence while the Ventersdorp Group basalt and Chuniespoort Group dolomite were being covered by Karoo Supergroup rocks and Drakensberg basalt. This makes the presence of diamonds from the Free State kimberlite pipes in the North West Province alluvial diamond fields unlikely. However, transportation of diamonds from known sources, including the kimberlite dykes at Swartruggens, is possible from the early Cretaceous up to the period during which northeast oriented buckling in the crust formed a watershed just north of Bakerville which terminated streams flowing to the south and southwest.

It is apparent that Dwyka glaciation had an important influence on the distribution of the diamondiferous gravels and the identification of glacial structures and deposits may therefore be an important aid in targeting potential diamond exploration areas.

ECOLOGICAL HABITAT AND LANDSCAPE FEATURES

The result obtained by plotting the coordinates are as follow:

The proposed site for prospecting overlaps completely with the Savanna 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 Eastern Kalahari Bushveld Bioregions and, more specifically, the Kimberley Thornveld (SVk4) as well as SchweizerReneke Bushveld (SVk3) vegetation types, the latter of which is an Endangered vegetation type. (Figure 4). Table 5 below provides an overview of the vegetation types associated with the study site.

Vegetation Type	Biome	Bioregion	Conservation Status
Kimberley Thornveld (SVk4)	Savanna	Eastern Kalahari Bushveld	Least Threatened 16% Target 18% Transformed 2% Protected
Schweizer-Reneke Bushveld (SVk3)	Savanna	Eastern Kalahari Bushveld	Endangered 16% Target 42% Transformed 0% Protected

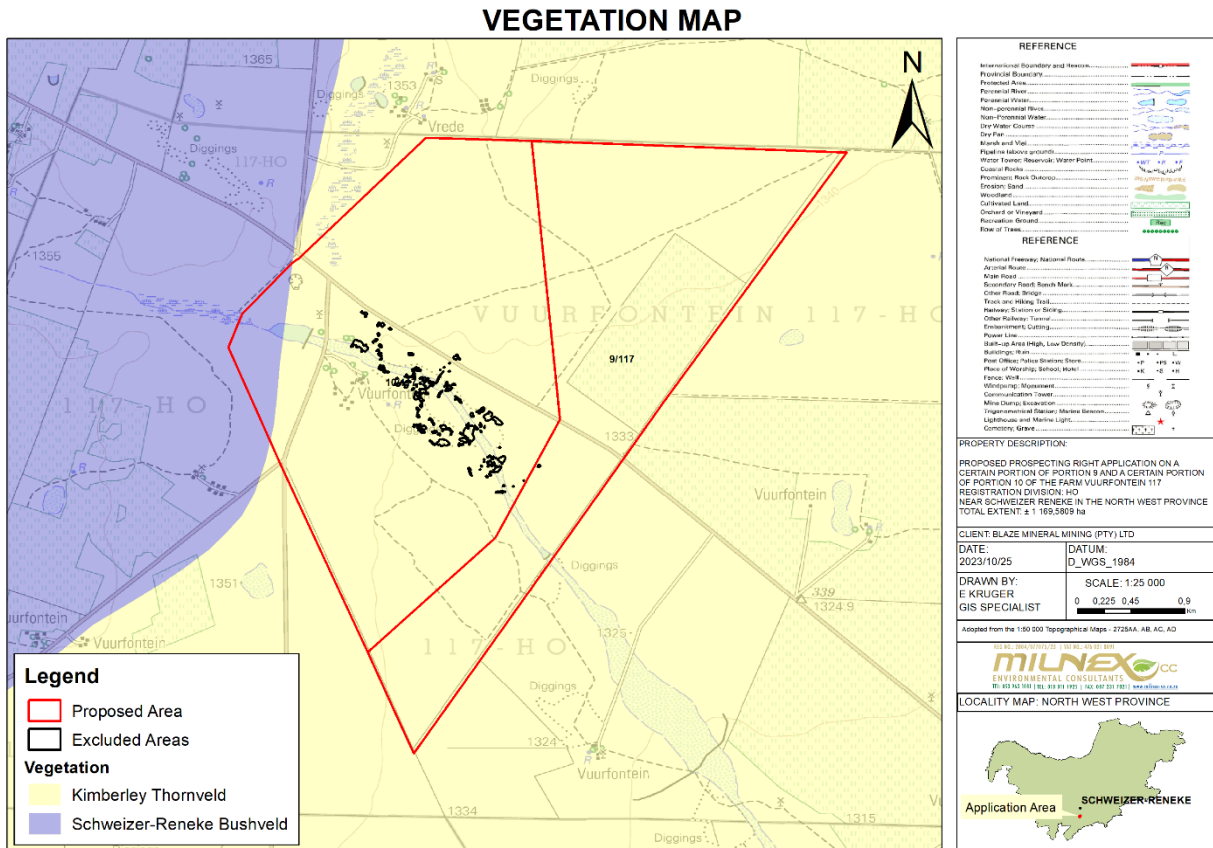


Figure 4: Vegetation Unit Map

Vegetation units and sensitive areas

The Study site can be divided into different vegetation units (Figure 5) based on land use, wetness, and vegetation structure. The vegetation units identified on site were divided, grouped, and discussed below.

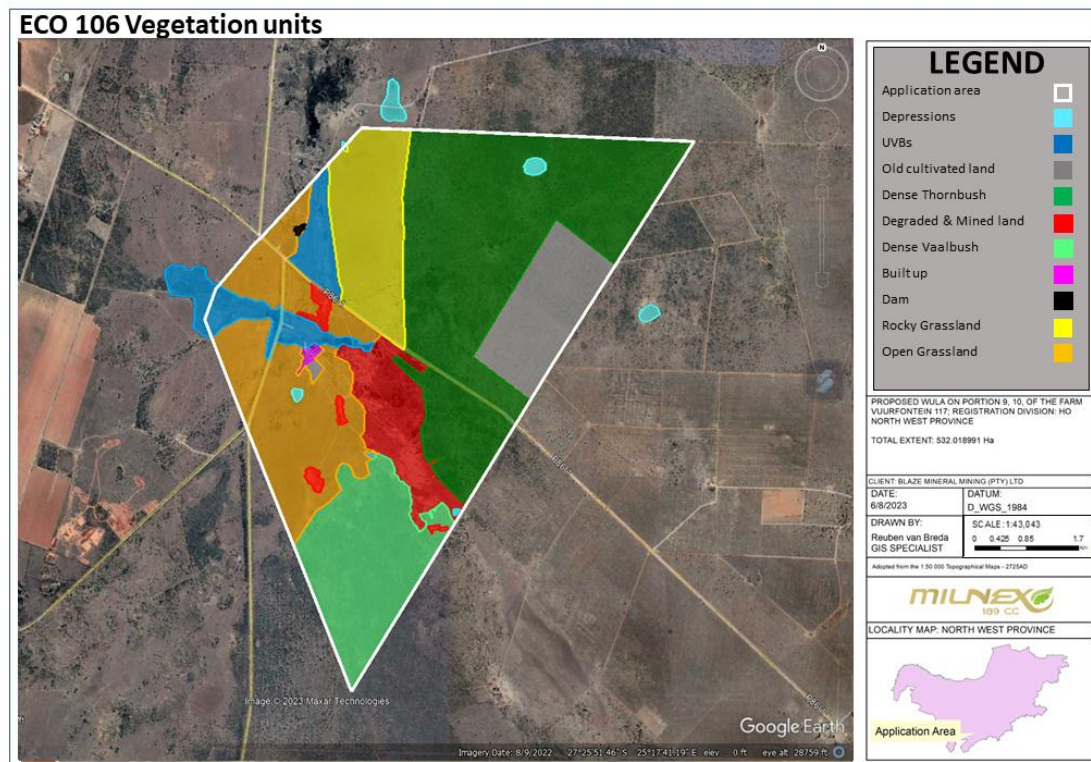


Figure 5: Vegetation units and sensitive areas identified on site.

Mined and transformed land.

This section (**Figure 6**) of the study site has been reshaped and disturbed as a result of prospecting or mining activities. These areas are ravaged by stockpiles, unrehabilitated pits, dirt roads, open pits, heaps, and trenches. This disturbance resulted in the proliferation of alien plant species observed such as *Tagetes minuta*, *Erigeron bonariensis*, *Bidens pilosa*, and *Verbena bonariensis*. Much of these areas have replaced an Unchanneled Valley Bottom wetland that flowed through the entirety of the application area. In some areas pits have filled with water and regained some degree of ecological function, with the presence of aquatic fauna and flora being confirmed by a site visit. In and around some of the older disturbed areas natural vegetation such as *Tarconanthus camphoratus*, *Vachellia karoo*, and *Vachellia erioloba* have started to repopulate, though the area remains highly disturbed.



Figure 1: Disturbance within the Application area.

Dense Thornbush

This vegetation unit is densely populated by *Tarconanthus camphoratus*, *Asparagus burchellii*, *Ehretia alba*, *Gymnosporia buxifolia*, *Searsia lancea*, *Vachellia karoo*, *Ziziphus mucronata*, *Vachellia erioloba*, *Senegalia mellifera subsp. detinens*, and is also prolifically interspersed with alien plant species such as *Tagetes minuta*, *Erigeron bonariensis*, *Bidens pilosa*, and *Verbena bonariensis*. This vegetation unit is not uniformly dense, with some areas being slightly more densely vegetated. Disturbances in this vegetation unit include overgrazing, a cattle corral, cattle paths, some localized trenches, and a large portion of the vegetation unit that was historically converted to cultivated land.



Figure 2: Vaalbos bushveld.

Dense Camphor bush/ Vaal bush

The southernmost corner of the application area is comprised of dense bush overwhelmingly dominated by *Tarconanthus camphoratus*. Other dominant species include *Searsia lancea*, *Vachellia erioloba*, *Grewia flava*, *Ehretia alba*, *Asparagus burchelli*, *Erigeron bonariensis*, *Tagetes minuta*, *Bidens pilosa*, *Verbena bonariensis*, and graminoids such as *Eragrostis lehmanniana*, *Themeda triandra*, and *Eragrostis rigidior*. This vegetation unit is mostly undisturbed but for the mining activities infringing on the border thereof, as well as a road along the border of the application area.



Figure 3: Camphor bush

Open Grassland

Two areas of the application area are void of trees or large bushes (except for a few lone *Vachellia karoo* trees). The dominant graminoids are *Eragrostis lehmanniana*, *Eragrostis rigidior*, *Themeda triandra*, *Panicum coloratum*, *Cymbopogon pospischilii*, and *Melinis repens*. Of the southeastern portion of grassland on the application area, the vegetation is slightly denser than the northern grassland, whilst the northern grassland unit is slightly sparser and rockier.



Figure 4: Grassland

UVB and Depression Wetlands

The wetlands present on this application site will be discussed later in this report.

Plant Theme Sensitivity

According to the DFFE Screening Report the Plant Species theme sensitivity of the proposed areas falls in a medium & low sensitivity. Please see **Appendix 7** for the colour map.

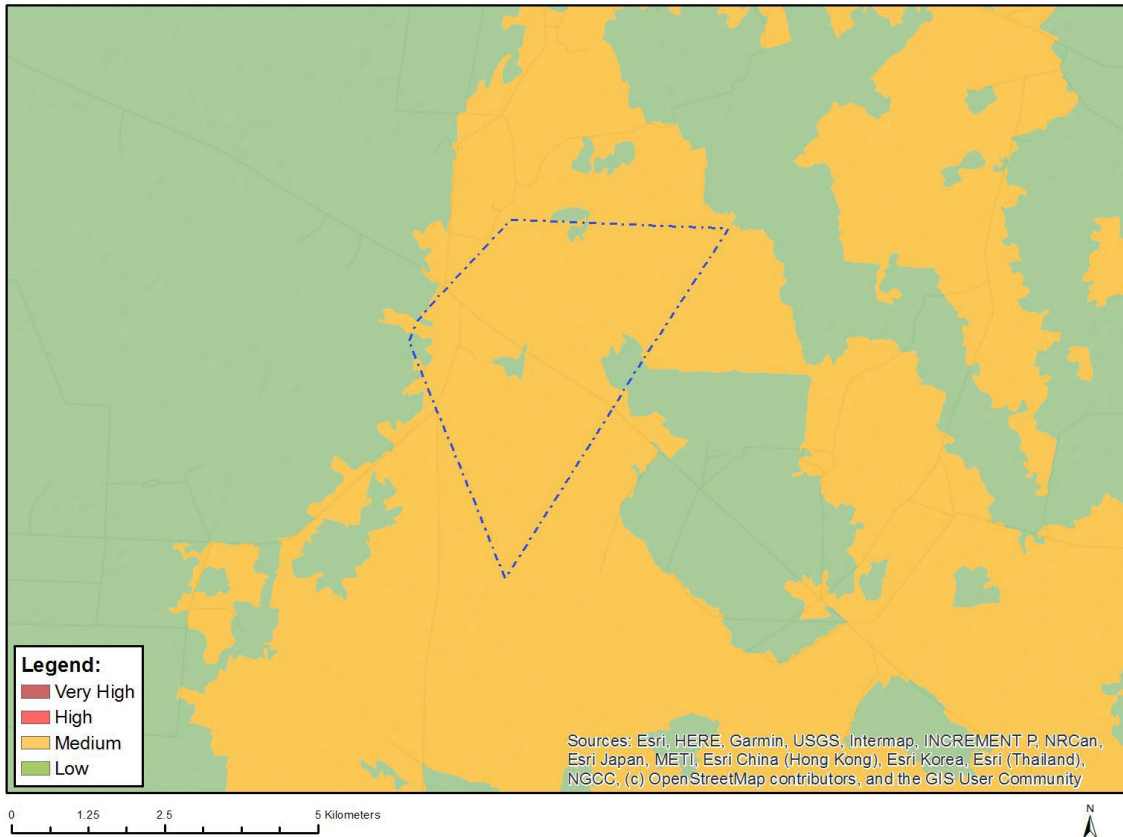


Figure 10: Plant Species Sensitivity

Table 6: 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)
<i>Asparagus burchellii</i>	Wild asparagus	Least concern, endemic	
<i>Ehretia alba</i>	Puzzle bush	Least concern	
* <i>Eucalyptus camaldulensis</i>	River red gum	Exotic, declared invader	1b
<i>Gymnosporia buxifolia</i>	Common spike-thorn	Least concern	
<i>Searsia lancea</i>	Karree	Least concern	
<i>Tarchonanthus camphoratus</i>	Wild Camphor bush	Least concern	
<i>Senegalia melifera</i> subsp. <i>detinens</i>	Black thorn		
^P <i>Vachellia erioloba</i>	Camel thorn	Protected	
<i>Vachellia karoo</i>	Sweet thorn tree	Least concern	
<i>Ziziphus mucronata</i>	Buffalo-thorn	Least concern	
Graminoids			
<i>Aristida congesta</i>	Spreading Three-awn	Least concern	
<i>Cenchrus ciliaris</i>	Foxtail buffalo grass	Least concern	
<i>Cymbopogon popischilii</i>	Turpentine grass	Least concern	
<i>Cynodon dactylon</i>	Couch Grass	Least concern	

<i>Digitaria eriantha</i>	Finger grass	Least concern	
<i>Eragrostis lehmanniana</i>	Lehmann's Love grass	Least concern	
<i>Fingerhuthia africana</i>	Thimble grass	Least concern	
<i>Heteropogon contortus</i>	Spear grass	Least concern	
<i>Hyparrhenia hirta</i>	Thatching grass	Least concern	
<i>Melinis repens</i>	Natal red top	Least concern	
<i>Panicum coloratum</i>	Small buffalo grass	Least concern	
<i>Setaria verticillata</i>	Hooked bristlegress	Least concern	
<i>Stipagrostis ciliata</i>	Bushman grass	Least concern	
<i>Themeda triandra</i>	Red grass	Least concern	
Forbs			
* <i>Argemone ochroleuca</i>	Mexican poppy	Exotic, declared invader	1b
* <i>Bidens pilosa</i>	Blackjack	Exotic	
* <i>Datura stramonium</i>	Common Thorn Apple	Exotic, declared invader	1b
# <i>Erigeron bonariensis</i>	Horseweed	Naturalized exotic weed	
* <i>Opuntia ficus-indica</i>	Sweet prickly pear	Exotic, declared invader	1b
* <i>Verbena bonariensis</i>	Tall verbena	Exotic, declared invader	1b
# <i>Tagetes minuta</i>	Khakibos	Naturalized exotic weed	
<i>Nidorella resedifolia</i>	Stinkkruid	Least concern	
* <i>Cirsium vulgare</i>	Spear thistle	Exotic, declared invader	1b

P - Protected Species

* - Alien and Invasive Species

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

One (1) protected tree species was recorded in abundance namely: *Vachellia erioloba* – Camel thorn. If any of these trees are to be removed, a protected tree license will have to be obtained.

Agricultural / land capability

Land capability is the combination of soil suitability and climate factors. The site and surrounds has a land capability classification, on the 8 category scale, of Class 4 & 5 (refer to Land capability map attached as Appendix 5).

Refer to Land capability map attached as **Appendix 5 & figure 11 below**.

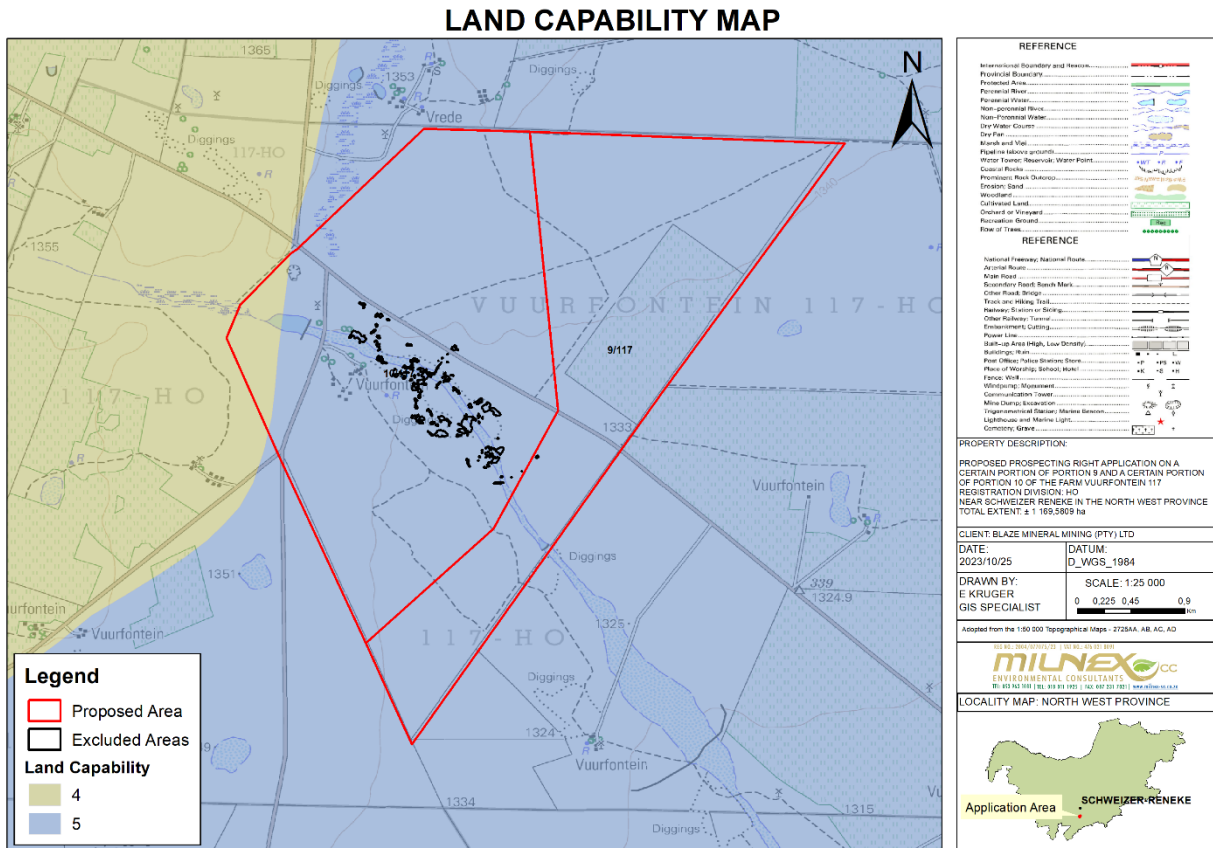
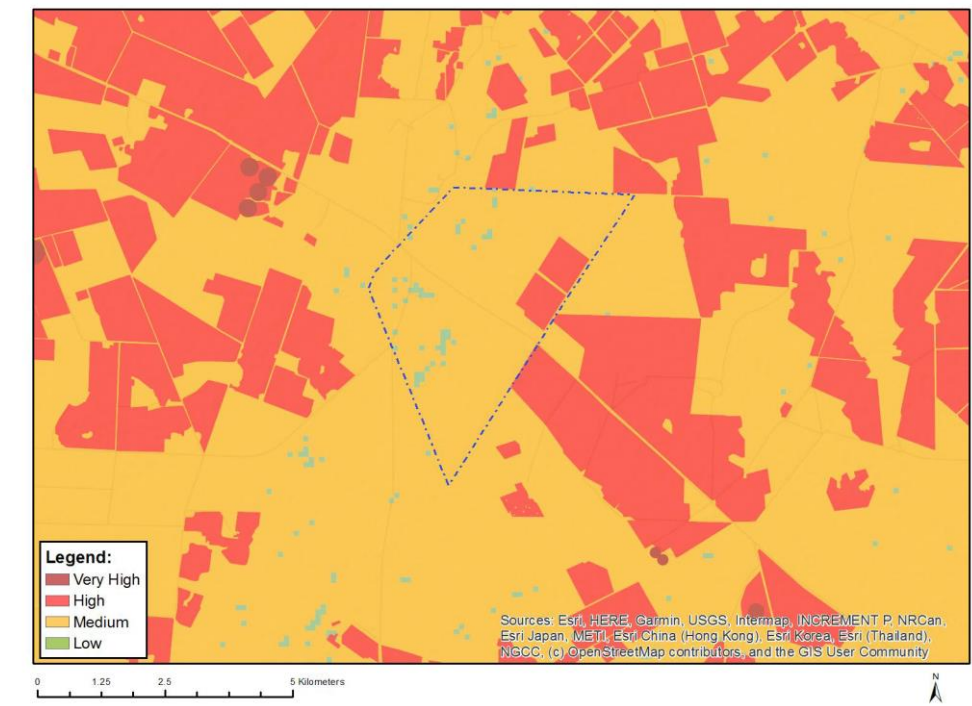


Figure 11: Land capability

According to the DFFE Screening Report the Agriculture theme sensitivity of the proposed area fall mostly within medium sensitivity followed by some patches of high sensitivity.

Please see **Appendix 7** for the colour map.



CRITICAL BIODIVERSITY AREA

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

- Critical Biodiversity Area One (CBA1);
- Critical Biodiversity Area Two (CBA2);
- Ecological Support Area (ESA);
- Other Natural Areas (ONA); and
- Protected Area (PA).

Based on the desktop information (**Figure 14**), the proposed area falls mostly within CBA 2 & ESA's.

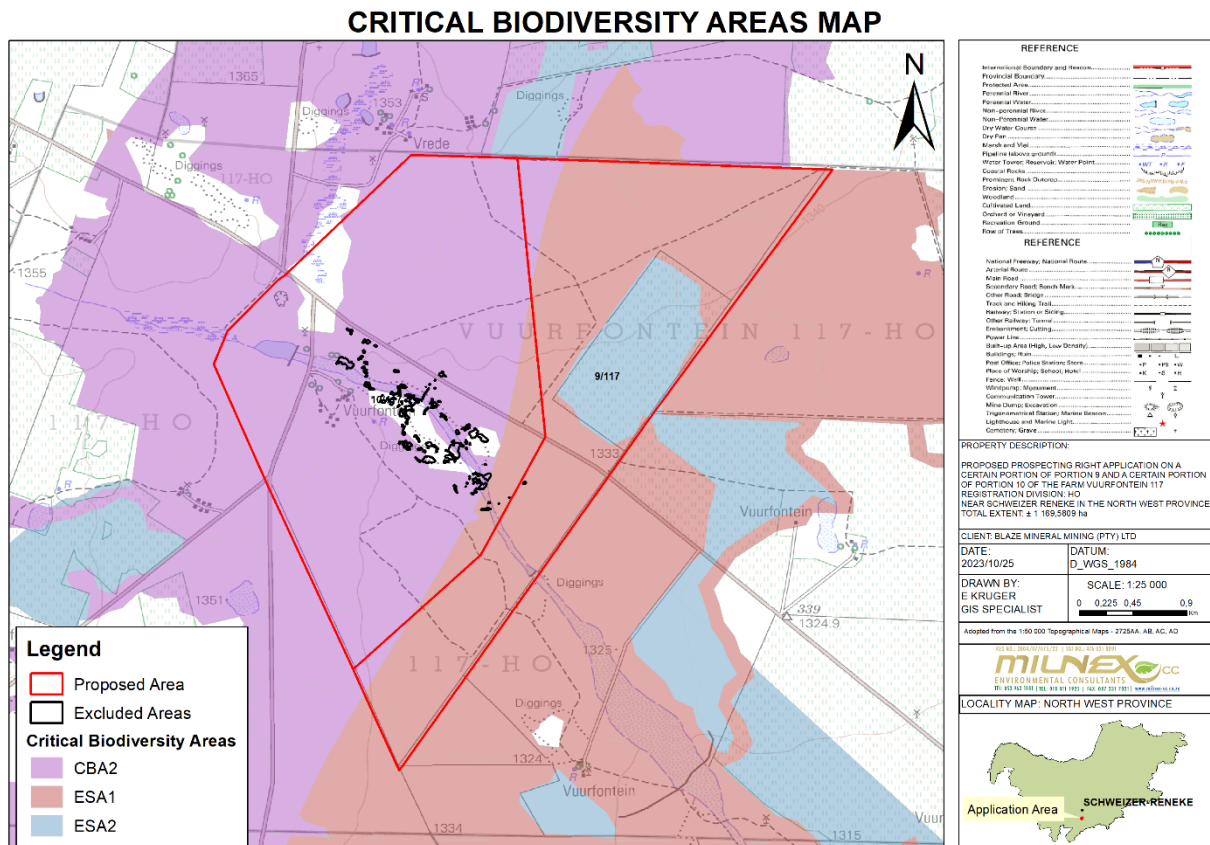


Figure 14: Critical Biodiversity Areas Map.

Aquatic Biodiversity Theme Sensitivity

The Aquatic Biodiversity Theme Sensitivity of the area is low and some parts of the application area have a high Aquatic Biodiversity Sensitivity and depicted on **Figure 15** below

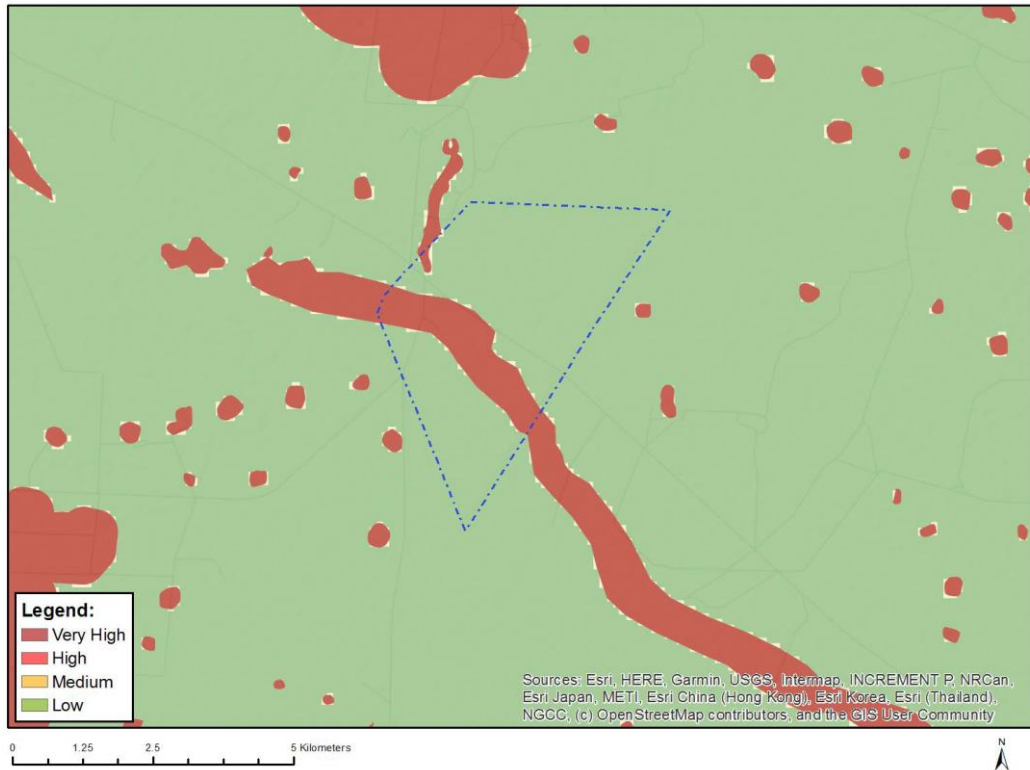


Figure 15: Aquatic Biodiversity Combined Sensitivity

Terrestrial Biodiversity Theme Sensitivity

According to the screening tool as implemented by DEA and attached as appendix 7, the application area is within a high Terrestrial Biodiversity Theme Sensitivity (See Figure 16). From the ArcGIS map, the area is dominated by low cultivated areas & previous mining as well.

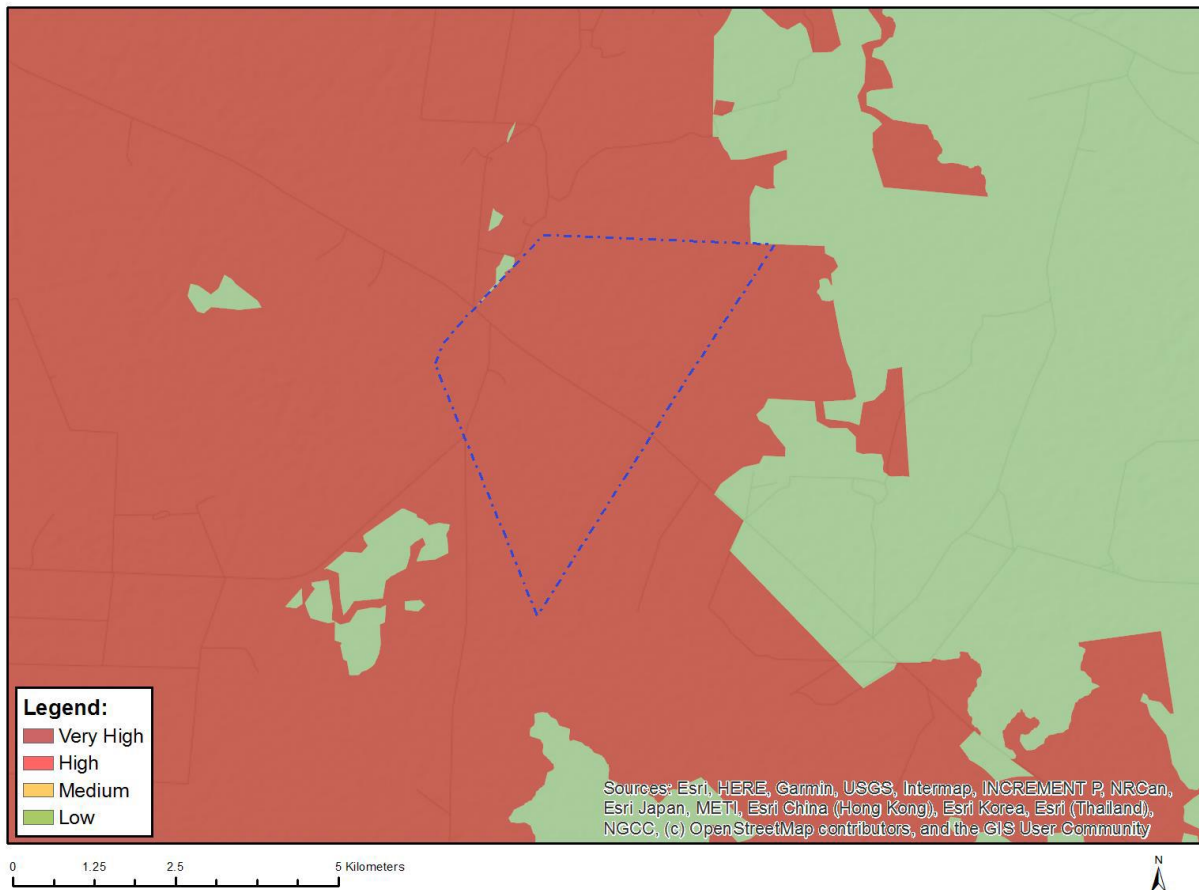


Figure 16: Terrestrial Biodiversity Combined Sensitivity

According to the DEA Screening Report the proposed portions fall within a low Animal Species sensitivity. Please see **Appendix 7** for the colour map.

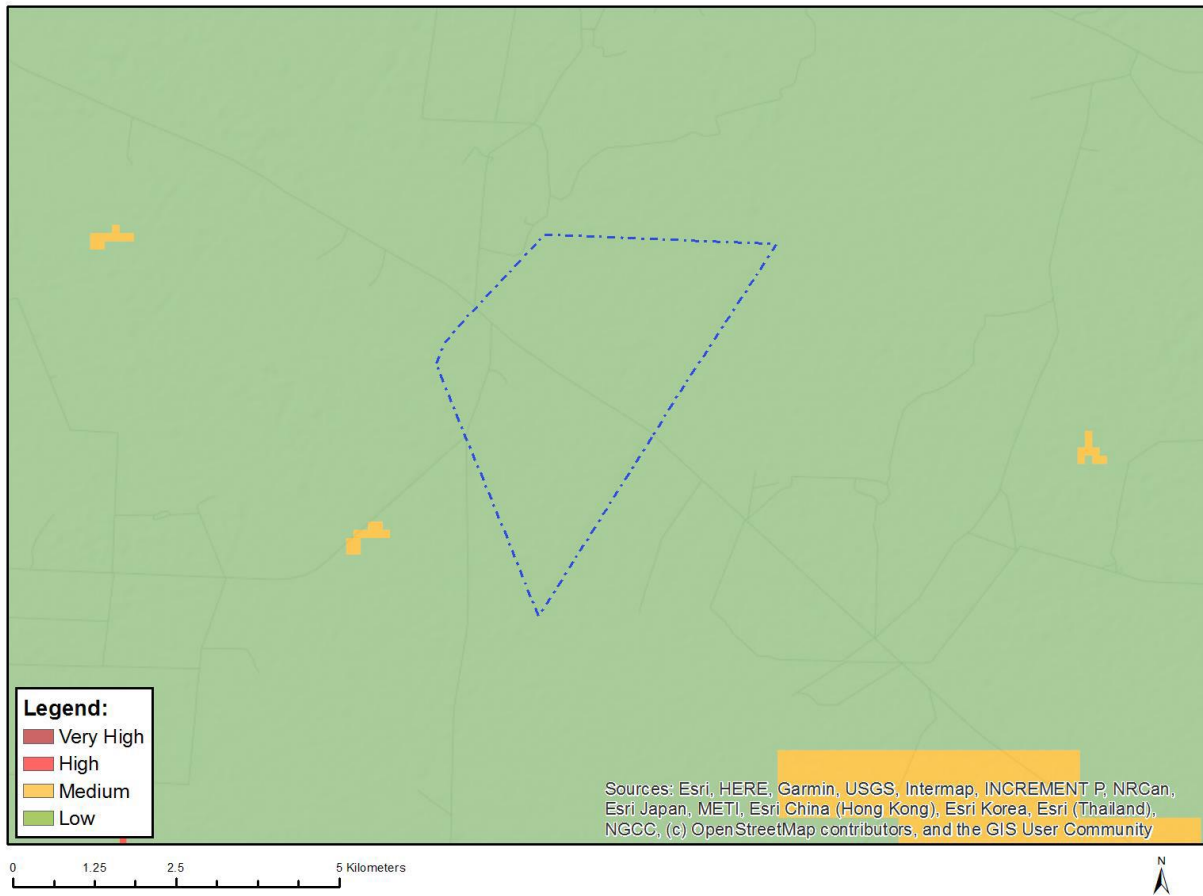


Figure 17: Animal Species theme sensitivity

A terrestrial biodiversity & wetland assessment was conducted, the findings were as follows:

Faunal Assessment

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 7**) by combining occurrence data from SABAP2 with species observed by the specialist on site (highlighted in green). There have not been any species of conservation concern or threatened or protected species recorded within the application area or its immediate surroundings. This does not, however, mean that species of conservation concern or threatened species may not on occasion occur or nest on site, and their presence may yet be recorded on the application area in the future.

Table 7: List of Birds Possibly Occurring on Site (SABAP2, 2023)

Common group	Common species	Genus	Species	IUCN and SA Redlist status	ToPS
	Ostrich	<i>Struthio</i>	<i>camelus</i>	LC	No
	Neddicky	<i>Cisticola</i>	<i>fulvicapilla</i>	LC	No
	Quailfinch	<i>Ortygospiza</i>	<i>atricollis</i>	LC	No
Barbet	Acacia Pied	<i>Tricholaema</i>	<i>leucomelas</i>	LC	No
Barbet	Crested	<i>Trachyphonus</i>	<i>vallantii</i>	LC	No
Batis	Pirit	<i>Batis</i>	<i>pirit</i>	LC	No
Bee-eater	Little	<i>Merops</i>	<i>pusillus</i>	LC	No
Bulbul	African Red-eyed	<i>Pycnonotus</i>	<i>nigricans</i>	LC	No
Canary	Yellow	<i>Crithagra</i>	<i>flaviventris</i>	LC	No
Chat	Ant-eating	<i>Myrmecocichla</i>	<i>formicivora</i>	LC	No
Cisticola	Levaillant's	<i>Cisticola</i>	<i>tinniens</i>	LC	No
Cormorant	Reed	<i>Microcarbo</i>	<i>africanus</i>	LC	No
Crow	Pied	<i>Corvus</i>	<i>albus</i>	LC	No
Dove	Cape Turtle	<i>Streptopelia</i>	<i>capicola</i>	LC	No
Dove	Laughing	<i>Spilopelia</i>	<i>senegalensis</i>	LC	No
Dove	Namaqua	<i>Oena</i>	<i>capensis</i>	LC	No
Dove	Red-eyed	<i>Streptopelia</i>	<i>semitorquata</i>	LC	No
Dove	Rock	<i>Columba</i>	<i>livia</i>	LC	No
Duck	Yellow-billed	<i>Anas</i>	<i>undulata</i>	LC	No
Firefinch	Red-billed	<i>Lagonosticta</i>	<i>senegala</i>	LC	No
Fiscal	Southern	<i>Lanius</i>	<i>collaris</i>	LC	No
Flycatcher	Fiscal	<i>Melaenornis</i>	<i>silens</i>	LC	No
Goshawk	Gabar	<i>Micronisus</i>	<i>gabar</i>	LC	No
Guineafowl	Helmeted	<i>Numida</i>	<i>meleagris</i>	LC	No
Heron	Grey	<i>Ardea</i>	<i>cinerea</i>	LC	No
Hoopoe	African	<i>Upupa</i>	<i>africana</i>	LC	No
Ibis	African Sacred	<i>Theskiornis</i>	<i>aethiopicus</i>	LC	
Ibis	Hadada	<i>Bostrychia</i>	<i>hagedash</i>	LC	No
Korhaan	Northern Black	<i>Afrotis</i>	<i>afraoides</i>	LC	No
Lapwing	Blacksmith	<i>Vanellus</i>	<i>armatus</i>	LC	No
Lark	Sabota	<i>Calendulauda</i>	<i>sabota</i>	LC	No
Martin	Brown-throated	<i>Riparia</i>	<i>paludicola</i>	LC	No
Mousebird	Red-faced	<i>Urocolius</i>	<i>indicus</i>	LC	No
Mousebird	White-backed	<i>Colius</i>	<i>colius</i>	LC	No
Ostrich	Common	<i>Struthio</i>	<i>camelus</i>	LC	No
Pipit	African	<i>Anthus</i>	<i>cinnamomeus</i>	LC	No
Plover	Three-banded	<i>Charadrius</i>	<i>tricoloris</i>	LC	No
Prinia	Black-chested	<i>Prinia</i>	<i>flavicans</i>	LC	No
Pytilia	Green-winged	<i>Pytilia</i>	<i>melba</i>	LC	No
Quelea	Red-billed	<i>Quelea</i>	<i>quelea</i>	LC	No
Roller	Purple	<i>Coracias</i>	<i>naevius</i>	LC	No
Scrub Robin	Kalahari	<i>Cercotrichas</i>	<i>paena</i>	LC	No
Shrike	Crimson-breasted	<i>Laniarius</i>	<i>atrococcineus</i>	LC	No
Snipe	African	<i>Gallinago</i>	<i>nigripennis</i>	LC	No
Sparrow	Cape	<i>Passer</i>	<i>melanurus</i>	LC	No

Common group	Common species	Genus	Species	IUCN and SA Redlist status	ToPS
Sparrow-Weaver	White-browed	<i>Plocepasser</i>	<i>mahali</i>	LC	No
Spurfowl	Swainson's	<i>Pternistis</i>	<i>swainsonii</i>	LC	No
Starling	Cape	<i>Lamprotornis</i>	<i>nitens</i>	LC	No
Stonechat	African	<i>Saxicola</i>	<i>torquatus</i>	LC	No
Tchagra	Brown-crowned	<i>Tchagra</i>	<i>australis</i>	LC	No
Teal	Red-billed	<i>Anas</i>	<i>erythrorhyncha</i>	LC	No
Tit	Ashy	<i>Melaniparus</i>	<i>cinerascens</i>	LC	No
Wagtail	Cape	<i>Motacilla</i>	<i>capensis</i>	LC	No
Warbler	Chestnut-vented	<i>Curruca</i>	<i>subcoerulea</i>	LC	No
Waxbill	Blue	<i>Uraeginthus</i>	<i>angolensis</i>	LC	No
Waxbill	Common	<i>Estrilda</i>	<i>astrild</i>	LC	No
Waxbill	Violet-eared	<i>Granatina</i>	<i>granatina</i>	LC	No
Weaver	Scaly-feathered	<i>Sporopipes</i>	<i>squamifrons</i>	LC	No
Weaver	Southern Masked	<i>Ploceus</i>	<i>velatus</i>	LC	No
Whydah	Shaft-tailed	<i>Vidua</i>	<i>regia</i>	LC	No

Mammals

Table 8 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.

Table 8: List of Mammals Possibly Occurring on Site (ADU, 2019)

Genus	species	Common Name	IUCN and SA Redlist Status	Likelihood of occurrence	ToPS
<i>Acinonyx</i>	<i>jubatus</i>	Cheetah	VU	Unlikely	No
<i>Aethomys</i>	<i>ineptus</i>	Tete Veld Rock Rat	LC	Possible	No
<i>Aepyceros</i>	<i>melampus</i>	Impala	LC	Present	No
<i>Alcelaphus</i>	<i>buselaphus</i>	Hartebeest	LC	Unlikely	No
<i>Antidorcas</i>	<i>marsupialis</i>	Springbok	LC	Present	No
<i>Aonyx</i>	<i>capensis</i>	African Clawless Otter	NT	Unlikely	No
<i>Atelerix</i>	<i>frontalis</i>	Southern African Hedgehog	LC	Possible	No
<i>Atilax</i>	<i>paludinosus</i>	Water Mongoose	LC	Unlikely	No
<i>Canis</i>	<i>mesomelas</i>	Black-backed Jackal	LC	Present	No
<i>Caracal</i>	<i>caracal</i>	Caracal	LC	Possible	No
<i>Ceratotherium</i>	<i>simum</i>	White Rhinoceros	NT	Unlikely	No
<i>Chlorocebus</i>	<i>pygerythrus</i>	Vervet Monkey	LC	Unlikely	No
<i>Connochaetes</i>	<i>gnou</i>	Black Wildebeest	LC	Present	Yes
<i>Connochaetes</i>	<i>taurinus</i>	Blue Wildebeest	LC	Unlikely	Yes
<i>Crociodura</i>	<i>cyanea</i>	Reddish-gray Musk Shrew	LC	Possible	No
<i>Cynictis</i>	<i>penicillata</i>	Yellow Mongoose	LC	Possible	No
<i>Damaliscus</i>	<i>pygargus</i>	Blesbok	LC	Present	Yes
<i>Desmodillus</i>	<i>auricularis</i>	Cape Short-eared Gerbil	LC	Possible	
<i>Diceros</i>	<i>bicornis</i>	Black Rhinoceros	CR	Unlikely	Yes
<i>Eidolon</i>	<i>helvum</i>	African Straw-coloured Fruit-bat	NT	Unlikely	No
<i>Elephantulus</i>	<i>myurus</i>	Eastern Rock Sengi	LC	Possible	No

Genus	species	Common Name	IUCN and SA Redlist Status	Likelihood of occurrence	ToPS
<i>Eptesicus</i>	<i>hottentotus</i>	Long-tailed Serotine Bat	LC	Unlikely	No
<i>Equus</i>	<i>quagga</i>	Burchell's Zebra	NT	Unlikely	Yes
<i>Felis</i>	<i>lybica</i>	African Wildcat	LC	Possible	No
<i>Felis</i>	<i>nigripes</i>	Black-footed Cat	VU	Possible	No
<i>Genetta</i>	<i>genetta</i>	Common Genet	LC	Unlikely	No
<i>Gerbilliscus</i>	<i>brantsii</i>	Highveld Gerbil	LC	Possible	No
<i>Gerbilliscus</i>	<i>leucogaster</i>	Bushveld Gerbil	LC	Possible	No
<i>Gerbillurus</i>	<i>paeba</i>	Pigmy Gerbil	LC	Possible	No
<i>Herpestes</i>	<i>sanguineus</i>	Slender Mongoose	LC	Possible	No
<i>Hydricis</i>	<i>maculicollis</i>	Spotted-necked Otter	NT	Unlikely	No
<i>Hystrix</i>	<i>africaeausstralis</i>	Cape Porcupine	LC	Possible	No
<i>Ichneumia</i>	<i>albicauda</i>	White-tailed Mongoose	LC	Possible	No
<i>Ictonyx</i>	<i>striatus</i>	Zorilla	LC	Possible	No
<i>Leptailurus</i>	<i>serval</i>	Serval	LC	Unlikely	Yes
<i>Lepus</i>	<i>capensis</i>	Cape Hare	LC	Possible	No
<i>Lepus</i>	<i>victoriae</i>	African Savanna Hare	LC	Possible	No
<i>Malacothrix</i>	<i>typica</i>	Gerbil Mouse	LC	Possible	No
<i>Mastomys</i>	<i>coucha</i>	Southern Multimammate Mouse	LC	Possible	No
<i>Mellivora</i>	<i>capensis</i>	Honey Badger	LC	Unlikely	No
<i>Micaelamys</i>	<i>namaquensis</i>	Namaqua Rock Rat	LC	Possible	No
<i>Mus</i>	<i>musculus</i>	House Mouse	LC	Possible	No
<i>Mystromys</i>	<i>albicaudatus</i>	White-tailed Rat	V	Possible	No
<i>Neoromicia</i>	<i>capensis</i>	Cape Bat	LC	Unlikely	No
<i>Neoromicia</i>	<i>zuluensis</i>	Zulu Pipistrelle Bat	LC	Unlikely	No
<i>Orycteropus</i>	<i>afer</i>	Aardvark	LC	Present	Yes
<i>Oryx</i>	<i>gazella</i>	Gemsbok	LC	Present	No
<i>Otocyon</i>	<i>megalotis</i>	Bat-eared Fox	LC	Possible	Yes
<i>Otomys</i>	<i>auratus</i>	Vlei Rat	NT	Unlikely	No
<i>Panthera</i>	<i>pardus</i>	Leopard	V	Unlikely	No
<i>Papio</i>	<i>ursinus</i>	Chacma Baboon	LC	Unlikely	No
<i>Parahyaena</i>	<i>brunnea</i>	Brown Hyaena	NT	Unlikely	No
<i>Pedetes</i>	<i>capensis</i>	Springhare	LC	Possible	No
<i>Phacochoerus</i>	<i>africanus</i>	Warthog	LC	Present	No
<i>Poecilogale</i>	<i>albinucha</i>	African Striped Weasel	LC	Possible	No
<i>Procavia</i>	<i>capensis</i>	Rock Hyrax	LC	Unlikely	No
<i>Pronolagus</i>	<i>rupestris</i>	Smith's Red Rock Hare	LC	Possible	No
<i>Proteles</i>	<i>crinata</i>	Aardwolf	LC	Unlikely	No
<i>Raphicerus</i>	<i>campestris</i>	Steenbok	LC	Possible	No
<i>Rhabdomys</i>	<i>bechuanae</i>	West-Central South African Four-striped Grass Rat	LC	Possible	No
<i>Rhabdomys</i>	<i>dilectus</i>	Mesic Four-striped Grass Rat	LC	Possible	No
<i>Rhinolophus</i>	<i>clivus</i>	Geoffroy's Horseshoe Bat	LC	Unlikely	No
<i>Rhinolophus</i>	<i>darlingi</i>	Darling's Horseshoe Bat	LC	Unlikely	No
<i>Rhinolophus</i>	<i>denti</i>	Dent's Horseshoe Bat	LC	Unlikely	No
<i>Saccostomus</i>	<i>campestris</i>	Pouched Mouse	LC	Possible	No

Genus	species	Common Name	IUCN and SA Redlist Status	Likelihood of occurrence	ToPS
<i>Smutsia</i>	<i>temminckii</i>	Temminck's Pangolin	VU	Unlikely	No
<i>Steatomys</i>	<i>krebsii</i>	Kreb's Fat Mouse	LC	Possible	No
<i>Suncus</i>	<i>varilla</i>	Lesser Dwarf Shrew	LC	Possible	No
<i>Suricata</i>	<i>suricata</i>	Suricate	LC	Possible	No
<i>Sylvicapra</i>	<i>grimmia</i>	Common Duiker	LC	Present	No
<i>Syncerus</i>	<i>caffer</i>	African Buffalo	NT	Unlikely	No
<i>Tadarida</i>	<i>aegyptiaca</i>	Egyptian Free-tailed Bat	LC	Unlikely	No
<i>Tragelaphus</i>	<i>oryx</i>	Eland	LC	Unlikely	No
<i>Tragelaphus</i>	<i>strepsiceros</i>	Greater Kudu	LC	Possible	No
<i>Vulpes</i>	<i>chama</i>	Cape Fox	LC	Possible	No
<i>Xerus</i>	<i>inauris</i>	South African Ground Squirrel	LC	Possible	No

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 8**) was created using data from the IUCN (2023). A Puffadder and Cape Cobra was encountered on site. None of the species expected to occur are species of conservation concern, nor are any threatened or protected species. This does not, however, mean that herpetofauna species of conservation concern or threatened or endangered species never occur on site, and their presence on the application area may be confirmed in the future.

Table 8: List of Herpetofauna Possibly Occurring on site (IUCN, 2023)

Genus	species	Common name	IUCN status	ToPS
Amphibians				
<i>Schismaderma</i>	<i>carens</i>	African Red Toad	LC	No
<i>Sclerophrys</i>	<i>capensis</i>	Raucous Toad	LC	No
<i>Sclerophrys</i>	<i>garmani</i>	Eastern Olive Toad	LC	No
<i>Sclerophrys</i>	<i>gutturalis</i>	Gutteral Toad	LC	No
<i>Sclerophrys</i>	<i>poweri</i>	Western olive Toad	LC	No
<i>Kassina</i>	<i>senegalensis</i>	Bubbling Kassina	LC	No
<i>Phrynobatrachus</i>	<i>natalensis</i>	Snoring Puddle Frog	LC	No
<i>Xenopus</i>	<i>laevis</i>	Common Platanna	LC	No
<i>Amietia</i>	<i>delalandii</i>	Delalande's River Frog	LC	No
<i>Cacosternum</i>	<i>boettgeri</i>	Boettger's Caco	LC	No
<i>Pyxicephalus</i>	<i>adspersus</i>	African Bullfrog	LC	No
<i>Tomopterna</i>	<i>cryptotis</i>	Cryptic Sand Frog	LC	No
<i>Tomopterna</i>	<i>natalensis</i>	Natal Sand Frog	LC	No
<i>Tomopterna</i>	<i>tandyi</i>	Tandy's Sand Frog	LC	No
Lizards				
<i>Agama</i>	<i>aculeata</i>	Common Ground Agama	LC	No
<i>Agama</i>	<i>atra</i>	Southern Rock Agama	LC	No
<i>Dalophia</i>	<i>pistillum</i>	Blunt-tailed Worm Lizard	LC	No
<i>Monopeltis</i>	<i>capensis</i>	Cape Spade-snouted Worm Lizard	LC	No
<i>Monopeltis</i>	<i>infuscata</i>	Dusky Spade-snouted Worm Lizard	LC	No
<i>Zygaspis</i>	<i>quadrifrons</i>	Kalahari Dwarf Worm Lizard	LC	No
<i>Karusasaurus</i>	<i>polyzonus</i>	Karoo Girdled Lizard	LC	No
<i>Chondrodactylus</i>	<i>bibronii</i>	Bibron's Tubercled Gecko	LC	No
<i>Lygodactylus</i>	<i>capensis</i>	Cape Dwarf Gecko	LC	No
<i>Pachydactylus</i>	<i>capensis</i>	Cape Thick-toed Gecko	LC	No
<i>Ptenopus</i>	<i>garrulus</i>	Common Barking Gecko	LC	No
<i>Gerrhosaurus</i>	<i>flavigularis</i>	Yellow-throated Plated Lizard	LC	No
<i>Meroles</i>	<i>squamulosus</i>	Common Desert Lizard	LC	No
<i>Nucras</i>	<i>holubi</i>	Holub's Sandveld Lizard	LC	No
<i>Nucras</i>	<i>intertexta</i>	Spotted Sandveld Lizard	LC	No
<i>Pedioplanis</i>	<i>lineocellata</i>	Spotted Sand Lizard	LC	No
<i>Pedioplanis</i>	<i>namaquensis</i>	Namaqua Sand Lizard	LC	No
<i>Acontias</i>	<i>gracilicauda</i>	Thin-tailed Legless Skink	LC	No
<i>Acontias</i>	<i>occidentalis</i>	Western Legless Skink	LC	No
<i>Panaspis</i>	<i>wahlbergii</i>	Angolan Snake-eyed Skink	LC	No
<i>Trachylepis</i>	<i>capensis</i>	Cape Skink	LC	No
<i>Trachylepis</i>	<i>punctatissima</i>	Speckled Rock Skink	LC	No
<i>Trachylepis</i>	<i>punctulata</i>	Speckled Sand Skink	LC	No
<i>Trachylepis</i>	<i>sulcata</i>	Western Rock Skink	LC	No
<i>Trachylepis</i>	<i>varia</i>	Eastern Variable Skink	LC	No
<i>Varanus</i>	<i>albigularis</i>	White-throated Monitor	LC	No
<i>Varanus</i>	<i>niloticus</i>	Nile Monitor	LC	No
Snakes				

Genus	species	Common name	IUCN status	ToPS
<i>Aparallactus</i>	<i>capensis</i>	Black-headed Centipede-eater	LC	No
<i>Atractaspis</i>	<i>bibronii</i>	Bibron's Stiletto Snake	LC	No
<i>Atractaspis</i>	<i>duerdeni</i>	Duerden's Stiletto Snake	LC	No
<i>Xenocalamus</i>	<i>bicolor</i>	Bicoloured Quill-snouted Snake	LC	No
<i>Chamaeleo</i>	<i>dilepis</i>	Flap-necked Chameleon	LC	No
<i>Crotaphopeltis</i>	<i>hotamboeia</i>	Herald Snake	LC	No
<i>Dasypeltis</i>	<i>scabra</i>	Rhombic Egg Eater	LC	No
<i>Dispholidus</i>	<i>typus</i>	Boomslang	LC	No
<i>Philothamnus</i>	<i>semivariiegatus</i>	Spotted Bush Snake	LC	No
<i>Elapsoidea</i>	<i>sundevallii</i>	Sundevall's Garter Snake	LC	No
<i>Naja</i>	<i>nivea</i>	Cape Cobra	LC	No
<i>Boaedon</i>	<i>capensis</i>	Brown House Snake	LC	No
<i>Lycophidion</i>	<i>capense</i>	Cape Wolf Snake	LC	No
<i>Leptotyphlops</i>	<i>scutifrons</i>	Peter's Thread Snake	LC	No
<i>Prosymna</i>	<i>bivittata</i>	Two-striped Shovel-snout	LC	No
<i>Prosymna</i>	<i>sundevallii</i>	Sundevall's Shovel-snout	LC	No
<i>Psammophis</i>	<i>brevirostris</i>	Short-snouted Grass Snake	LC	No
<i>Psammophis</i>	<i>leightoni</i>	Cape Sand Snake	LC	No
<i>Psammophylax</i>	<i>tritaeniatus</i>	Striped Skaapsteker	LC	No
<i>Pseudaspis</i>	<i>cana</i>	Mole Snake	LC	No
<i>Indotyphlops</i>	<i>braminus</i>	Brahminy Blind Snake	LC	No
<i>Rhinotyphlops</i>	<i>lalandei</i>	Delalande's Beaked Blind Snake	LC	No
<i>Bitis</i>	<i>arietans</i>	Puff Adder	LC	No
Shelled Reptiles				
<i>Pelomedusa</i>	<i>galeata</i>	South African Helmeted Terrapin	LC	No
<i>Homopus</i>	<i>femorals</i>	Greater Padloper	LC	No
<i>Stigmochelys</i>	<i>pardalis</i>	Leopard Tortoise	LC	No

During the site visit no SCC were observed by the specialist, nor are there any that are known to occur within the application area. There are some reports of a Leopard having been seen on farms within the greater area, though the noisy and large-scale mining operations and disturbed areas make it unlikely that this species will occur on the application area. Due to the migratory behaviour of certain organisms, and tolerance to disturbed habitat, some other species of conservation concern may sporadically be seen in the study area.

Biodiversity Priority Areas for Mining

The Mining and Biodiversity Guideline was developed in 2013 for the purpose of mainstreaming biodiversity management practices into the mining sector (DEA, DMR, Chamber of Mines, SAMBF & SANBI 2013). This Guideline provides explicit direction in terms of where mining-related impacts are legally prohibited, where biodiversity priority areas may present high risks for mining projects, and where biodiversity may limit the potential for mining. The Guideline distinguishes between four categories of biodiversity priority areas in relation to their importance from a biodiversity and ecosystem service perspective as well as the implications for mining in these areas (**Table 9**).

Table 9: Four categories of biodiversity priority areas in relation to their biodiversity importance and implications for mining.

Category	Biodiversity Priority Areas	Risks for Mining	Implications for Mining
A. Legally Protected	<ul style="list-style-type: none"> Protected areas (including National Parks, Nature Reserves, World Heritage) 	Mining Prohibited	Mining projects cannot commence as mining is legally prohibited. Although mining is prohibited in Protected Areas, it may be allowed in Protected Environments if

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

	<ul style="list-style-type: none"> Estuarine functional zone <p>*Note that the status of buffer areas of World Heritage Sites is subject to a current intra-governmental process</p>		
D. Moderate Biodiversity Importance	<ul style="list-style-type: none"> Ecological support areas Vulnerable ecosystems Focus areas for protected area expansion (land-based and offshore protection) 	Moderate Risk for Mining	<p>These areas are of moderate biodiversity value.</p> <p>EIAs and their associated specialist studies should focus on confirming the presence and significance of these biodiversity features, identifying features (e.g. threatened (land-based and offshore protection) species) not included in the existing datasets, and on providing site-specific information to guide the application of the mitigation hierarchy.</p> <p>Authorisations may set limits and specify biodiversity offsets that would be written into licence agreements and/or authorisations.</p>

Based on **Figure 18**, the area does overlap with category C & D: moderate & high risk for mining.

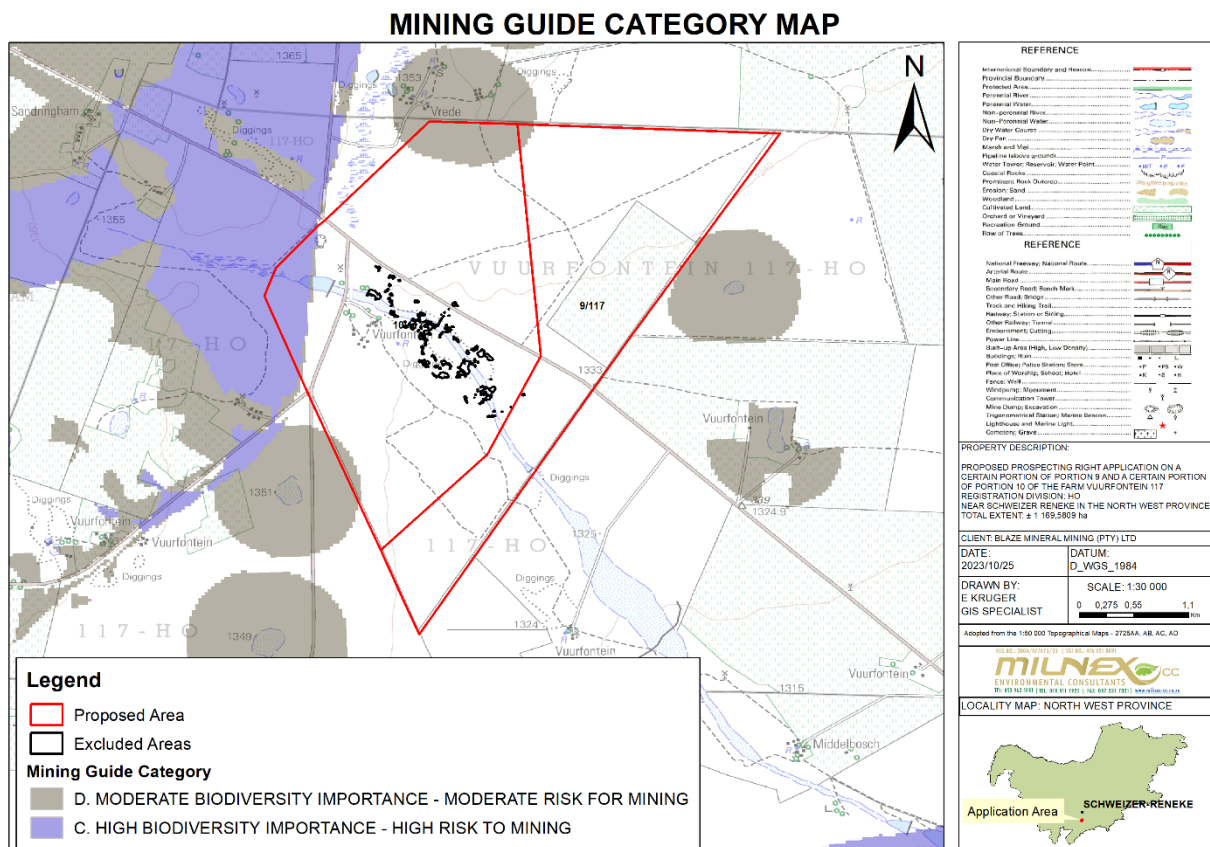


Figure 18: Biodiversity priority areas, in accordance with the Mining of Biodiversity Guidelines, associated with the study site.

WETLAND AREAS

In terms of Section 1 of the National Water Act (No. 36 of 1998) (NWA), wetlands are legally defined as: "land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered

with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil" (NWA 1998).

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

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

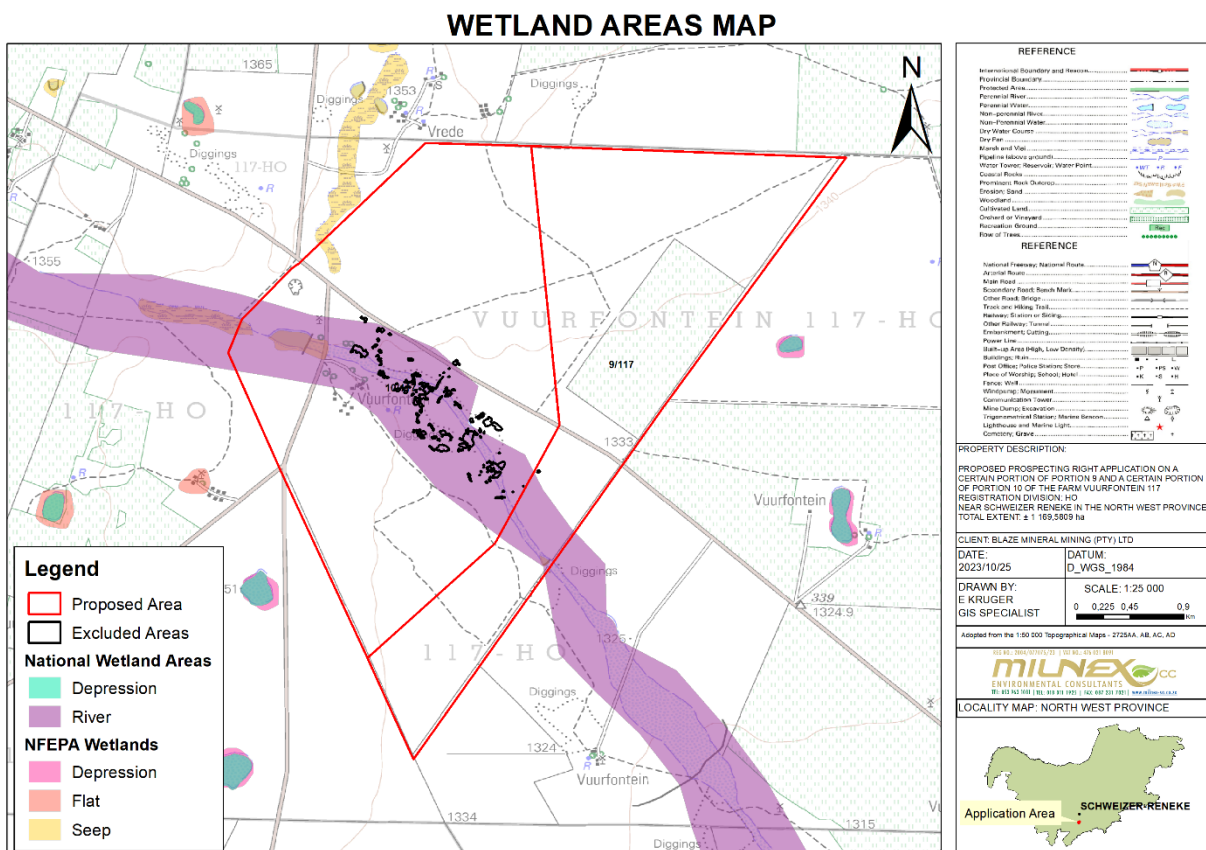


Figure 19: Wetland types expected to occur in the study area .

A terrestrial biodiversity & wetland assessment was conducted, the findings were as follows:

Wetland Habitat Description and System Characterisation

The wetland assessment was conducted on the 24th and 25th of May 2023, which was within the dry season. A hand-held auger and GPS phone were used to log all information in the field.

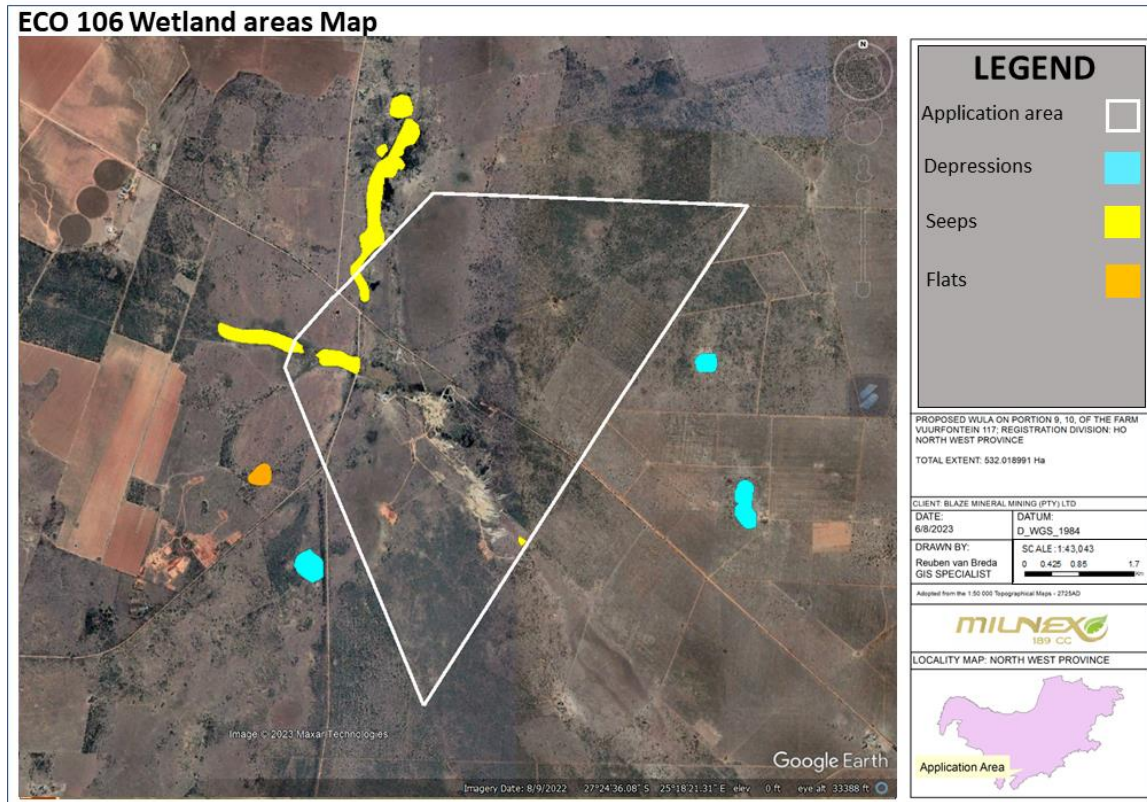


Figure 20: Wetland types expected to occur in the study area.

From the desktop assessment, three (3) wetland types were expected to occur within and around the study area (Figure 20). These are Seeps, Depressions, and a Flat wetland. A site visit was conducted to confirm the desktop findings and are discussed below.

Six wetlands were assessed and delineated during the site visit. The site visit confirmed the assessed wetlands to be two Unchanneled Valley Bottom and four Depressions wetlands. Two more Depression wetlands are located within 500m of the application area. They were, however, not assessed but given an average PES, EIS, and REC score as well as a buffer. Alluvial diamond mining and agricultural activities (cattle) occur within and/or in close proximity of the wetland areas. With that noted, the assessment will aim to assess the state and importance of these wetlands, along with conserving them through consideration of the catchment area.

The most extensive wetland within the application area is an Unchanneled Valley Bottom Wetland that starts East of the application area and flows throughout its entire extent along a central channel, eventually continuing beyond the application area to the West thereof, in total having an estimated length of at least 6km. Extensive mining, water abstraction, development, agriculture, and other anthropogenic activities have taken place within this wetland and the rest of the application area, resulting in massive disturbances within the wetland and a deviation of its natural state. The wetland is, however, not uniformly disturbed nor is it disturbed by the same activities throughout. The uppermost section remains largely natural and undisturbed whilst the central section is moderately disturbed by agricultural and historic prospecting activities. Lastly, the lowermost section is greatly disturbed by present and historic mining activities. These reasons, coupled with the wetlands large size, led to it being discussed in three different sections (upper, middle, lower). This was done for both ease of discussion and clarity of understanding of the system, as well as assignment of appropriate buffers.

The uppermost portion of UVB1 constitutes a wide saturated Valley Bottom Wetland dominated by waist high sedges (Cyperaceae) leading to a deep pool of water within a riparian zone dominated by *Searsia lancea*, *Vachellia karoo*, *Tarconanthus camphoratus*, and some *Eucalyptus camaldulensis*. Beyond the open water the wetland continues as a section of sedges and graminoids with saturated soils and subsurface water all the way to the road where it widens dramatically, spreading out along the road. There is however at least one drainage culvert allowing for flow into the middle section. The riparian area also extends to the road. This portion of the wetland is the least disturbed on the application area and supports the highest biodiversity of avifaunal species observed in the application area.



Figure 21: Wide upper section of UVB1 dominated by saturated graminoids and Sedges.



Figure 22: Deep pool of open water and Riparian zone within UVB1 upper



Figure 23: Old dam wall, likely the cause of the deep pool of water within the middle of the UVB1 upper section & riparian zone.

The middle section of this wetland stretches to roughly the start of the active mining operation and is similar in composition to the upper section of the unit, i.e. it starts as a very large swath of saturated soil (shallow surface water present) dominated by graminoids and sedges. The borders of this section have been narrowed by infilling of sand and stones from historic mining activities. This wetland is also pockmarked by many deep pits from historic mining (likely prospecting activities). Due to the high amount of saturation of this wetland, these pits have filled with deep water and currently support a large biodiversity of wetland plants, aquatic invertebrates, and especially avifaunal species. The borders of this section of the wetland are also dominated by similar trees as the rest of the application area (*Vachellia karoo*, *Vachellia tortilis*, *Searsia lancea*, *Tarconanthus camphoratus*, *Ehretia alba*). The lowermost (westernmost) portion of this section is characterised by a series of deep pits and dams, filled with water, intersected by roads and berms as well as some areas of saturated soils dominated by wetland plants such as Cyperaceae and *Marsilea* sp.



Figure 24: Infilled road and berms disturbing the western part of UVB1 middle.



Figure 25: Open water in central part of UVB1 middle



Figure 26: Wide view of UVB1 middle with water-filled pits on the left and buildings built on the wetland edge on the right.

The lowest portion of the UVB has been almost completely transformed by mining and prospecting activities. It currently consists of soils that are seasonally saturated interspersed in a landscape of pits, heaps of mined material, and bare ground. The very last section of the UVB still on the study section is represented by a small depression dominated by sedges (*Cyperaceae*). The soil of this wetland is a grey loamy clay, easily identifiable as most of it has been overturned.



Figure 27: Upturned soil of UVB1 lower



Figure 28: Unnatural water filled pits of UVB 1 lower.



Figure 29: Grey gleyic clay soil profile of UVB1 lower, exposed by mining. Ground water has pooled in the bottom of the pits.



Figure 30: Tiny portion of UVB1 lower at the end of the application unit (this would be the natural state of this wetland), dominated by Sedges and presenting surface water.

UVB2 is a wetland that seems to only have an ephemeral to seasonal supply of water or flow, perhaps under stormflow conditions. Whilst the wetland is currently very dry and sandy, hydrogeomorphic soil properties (mottling) was encountered within the top 50cm of soil. This, accompanied by the topography, as well as sporadic Sedges scattered throughout this unit confirmed it as a wetland. This wetland is disturbed by historic prospecting activities (though to a much smaller extent as the other UVB) as well as current agricultural activities (cattle).



Figure 31: Faint mottles present within the soil of UVB 2



Figure 32: Wide view of a section of UVB 2. This wetland is significantly drier than UVB 1.



Figure 33: Sedges (Cyperaceae) present sporadically throughout UVB 2.

There are four small Depression wetlands located within the boundaries of the application area. All of the depression wetlands are of similar size (<3 ha), and present similar characteristics. All of the assessed Depression wetlands were void of woody vegetation, whereas species such as *Tarconanthus camphoratus* and *Grewia flava* dominated the boundaries, whilst the Depressions themselves were dominated by *Themeda triandra*, *Eragrostis lehmanniana*, *Eragrostis rigidior*, *Melinis repens*, as well as *Erigeron bonariensis*. Wetland plants (Sedges) were present but very sparse. All of the Depression wetlands were endoreic and disturbed by the presence of cattle.



Figure 34: Similar, dry Depression wetlands within the application area.

Wetland Habitat and System Characterisation

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 10). 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 10: Description of the assessed wetland areas on site.

Feature	UVB 1	UVB 2	Depressions
Catchment Features and Current Impacts	Surface water drains from the catchment and flows along the UVB across the entire extent of the application area. Extremely impacted by pits, roads, cattle, building, infillings, excavations, invasive species, prospecting, and mining activities.	Surface water drains from the catchment and flows along the UVB Southward. Under stormflow conditions water would flow into UVB1.	Endorheic: there is no outflow and water drains from the catchment towards the lowest part of the system.
Wetland Type	UVB	UVB	Depression
Downstream Features	Land mostly dedicated to grazing, old fields, and some mining activities.	UVB 1, a major wetland within the application area.	System is endoreic.
Vegetation Characteristics	Vegetation dense in the natural and semi natural areas. This UVB includes a riparian area with very dense woody growth. The lower portion of UVB encompasses large areas overturned soil void of vegetation. Dominant species	Vegetation cover short (<1m). Dominated by graminoids and shrubs. Dominant species listed in Table 11. Exotic and invasive species present.	Vegetation dense though short (<1m). Dominated by graminoids, with sporadic Sedges (Cyperaceae). Dominant species listed in Table 11. Exotic and invasive species present.

	listed in Table 11. Exotic and invasive species present though very localized.		
Algae Presence	Present in all open water deposits, though limited.	No surface water	No surface water
Aquatic Faunal Impacts	Major impacts would be on macroinvertebrate assemblage and aquatic dependent animals such as frogs and avifaunal species.	Major impacts would be on macroinvertebrate assemblage and aquatic dependent animals such as frogs and avifaunal species during the wet season when such species may be present.	Major impacts would be on macroinvertebrate assemblage and aquatic dependent animals such as frogs and avifaunal species during the wet season when such species may be present
Depth Characteristics	Not assessed	No water present	No water present
Flow Conditions	Low or no flow	No water present	No water present
Water Clarity	Slight discolouration attributed to suspended minerals. Water clarity very good.	No water present	No water present
Water Odour	None	No water present	No water present
Erosion Impacts	Low erosion potential in upper and middle portion due to dense vegetation cover. High erosion potential on the lower portion of the UVB due to lack of vegetation cover and other disturbances.	Moderate erosion potential due to moderately low vegetation cover.	Moderate erosion potential due to moderately low vegetation cover.
Soil characteristics	Redoximorphic features (mottling) were present within the wetland. Soil properties ranged from grey and gleyic clay to grey moist sand.	Redoximorphic features (mottling) were present within the wetland. Soil was a sandy loam.	Redoximorphic features (mottling) were present within the wetland. Soil ranged from brown loamy clay to brown sandy clay.

WET-Health Assessment

Three modules, namely hydrology, geomorphology, and vegetation, were assessed as a single unit for the HGM Units and subsequently an area weighted score was obtained for the HGM Units. The potential impacts of activities such as agriculture, erosion, prospecting, mining, altered hydrological functions and clearing of natural vegetation within the greater catchment were taken into consideration during the assessment. The results are summarised in **Table 11** below.

Table 11: Summary of results of the WET-Health assessments conducted for the wetland areas.

Wetland	Hydrology Module		Geomorphology Module		Water Quality		Vegetation Module		Overall PES Score
	Impact Score	Trajectory of Change	Impact Score	Trajectory of Change	Impact Score	Trajectory of Change	Impact Score	Trajectory of Change	
UVB 1 Upper	A	↓↓	B	↓↓	A	↓↓	C	↓↓	B
UVB 1 Middle	C	↓↓	B	↓↓	A	↓↓	D	↓↓	C
UVB 1 Lower	F	↓↓	F	↓↓	D	↓↓	E	↓↓	E
UVB 2	A	↓↓	A	↓↓	B	↓↓	C	↓↓	B
D1	A	↓↓	A	↓↓	B	↓↓	B	↓↓	B
D2	A	↓↓	A	↓↓	B	↓↓	B	↓↓	B
D3	A	↓↓	A	↓↓	B	↓↓	B	↓↓	B
D4	A	↓↓	A	↓↓	B	↓↓	B	↓↓	B

The overall PES Category for the upper part of Unchanneled valley bottom 1 (UVB1), UVB 2, as well as Depression wetlands D1-D4 was observed to be B, which means that these wetlands are largely natural, but with a few modifications. A small change in natural habitats and biota may have taken place but the ecosystem functions are essentially unchanged. With that being noted, a decrease in the PES is likely to occur over the next few years if the prospecting activities occur within the exclusion zones, and if degradation occurs due to human activities.

In the case of UVB 1, the only modifications are the remains of an old stone wall within the riparian zone, some groves of invasive vegetation (*Eucalyptus camaldulensis*) as well as a dirt road that has been built up and transects the wetland: resulting in the division between the upper and middle sections of UVB1. There are culverts built through the road, allowing for water to flow through into the middle section of UVB1. Based on satellite data, it is clear that water has accumulated on the western side of the road and spread out against the berm of the road, resulting in a widening of the wetland area. The vegetation and water quality of UVB2 as well as the Depression wetlands is slightly disturbed due to the presence of cattle within the wetlands and the farm portions they are located in.

The overall PES category for the middle section of UVB1 is C- Moderately modified. Losses and changes of natural habitat and biota have occurred, whilst the basic ecosystem functions are still predominantly unchanged. This wetland is disturbed by a built-up dirt road transecting it and limiting upstream water flow into the wetland, bar for the presence of some culverts allowing flow underneath the road. At the western portion of this section there are more roads transecting the wetland, and it becomes gradually more disturbed by infilling, dumping, many excavated pits and other anthropogenic disturbances, as well as cattle that move throughout this wetland.

The overall PES Category for the lower section of UVB 2 is E- Seriously modified. There is a serious loss of natural habitat, biota and other basic ecosystems. This wetland section has been seriously transformed, especially in the lower part where most of the topsoil of the entire section has been dug up and removed.

Ecosystem Services

Physical and hydrological features allow hydro-geomorphic units to perform specific ecosystems services. A Wet-Eco Service evaluation was conducted for the wetland and riparian areas assessed on site to determine the services as described in the methodology. The degree of disturbance and modification of wetlands and riparian areas results in a decrease in the ability to which they can perform these ecosystem services. The findings of the Wet-Ecoservice evaluation conducted is provided in **Figures 35 to 39** below.

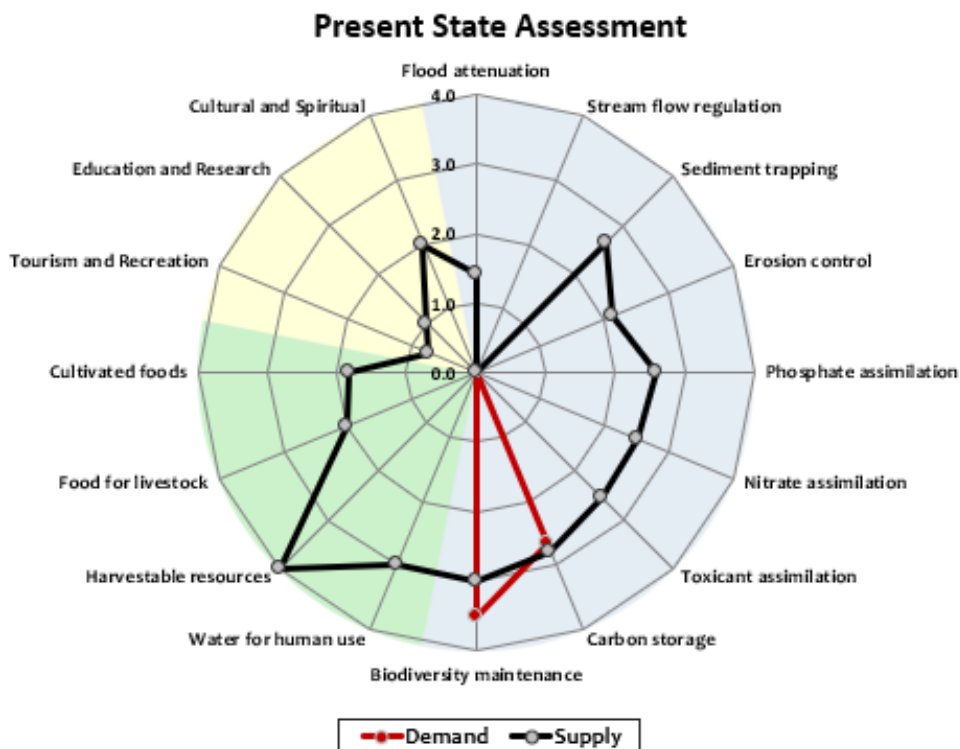


Figure 35: Ecosystem services of the upper portion of UVB1

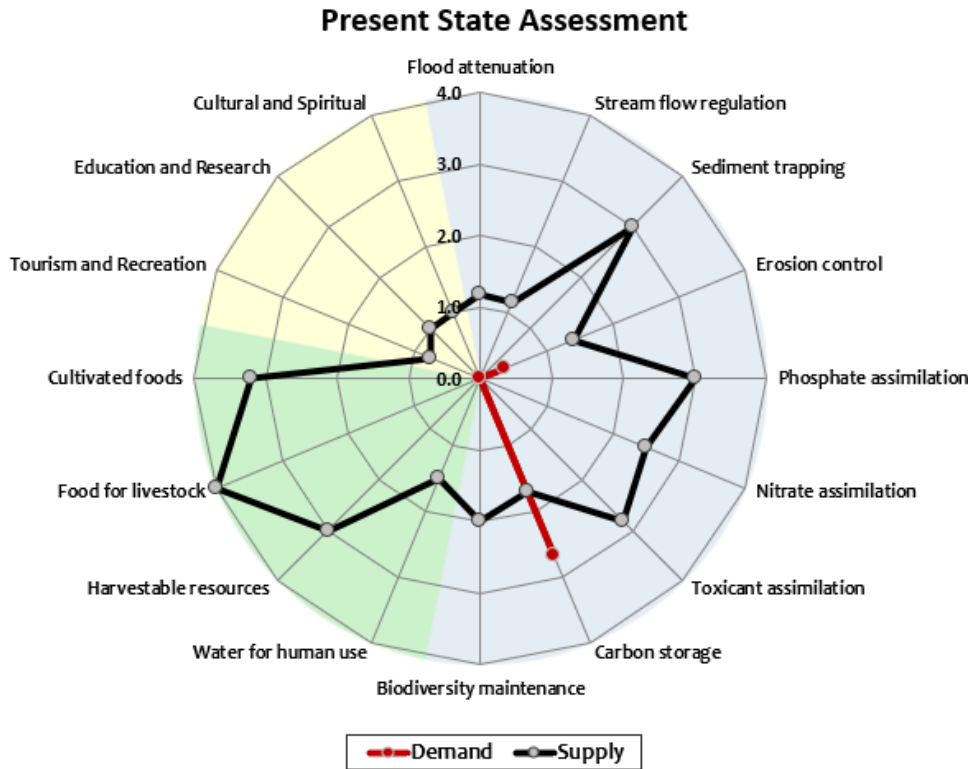


Figure 36: Ecosystem services of the middle portion of UVB1

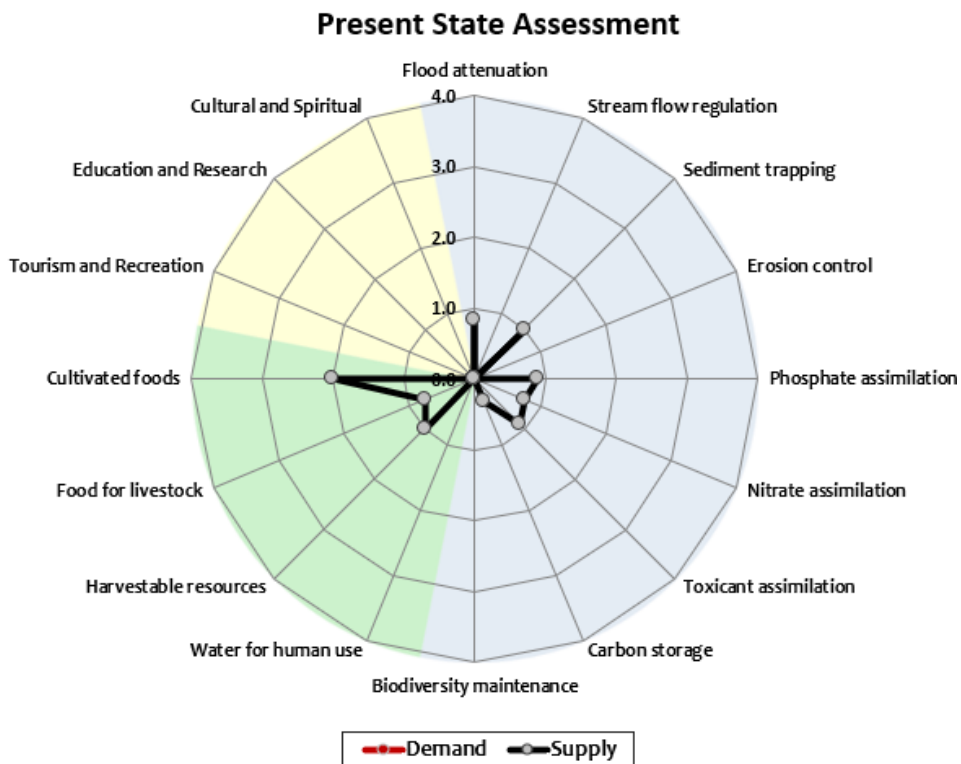


Figure 37: Ecosystem services of the lower part of UVB1

Present State Assessment

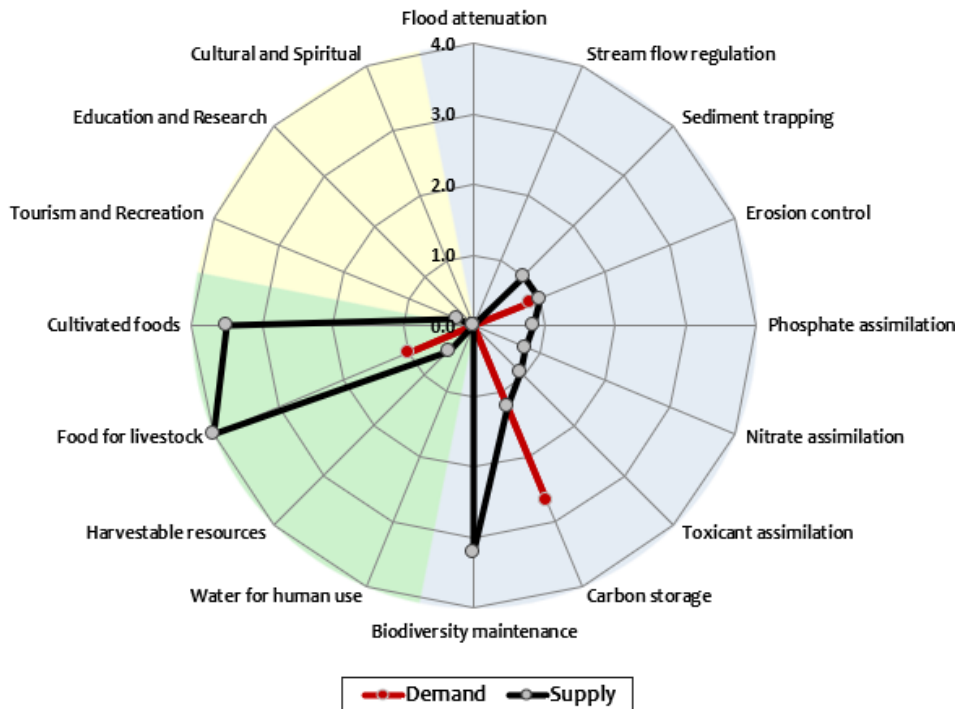


Figure 38: Ecosystem services of UVB2

Present State Assessment

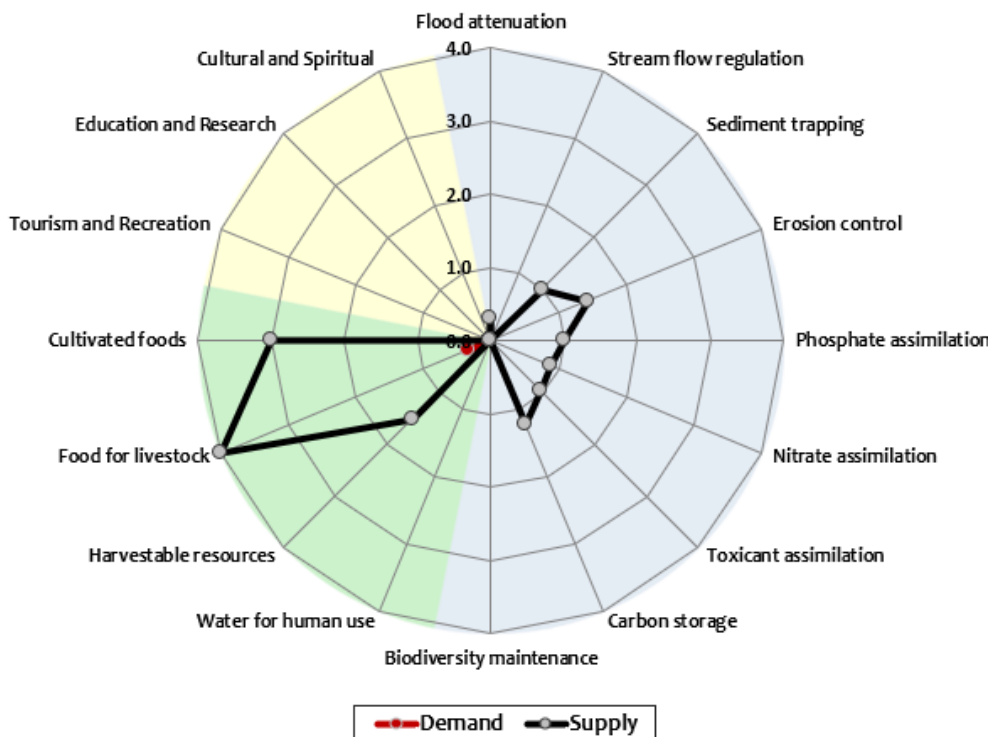


Figure 39: Ecosystem services of the Depression wetlands 1-4

Ecological Importance and Sensitivity

The EIS assessment was applied to all wetland features within the study area in order to ascertain the levels of sensitivity and ecological importance of the features, as well as to assist in informing a suitable Recommended Ecological Category (REC) for each. The results of these assessments are summarised in the Tables below.

Table 12: EIS scores obtained for UVB1 Upper (DWAF, 1999). EIS 3.3

		Present State				Future State			
ECOSYSTEM SERVICE		Supply	Demand	Importance Score	Importance	Supply	Demand	Importance Score	Importance
REGULATING AND SUPPORTING SERVICES	Flood attenuation	1.4	0.0	0.0	Very Low	1.4	0.0	0.0	Very Low
	Stream flow regulation	0.0	0.0	0.0	Very Low	0.0	0.0	0.0	Very Low
	Sediment trapping	2.6	0.0	1.1	Low	2.6	0.0	1.1	Low
	Erosion control	2.1	0.0	0.6	Very Low	2.1	0.0	0.6	Very Low
	Phosphate assimilation	2.6	0.0	1.1	Low	2.6	0.0	1.1	Low
	Nitrate assimilation	2.5	0.0	1.0	Low	2.5	0.0	1.0	Low
	Toxicant assimilation	2.6	0.0	1.1	Low	2.6	0.0	1.1	Low
	Carbon storage	2.8	2.7	2.6	Moderately High	2.8	2.7	2.6	Moderately High
	Biodiversity maintenance	3.0	3.5	3.3	Very High	3.0	3.5	3.3	Very High
PROVISIONING SERVICES	Water for human use	3.0	0.0	1.5	Moderately Low	3.0	0.0	1.5	Moderately Low
	Harvestable resources	4.0	0.0	2.5	Moderately High	4.0	0.0	2.5	Moderately High
	Food for livestock	2.0	0.0	0.5	Very Low	2.0	0.0	0.5	Very Low
	Cultivated foods	1.8	0.0	0.3	Very Low	1.8	0.0	0.3	Very Low
CULTURAL SERVICES	Tourism and Recreation	0.8	0.0	0.0	Very Low	0.8	0.0	0.0	Very Low
	Education and Research	1.0	0.0	0.0	Very Low	1.0	0.0	0.0	Very Low
	Cultural and Spiritual	2.0	0.0	0.5	Very Low	2.0	0.0	0.5	Very Low

Table 13: EIS scores obtained for UVB1 Middle (DWAF, 1999). EIS 2.5

		Present State				Future State			
ECOSYSTEM SERVICE		Supply	Demand	Importance Score	Importance	Supply	Demand	Importance Score	Importance
REGULATING AND SUPPORTING SERVICES	Flood attenuation	1.2	0.0	0.0	Very Low	1.2	0.0	0.0	Very Low
	Stream flow regulation	1.2	0.0	0.0	Very Low	1.2	0.0	0.0	Very Low
	Sediment trapping	3.0	0.0	1.5	Moderately Low	3.0	0.0	1.5	Moderately Low
	Erosion control	1.4	0.4	0.1	Very Low	1.4	0.4	0.1	Very Low
	Phosphate assimilation	3.0	0.0	1.5	Moderately Low	3.0	0.0	1.5	Moderately Low
	Nitrate assimilation	2.5	0.0	1.0	Low	2.5	0.0	1.0	Low
	Toxicant assimilation	2.8	0.0	1.3	Moderately Low	2.8	0.0	1.3	Moderately Low
	Carbon storage	1.7	2.7	1.5	Moderately Low	1.7	2.7	1.5	Moderately Low
	Biodiversity maintenance	2.0	0.0	0.5	Very Low	2.0	0.0	0.5	Very Low
PROVISIONING SERVICES	Water for human use	1.5	0.0	0.0	Very Low	1.5	0.0	0.0	Very Low
	Harvestable resources	3.0	0.0	1.5	Moderately Low	3.0	0.0	1.5	Moderately Low
	Food for livestock	4.0	0.0	2.5	Moderately High	4.0	0.0	2.5	Moderately High
	Cultivated foods	3.2	0.0	1.7	Moderate	3.2	0.0	1.7	Moderate
CULTURAL SERVICES	Tourism and Recreation	0.8	0.0	0.0	Very Low	0.8	0.0	0.0	Very Low
	Education and Research	1.0	0.0	0.0	Very Low	1.0	0.0	0.0	Very Low
	Cultural and Spiritual	1.0	0.0	0.0	Very Low	1.0	0.0	0.0	Very Low

Table 14: EIS scores obtained for UVB1 Lower (DWAF, 1999). EIS 0.5

		Present State				Future State			
ECOSYSTEM SERVICE		Supply	Demand	Importance Score	Importance	Supply	Demand	Importance Score	Importance
REGULATING AND SUPPORTING SERVICES	Flood attenuation	0.8	0.0	0.0	Very Low	0.0	0.0	0.0	Very Low
	Stream flow regulation	0.0	0.0	0.0	Very Low	0.0	0.0	0.0	Very Low
	Sediment trapping	1.0	0.0	0.0	Very Low	1.0	0.0	0.0	Very Low
	Erosion control	0.0	0.0	0.0	Very Low	0.0	0.0	0.0	Very Low
	Phosphate assimilation	0.9	0.0	0.0	Very Low	0.9	0.0	0.0	Very Low
	Nitrate assimilation	0.8	0.0	0.0	Very Low	0.8	0.0	0.0	Very Low
	Toxicant assimilation	0.9	0.0	0.0	Very Low	0.9	0.0	0.0	Very Low
	Carbon storage	0.3	No scores	No scores	No scores	0.3	No scores	No scores	No scores
	Biodiversity maintenance	0.0	0.0	0.0	Very Low	0.0	0.0	0.0	Very Low
PROVISIONING SERVICES	Water for human use	0.0	0.0	0.0	Very Low	0.0	0.0	0.0	Very Low
	Harvestable resources	1.0	0.0	0.0	Very Low	1.0	0.0	0.0	Very Low
	Food for livestock	0.8	0.0	0.0	Very Low	0.8	0.0	0.0	Very Low
	Cultivated foods	2.0	0.0	0.5	Very Low	2.0	0.0	0.5	Very Low
CULTURAL SERVICES	Tourism and Recreation	0.0	0.0	0.0	Very Low	0.0	0.0	0.0	Very Low
	Education and Research	0.0	0.0	0.0	Very Low	0.0	0.0	0.0	Very Low
	Cultural and Spiritual	0.0	0.0	0.0	Very Low	0.0	0.0	0.0	Very Low

Table 15: EIS scores obtained for UVB2 DWAF, 1999). EIS 3.0

		Present State				Future State			
ECOSYSTEM SERVICE		Supply	Demand	Importance Score	Importance	Supply	Demand	Importance Score	Importance
REGULATING AND SUPPORTING SERVICES	Flood attenuation	0.0	0.0	0.0	Very Low	0.0	0.0	0.0	Very Low
	Stream flow regulation	0.0	0.0	0.0	Very Low	0.0	0.0	0.0	Very Low
	Sediment trapping	1.0	0.0	0.0	Very Low	1.0	0.0	0.0	Very Low
	Erosion control	1.0	0.9	0.0	Very Low	1.0	0.9	0.0	Very Low
	Phosphate assimilation	0.8	0.0	0.0	Very Low	0.8	0.0	0.0	Very Low
	Nitrate assimilation	0.8	0.0	0.0	Very Low	0.8	0.0	0.0	Very Low
	Toxicant assimilation	0.9	0.0	0.0	Very Low	0.9	0.0	0.0	Very Low
	Carbon storage	1.2	2.7	1.1	Low	1.2	2.7	1.1	Low
	Biodiversity maintenance	3.2	0.0	1.7	Moderate	3.2	0.0	1.7	Moderate
PROVISIONING SERVICES	Water for human use	0.0	0.0	0.0	Very Low	0.0	0.0	0.0	Very Low
	Harvestable resources	0.5	0.0	0.0	Very Low	0.5	0.0	0.0	Very Low
	Food for livestock	4.0	1.0	3.0	High	4.0	1.0	3.0	High
	Cultivated foods	3.5	0.0	2.0	Moderate	3.5	0.0	2.0	Moderate
CULTURAL SERVICES	Tourism and Recreation	0.3	0.0	0.0	Very Low	0.3	0.0	0.0	Very Low
	Education and Research	0.0	0.0	0.0	Very Low	0.0	0.0	0.0	Very Low
	Cultural and Spiritual	0.0	0.0	0.0	Very Low	0.0	0.0	0.0	Very Low

Table 16: EIS scores obtained for the Depression wetlands (DAAF, 1999). EIS 2.0

		Present State				Future State			
ECOSYSTEM SERVICE		Supply	Demand	Importance Score	Importance	Supply	Demand	Importance Score	Importance
REGULATING AND SUPPORTING SERVICES	Flood attenuation	0.0	0.0	0.0	Very Low	0.0	0.0	0.0	Very Low
	Stream flow regulation	0.0	0.0	0.0	Very Low	0.0	0.0	0.0	Very Low
	Sediment trapping	1.0	0.0	0.0	Very Low	1.0	0.0	0.0	Very Low
	Erosion control	1.4	0.0	0.0	Very Low	1.4	0.0	0.0	Very Low
	Phosphate assimilation	1.0	0.0	0.0	Very Low	1.0	0.0	0.0	Very Low
	Nitrate assimilation	0.9	0.0	0.0	Very Low	0.9	0.0	0.0	Very Low
	Toxicant assimilation	0.9	0.0	0.0	Very Low	0.9	0.0	0.0	Very Low
	Carbon storage	1.4	2.7	1.3	Low	1.4	2.7	1.3	Low
	Biodiversity maintenance	2.7	0.0	1.2	Low	2.7	0.0	1.2	Low
PROVISIONING SERVICES	Water for human use	0.6	0.0	0.0	Very Low	0.6	0.0	0.0	Very Low
	Harvestable resources	1.0	0.0	0.0	Very Low	1.0	0.0	0.0	Very Low
	Food for livestock	3.0	0.0	1.5	Moderately Low	3.0	0.0	1.5	Moderately Low
	Cultivated foods	3.5	0.0	2.0	Moderate	3.5	0.0	2.0	Moderate
CULTURAL SERVICES	Tourism and Recreation	0.3	0.0	0.0	Very Low	0.3	0.0	0.0	Very Low
	Education and Research	0.0	0.0	0.0	Very Low	0.0	0.0	0.0	Very Low
	Cultural and Spiritual	1.0	0.0	0.0	Very Low	1.0	0.0	0.0	Very Low

These results indicate that the upper portion of UVB1 falls in EIS category A- Very High. It is an indication that the importance of services supplied by this wetland is very high relative to that supplied by other wetlands. The functioning and/or biodiversity of these features are usually very sensitive to anthropogenic disturbances. This includes areas that play a major role in providing goods and services at a local or regional level. Not only is this wetland the largest and most biodiverse wetland within the application area, it is also much less transformed than some other wetlands on the application area.

The middle portion of UVB1 as well as UVB2 fall within EIS category B- High. The importance of services supplied by these wetlands are moderately high to high compared to those supplied by other wetlands within the area. They possess features that are considered to be ecologically important and sensitive at a regional scale. The functioning and/or biodiversity of these features are typically moderately sensitive to anthropogenic disturbances. They typically play an important role in providing ecological services at the local scale.

Due to their small size and generally insignificant features, the Depression wetlands were calculated to fall within EIS Category C- Moderate. The importance of the services supplied by these wetlands are moderate relative to that supplied by other wetlands. They possess features that are ecologically important and sensitive at a local scale. The functioning and/or biodiversity of these features is not usually sensitive to anthropogenic disturbances. They typically play a small role in providing ecological services at the local scale. The two Depression wetlands that were not assessed (D5 & D6), were given the same scores as those that were, as they are of similar size and located within similar vegetation units.

The REC estimated appropriate for the wetland areas features is presented in **Table 17** below.

Table 17: Summary of the REC categories assigned to all wetland features.

Features	REC Category
UVB 1 (Upper)	A Improve
UVB 1 (Middle)	B/C Improve
UVB 1 (Lower)	D Improve
UVB 2	A/B

	Improve
D1 - D4	B Maintain
D5 - D6	B Maintain

Buffer Zone Determination

The buffer zones (Figure 40) 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). Due to the varying states of degradation and importance of different areas of UVB it was calculated to have different buffer zones, based on their importance and present condition. The recommended/exclusion buffer zones were calculated to be 17m (UVB1 upper), and 15m (UVB1 middle), 29m (UVB1 lower), 18m (UVB2), and 19m (D1- D6), given that mitigation measures suggested will be adhered to.

Summary of Results

The results recorded for the wetlands potentially affected by the prospecting activities are summarised in Table 18 below.

Table 18: Summary of the results

Classification	Scientific Buffer	PES	EIS	REC
UVB 1 (Upper)	17m	B	Very High	A Improve
UVB 1 (Middle)	15m	C	High	B/C Improve
UVB 1 (Lower)	29m	E	Low	D Improve
UVB 2	18m	B	High	A/B Improve
D1 - D4	19m	B	Moderate	B Maintain
D5 - D6	19m	B	Moderate	B Maintain

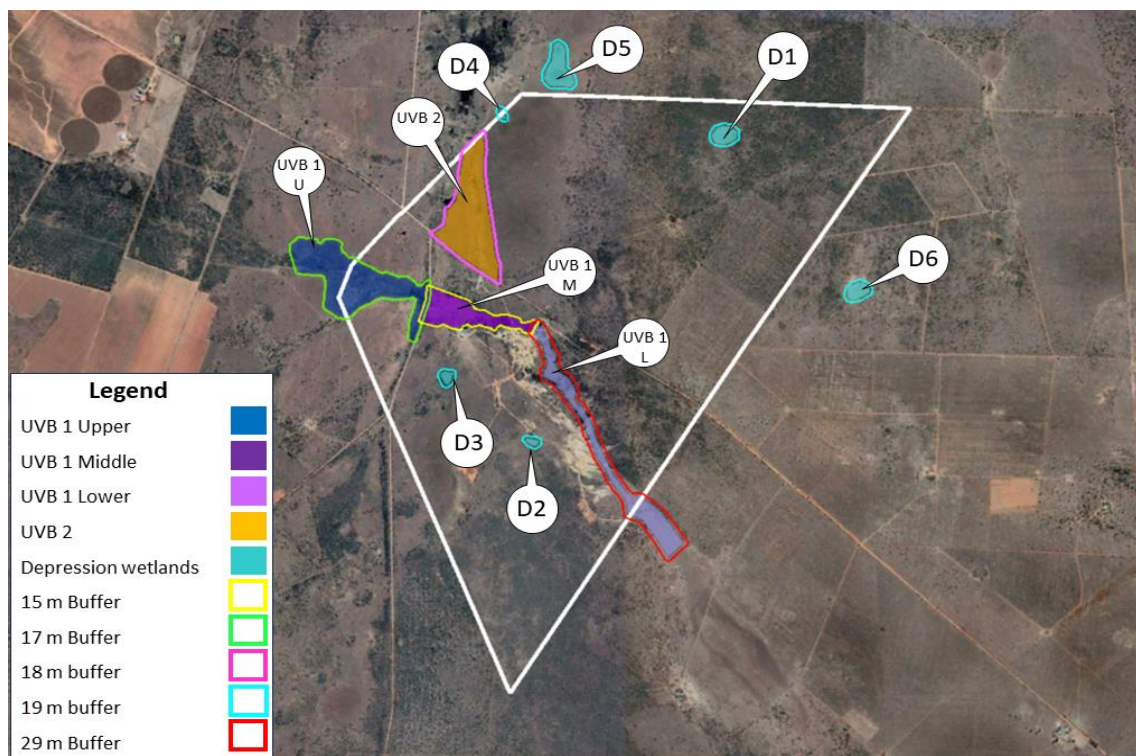


Figure 40: Watercourse Assessment and Delineation of the resources associated with the study site.

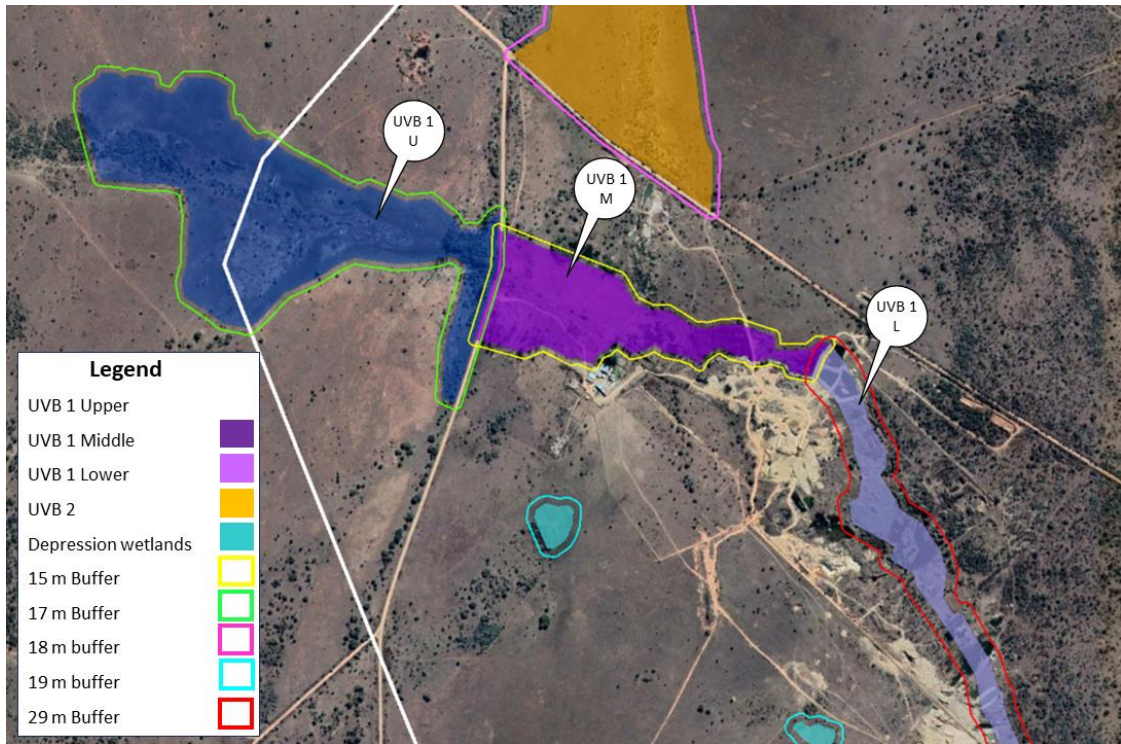


Figure 5: Watercourse Assessment and Delineation of the resources associated with the study site, focused on UVB1

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 43).

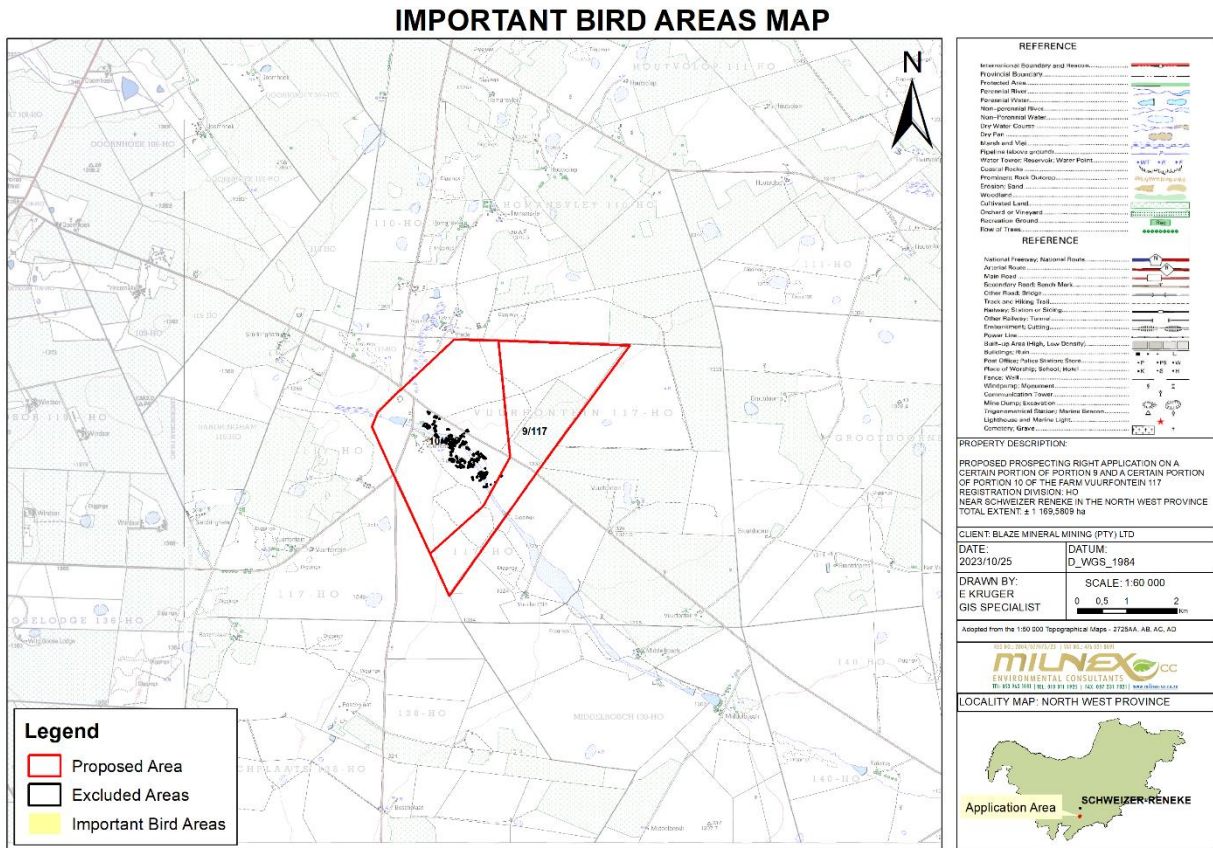


Figure 43: Important Bird and Biodiversity Areas associated with the study site.

RIVER ECOSYSTEM STATUS

According to **Figure 44**, an unnamed water course is present on the map but does not traverse any of the properties. The watercourse is classified as Class D: Largely Modified.

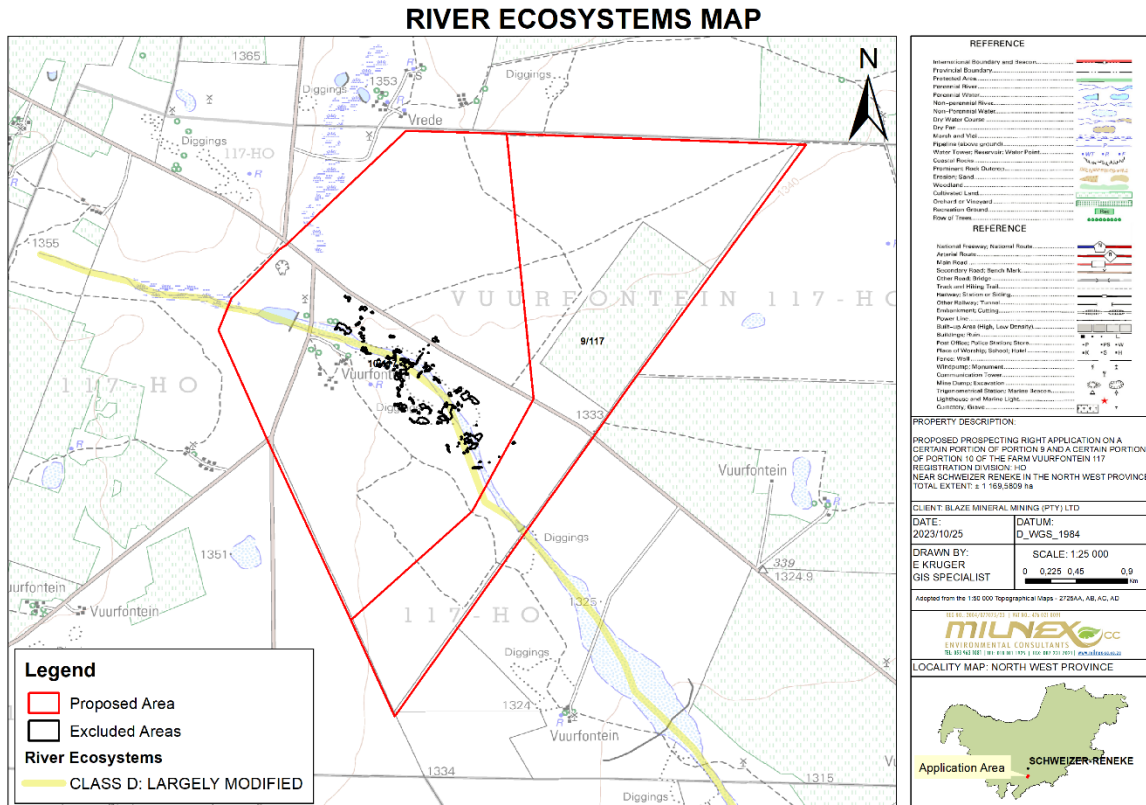


Figure 44: River Ecosystem status of the rivers occurring in close proximity to the study site.

CULTURAL, HERITAGE & PALAEOLOGICAL ASPECTS

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

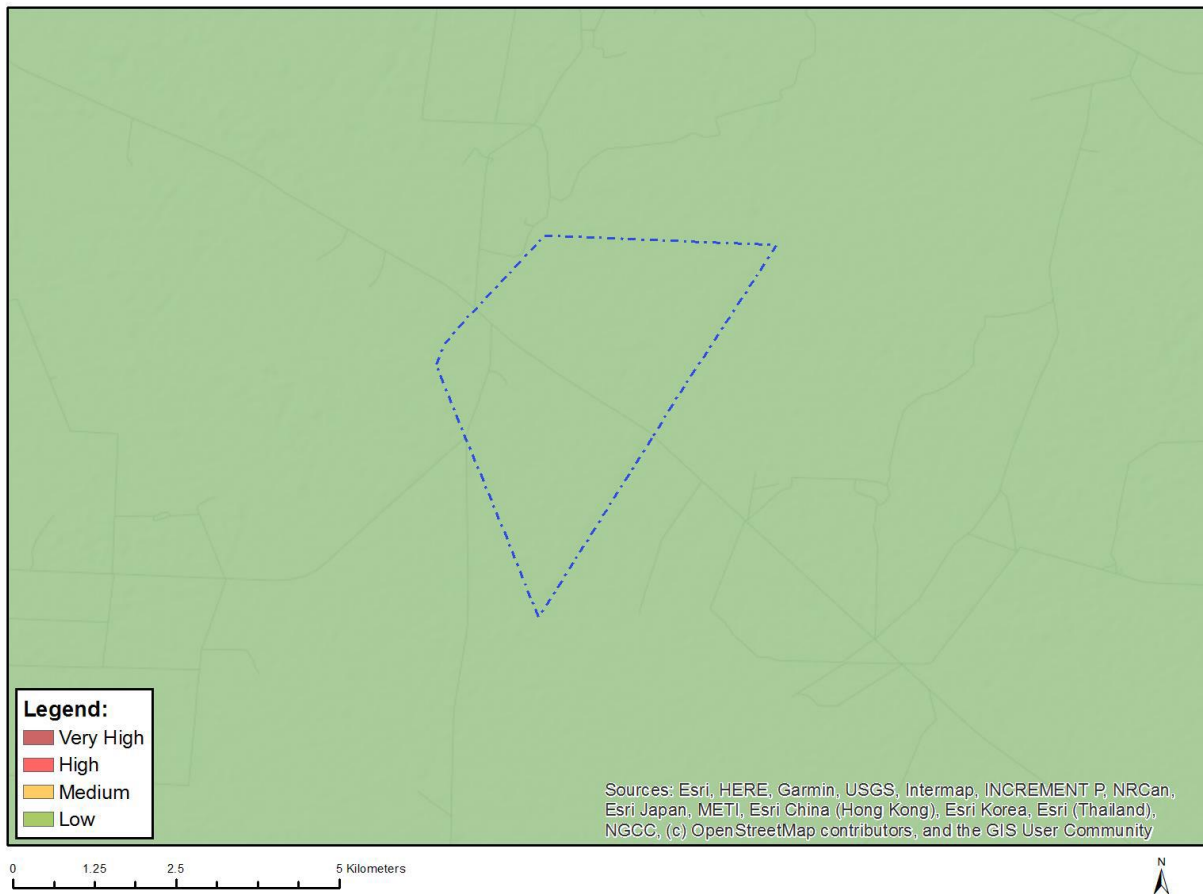


Figure 45: Archaeological and Cultural Heritage Combined Sensitivity

A Phase 1 heritage Impact Assessment was conducted by Mr Francois P Coetzee in October 2023. The findings were as follows:

Review of existing information/data

Additional information on the cultural heritage of the area was sourced from the following records:

- National Mapping Project by SAHRA (which lists heritage impact assessment reports submitted for South Africa);
- Environmental Potential Atlas (ENPAT);
- Online SAHRIS database;
- National Automated Archival Information retrieval System (NAAIRS);
- Maps and information documents supplied by the client; and
- Several heritage surveys have been conducted in the vicinity of the survey area (published and unpublished) material on the area (Kruger 2018a, 2018b; Kusel 2007; Van Schalkwyk 2017)

Although several heritage impact assessments have been completed in the general vicinity of the survey area, no heritage sites were recorded inside the survey footprint. A survey conducted in the Bloemhof Nature Reserve situated to the south of the survey footprint recorded Early, Middle and Later Stone assemblages, two cemeteries and at least ten historical farm homesteads (Kusel 2007). A survey on the farm Kameelkuil 88 HO near Bloemhof yielded one graveyard with over 100 graves (Van Schalkwyk 2017). A heritage scoping study (desktop) of the farm Ganspan 194 HO, situated to the north of the current survey footprint, was conducted and indicated a high probability of historical structures and graves in the area (Kruger 2018a). A heritage scoping study (desktop) of the farm Oersonskraal 250 HO, situated to the east of the current survey footprint, was conducted and indicated a low to medium probability of military remains, historical structures and graves in the area (Kruger 2018b). The farm Mimosa 61 HO located south of Schweizer-Reneke was surveyed in 2018, however no cultural heritage remains were recorded (Van Schalkwyk 2018). A survey

was also conducted on the farms Maraetchesfontein 54 HO and Rietput 60 HO which yielded the following cultural heritage sites, namely a rock art engraving site, a graveyard with two graves, another graveyard with 20 graves and a historical livestock enclosure (Van Schalkwyk 2021). During 2020 a heritage survey was conducted in the town Schweizer-Reneke and the farm Townlands 62 HO during which no cultural heritage remains were recorded (Kusel 2020).

Note that several heritage sites have been recorded in the Schweizer-Reneke and Wolmaransstad region, however none are located near the survey footprint (SAHRIS Database 2023). Furthermore, no declared National or Provincial Heritage Site has been recorded in the region (SAHRIS Database 2023).

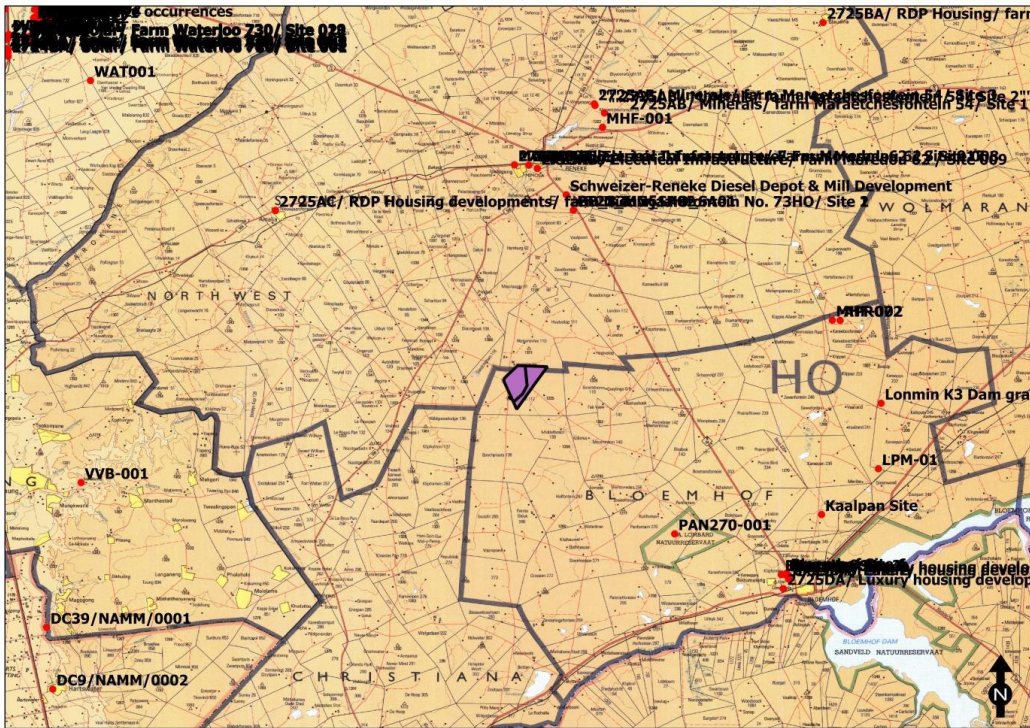


Figure 46: Recorded sites near the survey footprint (SAHRIS as at August 2023)

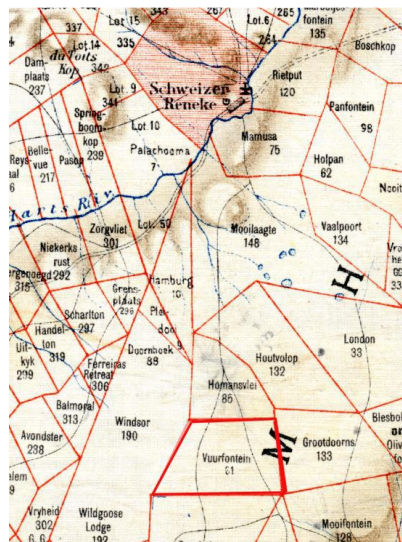


Figure 47: Jeppe's Map dating to 1899 indicates the location of the farms east of Ventersdorp

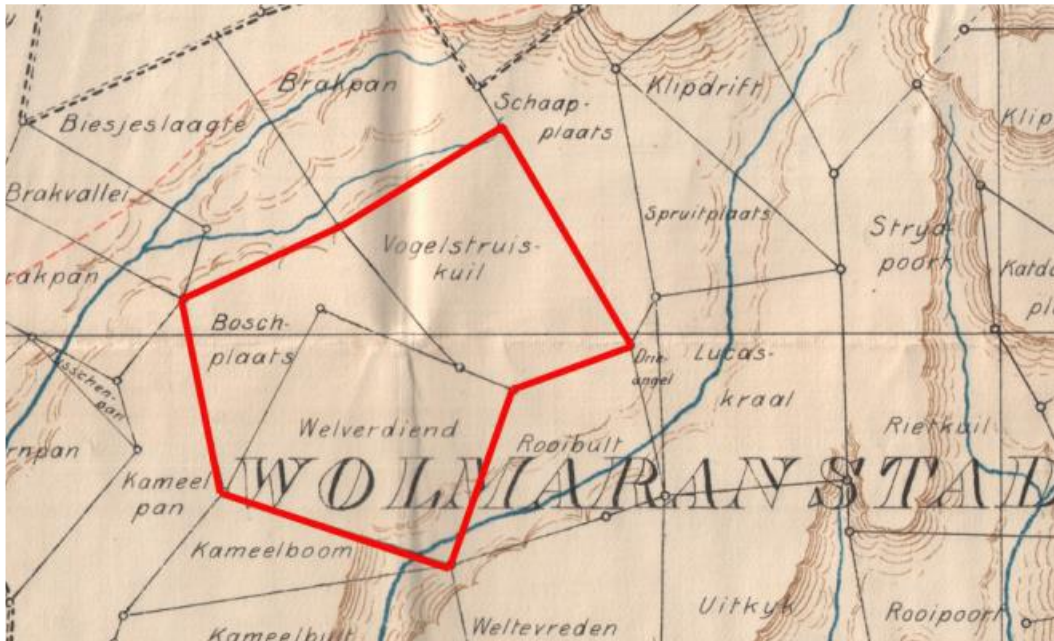


Figure 48: The farm indicated on the Field Intelligence Department Map of 1900

Historical maps of the late 19th to mid 20th centuries clearly indicate two access roads situated on the farm. According to archival documents the application of mining for the alluvial mining of precious stones (diamonds) on the farm Vuurfontein 117 HO was first requested in 1903 between Mr DG Pritchard and the owner of the farm (TAB/CS/346) and started in 1928 (SAB/MNW/945) with proclamations in 1939 (SAB/URU/1843) and 1946 (SAB/URU/2305) and later also in 1957 (SAB/URU/3620). In 1965 Portion 16 of the farm was deproclaimed for alluvial diamonds (SAB/URU/4841).

Site visits

The field survey was conducted in October 2023.

Social interaction and current inhabitants

Local residents and the farm owners were consulted during the survey to locate known heritage sites in the region.

Public Consultation and Stakeholder Engagement

An advertisement was placed in English in the local newspaper (Stellalander) on 10 May 2023 notifying the public of the EIA process and requesting Interested and Affected Parties (I&APs) to register with, and submit their comments to Milnex CC. I&APs were given the opportunity to raise comments within 30 days of the advertisement. Site notices were placed on site in English to inform surrounding communities and immediately adjacent landowners of the proposed development. I&APs will be given the opportunity to raise comments. 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 15 May 2023 and were requested to submit comments by 14 June 2023 (30 days).

Assumptions, restrictions, gaps and limitations

No severe physical restrictions were encountered as the survey area was totally accessible.

The Cultural Heritage Sites

Isolated occurrences

Isolated occurrences are artefacts or small features recorded on the surface with no contextual information. No other associated material culture (in the form of structures or deposits) was noted that might provide any further context. This can be the result of various impacts and environmental factors such as erosion and modern developments. By contrast archaeological sites are often complex sites with evidence of archaeological deposit and various interrelated features such as complex deposits, stone walls and middens. However, these isolated occurrences are seen as remains of erstwhile complex or larger sites and they therefore provide a broad indication of possible types of sites or structures that might be expected to occur or have occurred in the survey footprint.

No isolated finds were recorded during the survey.

Heritage sites

A total of seven sites were recorded during the survey of which three are graveyards (Sites 1, 2 & 4), three are historical structures (Sites 3, 5 & 6) and one is the original farmhouse complex (Site 7). The sites are probably associated with a late 19th and early 20th phase of occupation as we know the farm was already occupied and owned by 1871. According to the family the farmhouse was built in the 1880s. Site 2 is an older graveyard and probably dates to the late 19th century, but the younger graveyard (Site 2) is a more recent addition, dating to the mid- 20th century. The main farmhouse (Site 7) has been extensively expanded and altered as the original central core is still intact. The original farm sheds and livestock enclosures are still standing and also date to the late 19th century. A blockhouse also forms part of the livestock enclosure walling. The farmhouse is also significant as it was occupied by the British soldiers during the South African War (1899-1902) (Personal Communication: farm owner).

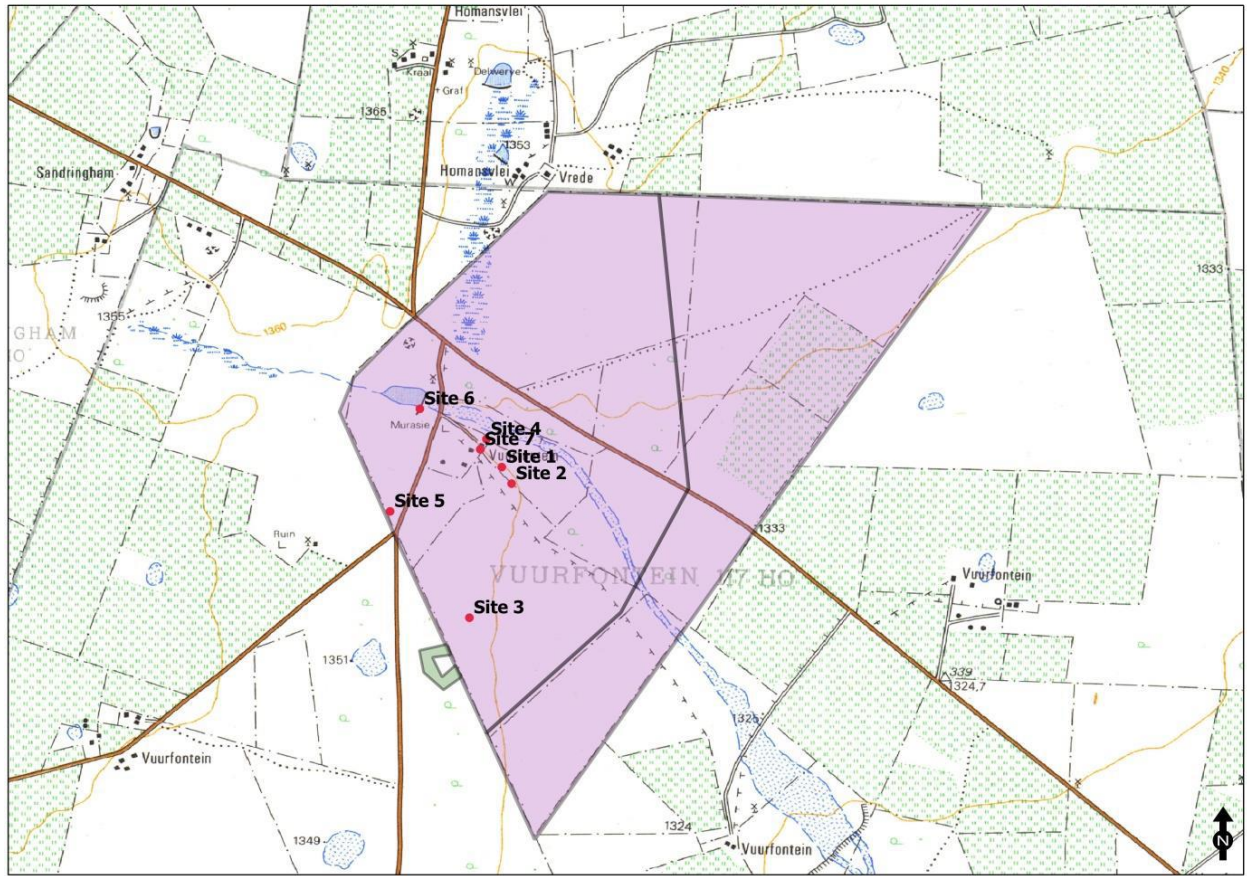


Figure 49: Location of the heritage sites within the survey footprint

Locations and Evaluation of Sites

Table 19: Location and evaluation of sites

Site No	Coordinates	Site Type	Field Rating of Significance	Impact	Proposed Mitigation
1	27.428348 , 25.295694	Graveyard	Generally Protected A High significance	None	<ul style="list-style-type: none"> Maintain 50 m buffer zone during prospecting Should be fenced off
2	27.429536 , 25.296400	Graveyard	Generally Protected A High significance	None	<ul style="list-style-type: none"> Maintain 50 m buffer zone during prospecting Should be fenced off
3	27.439171 , 25.293368	Historical structure	Generally Protected C Low significance	None	<ul style="list-style-type: none"> Maintain 50 m buffer zone during prospecting
4	27.426348 , 25.294589	Graveyard	Generally Protected A High significance	None	<ul style="list-style-type: none"> Maintain 50 m buffer zone during prospecting Should be fenced off
5	27.431529 , 25.287677	Historical structure	Generally Protected C Low significance	None	<ul style="list-style-type: none"> Maintain 50 m buffer zone during prospecting
6	27.424161 , 25.289811	Historical structure (Dam wall)	Generally Protected C Low significance	None	<ul style="list-style-type: none"> Maintain 50 m buffer zone during prospecting
7	27.427075 , 25.294148	Farmhouse Complex	Generally Protected C Low significance	None	<ul style="list-style-type: none"> Maintain 50 m buffer zone during prospecting

Management Measures

Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. Those resources that cannot be avoided and that are directly impacted by the proposed development can be excavated/recorded and a management plan can be developed for future action. Those sites that are not impacted on can be written into the management plan, whence they can be avoided or cared for in the future.

Objectives

- Protection of archaeological, historical and any other site or land considered being of cultural value within the project boundary against vandalism, destruction and theft.
- The preservation and appropriate management of new discoveries in accordance with the NHRA, should these be discovered during construction activities

The following shall apply:

- Known sites should be clearly marked in order that they can be avoided during construction activities.
- The contractors and workers should be notified that archaeological sites might be exposed during the construction activities.
- Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible;
- All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken;
- Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and
- Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the NHRA (Act No. 25 of 1999), Section 51. (1).

Control

In order to achieve this, the following should be in place:

- A person or entity, e.g. the Environmental Control Officer, should be tasked to take responsibility for the heritage sites and should be held accountable for any damage.
- Known sites should be located and isolated, e.g. by fencing them off. All construction workers should be informed that these are no-go areas, unless accompanied by the individual or persons representing the Environmental Control Officer as identified above.
- In areas where the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, but only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.

According to the DFFE Screening Report the proposed area within Medium Paleontology Theme Sensitivity. Please see map colour map under **Appendix 7**.

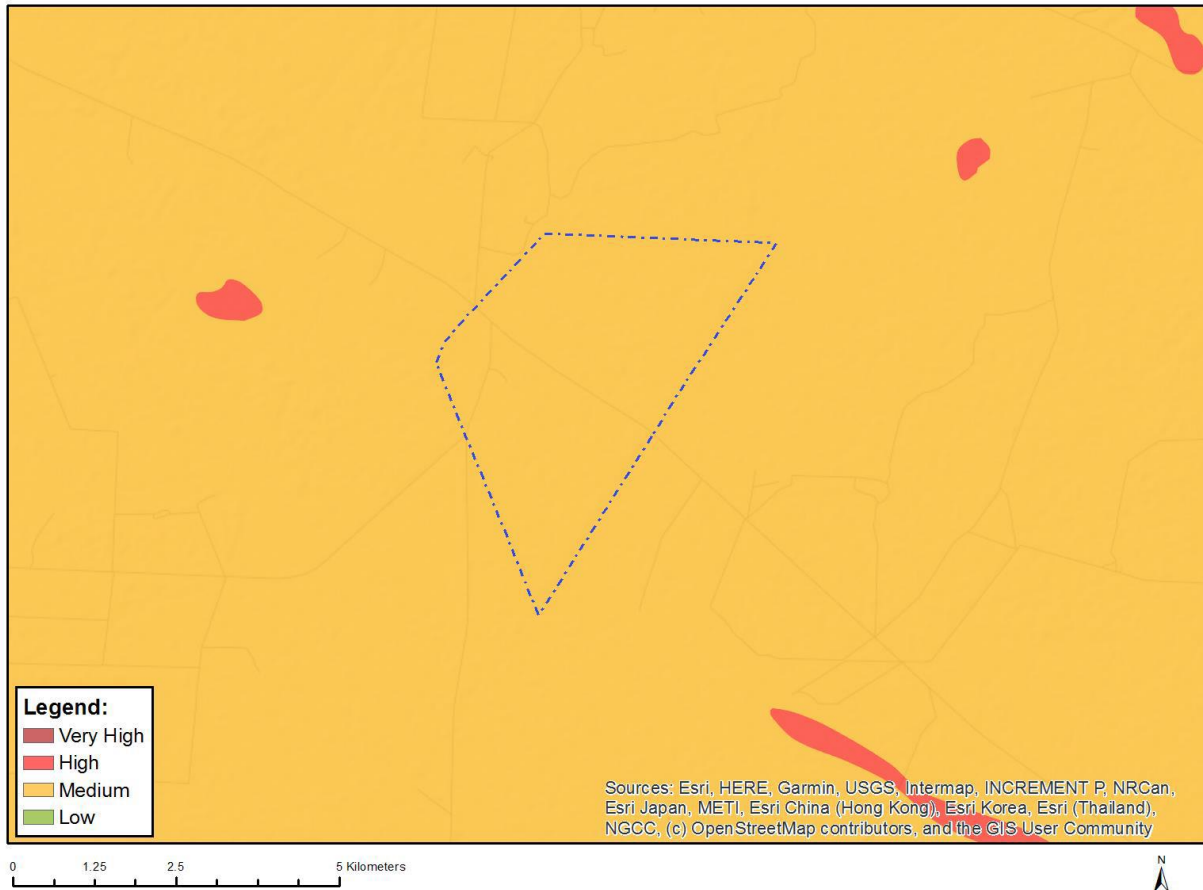


Figure 50: Relative Palaeontology Theme Sensitivity

A desktop Paleontological Assessment has been conducted by Mrs Elize Butler. The findings were as follows:

The proposed development is underlain by the Bothaville Formation and the Allanridge Formation (Platberg Group, Ventersdorp Supergroup), as well as a small portion of Quaternary river-terrace gravel that are diamondiferous in places.

According to the South African Heritage Resources Information System, the Palaeontological Sensitivity of the Formation and the Allanridge Formations is Low, while that of the Quaternary river-terrace gravel is moderate. A Low Palaeontological Sensitivity has thus been allocated to the proposed development. It is therefore considered that the proposed mining will not lead to detrimental impacts on the palaeontological heritage of the area.

If fossil remains 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 (if possible, *in situ*) 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 correct mitigation (recording and collection) can be carry out by a paleontologist.

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

DESCRIPTION OF THE SOCIO-ECONOMIC ENVIRONMENT

Description of the socio-economic environment

- Socio-economic conditions

Geography, History & Economy

Lekwa-Teemane Local Municipality is part of Dr Ruth Segomotsi Mompoti District Municipality.

Description: The Lekwa-Teemane Local Municipality is a Category B municipality situated in the Dr Ruth Segomotsi Mompoti District Municipality in the North West Province. It neighbours the following municipalities: Maquassi Hills, Mamusa, the Frances Baard District and Magareng. It is one of five municipalities in the district. Lekwa-Teemane was established on 6 December 2000.

Christiana is an agricultural town situated on the banks of the Vaal River. The town was established in 1870, when diamonds were discovered in the river banks.

Not far from Christiana is the agricultural town of Bloemhof. It was founded in 1864 and established on the farm owned by John Barclay, who survived the HMS Birkenhead shipwreck in 1852. The place became known as Bloemhof (flower court) because of the lovely gardens that were planted there by Barclay's daughter.

Area: 3 654km²

Cities/Towns: Bloemhof, Christiana

Main Economic Sectors: Agriculture and hunting (12.6%), transport (8%), finance and insurance (7.6%)

DESCRIPTION OF THE CURRENT LAND USES.

Portion 9 and 10 of the farm Vuurfontein 117, Registration Division, HO, North West Province has a history of mining/prospecting activities. It must be noted that Blaze Mineral Mining (Pty) Ltd will not take responsibility for any existing/open disturbances. The current disturbances have been surveyed by drone has been mapped. All maps in this document have been amended accordingly, and any current disturbances have thus been excluded from this application in terms of existing environmental liability

According to the map (Figure 51 and Figure 52), the proposed area is covered with largely with grasslands, some cultivated areas are also present. The map also indicates that some degraded areas are present, largely due to historical mining/prospecting activities

In terms of the National Water Act the following water uses will be applied for:

- 21a - Taking Water from a Water
- 21b – The storing of water
- 21c – Impeding or diverting the flow of a watercourse
- 21g – Disposing of waste
- 21i – Altering the beds or banks of a water course.

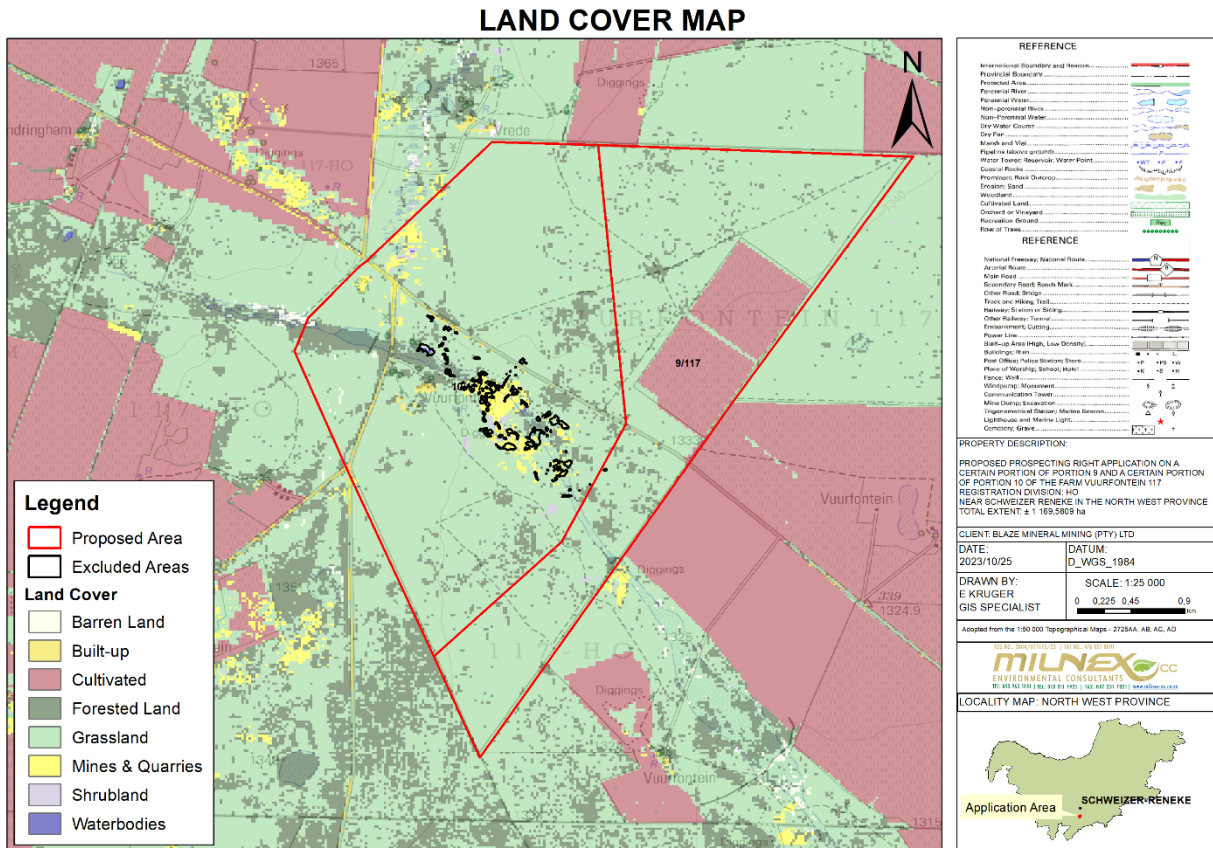


Figure 51: Land cover

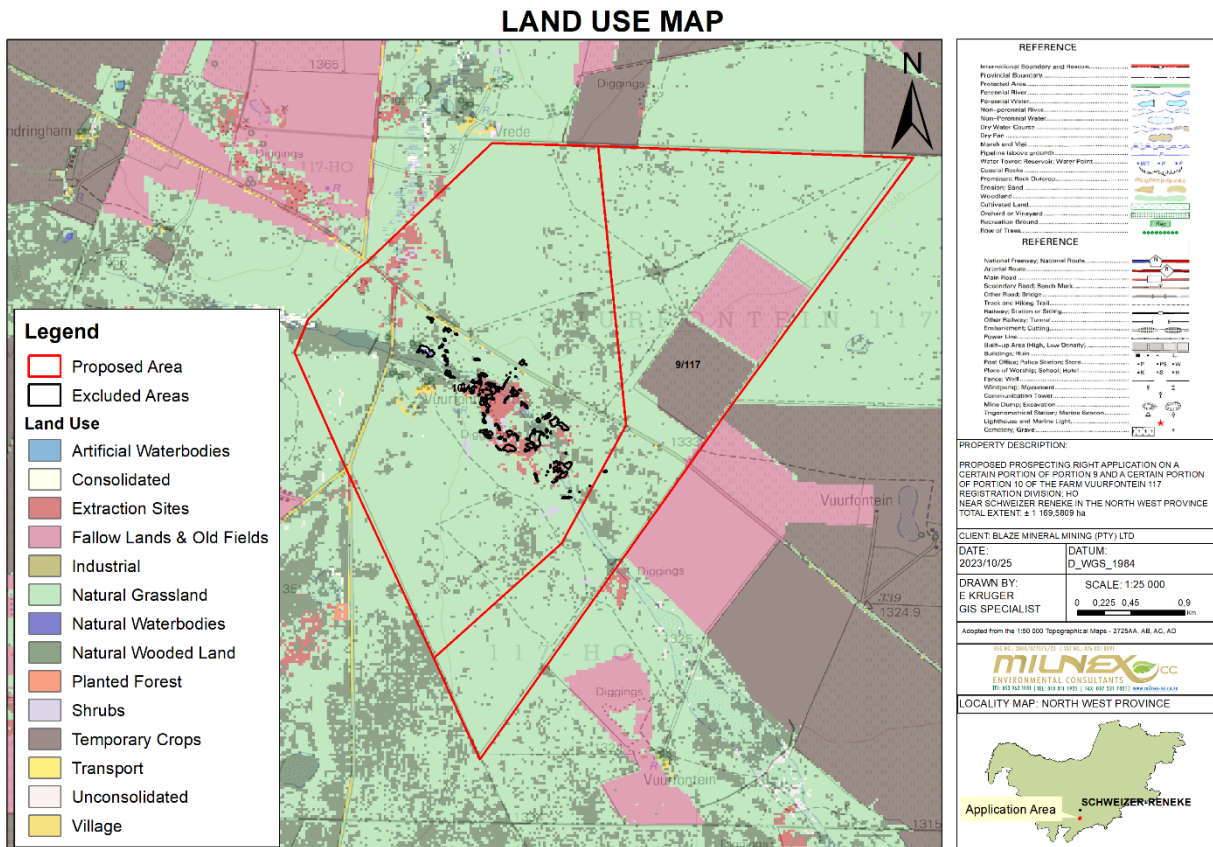


Figure 52: Land use map

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 result from the proposed development. Different impacts need to be evaluated in terms of its significance and in doing so highlight the most critical issues to be addressed.

Significance is determined through a synthesis of impact characteristics which include context and intensity of an impact. Context refers to the geographical scale i.e. site, local, national or global whereas intensity is defined by the severity of the impact e.g. the magnitude of deviation from background conditions, the size of the area affected, the duration of the impact and the overall probability of occurrence. Significance is calculated as shown in the Table below.

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

Impact Rating System

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

- Construction
- Operation
- Decommissioning

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

Table 20: 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
<p>Site preparation Site Clearance, establishing construction area</p>	<p>Construction Operation Decommissioning</p>	<p>Physical destruction and disturbance of:</p> <ul style="list-style-type: none"> • Biodiversity (thicket is mostly invasive tree species and area is already disturbed by agricultural activities) • Air pollution • Disturbing noise • Visual impacts
<p>Earthworks</p>	<p>Construction Operation Decommissioning</p>	<p>Excavations:</p> <ul style="list-style-type: none"> • 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
<p>Civil works Erection of structures, concrete work, steel work, electrical installation, establishing pipelines (if any)</p>	<p>Construction Operation Decommissioning</p>	<ul style="list-style-type: none"> • 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
<p>Pitting, Trenching, load, and hauling</p>	<p>Construction Operation</p>	<ul style="list-style-type: none"> • Loss of mineral resources • Loss of soil resources and land capability <p>Physical destruction and disturbance of:</p> <ul style="list-style-type: none"> • 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
<p>Waste rock management Storage, stockpile or final disposal</p>	<p>Operation Decommissioning Closure (final land form)</p>	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • Pollution if not managed and stored properly
Rehabilitation Replacing soil, slope stabilization, landscaping, re-vegetation, restoration	Construction Operation Decommissioning Closure	<ul style="list-style-type: none"> • Disturbance of biodiversity • Alteration of natural drainage patterns • Contamination of groundwater • Air pollution • Visual impacts

ACTIVITY	PHASE	POTENTIAL POSITIVE IMPACTS
Job creation	Construction Operation	<ul style="list-style-type: none"> • Temporary employment and other economic benefits
Maintenance and aftercare Inspection and maintenance of remaining facilities and rehabilitated areas	Closure	<ul style="list-style-type: none"> • 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 Scoping and EIR report, as well as response provided is captured and recorded within the Comments and Response Report and will be attached in the final EIR.

POTENTIAL IMPACT	POSSIBLE MITIGATION MEASURES
Influx of persons (job seekers)	<ul style="list-style-type: none"> Establish and maintain site security measures Control site and facility access
Hazardous waste pollution	<ul style="list-style-type: none"> Implement hazardous waste, dirty water and mineralised and non- mineralised waste management procedures
Loss of soil resources and land capability through physical disturbance	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Authorise all water uses as defined in the NWA Compliance with relevant license requirements
Air pollution	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> • 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, Cultural & Paleontology	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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, the possibility to encounter high volumes of Diamonds (Alluvial), Diamonds (General) & Diamonds (DIA) on Portion 9 and Portion 10 of the Farm Vuurfontein 117., Registration Division: HO, North West Province is preferred due to the sites mineral resources. The specific site has been chosen for its mineral resources thus making an alternative site selection null and void. No prospecting should commence without the necessary permits and the impacts on the surrounding area, the livestock grazing and agricultural land should be kept to the minimum were identified. (PWP, **Appendix 9**).

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.

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

(AS CONTEMPLATED IN THE ACCEPTED SCOPING REPORT THROUGH THE LIFE OF THE ACTIVITY, INCLUDING—.)

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

Process for the identification of key issues

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

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

Checklist analysis

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

Table 21: 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	✘			An unnamed river traverses the area. The river is classified as a class D: Largely Modified river
II. A conservation or open space area			✘	
III. An area that is of cultural importance		✘		According to the DEA screening tool the cultural Heritage Sensitivity is classified as low
IV. Site of geological significance		✘		
V. Areas of outstanding natural beauty		✘		Land capability 4 & 5
VI. Highly productive agricultural land			✘	Some agricultural/historical agriculture has taken place on the property
VII. Floodplain			✘	An unnamed river traverses the area. The river is classified as a class D: Largely Modified river. A wetland study will have be conducted to determine such
VIII. Indigenous forest			✘	
IX. Grass land	✘			
X. Bird nesting sites			✘	According to appendix 7, the area does not fall within an Important Bird Area
XI. Red data species			✘	
XII. Tourist resort			✘	
2. Will the project potentially result in potential?				
I. Removal of people		✘		None.
II. Visual Impacts	✘			The visual impact will be managed
III. Noise pollution		✘		The noise impact is unlikely to be significant.
IV. Construction of an access road		✘		None. Access will be obtained from gravel road off the R506 & R34

V. Risk to human or valuable ecosystems due to explosion/fire/discharge of waste into water or air.		×		None.
VI. Accumulation of large workforce (>50 manual workers) into the site.		×		Approximately 15 employment opportunities will be created during the construction and operational phase of the project.
VII. Utilisation of significant volumes of local raw materials such as water, wood etc.	×			The application area will use 14 feet washing pans will be used, the amount of water for the pans will be 15 000 L/hour from which 30% is re-used.
VIII. Job creation	×			Approximately 15 employment opportunities will be created during the construction and operational phase of the project.
IX. Traffic generation		×		None.
X. Soil erosion		×		Only areas earmarked for mining will be cleared. Mining will be phased and the topsoil stockpiled separately. Concurrent rehabilitation will take place. The soil also has a low erosion potential.
XI. Installation of additional bulk telecommunication transmission lines or facilities		×		None.
3. Is the proposed project located near the following?				
I. A river, stream, dam or wetland	×			Some depressions are present adjacent to the application area
II. A conservation or open space area			×	
III. An area that is of cultural importance			×	According to the DEA screening tool the cultural Heritage Sensitivity is classified as low (Appendix 7)
IV. A site of geological significance			×	
V. An area of outstanding natural beauty			×	According to the land use map, the area consists of historic mining, grassland, an unnamed river and cultivated/historic cultivated fields
VI. Highly productive agricultural land			×	
VII. A tourist resort		×		
VIII. A formal or informal settlement		×		

Matrix analysis

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

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

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

- **Mitigation:** Impacts need to be mitigated to minimise the effect on the environment.

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

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									
<p>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."</p> <p>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;</p> <p>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 bioregional plans; (v) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as 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."</p>	<p><u>Site clearing and preparation</u> Areas earmarked for prospecting will need to be cleared, topsoil will be stockpiled separately.</p>	BIOPHYSICAL ENVIRONMENT	Fauna & Flora	<ul style="list-style-type: none"> Loss or fragmentation of indigenous natural vegetation. Loss of sensitive species. Loss or fragmentation of habitats. 		-	L	Yes	-
			Air	<ul style="list-style-type: none"> Air pollution due to the increase of traffic of construction vehicles. 	-		M	Yes	-
			Soil	<ul style="list-style-type: none"> Soil degradation, including erosion. Loss of topsoil. Disturbance of soils and existing land use (soil compaction). 		-	S	Yes	-
			Geology	<ul style="list-style-type: none"> It is not foreseen that the removal of indigenous vegetation will impact on the geology or vice versa. 	-		S	Yes	-
			Existing services infrastructure	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Pollution due to construction vehicles. 	-		S	Yes	-
			Surface water	<ul style="list-style-type: none"> Increase in storm water run-off. Pollution of water sources due to soil erosion. Destruction of watercourses (pans/dams/streams). 		-	S	Yes	-
		SOCIALECONOMIC ENVIRONMENT	Local unemployment rate	<ul style="list-style-type: none"> Job creation. Business opportunities. Skills development. 		+	S	Yes	-
			Visual landscape	<ul style="list-style-type: none"> Potential visual impact on residents of farmsteads and motorists in close proximity to proposed facility. 	-		L	Yes	-
			Traffic volumes	<ul style="list-style-type: none"> Increase in construction vehicles. 	-		S	Yes	-
			Health & Safety	<ul style="list-style-type: none"> Air/dust pollution. Road safety. Increased risk of veld fires. 		-	S	Yes	-
			Noise levels	<ul style="list-style-type: none"> The generation of noise as a result of construction vehicles, the use of machinery such as drills, excavators, rotary pans, dumper trucks and people working on the site. 	-		L	Yes	-
			Tourism industry	<ul style="list-style-type: none"> Since there are no tourism facilities in close proximity to the site, the construction activities will not have an impact on tourism in the area. 	N/A	N/A	N/A	Yes	-
Heritage resources	<ul style="list-style-type: none"> Removal or destruction of archaeological and/or paleontological sites. 	-		S	Yes	-			

				<ul style="list-style-type: none"> Removal or destruction of buildings, structures, places and equipment of cultural significance. Removal or destruction of graves, cemeteries and burial grounds. 						
OPERATIONAL PHASE										
<p>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, 2002, 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.</p> <p>Listing Notice 1, (GNR 327), Activity 19: The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from: (i) a watercourse;</p>	<p>The key components of the proposed project are described below:</p> <ul style="list-style-type: none"> Supporting Infrastructure - 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. Roads – Access will be obtained from gravel road off the R506 & R 34 Fencing - For health, safety and security reasons, the facility will be required to be fenced off from the surrounding farm. 	BIOPHYSICAL ENVIRONMENT	Fauna & Flora	<ul style="list-style-type: none"> Fragmentation of habitats. Establishment and spread of declared weeds and alien invader plants (operations). 		-	L	Yes	-	
			Air quality	<ul style="list-style-type: none"> Air pollution due to the mining activity, crusher plant and transport of the gravel to the designated areas. 	-		S	Yes	-	
			Soil	<ul style="list-style-type: none"> Soil degradation, including erosion. Disturbance of soils and existing land use (soil compaction). Loss of agricultural potential (low significance relative to agricultural potential of the site). 		-	L	Yes	-	
			Geology	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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. Approximately 15 000 L/hour 		-	L	Yes	-	
			Ground water	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Increase in storm water runoff. The development will potentially result in an increase in storm water run-off that needs to be managed to prevent soil erosion. Destruction of watercourses (pans/dams/streams). Leakage of hazardous materials. The machinery on site require oils and fuel to function. Leakage of these oils and fuels can contaminate water supplies. 	-		L	Yes	-	
			SOCIAL/ECONOMIC ENVIRONMENT	Local unemployment rate	<ul style="list-style-type: none"> Job creation. Security guards will be required for 24 hours every day of the week. Skills development. 		+	L	Yes	-
				Visual landscape	<ul style="list-style-type: none"> The proposed portions are used for livestock grazing which will still take place simultaneously with the prospecting activity, however this depends on the location of the activity. 		-	L	Yes	-
				Traffic volumes	<ul style="list-style-type: none"> Increase in vehicles collecting gravel for distribution. 	-		S	Yes	-
				Health & Safety	<ul style="list-style-type: none"> Air/dust pollution. Road safety. 		-	S	Yes	-
				Noise levels	<ul style="list-style-type: none"> The proposed development will result in noise pollution during the operational phase. 	-	-	L	Yes	-

			Tourism industry	<ul style="list-style-type: none"> Since there are no tourism facilities in close proximity to the site, the decommissioning activities will not have an impact on tourism in the area. 	N/A	N/A	N/A	N/A	-	
			Heritage resources	<ul style="list-style-type: none"> 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										
-	<p><u>Mine closure</u> During the mine closure the Mine and its associated infrastructure will be dismantled.</p> <p><u>Rehabilitation of biophysical environment</u> The biophysical environment will be rehabilitated.</p>		BIOPHYSICAL ENVIRONMENT	Fauna & Flora	<ul style="list-style-type: none"> Re-vegetation of exposed soil surfaces to ensure no erosion in these areas. 	+		L	Yes	-
				Air quality	<ul style="list-style-type: none"> Air pollution due to the increase of traffic of construction vehicles. 	-		S	Yes	-
				Soil	<ul style="list-style-type: none"> Backfilling of all voids Placing of topsoil on backfill 	+		L	Yes	-
				Geology	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Pollution due to construction vehicles. 	-		S	Yes	-
				Surface water	<ul style="list-style-type: none"> Increase in storm water run-off. Pollution of water sources due to soil erosion. Destruction of watercourses (pans/dams/streams). 	-		S	Yes	-
			SOCIAL/ECONOMIC ENVIRONMENT	Local unemployment rate	<ul style="list-style-type: none"> Loss of employment. 		-	L	Yes	-
				Visual landscape	<ul style="list-style-type: none"> Potential visual impact on visual receptors in close proximity to proposed facility. 	-		S	Yes	-
				Traffic volumes	<ul style="list-style-type: none"> Increase in construction vehicles. 	-		S	Yes	-
				Health & Safety	<ul style="list-style-type: none"> Air/dust pollution. Road safety. Increased crime levels. The presence of mine workers on the site may increase security risks associated with an increase in crime levels as a result of influx of people in the rural area. 			L	Yes	-
				Noise levels	<ul style="list-style-type: none"> The generation of noise as a result of construction vehicles, the use of machinery and people working on the site. 	-		S	Yes	-
				Tourism industry	<ul style="list-style-type: none"> Since there are no tourism facilities in close proximity to the site, the decommissioning activities will not have an impact on tourism in the area. 	N/A	N/A	N/A	N/A	-
				Heritage resources	<ul style="list-style-type: none"> 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/game and farm infrastructure, and increased risk of veld fires. The abovementioned impacts are discussed in more detail below:

Ecological Impacts:

Potential Environmental Impact	Environmental Impact Before Mitigation					Significance	Environmental Impact After Mitigation					Significance
	Frequency of Impact	Frequency of Activity	Severity	Spatial Scale	Duration		Frequency of Impact	Frequency of Activity	Severity	Spatial Scale	Duration	
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

Impact methodology pertaining to all Biodiversity/Ecological impacts as stated above can be found on page 90 – 96 of the Ecological and Wetland Impact Report, attached in **Appendix 12**.

- 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	Definite (4)	Possible (2)
Duration	Permanent (4)	Medium term (2)
Magnitude	High (3)	Medium (2)
Reversibility	Barely reversible (3)	Completely reversible (1)
Irreplaceable loss of resources	Significant loss of resource (3)	Marginal loss (2)
Cumulative impact	Medium cumulative impact (3).	
Significance	Negative high (54)	Negative Low (22)
Can impacts be mitigated?	<p>The following mitigation or management measures are provided:</p> <ul style="list-style-type: none"> • 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. <p>Establish an effective record keeping system for each area where soil is disturbed for constructional purposes. These records should be included in environmental performance reports, and should include all the records below.</p> <ul style="list-style-type: none"> • 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. 	

	<ul style="list-style-type: none"> Photograph the area on completion of rehabilitation and on an annual basis thereafter to show vegetation establishment and evaluate progress of restoration over time. <p>Section (f) of the EMPr also provide mitigation measures related to topsoil management.</p>
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- 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.

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	Permanent (4)	Medium term (2)
Magnitude	High (3)	Low (1)
Reversibility	Barely reversible (3)	Completely reversible (1)
Irreplaceable loss of resources	Significant loss of resource (3)	Marginal (2)
Cumulative impact	Medium cumulative impact (3).	
Significance	Negative High (51)	Negative low (11)
Can impacts be mitigated?	<p>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.</p> <p>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.</p>	

- Temporary noise disturbance - Preparation activities will result in the generation of noise over a period of months. Sources of noise are likely to include vehicles, the use of machinery such as back actors and people working on the site. The noise impact is unlikely to be significant; but activities should be limited to normal working days and hours (6:00 – 18:00).

Temporary noise disturbance	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Probable (3)	Possible (2)
Duration	Short term (1)	Short term (1)
Magnitude	Medium (2)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	Marginal loss (2)	Marginal loss (2)
Cumulative impact	Low cumulative impact (2).	
Significance	Negative low (22)	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. Construction waste is likely to consist of packaging, scrap metals,

waste cement, etc If any). The applicant will need to ensure that general and construction waste is appropriately disposed of i.e. taken to the nearest licensed landfill. Sufficient ablution facilities must be provided, in the form of portable/VIP toilets.

Generation of waste	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Site (1)
Probability	Possible (2)	Possible (2)
Duration	Medium term (2)	Medium term (2)
Magnitude	Medium (2)	Low (1)
Reversibility	Irreversible (4)	Irreversible (4)
Irreplaceable loss of resources	Marginal loss of resource (2)	No loss of resource (1)
Cumulative impact	Low cumulative impact (2) - An additional demand for landfill space could result in significant cumulative impacts if services become unstable or unavailable, which in turn would negatively impact on the local community.	
Significance	Negative low (28)	Negative low (12)
Can impacts be mitigated?	Yes, it is therefore important that all management actions and mitigation measures included in section (f) of the EMP are implemented.	

- Impacts on heritage objects

According to the Phase 1 Heritage impact assessment the following Impact Assessment Rating was determined

Nature: A total of seven sites were recorded during the survey		
	Without mitigation	With mitigation
Construction Phase		
<i>Probability</i>	Definite (5)	Very Improbable (1)
<i>Duration</i>	Permanent (5)	Short term (2)
<i>Extent</i>	Limited to the site (1)	Limited to the site (1)
<i>Magnitude</i>	Very High (10)	Minor (2)
Significance of Impact	80 (High)	5 (Low)
<i>Status (positive or negative)</i>	Negative	Positive
Reversibility	Low	Low
<i>Irreplaceable loss of resources?</i>	Yes	None
<i>Cumulative impacts and indirect impacts</i>	Prospecting phase may cause excessive vibrations.	
<i>Can impacts be mitigated?</i>	Yes, buffer zones (50 metres) should be maintained during prospecting activities.	

The following mitigation measures are recommended:

- Protection of archaeological, historical and any other site or land considered being of cultural value within the project boundary against vandalism, destruction and theft.
- The preservation and appropriate management of new discoveries in accordance with the NHRA, should these be discovered during construction activities

The following shall apply:

- Known sites should be clearly marked in order that they can be avoided during construction activities.
- The contractors and workers should be notified that archaeological sites might be exposed during the construction activities.
- Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible;

- All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken;
- Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and
- Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the NHRA (Act No. 25 of 1999), Section 51. (1).

Control

In order to achieve this, the following should be in place:

- A person or entity, e.g. the Environmental Control Officer, should be tasked to take responsibility for the heritage sites and should be held accountable for any damage.
 - Known sites should be located and isolated, e.g. by fencing them off. All construction workers should be informed that these are no-go areas, unless accompanied by the individual or persons representing the Environmental Control Officer as identified above.
 - In areas where the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, but only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.
- Increase in vehicle traffic – The movement of heavy vehicles during the clearance of vegetation and topsoil has the potential to damage local farm roads and create dust and safety impacts for other road users in the area. Access will be obtained from existing gravel roads. While the volume of traffic along this gravel road off the R504 road is low, the movement of heavy vehicles along this road is likely to damage the road surface and impact on other road users. The contractor should be required to ensure that damage to the road is repaired periodically. The movement of additional heavy vehicle traffic will add significantly to the current traffic load on the road. The impact on the roads is therefore likely to be moderate.

Increase in vehicle traffic	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Possible (2)	Unlikely (1)
Duration	Long term (3)	Medium term (2)
Magnitude	Medium (2)	Medium (2)
Reversibility	Completely reversible (1)	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 low impacts (26)	Negative low (20)
Can impacts be mitigated?	<p>The potential impacts associated with heavy vehicles can be effectively mitigated. The mitigation measures include:</p> <ul style="list-style-type: none"> • 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. <p>Also refer section (f) of the EMPr. For mitigation measures related to traffic.</p>	

- **Risk to safety, livestock/game, and farm infrastructure** - The presence on and movement of workers on and off the site poses a potential safety threat to local farmer's and farm workers in the vicinity of the site 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/game, and farm infrastructure	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	Medium term (2)	Medium term (2)
Magnitude	Medium (2)	Low (1)
Reversibility	Partly reversible (2)	Completely reversible (1)
Irreplaceable loss of resources	Marginal resource (2)	Marginal resource (2)
Cumulative impact	Low cumulative effects (2), provided losses are compensated for.	
Significance	Negative low (22)	Negative low (9)
Can impacts be mitigated?	<p>Key mitigation measures include:</p> <ul style="list-style-type: none"> • 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 Blaze Mineral Mining (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; • Blaze Mineral Mining (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/game if ingested; • Contractors appointed Blaze Mineral Mining (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 Blaze Mineral Mining (Pty) Ltd must ensure that construction workers who are found guilty of trespassing, stealing livestock/game 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; 	

	<ul style="list-style-type: none"> The housing of construction workers on the site should be strictly limited to security personnel (if any).
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- Increased risk of veld fires** - The presence of construction workers and construction-related activities on the site poses an increased risk of grass fires that could in turn pose a threat to livestock/game, crops, wildlife 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 different phase of prospect.

Increased risk of veld fires	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Site (1)
Probability	Probable (3)	Possible (2)
Duration	Medium term (2)	Medium term (2)
Magnitude	Very high (4)	Medium (2)
Reversibility	Partly reversible (2)	Completely reversible (1)
Irreplaceable loss of resources	Significant loss (3)	Marginal loss (2)
Cumulative impact	Low cumulative effects (2), provided losses are compensated for.	
Significance	Negative high (56)	Negative low (20)
Can impacts be mitigated?	<p>The mitigation measures include:</p> <ul style="list-style-type: none"> 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 Ecological impacts 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, Heritage & Paleontological Impacts. 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:

Ecological Impact

Potential Environmental Impact	Environmental Impact Before Mitigation					Significance	Environmental Impact After Mitigation					Significance
	Frequency of Impact	Frequency of Activity	Severity	Spatial Scale	Duration		Frequency of Impact	Frequency of Activity	Severity	Spatial Scale	Duration	
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

Impact methodology pertaining to all Biodiversity/Ecological impacts as stated above can be found on page 90-96 of the Ecological & Wetland Impact Report, attached in **Appendix 12**.

- 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.

Concurrent backfilling should take place in order to rehabilitate.

Soil erosion	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Site (1)	Site (1)
Probability	Probable (3)	Possible (2)
Duration	Long term (3)	Medium term (2)
Magnitude	Medium (2)	Medium (2)
Reversibility	Barely reversible (3)	Completely reversible (1)
Irreplaceable loss of resources	Significant loss of resource (3)	Marginal loss of resource (2)

Cumulative impact	Medium cumulative 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 Medium (32)	Negative Low (22)
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 existing activities on most of the portion as both (existing activities and prospecting activities) can be done concurrently.

Change in land use	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	medium term (2)	medium term (2)
Magnitude	Medium (2)	Low (1)
Reversibility	Partly reversible (2)	Completely reversible (1)
Irreplaceable loss of resources	Marginal loss of resource (2)	No loss of resource (1)
Cumulative impact	Low cumulative impacts (2).	
Significance	Negative Low (22)	Negative low (8)
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 Diamonds Alluvial (DA) & Diamonds General (D) prospecting will provide the municipality with increased cash flow and livelihood, thereby improve the financial sustainability of the municipality.

Generation of alternative land use income	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Positive	Positive
Geographical extent	Local (2)	Local (2)
Probability	Possible (2)	Possible (2)
Duration	medium term (2)	medium term (2)
Magnitude	Medium (2)	Medium (2)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	Marginal loss of resource (2)	Marginal loss of resource (2)
Cumulative impact	Medium cumulative impacts (3).	
Significance	Positive medium (26)	Positive medium (26)
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 and concurrent rehabilitation must be implemented.

Increase in storm water runoff	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Site (1)
Probability	Possible (2)	Unlikely (1)
Duration	Long term (3)	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	Medium cumulative impact (3) - Should these impacts occur, there will be a cumulative impact on the wider area.	
Significance	Negative medium (32)	Negative low (10)
Can impacts be mitigated?	<p>Yes. It is therefore important that all management actions and mitigation measures included in section (f) of the EMPr. are implemented to ensure that these impacts do not occur</p> <p>The cut-off trenches and silt fences will be installed where necessary as to control runoff storm water by attenuating it and control the movement of sediment on the premises.</p> <p>These structures will be monitored on a regular basis. It is suggested that it be monitored on a weekly basis during the rainy season, and after possible rain events during the dry season.</p> <p>If these practices is found to be insufficient for the control of storm water and sedimentation, other alternatives should immediately be investigated and implemented.</p>	

- Increased consumption of water - Since 1 x 14 feet washing pan will be used, the amount of water for the pans will be 15 000 litres per hour, from which 30% is re-used. Water will also be used for dust suppression.

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	Medium term (3)	Medium term (2)
Magnitude	High (3)	Medium (2)
Reversibility	Irreversible (4)	Barely reversible (4)
Irreplaceable loss of resources	Significant loss of resources (3)	Marginal loss of resources (2)
Cumulative impact	Medium cumulative impacts (3) - An additional demand on water sources could result in a significant cumulative impact with regards to the availability of water.	
Significance	Negative High impact (57)	Negative medium (34)
Can impacts be mitigated?	Yes, management actions and mitigation measures related to the use of water are included in section (f) of the EMPr.	

- Generation of waste – Approximately 15 Workers will be present on site from 6:00 – 18:00, Monday to Saturday. Sources of general waste will be waste food, packaging, paper, etc. General waste will be stored on-site in a skip bin with a lid, when the skip bin is full the content must be removed to a licensed landfill site.

Generation of waste	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Site (1)
Probability	Probable (3)	Possible (2)
Duration	Short term (1)	Short term (1)
Magnitude	medium (2)	Low (1)
Reversibility	Partly reversible (2)	Partly reversible (2)
Irreplaceable loss of resources	Marginal of resource (2)	No loss of resource (1)
Cumulative impact	Low cumulative impact (2) - An additional demand for landfill space could result in significant cumulative impacts with regards to the availability of landfill space.	
Significance	Negative low (24)	Negative low (7)
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 (1)
Probability	Possible (2)	Unlikely (1)
Duration	Medium Term (2)	Short term (1)
Magnitude	High (3)	Medium (2)
Reversibility	Partly reversible (3)	Partly reversible (2)
Irreplaceable loss of resources	Significant loss of resources (3)	Marginal loss of resource (2)
Cumulative impact	High cumulative impacts (4) if impact occurs and not mitigated.	
Significance	Negative medium (48)	Negative low (22)
Can impacts be mitigated?	Yes. It is therefore important that all management actions and mitigation measures included in the section (f) of EMPr are implemented to ensure that these impacts do not occur.	

- Noise disturbance - Prospecting activities will result in the generation of noise over a period of approximately 5 years. Sources of noise are likely to include vehicles, the use of machinery such as back actors, rotary pans and people working on site. Noise may impact on the existing activities however, this depends on where the prospecting activities will take place, which will only be determined during Phase 1 and Phase 2 (PWP) of the prospecting activities.

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	Marginal loss of resource (2)	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.	

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) & Diamonds (DIA) on the areas sense of place with mitigation is likely to be low.

Potential impacts on tourism	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	Marginal loss of resource (2)	Marginal loss of resource (2)
Cumulative impact	The impact would result in low cumulative effects (2).	
Significance	Negative low (24)	Negative low (11)
Can impacts be mitigated?	The proponent may compensate the income losses of any entity that may endure loss of visitors as a result of the prospecting activities. Proof must be provided that losses are due to prospecting activities.	

- Impacts on heritage objects

According to the Phase 1 Heritage impact assessment the following impact assessment rating was determined

Nature: A total of seven sites were recorded during the survey		
	Without mitigation	With mitigation
Construction Phase		
<i>Probability</i>	Definite (5)	Very Improbable (1)
<i>Duration</i>	Permanent (5)	Short term (2)
<i>Extent</i>	Limited to the site (1)	Limited to the site (1)
<i>Magnitude</i>	Very High (10)	Minor (2)
Significance of Impact	80 (High)	5 (Low)
<i>Status (positive or negative)</i>	Negative	Positive
Reversibility	Low	Low
<i>Irreplaceable loss of resources?</i>	Yes	None
<i>Cumulative impacts and indirect impacts</i>	Prospecting phase may cause excessive vibrations.	
<i>Can impacts be mitigated?</i>	Yes, buffer zones (50 metres) should be maintained during prospecting activities.	

The following mitigation measures are recommended:

- Protection of archaeological, historical and any other site or land considered being of cultural value within the project boundary against vandalism, destruction and theft.
- The preservation and appropriate management of new discoveries in accordance with the NHRA, should these be discovered during construction activities

The following shall apply:

- Known sites should be clearly marked in order that they can be avoided during construction activities.
- The contractors and workers should be notified that archaeological sites might be exposed during the construction activities.

- Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible;
- All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken;
- Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and
- Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the NHRA (Act No. 25 of 1999), Section 51. (1).

Control

In order to achieve this, the following should be in place:

- A person or entity, e.g. the Environmental Control Officer, should be tasked to take responsibility for the heritage sites and should be held accountable for any damage.
- Known sites should be located and isolated, e.g. by fencing them off. All construction workers should be informed that these are no-go areas, unless accompanied by the individual or persons representing the Environmental Control Officer as identified above.
- In areas where the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, but only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.

- Impacts on palaeontological objects

Impact methodology pertaining to all Paleontological impacts as stated above can be found on page 19 – 23 of the Paleontological Desktop Assessment Report, attached in Appendix 12.

Impacts	Extent	Duration	Magnitude	Reversibility	Irreplaceable loss	Cumulative effect	Impact Significance
Pre-mitigation	1	4	1	4	4	2	15 Low
Post mitigation	1	4	1	4	4	2	15 Low

DECOMMISSIONING PHASE (MINE CLOSURE AND REHABILITATION)

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

- Rehabilitation of the physical environment – The physical environment will benefit from the closure of the prospecting area since the site will be restored to its pre-prospecting state. The areas to be prospected must be rehabilitated in such a way that it can support the existing pre-prospecting activity of that specific area. Existing pre-prospecting activities include but is not limited to golf course, municipal sewerage works, and municipal landfill site. The area is already disturbed by previous mining activities in the past and has unrehabilitated areas.

Potential Environmental Impact	Environmental Impact Before Mitigation					Significance	Environmental Impact After Mitigation					Significance
	Frequency of Impact	Frequency of Activity	Severity	Spatial Scale	Duration		Frequency of Impact	Frequency of Activity	Severity	Spatial Scale	Duration	
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

- **Loss of employment** - The decommissioning of the facility has the potential to have a negative social impact on the local community as it will create job losses.

Loss of employment	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Probable (3)	Probable (3)
Duration	Permanent (4)	Permanent (4)
Magnitude	Medium (2)	Medium (2)
Reversibility	Irreversible (4)	Irreversible (4)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	Medium cumulative impacts (3)	
Significance	Negative medium (34)	Negative medium (34)
Can impacts be mitigated?	The following mitigation measures are recommended: <ul style="list-style-type: none"> • All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning; • Blaze Mineral Mining (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.
<p>Phase 1 Cultural Heritage Impact Assessment, conducted by Francois P Coetzee</p>	<p>A total of seven sites were recorded during the survey of which three are graveyards (Sites 1, 2 & 4), three are historical structures (Sites 3, 5 & 6) and one is the original farmhouse complex (Site 7). The sites are probably associated with a late 19th and early 20th phase of occupation as we know the farm was already occupied and owned by 1871. According to the family the farmhouse was built in the 1880s. Site 2 is an older graveyard and probably dates to the late 19th century, but the younger graveyard (Site 2) is a more recent addition, dating to the mid- 20th century. The main farmhouse (Site 7) has been extensively expanded and altered as the original central core is still intact. The original farm sheds and livestock enclosures are still standing and also date to the late 19th century. A blockhouse also forms part of the livestock enclosure walling. The farmhouse is also significant as it was occupied by the British soldiers during the South African War (1899-1902) (Personal Communication: farm owner).</p> <p>In this regard please note the following proposed mitigation measures:</p> <ul style="list-style-type: none"> □ Take note of the position of the existing heritage sites; □ A buffer zone of 50 metres should be maintained; □ Care should be taken to prevent any indirect impacts on the historical structures. <p>No archaeological (both Stone Age and Iron Age) artefacts, assemblages, features, structures or settlements were recorded during the survey of the project footprint. It is well known that Late Iron Age stone-walled settlements do not usually occur in open exposed ridges and low-lying grasslands and floodplains.</p>	<p>X</p>	

	<table border="1"> <tr> <td colspan="3">Nature: A total of seven sites were recorded during the survey</td> </tr> <tr> <td></td> <td>Without mitigation</td> <td>With mitigation</td> </tr> <tr> <td colspan="3">Construction Phase</td> </tr> <tr> <td><i>Probability</i></td> <td>Definite (5)</td> <td>Very Improbable (1)</td> </tr> <tr> <td><i>Duration</i></td> <td>Permanent (5)</td> <td>Short term (2)</td> </tr> <tr> <td><i>Extent</i></td> <td>Limited to the site (1)</td> <td>Limited to the site (1)</td> </tr> <tr> <td><i>Magnitude</i></td> <td>Very High (10)</td> <td>Minor (2)</td> </tr> <tr> <td>Significance of Impact</td> <td>80 (High)</td> <td>5 (Low)</td> </tr> <tr> <td><i>Status (positive or negative)</i></td> <td>Negative</td> <td>Positive</td> </tr> <tr> <td>Reversibility</td> <td>Low</td> <td>Low</td> </tr> <tr> <td><i>Irreplaceable loss of resources?</i></td> <td>Yes</td> <td>None</td> </tr> <tr> <td><i>Cumulative impacts and indirect impacts</i></td> <td colspan="2">Prospecting phase may cause excessive vibrations.</td> </tr> <tr> <td><i>Can impacts be mitigated?</i></td> <td colspan="2">Yes, buffer zones (50 metres) should be maintained during prospecting activities.</td> </tr> </table> <p>It is therefore recommended, from a cultural heritage perspective that the proposed prospecting activities may proceed, taking into account the mitigation measures.</p> <p>Also, please note: Archaeological deposits usually occur below ground level. Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and a university or museum notified in order for an investigation and evaluation of the find(s) to take place (cf. NHRA (Act No. 25 of 1999), Section 36 (6)).</p>	Nature: A total of seven sites were recorded during the survey				Without mitigation	With mitigation	Construction Phase			<i>Probability</i>	Definite (5)	Very Improbable (1)	<i>Duration</i>	Permanent (5)	Short term (2)	<i>Extent</i>	Limited to the site (1)	Limited to the site (1)	<i>Magnitude</i>	Very High (10)	Minor (2)	Significance of Impact	80 (High)	5 (Low)	<i>Status (positive or negative)</i>	Negative	Positive	Reversibility	Low	Low	<i>Irreplaceable loss of resources?</i>	Yes	None	<i>Cumulative impacts and indirect impacts</i>	Prospecting phase may cause excessive vibrations.		<i>Can impacts be mitigated?</i>	Yes, buffer zones (50 metres) should be maintained during prospecting activities.			
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	<p>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:</p> <ul style="list-style-type: none"> • The site presented a Low sensitivity for the Animal Species Theme. There were not any SCC encountered during the site visit, nor are there expected to occur within the application area. • The site presented a Very High Sensitivity for the Aquatic Species Theme due to the presence of two Unchanneled Valley Bottom wetlands and six Depression wetlands within the application area and its 500m buffer. • The site presented a Medium Plant Species Sensitivity Theme. The Vegetation on site is disturbed by declared invader plant species, which occur throughout the entirety of the study site in varying degrees of density. <i>Vachellia erioloba</i>, a protected species in South Africa, is quite prevalent throughout the dense eastern vegetation of the study site. The DFFE screening tool suggested a sensitive plant species as potentially occurring on site, though this species was not observed on site, neither is it expected to occur there. This species is only known from a single site in the Northern part of the Free State Province. • The site has a Very High Sensitivity for the Terrestrial biodiversity Theme. Though largely transformed in some areas by mining and agricultural activities, the application area is transected by a threatened ecosystem (Schweizer-Reneke Bushveld), overlaps CBA2, ESA1, and ESA2 areas, and is a designated National Nature Reserve (Vuurfontein Private Nature Reserve). <p>The information below concludes the Desktop findings supported by field verifications.</p> <ul style="list-style-type: none"> • According to the National Threatened Ecosystem database (2011), one threatened ecosystem, the Schweizer-Reneke bushveld vegetation type transects the application unit. • According to the Northwest Biodiversity sector plan and map (2015), the study area largely overlaps a CBA2, ESA1, and ESA2 areas. • According to the National Freshwater Ecosystem Priority Areas Database (NFEPA, 2011), one wetland is expected to occur on the application area, this being a river. A site visit confirmed the presence of two Unchanneled Valley Bottom Wetlands (one of which is largely transformed) as well as six Depression Wetlands within the application area and within 500m of its border. • The study area is not found in a Strategic Water Source Area (SWSA). 		
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	<p>It is imperative that an effective management plan is implemented to ensure that all mitigation measures discussed in the report are adhered to. It is also important for the operations to be conducted outside of the recommended exclusion buffers. It is also recommended that the disturbed areas within the exclusion zones be rehabilitated and that no further degrading activities take place. It is recommended that sites providing high mineral yield outside the exclusion buffers be investigated. Thereafter, can the proposed mining operations be considered from an ecological conservation point of view. 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.</p>		
<p>Palaeontological Desktop Assessment, conducted by Elize Butler from Banzai Environmental (Pty) Ltd</p>	<p>FINDINGS AND RECOMMENDATIONS</p> <p>The proposed development is underlain by the Bothaville Formation and the Allanridge Formation (Platberg Group, Ventersdorp Supergroup), as well as a small portion of Quaternary river-terrace gravel that are diamondiferous in places.</p> <p>According to the South African Heritage Resources Information System, the Palaeontological Sensitivity of the Formation and the Allanridge Formations is Low, while that of the Quaternary river-terrace gravel is moderate. A Low Palaeontological Sensitivity has thus been allocated to the proposed development. It is therefore considered that the proposed mining will not lead to detrimental impacts on the palaeontological heritage of the area.</p> <p>If fossil remains 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 (if possible, <i>in situ</i>) 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 correct mitigation (recording and collection) can be carry out by a paleontologist.</p> <p>It is consequently recommended that no further paleontological heritage studies, ground-truthing and/or specialist mitigation are required pending the discovery of fossils.</p> <p><u>CHANCE FINDS PROTOCOL</u></p> <p>The following procedure will only be followed if fossils are uncovered during the excavation phase of the development.</p>	<p style="text-align: center;">X</p>	

	<p>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 objects and material, meteorites and rare geological specimens”.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p><u>Chance Find Procedure</u></p> <ul style="list-style-type: none"> • 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. 		
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	<ul style="list-style-type: none"> • 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. 		
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The reports are available under **Appendix 12**.

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

Specialist study according to DEA Screening tool	Response
Agriculture Impact Assessment	<p>The land capability for the proposed area and surrounding area falls within Land in Class 4 & 5.</p> <p>None of the areas are currently cultivated. Most of the application area consists of natural areas, with some water bodies and some historical mining activities.</p>

		<p>The proposed works include:</p> <table border="1"> <tr> <td colspan="3">Timeframe: 24 months (month 7-30)</td> </tr> <tr> <td>Pits</td> <td>100 pits</td> <td></td> </tr> <tr> <td>Total area disturbed for 10 months</td> <td>$100 \text{ pits} \times (3\text{m} \times 2\text{m}) / 10\,000 =$</td> <td>0.06 Ha disturbed</td> </tr> </table> <table border="1"> <tr> <td colspan="3">Timeframe: 24 months (month 31-54)</td> </tr> <tr> <td>Trenches</td> <td>50 trenches</td> <td></td> </tr> <tr> <td>Total area disturbed for 20 months</td> <td>$50 \text{ trenches} \times (40\text{m} \times 30\text{m}) / 10\,000 =$</td> <td>6 Ha disturbed</td> </tr> </table> <p>According to the table above it can be observed that disturbance will be 6.06 Ha over an application area of 1176.1577.</p> <p>It is unlikely that the 6.06 hectare disturbance will have a high impact on the current land capability and cultivation capacity.</p> <p>Therefore no Agricultural Impact Assessment was done.</p>	Timeframe: 24 months (month 7-30)			Pits	100 pits		Total area disturbed for 10 months	$100 \text{ pits} \times (3\text{m} \times 2\text{m}) / 10\,000 =$	0.06 Ha disturbed	Timeframe: 24 months (month 31-54)			Trenches	50 trenches		Total area disturbed for 20 months	$50 \text{ trenches} \times (40\text{m} \times 30\text{m}) / 10\,000 =$	6 Ha disturbed
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Archaeological and cultural Heritage Impact Assessment		A Phase 1 HIA was conducted and has been included in Appendix 12 of the Final EIR and EMPR																		
Paleontological Impact Assessment		A Paleontological Desktop Assessment was conducted and has been included in Appendix 12 of the Final EIR and EMPR																		
Biodiversity study	Terrestrial Biodiversity Impact Assessment	An Ecological & Wetland Impact Assessment was conducted. The study is available under Appendix 12 .																		
	Aquatic Biodiversity Impact Assessment																			
	Plant Species Assessment																			
	Terrestrial Biodiversity Impact Assessment																			
Noise Impact Assessment		We do not see the need for this study as noise is limited to working hours.																		

	<p>Limited equipment will also be used, such as the following:</p> <table border="1"> <thead> <tr> <th>List of equipment</th> </tr> </thead> <tbody> <tr> <td> 14ft Washing Pans 1 x Dumper 1 x Excavator 1 x Front End Loader 1 x 60Kva Generator </td> </tr> </tbody> </table>	List of equipment	14ft Washing Pans 1 x Dumper 1 x Excavator 1 x Front End Loader 1 x 60Kva Generator
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<p>Radioactivity Impact Assessment</p>	<p>This study is not necessary since the process of mining Diamonds Alluvial (DA), Diamonds General (D) & Diamonds (DIA) does not have any radioactive effects.</p>		

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:

An Ecological and Wetland Impact Assessment Report was conducted by an Ecologist, Mr Reuben van Breda, from Milnex CC. The report is available under **Appendix 12**. The findings of the study as a follow:

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: **Low Sensitivity**
- Aquatic Biodiversity Theme: **Very High Sensitivity.**
- Plant Species Theme: **Medium 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 Low sensitivity for the Animal Species Theme. There were not any SCC encountered during the site visit, nor are there expected to occur within the application area.
- The site presented a Very High Sensitivity for the Aquatic Species Theme due to the presence of two Unchanneled Valley Bottom wetlands and six Depression wetlands within the application area and its 500m buffer.
- The site presented a Medium Plant Species Sensitivity Theme. The Vegetation on site is disturbed by declared invader plant species, which occur throughout the entirety of the study site in varying degrees of density. *Vachellia erioloba*, a protected species in South Africa, is quite prevalent throughout the dense eastern vegetation of the study site. The DFFE screening tool suggested a sensitive plant species as potentially occurring on site, though this species was not observed on site, neither is it expected to occur there. This species is only known from a single site in the Northern part of the Free State Province.
- The site has a Very High Sensitivity for the Terrestrial biodiversity Theme. Though largely transformed in some areas by mining and agricultural activities, the application area is transected by a threatened ecosystem (Schweizer-Reneke Bushveld), overlaps CBA2, ESA1, and ESA2 areas, and is a designated National Nature Reserve (Vuurfontein Private Nature Reserve).

The information below concludes the Desktop findings supported by field verifications.

- According to the National Threatened Ecosystem database (2011), one threatened ecosystem, the Schweizer-Reneke bushveld vegetation type transects the application unit.

- According to the Northwest Biodiversity sector plan and map (2015), the study area largely overlaps a CBA2, ESA1, and ESA2 areas.
- According to the National Freshwater Ecosystem Priority Areas Database (NFEPA, 2011), one wetland is expected to occur on the application area, this being a river. A site visit confirmed the presence of two Unchanneled Valley Bottom Wetlands (one of which is largely transformed) as well as six Depression Wetlands within the application area and within 500m of its border.
- The study area is not found in a Strategic Water Source Area (SWSA).
- Naturalized exotic weeds, exotic and invasive vegetation species were recorded on site.
- According to the South African Protected and Conservation Areas Database (SAPAD, 2022) the application area is a designated national nature reserve; the Vuurfontein Private Nature, designated in 1961.
- For Avifaunal species potentially occurring on site, and that enjoy conservation status in the Eskom Red Data Book
- For Mammal species potentially occurring on site, and that enjoy conservation status in the Eskom Red Data Book
- For Herpetofauna species potentially occurring on site, and that enjoy conservation status in the Eskom Red Data Book
- Results for wetlands recorded are summarised in the **Table** below:

Wetland Assessment:

Classification	Scientific Buffer	PES	EIS	REC
UVB 1 (Upper)	17m	B	Very High	A Improve
UVB 1 (Middle)	15m	C	High	B/C Improve
UVB 1 (Lower)	29m	E	Low	D Improve
UVB 2	18m	B	High	A/B Improve
D1 - D4	19m	B	Moderate	B Maintain
D5 - D6	19m	B	Moderate	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. It is also important for the operations to be conducted outside of the recommended exclusion buffers. It is also recommended that the disturbed areas within the exclusion zones be rehabilitated and that no further degrading activities take place. It is recommended that sites providing high mineral yield outside the exclusion buffers be investigated. Thereafter, can the proposed mining operations be considered from an ecological conservation point of view. 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 Phase 1 Cultural Heritage Impact Assessment was conducted by FP Coetzee and a Palaeontological Desktop Assessment was conducted by Elize Butler from Banzai Environmental (Pty) Ltd. The reports are available under **Appendix 12**. Below are the findings of the specialist studies:

A total of seven sites were recorded during the survey of which three are graveyards (Sites 1, 2 & 4), three are historical structures (Sites 3, 5 & 6) and one is the original farmhouse complex (Site 7). The sites are probably associated with a late 19th and early 20th phase of occupation as we know the farm was already occupied and owned by 1871. According to the family the farmhouse was built in the 1880s. Site 2 is an older graveyard and probably dates to the late 19th century, but the younger graveyard (Site 2) is a more recent addition, dating to the mid- 20th century. The main farmhouse (Site 7) has been extensively expanded and altered as the original central core is still intact. The original farm sheds and livestock enclosures are still standing and also date to the late 19th century. A blockhouse also forms part of the livestock enclosure walling. The farmhouse is also significant as it was occupied by the British soldiers during the South African War (1899-1902) (Personal Communication: farm owner).

In this regard please note the following proposed mitigation measures:

- ▣ Take note of the position of the existing heritage sites;
- ▣ A buffer zone of 50 metres should be maintained;
- ▣ Care should be taken to prevent any indirect impacts on the historical structures.

No archaeological (both Stone Age and Iron Age) artefacts, assemblages, features, structures or settlements were recorded during the survey of the project footprint. It is well known that Late Iron Age stone-walled settlements do not usually occur in open exposed ridges and low-lying grasslands and floodplains.

Nature: A total of seven sites were recorded during the survey		
	Without mitigation	With mitigation
Construction Phase		
<i>Probability</i>	Definite (5)	Very Improbable (1)
<i>Duration</i>	Permanent (5)	Short term (2)
<i>Extent</i>	Limited to the site (1)	Limited to the site (1)
<i>Magnitude</i>	Very High (10)	Minor (2)
Significance of Impact	80 (High)	5 (Low)
<i>Status (positive or negative)</i>	Negative	Positive
Reversibility	Low	Low
<i>Irreplaceable loss of resources?</i>	Yes	None
<i>Cumulative impacts and indirect impacts</i>	Prospecting phase may cause excessive vibrations.	
<i>Can impacts be mitigated?</i>	Yes, buffer zones (50 metres) should be maintained during prospecting activities.	

It is therefore recommended, from a cultural heritage perspective that the proposed prospecting activities may proceed, taking into account the mitigation measures.

Also, please note: Archaeological deposits usually occur below ground level. Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and a university or museum notified in order for an investigation and evaluation of the find(s) to take place (**cf. NHRA (Act No. 25 of 1999)**, Section 36 (6)).

The proposed development is underlain by the Bothaville Formation and the Allanridge Formation (Platberg Group, Ventersdorp Supergroup), as well as a small portion of Quaternary river-terrace gravel that are diamondiferous in places.

According to the South African Heritage Resources Information System, the Palaeontological Sensitivity of the Formation and the Allanridge Formations is Low, while that of the Quaternary river-terrace gravel is moderate. A Low Palaeontological Sensitivity has thus been allocated to the proposed development. It is therefore considered that the proposed mining will not lead to detrimental impacts on the palaeontological heritage of the area.

If fossil remains 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 (if possible, *in situ*) 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 correct mitigation (recording and collection) can be carry out by a paleontologist.

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

Paleontological Desktop Assessment

CHANCE FINDS PROTOCOL

The following procedure will only be followed if fossils are uncovered during the excavation phase of the development.

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 objects and material, meteorites and rare geological specimens".

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

- 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.

➤ Potential social impacts:

The presence of construction workers poses a potential risk to family structures and social networks. While the presence of construction workers does not in itself constitute a social impact, the manner in which construction workers conduct themselves can impact on local communities. The most significant negative impact is associated with the disruption of existing family structures and social networks.

➤ Potential impacts on land use:

According to the map (Figure 51 and Figure 52), the proposed area is covered with largely with grasslands, some cultivated areas are also present. The map also indicates that some degraded areas are present, largely due to historical mining/prospecting activities

In terms of the National Water Act the following water uses will be applied for:

- 21a - Taking Water from a Water
- 21b – The storing of water
- 21c – Impeding or diverting the flow of a watercourse
- 21g – Disposing of waste
- 21i – Altering the beds or banks of a water course.

- 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 after mitigations.
- Positive impacts: The mining of Diamonds Alluvial (DA), Diamonds General (D) & Diamonds (DIA) will have socio-economic benefit to the area.

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

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

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

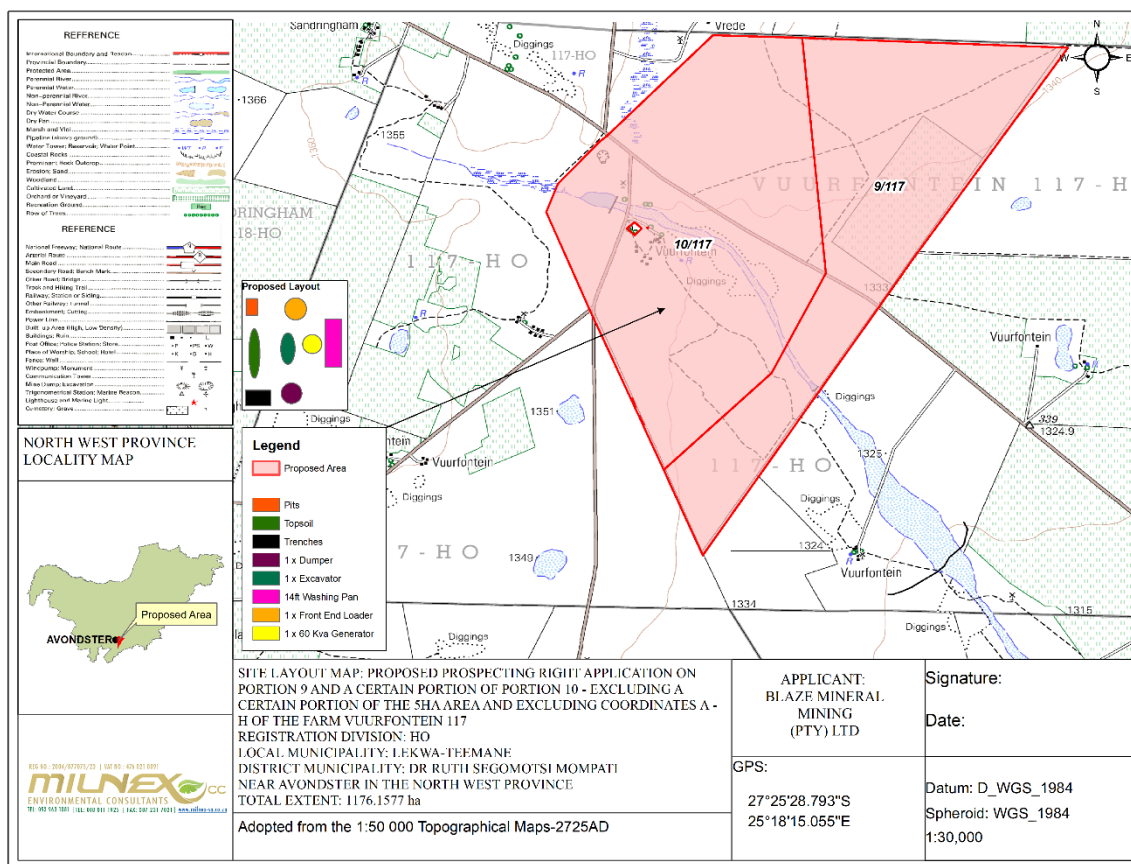


Figure 53: Site Plan

Refer to Site layout Map attached in **Appendix 4**.

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

There is regional socio economic benefits due to the Diamonds Alluvial (DA), Diamonds General (D) & Diamonds (DIA) 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 prospecting area must be kept neat and tidy during waste handling to prevent unsightliness and accidents.
Expected outcomes include:
 - Minimum impacts on the environment as a result of Diamonds Alluvial, Diamonds General & Diamonds.
 - Compliance with legislative requirements.
 - Prospecting 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 prospecting for Diamonds (Alluvial), Diamonds (General) & Diamonds Portion 9 and Portion 10 of the Farm Vuurfontein 117., Registration Division: HO, North West Province were identified. The specific site has been chosen for its mineral resources thus making an alternative site selection null and void. No prospecting should commence without the necessary permits and the impacts on the surrounding area, the livestock grazing, agricultural land and natural area should be kept to the minimum.

O. ASPECTS FOR INCLUSION AS CONDITIONS OF AUTHORISATION.

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

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

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

(Which relate to the assessment and mitigation measures proposed)

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

Q. REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORISED

(and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;)

Reasons why the activity should be authorized or not.

Based on the outcomes of other diamond exploration 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. There are also various alluvial diamond operations within the vicinity of the exploration area.

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 and the attached specialist studies and the requirements/conditions thereof.

R. PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED.

For a minimum of 5 years.

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

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

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

I, Christiaan Baron, herewith confirms

- A. the correctness of the information provided in the reports
- B. the inclusion of comments and inputs from stakeholders and I&APs ;
- C. the inclusion of inputs and recommendations from the specialist reports where relevant; and
- D. the acceptability of the project in relation to the finding of the assessment and level of mitigation proposed;

Signature of the environmental assessment practitioner:

Milnex CC

Name of company:

27/10/2023

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:)

Applicant: Blaze Mineral Mining (Pty) Ltd		Ref No.: NW30/5/1/1/2/13755PR					
Evaluators: Milnex CC		Date: Oct-20					
No.	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	Master Rate	Multiplication factor	Weighting factor 1	Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	200	20,63	1	1	4126
2 (A)	Demolition of steel buildings and structures	m2	30	287,43	1	1	8622,9
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	423,59	1	1	0
3	Rehabilitation of access roads	m2	150	51,44	1	1	7716
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	499,23	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	272,3	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	574,87	1	1	0
6	Opencast rehabilitation including final voids and ramps	ha	1,2	292575,47	0,52	1	182567,0933
7	Sealing of shafts adits and inclines	m3	0	154,3	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0,04	200899,8	1	1	8035,992
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0,02	250217,08	1	1	5004,3416
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	726749	1	1	0
9	Rehabilitation of subsided areas	ha	0,04	168223,34	1	1	6728,9336
10	General surface rehabilitation	ha	0,04	159146,54	1	1	6365,8616
11	River diversions	ha	0	159146,54	1	1	0
12	Fencing	m	50	181,54	1	1	9077
13	Water management	ha	0,2	60511,99	0,25	1	3025,5995
14	2 to 3 years of maintenance and aftercare	ha	0,05	21179,2	1	1	1058,96
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum	0			1	0
Sub Total 1							242328,6816
1	Preliminary and General		29079,44179	weighting factor 2			30533,41388
				1,05			
2	Contingencies			24232,86816			24232,86816
Subtotal 2							297094,96
VAT (15%)							44564,24
Grand Total							341659

A. Explain how the aforesaid amount was derived.

The closure cost estimate will be 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 will be 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 **Blaze Mineral Mining (Pty) Ltd** will be submitted

Rehabilitation Fund

Blaze Mineral Mining (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

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

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

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

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

The prospecting Diamonds Alluvial (DA), Diamonds General (D) and Diamonds (DIA) prospecting may impact directly on any socio-economic aspects. Indirect socio-economic benefits are expected to be associated with the creation of employment.

According to the map (Figure 51 and Figure 52), the proposed area is covered with largely with grasslands, some cultivated areas are also present. The map also indicates that some degraded areas are present, largely due to historical mining/prospecting activities

In terms of the National Water Act the following water uses will be applied for:

- 21a - Taking Water from a Water
- 21b – The storing of water
- 21c – Impeding or diverting the flow of a watercourse
- 21g – Disposing of waste
- 21i – Altering the beds or banks of a water course.

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

Cultural and heritage aspects

Specialist study

Phase 1 Cultural Heritage Impact Assessment & PDA

Phase 1 Heritage Impact Assessment

A total of seven sites were recorded during the survey of which three are graveyards (Sites 1, 2 & 4), three are historical structures (Sites 3, 5 & 6) and one is the original farmhouse complex (Site 7). The sites are probably associated with a late 19th and early 20th phase of occupation as we know the farm was already occupied and owned by 1871. According to the family

the farmhouse was built in the 1880s. Site 2 is an older graveyard and probably dates to the late 19th century, but the younger graveyard (Site 2) is a more recent addition, dating to the mid- 20th century. The main farmhouse (Site 7) has been extensively expanded and altered as the original central core is still intact. The original farm sheds and livestock enclosures are still standing and also date to the late 19th century. A blockhouse also farms part of the livestock enclosure walling. The farmhouse is also significant as it was occupied by the British soldiers during the South African War (1899-1902) (Personal Communication: farm owner).

In this regard please note the following proposed mitigation measures:

- ▣ Take note of the position of the existing heritage sites;
- ▣ A buffer zone of 50 metres should be maintained;
- ▣ Care should be taken to prevent any indirect impacts on the historical structures.

No archaeological (both Stone Age and Iron Age) artefacts, assemblages, features, structures or settlements were recorded during the survey of the project footprint. It is well known that Late Iron Age stone-walled settlements do not usually occur in open exposed ridges and low-lying grasslands and floodplains.

Nature: A total of seven sites were recorded during the survey		
	Without mitigation	With mitigation
Construction Phase		
<i>Probability</i>	Definite (5)	Very Improbable (1)
<i>Duration</i>	Permanent (5)	Short term (2)
<i>Extent</i>	Limited to the site (1)	Limited to the site (1)
<i>Magnitude</i>	Very High (10)	Minor (2)
Significance of Impact	80 (High)	5 (Low)
<i>Status (positive or negative)</i>	Negative	Positive
Reversibility	Low	Low
<i>Irreplaceable loss of resources?</i>	Yes	None
<i>Cumulative impacts and indirect impacts</i>	Prospecting phase may cause excessive vibrations.	
<i>Can impacts be mitigated?</i>	Yes, buffer zones (50 metres) should be maintained during prospecting activities.	

It is therefore recommended, from a cultural heritage perspective that the proposed prospecting activities may proceed, taking into account the mitigation measures.

Also, please note: Archaeological deposits usually occur below ground level. Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and a university or museum notified in order for an investigation and evaluation of the find(s) to take place (*cf. NHRA (Act No. 25 of 1999)*, Section 36 (6)).

Paleontological Desktop Assessment

CHANCE FINDS PROTOCOL

The following procedure will only be followed if fossils are uncovered during the excavation phase of the development.

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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

- 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.

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 9 and Portion 10 of the Farm Vuurfontein 117., Registration Division: HO, North West Province, is preferred due to the sites underlying geology and the possible diamond bearing gravel 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
Christiaan Baron	Master's Degree in Environmental Management (refer to Appendix 1) Registered EAP (EAPASA) Reg No: 2020/2639	Tel No.: (018) 011 1925 Fax No. : (053) 963 2009 e-mail address: christiaan@milnex-sa.co.za

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

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

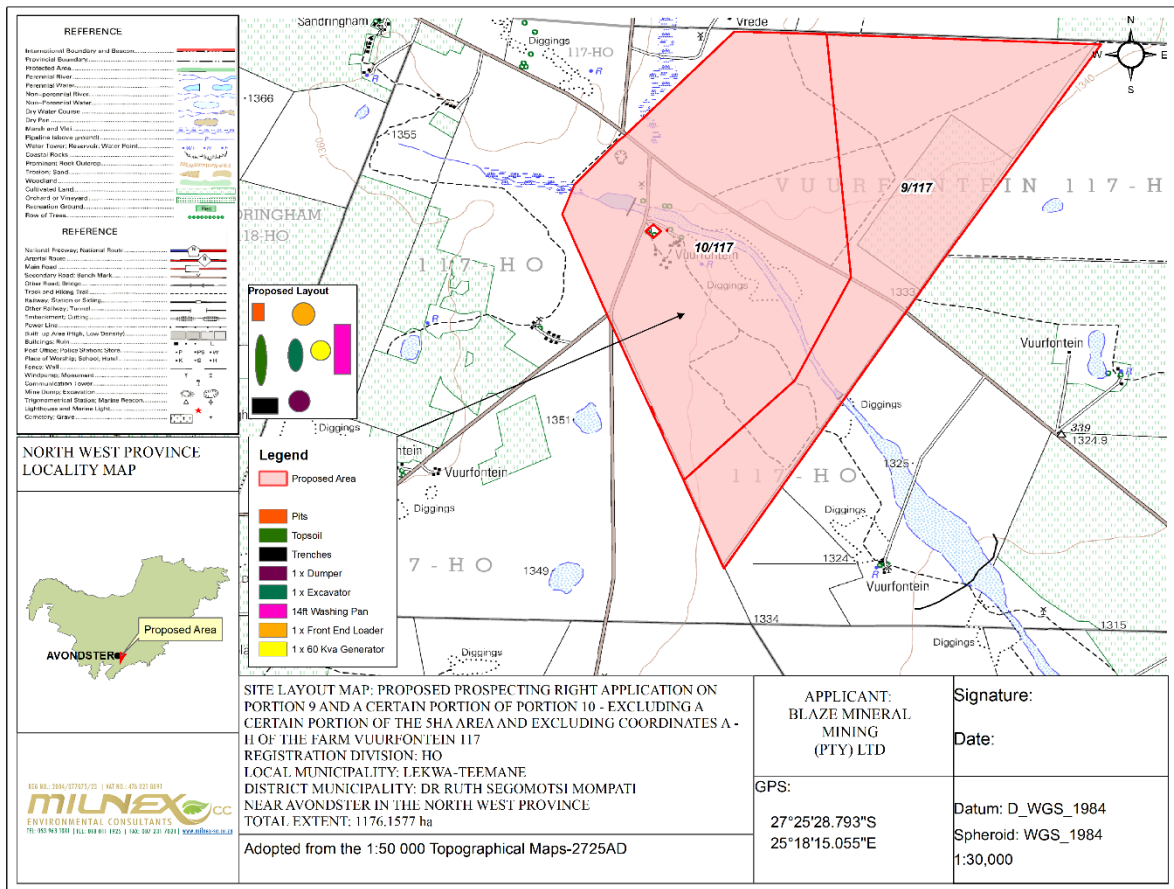


Figure 54: Site Plan

Refer to Site layout Map attached 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 **Blaze Mineral Mining (Pty) Ltd.** The remaining impacts be of an acceptable nature with minimal deterioration over time.
- The final outcome of the prospecting 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 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 threats due to terrain hazards to humans and animals utilizing the rehabilitated prospecting site after closure by:

- Demonstrating through upfront soil testing that any resultant inorganic and organic pollution present on the site is acceptable;

- Removal of potential contaminants such as hydrocarbons and chemicals off site;
- Shaping of embankments and trenches to safe slopes and reintegrating of these into surrounding topography.
- Ensuring that the environmental quality as reflected above is achieved.

5. Land capability / land use

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

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

6. Aesthetic quality

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

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

7. Landscape viability

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

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

8. Biodiversity

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

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

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

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

The Rehabilitation & Closure Plan is attached as **Appendix 10**.

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

Applicant: Blaze Mineral Mining (Pty) Ltd		Ref No.: NW30/5/1/12/13755PR					
Evaluators: Milnex CC		Date: Oct-20					
No.	Description	Unit	A	B	C	D	E=A*B*C*D
			Quantity	Master Rate	Multiplication factor	Weighting factor 1	Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	200	20,63	1	1	4126
2 (A)	Demolition of steel buildings and structures	m2	30	287,43	1	1	8622,9
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	423,59	1	1	0
3	Rehabilitation of access roads	m2	150	51,44	1	1	7716
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	499,23	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	272,3	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	574,87	1	1	0
6	Opencast rehabilitation including final voids and ramps	ha	1,2	292575,47	0,52	1	182567,0933
7	Sealing of shafts adits and inclines	m3	0	154,3	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0,04	200899,8	1	1	8035,992
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0,02	250217,08	1	1	5004,3416
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	726749	1	1	0
9	Rehabilitation of subsided areas	ha	0,04	168223,34	1	1	6728,9336
10	General surface rehabilitation	ha	0,04	159146,54	1	1	6365,8616
11	River diversions	ha	0	159146,54	1	1	0
12	Fencing	m	50	181,54	1	1	9077
13	Water management	ha	0,2	60511,99	0,25	1	3025,5995
14	2 to 3 years of maintenance and aftercare	ha	0,05	21179,2	1	1	1058,96
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum	0			1	0
Sub Total 1							242328,6816
1	Preliminary and General		29079,44179			weighting factor 2 1,05	30533,41388
2	Contingencies			24232,86816			24232,86816
Subtotal 2							297094,96
VAT (15%)							44564,24
Grand Total							341659

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

Financial Guarantee

The financial guarantee for the rehabilitation for land disturbed by **Blaze Mineral Mining (Pty) Ltd** will be submitted

Rehabilitation Fund

Blaze Mineral Mining (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 m ²)	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 alluvial diamond prospecting as the case may be.
Clearance of vegetation	Pitting and trenching phase-(construction and operation phase)	1176.1577 Ha Pits: 100 pits, with dimensions of 3m x 2m x 3m each. Trenches: 50 trenches with dimensions of 40m x 30m x 3m each. Concurrent backfilling will take place in	<ol style="list-style-type: none"> 1) Site clearing must take place in a phased manner, as and when required. 2) Areas which are not to be prospected on within two months must not be cleared to reduce erosion risks. 3) The area to be cleared must be clearly demarcated and this footprint strictly maintained. 4) Spoil that is removed from the site must be removed to an approved spoil site or a licensed landfill site. 5) The necessary silt fences and erosion control measures must be implemented in areas where these risks are more prevalent. 	Compliance with Duty of Care as detailed within NEMA	Duration of operations on the prospecting activities.

		order to rehabilitate.			
Construction of roads	Pitting and trenching phase (construction and operation phase)	+/- 150m	<ol style="list-style-type: none"> 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 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. 	Compliance with Duty of Care as detailed within NEMA	Duration of operations on the prospecting activities.
Prospecting Diamonds Alluvial (DA), Diamonds General (D) and Diamonds (DIA) – Soils and geology	Pitting and trenching phase (construction and operation phase)	<p>1176.1577 Ha</p> <p>Pits: 100 pits, with dimensions of 3m x 2m x 3m each.</p> <p>Trenches: 50 trenches with dimensions of 40m x 30m x 3m each.</p>	<ol style="list-style-type: none"> 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

		<p>Concurrent backfilling will take place in order to rehabilitate.</p>	<ol style="list-style-type: none"> 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	Pitting and trenching phase (construction and operation phase)	<p>1176.1577 Ha</p> <p>Pits: 100 pits, with dimensions of 3m x 2m x 3m each.</p> <p>Trenches: 50 trenches with dimensions of 40m x 30m x 3m each.</p> <p>Concurrent backfilling will take place in order to rehabilitate.</p>	<ol style="list-style-type: none"> 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, 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 	Compliance with Duty of Care as detailed within NEMA	Duration of operations on the prospecting area

			<p>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.</p> <p>10) The Contractor must take measures to discourage labourers from loitering in the area and causing noise disturbance. Where possible labour shall be transported to and from the site by the Contractor or his Sub-Contractors by the Contractors own transport.</p> <p>11) Implementation of enclosure and cladding of processing plants.</p> <p>12) Applying regular and thorough maintenance schedules to equipment and processes. An increase in noise emission levels very often is a sign of the imminent mechanical failure of a machine.</p>		
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IMPACT MANAGEMENT ACTIONS

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

ACTIVITY (whether listed or not listed). (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. <ul style="list-style-type: none"> • 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.
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	Wetland	Construction Operational 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.	Minimisation of impacts to acceptable limits

	<p>Clearing of vegetation – vegetation loss</p> <p>Loss of biodiversity</p> <p>Vehicles driving in and through wetlands</p> <p>Decommissioning: Damage to vegetated areas</p> <p>Ineffective rehabilitation measures</p> <p>Vehicles driving in and through wetlands</p>			<p>All maintenance within wetlands must be restricted to the dry season.</p> <p>Maintenance activities should not impact on rehabilitated or naturally vegetated areas.</p> <p>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.</p> <p>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.</p>	
<p>Alteration of the amount of sediment entering the water resource and associated change in turbidity</p>	<p>Construction: Vegetation clearance causing sedimentation</p> <p>Earthworks activities</p> <p>Disturbance of soil surface and runoff characteristics</p> <p>Erosion</p> <p>Operational: Excavation from the wetlands leading to degraded systems.</p>	Watercourses	<p>Construction Operational Decommissioning</p>	<p>Buffer zones should be maintained, in order to minimise sedimentation of the downstream areas.</p> <p>No stockpiling should take place within wetlands or the calculated buffers.</p> <p>Ensure that erosion management and sediment controls are strictly implemented from the beginning of site clearing activities.</p> <p>All areas should be re-sloped and top-soiled where necessary and reseeded with indigenous grasses to stabilise the loose material.</p> <p>All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds.</p>	<p>Minimisation of impacts to acceptable limits</p>

	<p>Removal of substrate within wetlands</p> <p>Clearing of vegetation – vegetation loss</p> <p>Loss of biodiversity</p> <p>Vehicles driving in and through watercourses</p> <p>Decommissioning: Damage to vegetated areas</p> <p>Ineffective rehabilitation measures</p> <p>Vehicles driving in and through watercourses</p>			<p>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.</p> <p>Erosion control measures, such as berms, must be implemented to manage runoff from roads to prevent erosion and pollution.</p> <p>Rehabilitation of disturbed areas as a result of construction must be implemented immediately upon completion of construction.</p> <p>Rehabilitation must ensure that riparian structure and function are reinstated in such a way as to ensure the ongoing functionality of the larger riparian systems at pre-prospecting levels.</p> <p>All rehabilitation activities should occur in the dry season.</p> <p>The duration of impacts on the wetland systems should be minimised as far as possible by ensuring that the duration of time in which sedimentation will take place is minimised.</p> <p>Maintain flood capacity, particularly in areas with significant flood hazards.</p>	
Alteration of water quality (surface and ground water)	<p>Construction: Runoff from road surfaces</p> <p>Discharge of sewage</p> <p>Discharge of solvents, chemicals and hydrocarbons</p> <p>Operational: Maintenance of vehicles and machinery</p>	Water Quality	Construction Operational Decommissioning	<p>Re-fuelling must take place on a sealed surface area to prevent hydrocarbon pollution.</p> <p>All spills should be cleaned up immediately and disposed of.</p> <p>Spill kits should be readily available and easily accessible throughout the site.</p> <p>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.</p> <p>Littering must be prevented by effective site management and the provision of bins.</p>	Minimisation of impacts to acceptable limits

	<p>Runoff from road surfaces</p> <p>Discharge of sewage</p> <p>Discharge of solvents, chemicals and hydrocarbons</p> <p>Excavation from the wetlands and the release of nutrients and pollutants from disturbed soils</p> <p>Removal of substrate within wetlands</p> <p>Decommissioning: Damage to vegetated areas</p> <p>Ineffective rehabilitation measures</p> <p>Vehicles driving</p>			<p>Provision of adequate sanitation facilities located outside of the delineated buffer zones.</p> <p>An emergency spill procedure should be developed and implemented.</p> <p>No stockpiling should take place within wetlands and their buffers.</p> <p>All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimized, and be surrounded by bunds.</p> <p>Stockpiles must be located away from channels, wetlands and drainage lines.</p> <p>Erosion and sedimentation into wetlands must be minimised through the effective stabilization and the re-vegetation of any disturbed areas.</p>	
Loss of terrestrial habitat	<p>Construction: Clearing of vegetation – vegetation loss</p> <p>Operational: Removal of substrate within wetlands</p> <p>Clearing of vegetation during prospecting operations</p>	Terrestrial Vegetation	<p>Construction</p> <p>Operational</p> <p>Decommissioning</p>	<p>Areas that are stripped during construction and operation should be re-vegetated with indigenous vegetation.</p> <p>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.</p> <p>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.</p>	<p>Minimisation of impacts to acceptable limits</p>

	<p>Decommissioning: Damage to vegetated areas</p> <p>Ineffective rehabilitation measures</p> <p>Vehicles driving in and through watercourses</p>				
Loss of Aquatic Biota	<p>Construction: Runoff from road surfaces</p> <p>Sedimentation</p> <p>Discharge of solvents, chemicals and hydrocarbons</p> <p>Operational: Maintenance of vehicles and machinery</p> <p>Runoff from road surfaces</p> <p>Discharge of solvents, chemicals and hydrocarbons</p> <p>Excavation from the watercourses and the release of nutrients and pollutants from disturbed soils</p> <p>Removal of substrate within wetlands</p>	Aquatic Biota	Construction Operational	Identification, and if necessary, biomonitoring of aquatic organisms (Macroinvertebrates, Diatoms, and amphibian species) within the wetland systems is essential.	Minimisation of impacts to acceptable limits

	Sedimentation				
Loss of Terrestrial Fauna	<p>Construction and Operational:</p> <p>Vegetation loss and disturbance – clearing of vegetation</p> <p>Excessive noise disturbances</p> <p>Illegal hunting</p> <p>Habitat fragmentation destruction</p> <p>Vehicles driving through natural vegetated areas</p>	Terrestrial Fauna	Construction Operational	<p>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.</p> <p>Prior and during vegetation clearance any larger fauna species noted should be given the opportunity to move away from the construction machinery.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>No hunting, trapping, or killing of fauna is allowed.</p> <p>Any lizards, snakes, or monitors encountered should be allowed to escape to a suitable habitat away from disturbance.</p>	Minimisation of impacts to acceptable limits

				<p>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.</p> <p>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.</p>	
Loss of Terrestrial Flora	<p>Construction and Operational: Vegetation clearance</p> <p>Vehicles driving through natural vegetated areas</p> <p>Habitat fragmentation and destruction</p>	Terrestrial flora	Construction Operational	<p>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.</p> <p>Protected trees and plants shall not be removed or damaged without prior approval, permits or licenses from the relevant authority.</p>	Minimisation of impacts to acceptable limits
Introduction and spread of alien vegetation	<p>Construction: Clearing of vegetation</p> <p>Movement of vehicles between different site.</p> <p>Operational: Removal of substrate within watercourses</p> <p>Clearing of vegetation during prospecting operations</p>	Terrestrial vegetation	Construction Operational Decommissioning	<p>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.</p> <p>An alien invasive vegetation management plan should be developed and implemented.</p> <p>Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat.</p> <p>Footprint areas should be kept as small as possible when removing alien plant species.</p> <p>No vehicles should be allowed to drive through designated sensitive drainage and wetlands areas during the eradication of alien and weed species.</p>	Minimisation of impacts to acceptable limits

	<p>Vehicles driving in and through watercourses</p> <p>Decommissioning: Damage to vegetated areas</p> <p>Ineffective rehabilitation measures</p> <p>Vehicles driving in and through watercourses</p>				
Prospecting of Diamonds Alluvial (DA), Diamonds General (D) and Diamonds (DIA) – excavations	Loss of topsoil	Soil	Pitting and trenching phase (construction and operation phase)	<ol style="list-style-type: none"> 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. 	Minimisation of impacts to acceptable limits

				<p>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.</p> <p>Establish an effective record keeping system for each area where soil is disturbed for prospecting purposes. These records should be included in environmental performance reports, and should include all the records below.</p> <ul style="list-style-type: none"> • Record the GPS coordinates of each area. • Record the date of topsoil stripping. • Record the GPS coordinates of where the topsoil is stockpiled. • Record the date of cessation prospecting activities at the particular site. • Photograph the area on cessation of prospecting activities. • Record date and depth of re-spreading of topsoil. • Photograph the area on completion of rehabilitation and on an annual basis thereafter to show vegetation establishment and evaluate progress of restoration over time. 	
	Erosion	Soil Air Water	Pitting and trenching phase (construction and operation phase)	<ol style="list-style-type: none"> 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. 	Minimisation of impacts to acceptable limits

				<p>5) Other erosion control measures that can be implemented are as follows:</p> <ul style="list-style-type: none"> ○ Brush packing with cleared vegetation ○ Mulch or chip packing ○ Planting of vegetation ○ Hydroseeding/hand sowing <p>6) Sensitive areas need to be identified prior to construction/prospecting so that the necessary precautions can be implemented.</p> <p>7) All erosion control mechanisms need to be regularly maintained.</p> <p>8) Seeding of topsoil and subsoil stockpiles to prevent wind and water erosion of soil surfaces.</p> <p>9) Retention of vegetation where possible to avoid soil erosion.</p> <p>10) Vegetation clearance should be phased to ensure that the minimum area of soil is exposed to potential erosion at any one time.</p> <p>11) Re-vegetation of disturbed surfaces should occur immediately after construction/prospecting activities are completed. This should be done through seeding with indigenous grasses.</p> <p>12) No impediment to the natural water flow other than approved erosion control works is permitted.</p> <p>13) To prevent stormwater damage, the increase in stormwater run-off resulting from construction/prospecting activities must be estimated and the drainage system assessed accordingly.</p> <p>14) Stockpiles not used in three (3) months after stripping must be seeded or backfilled to prevent dust and erosion.</p>	
	Air Pollution	Air	Pitting and trenching phase (construction and operation phase)	<p>Dust control</p> <ol style="list-style-type: none"> 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. 	Minimisation of impacts to acceptable limits

				<p>5) The Contractor shall be responsible for dust control on site to ensure no nuisance is caused to the neighbouring communities.</p> <p>6) A speed limit of 30km/h must not be exceeded on site.</p> <p>7) Any complaints or claims emanating from the lack of dust control shall be attended to immediately by the Contractor.</p> <p>8) Any dirt roads that are utilised by the workers must be regularly maintained to ensure that dust levels are controlled.</p> <p>Odour control</p> <p>9) Regular servicing of vehicles in order to limit gaseous emissions.</p> <p>10) Regular servicing of onsite toilets to avoid potential odours.</p> <p>Rehabilitation</p> <p>11) The Contractor should commence rehabilitation of exposed soil surfaces as soon as practical after completion of earthworks.</p> <p>Fire prevention</p> <p>12) No open fires shall be allowed on site under any circumstance. All cooking shall be done in demarcated areas that are safe and cannot cause runaway fires.</p> <p>13) The Contractor shall have operational fire-fighting equipment available on site at all times. The level of firefighting equipment must be assessed and evaluated through a typical risk assessment process.</p>	
	Noise		Pitting and trenching phase (construction and operation phase)	<p>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.</p> <p>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.</p>	Minimisation of impacts to acceptable limits

				<ol style="list-style-type: none"> 3) Truck traffic should be routed away from noise sensitive areas, where possible. 4) Noise levels must be kept within acceptable limits. 5) Noisy operations should be combined so that they occur where possible at the same time. 6) Mine workers to wear necessary ear protection gear. 7) Noisy activities to take place during allocated hours. 8) Noise from labourers must be controlled. 9) Noise suppression measures must be applied to all equipment. Equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. Should the vehicles or equipment not be in good working order, the Contractor may be instructed to remove the offending vehicle or machinery from the site. 10) The Contractor must take measures to discourage labourers from loitering in the area and causing noise disturbance. Where possible labour shall be transported to and from the site by the Contractor or his Sub-Contractors by the Contractors own transport. 11) Implementation of enclosure and cladding of processing plants. 12) Applying regular and thorough maintenance schedules to equipment and processes. An increase in noise emission levels very often is a sign of the imminent mechanical failure of a machine. 	
	Impact on potential cultural and heritage artefacts and Paleontological aspects	Heritage & Palaeontology	Pitting and trenching phase (construction and operation phase)	<p>Heritage Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. Those resources that cannot be avoided and that are directly impacted by the proposed development can be excavated/recorded and a management plan can be developed for future action. Those sites that are not impacted on can be written into the management plan, whence they can be avoided or cared for in the future.</p>	Minimisation of impacts to acceptable limits

				<p>Protection of archaeological, historical and any other site or land considered being of cultural value within the project boundary against vandalism, destruction and theft.</p> <p>The preservation and appropriate management of new discoveries in accordance with the NHRA, should these be discovered during construction activities.</p> <p>The following shall apply:</p> <p>Known sites should be clearly marked in order that they can be avoided during construction activities.</p> <p>The contractors and workers should be notified that archaeological sites might be exposed during the construction activities.</p> <p>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;</p> <p>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;</p> <p>Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and</p> <p>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 (Act No. 25 of 1999), Section 51. (1).</p> <p>In order to achieve this, the following should be in place:</p>	
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				<p>A person or entity, e.g. the Environmental Control Officer, should be tasked to take responsibility for the heritage sites and should be held accountable for any damage.</p> <p>Known sites should be located and isolated, e.g. by fencing them off. All construction workers should be informed that these are no-go areas, unless accompanied by the individual or persons representing the Environmental Control Officer as identified above.</p> <p>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.</p> <p>No archaeological (both Stone Age and Iron Age) artefacts, assemblages, features, structures or settlements were recorded during the survey of the project footprint.</p> <p><u>Palaeontology</u> 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.</p> <p><u>Chance Find Procedure</u> 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.</p> <p>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</p>	
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				<p>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.</p> <p>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.</p> <p>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.</p> <p>Upon receipt of the preliminary report, the Heritage Agency will inform the ESO (or site manager) whether a rescue excavation or rescue collection by a palaeontologist is necessary.</p> <p>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.</p> <p>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.</p> <p>Once the Heritage Agency has issued the written authorization, the developer may continue with the development on the affected area.</p>	
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Waste management		Pollution	Pitting and trenching phase (construction and operation phase)	<p>Litter management</p> <ol style="list-style-type: none"> 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. <p>Hazardous waste</p> <ol style="list-style-type: none"> 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
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				<p>13) Contaminants to be stored safely to avoid spillage.</p> <p>14) Machinery must be properly maintained to keep oil leaks in check.</p> <p>15) All necessary precaution measures shall be taken to prevent soil or surface water pollution from hazardous materials used during construction and any spills shall immediately be cleaned up and all affected areas rehabilitated.</p> <p>Sanitation</p> <p>16) The Contractor shall install mobile chemical toilets on the site.</p> <p>17) Staff shall be sensitised to the fact that they should use these facilities at all times. No indiscriminate sanitary activities on site shall be allowed.</p> <p>18) Toilets shall be serviced regularly and the ECO shall inspect toilets regularly.</p> <p>19) Toilets should be no closer than 50m or above the 1:100 year flood line from any natural or manmade water bodies or drainage lines or alternatively located in a place approved of by the Engineer.</p> <p>20) Under no circumstances may open areas, neighbours fences or the surrounding bush be used as a toilet facility.</p> <p>21) The construction of “Long Drop” toilets is forbidden, but rather toilets connected to the sewage treatment plant.</p> <p>22) Potable water must be provided for all construction staff.</p> <p>Remedial actions</p> <p>23) Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-site.</p> <p>24) Excavation of contaminated soil must involve careful removal of soil using appropriate tools/machinery to storage containers until treated or disposed of at a licensed hazardous landfill site.</p> <p>25) The ECO must determine the precise method of treatment for polluted soil. This could involve the application of soil absorbent materials as well as oil-digestive powders to the contaminated soil.</p>	
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				<p>26) If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent material.</p> <p>27) If necessary, oil absorbent sheets or pads must be attached to leaky machinery or infrastructure.</p> <p>28) Materials used for the remediation of petrochemical spills must be used according to product specifications and guidance for use.</p> <p>29) Contaminated remediation materials must be carefully removed from the area of the spill so as to prevent further release of petrochemicals to the environment, and stored in adequate containers until appropriate disposal.</p>	
Water Use and Quality	Water pollution	Water	Pitting and trenching phase (construction and operation phase)	<p>Water Use</p> <p>1) Develop a sustainable water supply management plan to minimise the impact to natural systems by managing water use, avoiding depletion of aquifers and minimising impacts to water users.</p> <p>2) Water must be reused, recycled or treated where possible.</p> <p>Water Quality</p> <p>3) The quality and quantity of effluent streams discharged to the environment including stormwater should be managed and treated to meet applicable effluent discharge guidelines.</p> <p>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.</p> <p>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.</p> <p>Stormwater</p> <p>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.</p>	

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

Heritage & Palaeontology	Disturbance or destruction of paleontological & heritage	<ul style="list-style-type: none"> • Conduct regular checks 	<ul style="list-style-type: none"> • 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.
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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.**

Blaze Mineral Mining (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.**

Blaze Mineral Mining (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