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11 February 2025

Attention: Azwihangwisi Mulaudzi

CC: Cate Phofele

: Rudzani Magauda

Dear Mr Mulaudzi

SUBMISSION: BASIC ASSESSMENT REPORT (BAR) AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT FOR THE PROPOSED PROSPECTING RIGHT APPLICATION FOR CLAY(GENERAL) IN RESPECT OF THE REMAINING EXTENT, PORTIONS 1 AND 11 OF THE FARM DOORNPOT 458 KR SITUATED IN THE MAGISTERIAL DISTRICT OF BELA-BELA/WATERBERG, LIMPOPO PROVINCE.

DMRE REFERENCE NUMBER SAMRAD: LP30/5/1/1/2/ 15699 PR

The above-mentioned matter bear's reference:

We hereby submit the environmental documents required for the above-mentioned application. We are submitting the following:

1. Basic Assessment Report and Environmental Management Programme
2. Supporting documents attached as appendices

Yours faithfully

A handwritten signature in black ink, appearing to read "Sunday Mabaso". The signature is stylized with several loops and a long horizontal stroke.

Sunday Mabaso

[Vahlengwe Mining Advisory and Consulting]

AQUARELLA INVESTMENTS 389 (PTY) LTD

BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT (EMPr)

BASIC ASSESSMENT REPORT (BAR) AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT FOR THE PROPOSED PROSPECTING RIGHT APPLICATION FOR CLAY(GENERAL) IN RESPECT OF THE REMAINING EXTENT, PORTIONS 1 AND 11 OF THE FARM DOORNPOT 458 KR SITUATED IN THE MAGISTERIAL DISTRICT OF BELA-BELA/WATERBERG, LIMPOPO PROVINCE.

FILE REFERENCE NUMBER SAMRAD: LP30/5/1/1/2/ 15699 PR

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Name	Responsibility	Signature	Date
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February 2025

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(c) the competent Authority must check whether the application has considered any minimum requirements applicable, or instructions or guidance provided by the competent authority to the submission of applications.

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

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

OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

- (a) Determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- (b) Identify the alternatives considered, including the activity, location, and technology alternatives.
- (c) Describe the need and desirability of the proposed alternatives,
- (d) Through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:
 - (i) The nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
 - (ii) The degree to which these impacts—
 - (aa) Can be reversed.
 - (bb) May cause irreplaceable loss of resources; and
 - (cc) Can be managed, avoided, or mitigated.
- (e) Through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—
 - (i) Identify and motivate a preferred site, activity, and technology alternative.
 - (ii) Identify suitable measures to manage, avoid or mitigate identified impacts; and
 - (iii) Identify residual risks that need to be managed and monitored

LIST OF ABBREVIATIONS

Table 1: List of abbreviations

BAR	Basic Assessment Report
BID	Background Information Document
DEA	Department of Environmental Affairs
DMRE	Department of Mineral Resources and Energy
CBA	Critical Biodiversity Area
CARA	Conservation of Agricultural Resources Act (Act No. 43 of 1983)
CRR	Comments and Responses Report
DFFE	Department of Forestry, Fisheries, and the Environment (DFFE)
EA	Environmental Authorization
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act, 1989 (Act No. 73 of 1989)
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ESA	Ecological Support Area
GDP	Gross Domestic Product
GIS	Geographic Information Systems
GNR	Government Notice Regulation
Ha	Hectares
I&APs	Interested and Affected Parties
Km	Kilometer's
MPRDA	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
NAAQS	National Ambient Air Quality Standards
NBA	National Biodiversity Assessment
NCR	Noise Control Regulations Act, 1989 (Act 73 of 1989)
NFEPA	National Freshwater Ecosystem Priority
NEM: AQA	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
NEM: BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)

NEM: WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NFEPA	National Freshwater Ecosystem Priority Area
NPA	National Protected Area
OHS	Occupational Health And Safety
PPP	Public Participation Process
PR	Prospecting Right
PWP	Prospecting Work Programme
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SANS	South African National Standard (SANS) 10103
WMA	Water Management Area

EXECUTIVE SUMMARY

Aquarella Investments 389, hereafter referred to as ‘the applicant’ or ‘Aquarella’ has applied for a prospecting right for clay(general) in respect of the remaining extent, portions 1 and 11 of the Farm Doornput 458 KR in the Magisterial District of Bela-Bela/Waterberg, Limpopo Province, for an extent area of 1 413 ha. The prospecting area is situated 13,51 km South-west of Bela -Bela and 26,41 km East south of Seabe and access road to the farm is via the R516 and N1 road, in the Bela- Bela District in Limpopo Province.

The application for a prospecting right is in terms of Section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (as amended) (MPRDA), and therefore, an Environmental Impact Assessment (EIA) process is required to acquire an Environmental Authorisation in terms of Section 24 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (as amended) (NEMA). VahleNgwe Mining Advisory and Consulting (Pty) Ltd, hereafter ‘VahleNgwe’ has been appointed by Aquarella as the independent Environmental Assessment Practitioner (EAP) to facilitate the Environmental Authorisation (EA) processes for the proposed prospecting activities. The competent authority for the environmental authorisation process is the Department of Mineral Resources and Energy (DMRE), Limpopo Province.

The proposed prospecting project triggers activities listed on Listing Notice 1 of the NEMA, therefore a Basic Assessment in terms of NEMA Government Notice Regulation (GNR) 982 (as amended) is required. The environmental impacts of the proposed project activities were determined by first identifying the environmental baseline and then conducting an environmental risk assessment to identify the significance of the impacts. The environmental impact assessment considered all phases of the project, including the site establishment, operational, rehabilitation and closure. The rating system used is applied to the potential impact on the receiving environment and includes an objective evaluation of the mitigation of the impact.

The stakeholder engagement process, as part of the Environmental Authorisation process was conducted in terms of NEMA (as amended), which provides clear guidelines for stakeholder engagement during an EIA. Stakeholders were afforded an opportunity to participate in the public review of the Draft BAR from 24 October 2024 - 23 November 2024 to ensure that the assessment of impacts and proposed management of impacts address their concerns. Comments received during the 30-day comment period (from the Draft BAR review) and will be incorporated into this report, to be submitted to DMRE for decision-making.

Details of the Applicant.

Table 2: Details of the applicant

Name of Applicant:	Aquarella Investments 389 (Pty) Ltd		
Registration number (if any):	2006/018898/07		
Trading name (if any):	Aquarella Investments 389 (Pty) Ltd		
Responsible person: (E.g., CEO, Director, etc.)	Victor Lupuwana		
Contact person:	Victor Lupuwana		
Physical address:	P.O. Box 2247 Vereeniging 1930		
Postal address:	P.O. Box 2247 Vereeniging 1930		
Postal code:	1930	Cellphone:	+27 74 634 4454
Email:	Victor@aquarellainvest.co.za		

Environmental Consultants

Vahlegwe Mining Advisory and Consulting (Pty) Ltd is the appointed independent Environmental Assessment Practitioner (EAP) to undertake the Basic Environmental Impact Assessment Process for the EA application for the proposed prospecting project for clay(general) in respect of the remaining extent, portions 1 and 11 of the Farm Doornput 458 KR within the Magisterial District of Bela-Bela/Waterberg, Limpopo Province.

Table 3: Details of the EAPs

Company name:	Vahlegwe Mining Advisory and Consulting (Pty) Ltd
Contact person:	Sunday M Mabaso
Physical address:	238 Voster Ave, Glenvista Extension 3, Johannesburg South, 2058
Telephone:	+2711 432 0062
Email:	<u>info@vahlegweadvisory.co.za</u>

Public Participation Process Methodology

A Public Participation Process (PPP) was undertaken as required in terms of Chapter 6 of the EIA Regulations, 2014 (as amended), promulgated under NEMA. During the undertakings of the PPP, the environmental and social impacts are investigated, and all stakeholders affected by the project are afforded an opportunity to comment, raise concerns and contribute to the assessment to ensure that local knowledge, needs, and values are taken into consideration

throughout the process.

A Draft Basic Assessment Report was made available for public review and comment for a period of 30 days and all comments or concerns raised will be recorded and responded to in the Comments and Responses Report (CRR). The comment period will commence from the **24 October 2024 to the 23 November 2024**.

The following activities were undertaken to announce the project and initiate the Basic Assessment process:

- A Background Information Document (BID) including an Interested and Affected Parties Registration Forms (IAPs) handed and distributed to various stakeholders including the I&APs via email.
- Newspaper advertisement on the Die Pos Newspaper on the 24th of October 2024.
- Site notices were erected at various places within the vicinity of the site on the 29th of October 2024.
- An electronic copy will be accessed and downloaded from the www.vahleNgweadvisory.co.za website.

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PART A:

SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1. Introduction

Aquarella Investments 389, hereafter referred as ‘the applicant’ or ‘Aquarella’ has applied for a prospecting right for clay (general) in respect of the remaining extent, portions 1 and 11 of the Farm Doornput 458 KR in the Magisterial District of Bela-Bela/Waterberg, Limpopo Province, for an extent area of 1 432,19 ha. The prospecting area is situated 17,42 km North-west of Bela-Bela town and 26,41 km East south of Seabe and access road to the farm is via the R516 and N1 road, in the Bela-Bela District in Limpopo Province.

The proposed prospecting activities will include non-invasive and invasive techniques. The planned invasive activities will cover an area of about 1 432,19 ha. The project entails the drilling of at least ten (10) boreholes to determine the mineral deposition, quantity, economic viability, and possibilities of the project leading to a viable mine. A 165mm diameter core drill will be used to drill the geological boreholes.

The prospecting activities will be undertaken in four (4) phases for a total duration of 48 month, thus five years with subject to renewal for and 3 years should the prospecting programme not be completed within the first term of granting.

2. Contact Person and correspondence address.

2.1 Details of the EAP

Table 4: Details of the EAP

Company name:	Vahlangwe Mining Advisory and Consulting (Pty) Ltd
Contact person:	Sunday M Mabaso
Physical address:	238 Voster Ave, Glenvista Extension 3, Johannesburg South, 2058
Telephone:	+27 11 432 0062
Email:	info@vahlangweadvisory.co.za

2.2. Expertise of the EAP

2.2.1 The qualifications of the EAP (with evidence as Appendix 1)

(This section describes the EAP's qualifications and experience for the proposed Project. Appendix A contains the EAPs' curriculum vitae and degrees.)

Table 5:Expertise of the EAP

NAME	Sunday M Mabaso
QAULIFICATIONS	Graduate Diploma in Engineering: Mining, Postgrad Certificate: Climate Change and Energy Law, Certificate: Mine Closure and Rehabilitation
RESPONSIBILITY ON PROJECT	Project Reviewer
PROFESSIONAL REGISTRATION	EAPASA (Reg. No. 2022/4485)
EXPERIENCE	Sunday Mabaso is the Project leader with over 4 (four) years in consulting and more than 20 years of service at the Department of Mineral Resources and Energy of which he served seven (7) years as a Regional Manager (3 years in Northern Cape and 4 years in Gauteng). He has acquired various qualifications in mining including a Graduate Diploma in Mining Engineering (GDE) and a Post Graduate Certificate in Climate Change and Energy Law both with the University of the Witwatersrand, and Mine Closure and Rehabilitation with the University of Pretoria. His experience includes monitoring and enforcing compliance with Social and Labour Plan and Mine Economics in terms of the MPRDA and the Mining Charter, Environmental Management and Waste Management in terms of NEMA and NEM: Waste Act.
NAME	Dimakatso Leholi
QUALIFICATIONS	Diploma in Environmental Sciences
RESPONSIBILITY ON PROJECT	Report Compiler
PROFESSIONAL REGISTRATION	EAPASA Candidate (Reg. No. 2023/6647)
EXPERIENCE	Dimakatso Leholi is an environmental sciences graduate with two (2) years of experience working in the Environmental Sciences field. She has 10 months working as an Environmental Education Facilitator, 10 months as a Safety Health and Environment Consultant for a steel manufacturing company where she was implementing the ISO systems. The systems were ISO 14001 and ISO 45001 also doing monthly factory inspections. She currently has six (6) months experience as an Environmental Management Consultant intern with a thorough understanding of the potential environmental and social impacts of mining activities in a variety of environmental settings. In the mining and environmental sectors, she has performed environmental assessments (S&EIR) and environmental compliance auditing. Her core competencies include research and report

	writing, map making, specialist report review and environmental impact assessment.
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3. Location of the overall Activity

Table 6: Details of the overall activity location

Farm Name:	Remaining Extent, portions 1 and 11 of the Farm Doornput 458 KR
Application area (Ha)	1 432,19 ha
Magisterial district:	Magisterial District of Bela-Bela/Waterberg, Limpopo Province
Distance and direction from nearest town	The prospecting area is situated 17,42 km northwest of Bela-Bela town and 26,41 km East south of Seabe and access road to the farm is via the R516 road, in the Magisterial District in Limpopo Province
21-digit Surveyor General Code for each farm portion	TOKR00000000045800000 TOKR00000000045800001 TOKR000000000458000011

4. Locality map

Attach a locality map at a scale not smaller than 1:250000 showing the nearest town and attach as **Appendix 2**



Figure 1: Locality map of the proposed area

5. Description of the scope of the proposed overall activity

Attach a plan drawn to a scale acceptable to the competent authority but not less than 1: 10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site.

Aquarella proposes to undertake clay (general) prospecting activities in respect of the remaining extent, portions 1 and 11 of the Farm Doornput 458 KR within the Magisterial District of Bela-Bela Limpopo Province. The planned invasive prospecting activities will cover an area of at least 1 413 ha. The project entails the drilling of about ten (10) boreholes to determine the mineral deposition, quantity, economic viability, and possibilities of the project leading to a viable mine. Access to the prospecting area will be through existing roads.

5.1. Listed and specified activities

Table 7: Listed and specified activities

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY (HA OR M ²)	APPLICABLE LISTING NOTICE <i>GNR 983, GNR 984 or GNR 985</i>
Prospecting Right application area	1 413 ha	Activity 20, GNR 983 (as amended)

Planned invasive drilling 10 boreholes at a maximum depth of 50m with each borehole sump area of 10m length x 10m breath	0.1 ha	Activity 20, GNR 983 (as amended)
Site clearing (30m x 30m)	0.09ha	Not Listed
Geophysical survey	1 413 ha	Not Listed
Geological field mapping	1 413 ha	Not Listed
Access roads (3m x 50m)	0.015ha	Not Listed

5.2. Description of the activities to be undertaken

(Describe Methodology or technology to be employed, including the type of commodity to be prospected/mined and for a linear activity, a description of the route of the activity).

The prospecting activities will include the following activities:

Establishment of the office and equipment storage site:

The site will be cleared of vegetation and levelled where the mobile site offices will be installed. No topsoil will be removed for this activity. Vegetation clearance of an extent area of 30x30m will be undertaken for the establishment of the site camp offices and auxiliary equipment for the operation.

Installation of mobile offices and ablutions.

Mobile offices and portable ablutions will be installed on the established site.

Construction of temporal access road to the camp.

Temporal access roads to the site camp and drill sites will be constructed within the proposed area. However, existing farm roads will be utilized as far as practicable.

Drilling; and

Drilling ten (10) boreholes will be undertaken using a grid drilling pattern to a maximum depth of 50 m with each borehole sump area of 10m length x 10m breath.

Rehabilitation and closure.

Concurrent rehabilitation of the drill holes will be conducted after each drilling is completed. The drill holes will be backfilled of material in their respective manner and the drilled hole to be closed with a cap. The final rehabilitation of the site will be conducted including the rehabilitation of the office and equipment storage site footprint, drill sites and access roads. The rehabilitation plan will be included within the EMPr which forms part of this report to be submitted to the Department of Mineral Resources and Energy (DMRE).

Project Phases

The prospecting activities will be undertaken in four (4) phases for a total duration of about

48 months, thus five years with subject to renewal for 3 years should the prospecting programme not be completed within the first term of granting. The prospecting phases will be conducted as follows:

Phase 1

Desktop Studies

A desktop study will be carried out to obtain all possible geological information and historical data of the proposed prospecting area. This includes the review of published geological reports, data from the Council of Geoscience and relevant geological research within the proposed area.

Reconnaissance Survey

A geological reconnaissance survey of the proposed area will be undertaken to assess the potential clay deposit and to comparatively evaluate the preferred deposit. This survey will generally be carried out for examination of the general geological features and characteristics of a region.

Geological Field Mapping

A geological field mapping will be conducted to obtain information about the surface lithologies and geological features and structures hence a geological map will be the outcome of this activity.

Geophysical Survey

Information will need to be gathered from undiscovered hidden clay deposits below the surface. A field data will be obtained based on the principles and guidelines. A GPS will be used to record the data point locations, and no access roads will be constructed for this survey.

RC/DC Drilling

Boreholes will be drilled at pre-determined sites on the proposed area. A 165mm diameter core drill will be used to drill the geological boreholes. At least ten (10) boreholes will be drilled using a grid drilling pattern at a maximum depth of 50 m. The exact of respective borehole positions will heavily rely on the data received from geophysical survey. The spacing between boreholes shall be decreased appropriately where significant quality changes occur in structurally complex area and along the seam sub-outcrop.

Concurrent Rehabilitation

After each borehole is completely drilled and does not show any occurrence, it will be fully rehabilitated. Rehabilitation will only be done by backfilling of material in their respective manner and closing the drilled hole with a cap.

Phase 2

Core Logging

All drill holes will be logged every meter containing information such as hole location, depth and other geological structures encountered within the hole. Dust samples will be taken in sealed chip trays and safeguarded for future referencing. Portions of the drill chips representing the ore will be taken and placed in bags for analysis.

Sample Analysis

All samples obtained from the drilling programme will be taken to the accredited laboratory for analysis and quality.

Phase 3

Banking & Feasibility Studies

The outcome of the prospecting work will determine whether the project is viable or not. This phase will comprise of the following key aspects:

Geological Modelling

Mineral Resource Estimation

A mineral resource estimation will be conducted and compiled into a Mineral Resources and Reserves Statement to be signed by a competent person. The estimation will include the tonnages and quality of the mineral. Should the results prove positive, the preparations for mining right application and any other relevant applications will commence. More various technical personnel will be involved in the process. The skills cycle will include geology, mine engineering, mine surveying, metallurgy, legal and finance.

Phase 4

Rehabilitation and closure

Final rehabilitation of the site will be conducted as the final phase of the prospecting activities and will be undertaken upon cessation of the project

6. Policy and Legislative Context

Table 8: Policy and Legislative context

Applicable legislation and guidelines used to compile the report	Reference where applied
<p><u>The Constitution of the Republic of South Africa, 1996</u></p> <p>Under Section 24 of the Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996) it is clearly stated that:</p> <p>Everyone has the right to</p> <ul style="list-style-type: none"> a) an environment that is not harmful to their health or well-being; and b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that - <ul style="list-style-type: none"> (i) Prevent pollution and ecological degradation. (ii) Promote conservation; and <p>Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.</p>	<p>Vahlengwe is undertaking an EIA process to identify and determine the potential impacts associated with the proposed prospecting activities. Mitigation measures recommended will aim to ensure that the potential impacts are managed to acceptable levels to support the rights as enshrined in the Constitution.</p>
<p><u>National Environmental Management Act, 1998 (Act No. 107 of 1998) and EIA Regulations (as amended in 2017)</u></p> <p>The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) (as amended) was set in place in accordance with</p>	<p>Activities associated with the proposed prospecting activities are identified as Listed Activities in the Listing Notice 1, GNR 983 (as amended), Listing Activity No. 20 and therefore require Basic Environmental Impact Assessment.</p>

<p>Section 24 of the Constitution. Certain environmental principles under NEMA must be adhered to, to inform decision making for issues affecting the environment.</p> <p>Section 24 (1)(a) and (b) of NEMA state that:</p> <p>The potential impact on the environment and socio-economic conditions of activities that require authorization or permission by law and which may significantly affect the environment, must be considered, investigated, and assessed prior to their implementation and reported to the organ of state charged by law with authorizing, permitting, or otherwise allowing the implementation of an activity.</p> <p>The EIA Regulation, 2014 was published under GN R 326 on 07 April 2017 (EIA Regulations) and came into effect on 07 April 2017. Together with the EIA Regulations, the Minister also published GN R 327 (Listing Notice No. 1), GN 325 (Listing Notice No. 2) and GN R 324 (Listing Notice No. 3) in terms of Sections 24(2) and 24D of the NEMA, as amended.</p>	
<p><u>Mineral and Petroleum Resource Development Act, 2002 (Act No. 28 of 2002)</u></p> <p>The Act makes provision for equitable access to and sustainable development of the nation’s mineral and petroleum resources;</p>	<p>The proposed project is applied for in terms of Section 16 of the MPRDA, 2002 (Act No. 28 of 2002) and the planned activities are according to the scope of the PWP in terms of the Mineral and Petroleum Resource Development Act, 2002 (Act No. 28 of 2002):</p>

<p>and provides for matters connected therewith.</p> <p>Mineral and Petroleum Resource Development Act, 2002 (Act No. 28 of 2002): Mineral and Petroleum Resource Development Regulations GNR 527 of 2004.</p> <p>Section 7 (1). The prospecting work programme must contain: -</p> <p>(f). a description of how the mineral resource and mineral description of the prospecting area will be determined throughout - (i) the prospecting work to be performed.</p> <p>(ii) a geological survey to be carried out; and</p> <p>(iii). A geophysical survey to be undertaken.</p> <p>(g). a description of the prospecting method or methods to be implemented that may include - (i) Any excavations, trenching, pitting, and drilling to be carried out.</p> <p>(ii) Any bulk sampling and testing to be carried out; and</p> <p>(iii) Any other prospecting methods to be applied.</p>	<p>Mineral and Petroleum Resource Development Regulations GNR 527 of 2004.</p>
<p><u>National Environmental Management: Air Quality Act, 2004 (Act 39 Of 2004)</u></p> <p>The National Environmental Management: Air Quality Act, 2004 (No. 39 of 2004) (NEM: AQA) governs all aspects of air quality, including pollution prevention, national norms and standards, and the requirement for an Atmospheric Emissions License (AEL) for listed activities that emit pollutants into the atmosphere and have</p>	<p>The prospecting operation will not be conducting activities that may require the application for an AEL. Regulation 2 of NEMAQA: National Dust Control Regulations GN R827 (01 November 2013) indicates that the purpose of the Act is to prescribe general measures for the control of dust in all areas. Therefore, Aquarella will be required in terms of Regulation 6 and 7 of the Act to implement measures for controlling dust and conducting an</p>

<p>or may have a significant negative impact on the environment. Activities requiring an AEL are listed in GN No. 893 (22 November 2013), which was published in accordance with Section 21(1) ((b) of the NEM: AQA. According to Section 22 of NEM: AQA, no one may engage in a listed activity without an AEL.</p>	<p>Ambient Air Quality Monitoring PM₁₀ respectively.</p>
<p><u>National Environmental Management: Waste Act, 2008</u></p> <p>The National Environmental Management: Waste Act of 2008 (No. 59 of 2008) (NEM: WA) governs all aspects of waste management, with a focus on waste avoidance and minimization. NEM: WA developed a system for categorizing and licensing waste management activities. Listed waste management activities that exceed certain thresholds are subject to an impact assessment and licensing process. Activities in Category A necessitate a Basic Assessment, whereas activities in Category B necessitate a Scoping and EIA process.</p>	<p>The prospecting activities will not be generating waste that will trigger or require the application of the Waste Management License in terms of the NEMWA. However, Aquarella must ensure that the waste generated must be properly managed through a Waste Management Programme (WMP).</p>
<p><u>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEM:BA)</u></p> <p>The NEM:BA governs the management and conservation of South Africa's biodiversity within the framework established by NEMA. This Act also governs the protection of species and ecosystems that require national protection, as well as the management of invasive</p>	<p>A Fauna and Flora Impact Assessment will be conducted as part of the Environmental Impact Assessment (EIA)</p>

<p>and alien species. The following regulations have been promulgated in accordance with the NEM:BA and are also relevant:</p> <ul style="list-style-type: none"> • Alien and Invasive Species Lists, 2014 published (GN R.599 in GG 37886 of 1 August 2014); <p>National Environmental Management: Biodiversity Act, 2004: Threatened and Protected Species Regulations;</p>	
<p><u>National Noise Control Regulations, R.154 of 1992 (the Noise Regulations) promulgated in terms of Section 25 of the Environmental Conservation Act, 1989 (Act 73 of 1989)</u></p> <p>The National Noise-Control Regulations (GN R154 in Government Gazette No. 13717 dated 10 January 1992) (NCRs) form part of the Environmental Conservation Act and these Regulations apply to external noise.</p> <p>The NCRs differentiates between Disturbing Noise levels (which is objective and scientifically measurable which are generally compared to existing ambient noise level) and Noise Nuisance (which is a subjective measure and is defined as noise that “<i>disturbs or impairs or may disturb or impair the convenience or peace of any person</i>”).</p> <p>Local Authorities use Controlled Areas to identify areas with high noise levels. Restrictions have been set out for development that occurs in these Controlled Areas. These regulations make provision</p>	<p>The EMPr includes measures to control and manage noise.</p>

<p>for guidelines pertaining to noise control and measurements. The regulations make reference to the use of the South African National Standards 10103:2008 (SANS) guidelines for the Measurement and <Rating of Environmental Noise with Respect to Land Use, Health, and Annoyance and to Speech Communication.</p>	
<p><u>Conservation of Agricultural Resources Act (Act No. 43 of 1983)</u></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>	<p>The EMPr include measures to control and manage potential impacts on the agricultural activities.</p>
<p><u>The National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA)</u></p> <p>The National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) is the main piece of legislation in South Africa that protects and regulates the management of heritage resources. The Act requires Heritage Resources Agencies, in this case in the South African Heritage Resources Agency (SAHRA) and the Provincial Heritage Resources Authority of Gauteng (PHRA-G), to be notified of any developments that may exceed certain minimum thresholds as soon as possible.</p>	<p>The EMPr include measures to control and manage potential impacts on the heritage resources.</p>

7. Need and desirability of the proposed activities.

(Motivate the need and desirability of the proposed development including the need and desirability of the activity in the context of the preferred location).

The mining sector is very crucial to the South African economy. The success of the proposed prospecting activities and quantification of resources would lead to a potential viable economic mining activity. This will consequently boost the countries' current struggling economy, should the project advance to the mining phase. Mining will significantly contribute to local economic growth through direct job creation, future business opportunities, royalties, also contributing to the national gross domestic product and tax revenues.

It has been presumed that the proposed area may have clay reserves which is based on the available geological information. The prospecting project will be necessary to ascertain the data in relation to the nature, location, and extent of the clay within the proposed prospecting area. Prospecting will also determine whether there are any features that could affect the economic extraction of the clay, should the project advance to the mining phase. Furthermore, if the target mineral is discovered, the information obtained from the prospecting activities will be required to determine how and where the clay body will be extracted, as well as how much economically clay reserves are available within the proposed prospecting area.

Aquarella anticipates that significant benefits from the area, should minerals be discovered, will accrue to the immediate area, the sub-region, and the Limpopo Province. These benefits must be balanced against the costs of the area, including the impacts to the landowner. There is no reason why this proposed project should not be considered at this time, given the high likelihood of a reserve as demonstrated by other resources discoveries in the area.

8. Motivation for the overall preferred site, activities, and technology alternative

📍 Preferred site

The proposed prospecting project site was selected as a preferred site based on the available geological information and historical data of the site. The available geological information suggests that the preferred site may have clay reserves.

📍 Activities

The prospecting activities will be undertaken in four (4) phases for a total duration month about 48 months, thus five (5) years. The intended activities within the stipulated timeframes will be able to provide sufficient information to declare the occurrence of the targeted mineral bodies. If the intended outcome of the project is not achieved within the intended timeframes, therefore, the prospecting right will be subjected to the renewal by extending the period up to three (3) years as

required in terms of Section 18 of the MPRDA, 2002 (Act No. 28 of 2002) (as amended). The prospecting activities will include the following activities:

- ✚ **Vegetation clearance** of an extent area of 30x30m will be undertaken for the establishment of the site camp offices and auxiliary equipment for the operation.
- ✚ **Installation of mobile offices and ablutions.**
- ✚ **Construction of temporal access roads** to the site camp and drill sites will be undertaken within the proposed area. However existing farm roads will be utilized as far as practicable.
- ✚ **Drilling of ten (10) boreholes** will be undertaken at a maximum depth of 10 to 50 m with each borehole sump area of 10m length x 10m breath; and
- ✚ **Rehabilitation** of the overall site and closure.

- ✚ **Technology alternative.**

The layout plan of the infrastructure has been planned to avoid sensitive areas as far as possible. The intended method of vegetation clearance will have minimal environmental impacts. The applicant intends to utilise a bulldozer to clear vegetation for site establishment and the construction of the access roads. A 165mm diameter core drill will be used to drill the geological boreholes at pre-determined sites on the proposed area. There are no alternative technologies identified for the proposed prospecting activities in this regard.

9.Full description of the process followed to reach the proposed preferred alternatives within the site.

(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.)

9.1. Details of the development footprint alternatives considered.

(With reference to the site plan as provided above and the location of the individual activities on site, provide details of the alternatives considered with respect to)

Aquarella intends to conduct the prospecting of clay to determine whether the area contains this commodity and, if so, whether the clay reserves are found in quantities that are economically valuable.

According to the NEMA: EIA Regulations GNR 982 (as amended), a Basic Assessment Report is required to identify alternatives for areas applied for, and in terms of the Regulations, an alternative to a proposed activity means a different strategy to meet the general purpose and requirements of the activity.

9.1.1. The property on which or location where the activity is proposed to be undertaken;

Prospecting sites and associated campsite location and access routes are among the location alternatives considered for the proposed area. The location alternatives were opted for based on several criteria, including environmental considerations (how sensitive the area is in terms of soils, wetlands, groundwater, and so on), sensitive receptors (proximity to communities and farmsteads), and the area's dependence on the necessary infrastructure.

9.1.2. The type of activity to be undertaken.

Alternative drilling sites cannot be considered at this stage because exploration boreholes can only be sited after desktop assessment, field mapping, and geophysical survey have been completed. There were two alternatives considered which is constructing new roads or using existing roads and establishing tracks. The use of existing roads was preferred because of the impact on vegetation and potential erosion that the construction of new roads might have.

9.1.3. The design or layout of the activity;

Since this area will not require any complicated surface infrastructure, no design and layout alternatives for the proposed area were determined. Alternatives were considered for the location of the campsite. A static location near the entrance of the site, a mobile campsite, and an offsite campsite were among the alternatives. The alternative sites were determined based on the sensitivity of the proposed area.

9.1.4. The technology to be used in the activity.

The prospecting activities proposed in the Prospecting Works Programme is dependent on the preceding phase as previously discussed; therefore, no alternatives are indicated, but rather a phased approach of trusted prospecting techniques.

9.1.5. The operational aspects of the activity; and

- **Site Establishment**

The applicant intends to utilize a bulldozer to clear vegetation for site establishment and the construction of the access roads.

- **Access Roads**

Existing roads will be utilized as far as possible, and areas of the least sensitivity will be chosen for access roads to the drill sites establishment.

- **Drilling**

Core drilling will be undertaken to determine the occurrence and distribution of the clay body. Drilling of the geological boreholes will be conducted at pre-determined sites on the proposed area.

9.1.6. The option of not implementing the activity.

The 'No-Go' alternative is the option to not conduct prospecting activities at the proposed project site. The No-Go alternative assumes that the site would remain in its current condition. The No-Go alternative would have no impact on the social and biophysical environment.

Aquarella intends on prospecting the proposed area to determine the availability of clay. Should the minerals be found, the proposed prospecting project alone will result in job creation and support for local businesses.

Accordingly, the consequences of not undertaking the proposed project will diminish the potential positive impacts of this project on the workforce to be used for the prospecting project as well as on the mining project. Therefore, the No-Go alternative is considered undesirable at the local and regional level.

9.2. 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 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.)

• Stakeholder Identification

Stakeholder engagement is an important part of the environmental decision-making process, and it forms part of the impact assessment phase. The process is primarily intended to provide I&APs with the opportunity to understand the proposed project. Furthermore, the purpose of consultation with the landowner, key stakeholders, and I&APs is to provide them with the necessary information about the proposed project so that they can make informed decisions about whether the project will affect them, as well as to provide the EIA team with local knowledge of the area and raise concerns about the potential biophysical, socioeconomic, and cultural impacts.

Vahlengwe's approach recognizes that I&APs are diverse in character and in their project interest.

The following criteria were used to identify I&APs:

- ✚ **Zone of influence:** the physical location in relation to the project site and the potential impacts. In general, the closer the affected people live to the project site, the greater their interest and the greater the potential impact of the project;

- ✚ **Stakeholder values:** the value that the stakeholders attach to the area that could be affected by the project. This includes aspects such as livelihood, land use, property, cultural heritage and sense of place; and
- ✚ **Jurisdiction:** the mandate/influence of institutions over the regulatory process and public opinion.

Draft Basic Assessment Report

Following the legislative requirements and good practice, it is important to develop documentation, which will be easily accessible to all stakeholders who would be affected or interested in the project. The following documents were developed and distributed to all stakeholders including the interested and affected parties. The various PPP materials which were used as part of the EIA processes are included as appendices to this report.

- **Public Participation Materials**

Following the legislative requirements and good practice, it is important to develop documentation, which will be easily accessible to all stakeholders who would be affected or interested in the project. The following documents have been developed and distributed to all stakeholders including the interested and affected parties. The various PPP materials which were used as part of the EIA processes are included as appendices to this report.

Background Information Document (BID):

The BID (**Appendix 3B**) aims to provide important information regarding the following:

- ✚ Project description of the proposed prospecting activities.
- ✚ The EIA and the PPP that were undertaken in support of the prospecting activities and relevant contact details.
- ✚ Details about how stakeholders could register as an Interested and Affected Party (I&AP) and be kept informed about the Project developments; and
- ✚ The public review and comment period for the draft Basic Assessment Report.
- ✚ The BIDs will be hand delivered to the affected and surrounding landowners

I&APs Registration Form:

A registration form was distributed to the community attached to the BID for the registration of the I&APs.

Site notice:

An A3 sized site notices informing I&APs about the project information as per the published newspaper advert, were developed, laminated and erected at the boundary of the proposed site as required in terms of Section 24J of NEMA read with Regulation 41 EIA regulation notices were placed within the vicinity of the proposed project site at strategic locations where it was deemed to be visible to community on the **29th October 2024**.

Newspaper advertisements:

A newspaper advertisement, informing all I&APs residing in the surrounding communities near the proposed area within the jurisdiction of the District Municipality of Bela-Bela was published and included the information about Aquarella intention to conduct the prospecting activities for clay, in respect of the remaining extent, portions 1 and 11 of the, Farm Doornput 458 KR within the Magisterial District of Bela-Bela/Waterberg, Limpopo Province. The newspaper advert was published through **Die Pos Newspaper** dated **24th October 2024**.

I&APs were informed to register any comments or concerns that they might have, regarding the proposed project by contacting the EAP, via email through the provided comments request form or request additional information via the telephone. The EAP details were included in the advert, Background Information Document (BID) and site notice.

Public meeting:

A door-to-door consultation method was undertaken on the 29th of January 2025. The consultation was to facilitate discussions on the Draft Basic Assessment Report to obtain comments, issues, concerns, and inputs from the Interested and Affected Parties (I&APs).

Draft BAR Commenting Period

A draft BAR report was made available via the Vahlengwe Mining Advisory and Consulting website (www.vahlengweadvisory.co.za). Printed copies were also made available for viewing at the locations deemed accessible to the community.

9.3. Summary of issues raised by I&APs

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

Table 9: Summary of issues raised by I&APs (Please refer to CRR (**Appendix 3H**) and Proof of consultation with State Departments (**Appendix 4**).

Interested and Affected Parties	Date	Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Landowner/s					
Lawful occupier/s of the land					
Landowners or lawful occupiers on adjacent properties					
Municipal councillor					
Municipality					
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					
Dept. Land Affairs					
Dept. Environmental Affairs					
Other Competent Authorities affected					

BAR/EMPR
Aquarella Investments 389 (Pty) Ltd
LP30/5/1/1/2/ 15699 PR

Other Interested and Affected Parties					
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9.4. The Environmental attributes associated with the alternatives.

(The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical, and biological aspects)

9.4.1. Baseline Environment

9.4.1.1. Type of environment affected by the proposed activity.

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

Regional Setting

The proposed project area is located within the jurisdiction Waterberg District Municipality under the Bela-Bela Local Municipalities, Limpopo Province. The proposed project area is located approximately 17,42km southwest of Bela-Bela town and about 9,32 km northwest of the Eersbewoond town. The project area is accessible via the unnamed road that connects to the R516 and R33 Road in the eastern side.

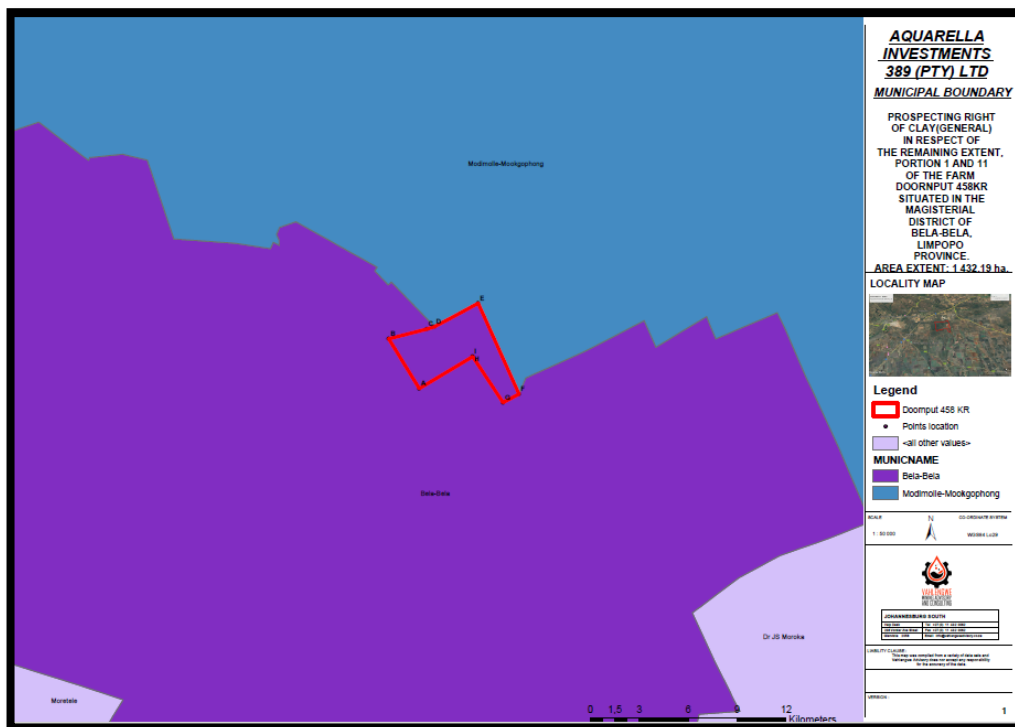


Figure 2: Municipal area

Climate

Throughout the year, precipitation is scarce in Bela-Bela. This climate is considered to be BSh according to the Köppen-Geiger climate classification. The temperature in this location is approximately 19.6 °C | 67.3 °F, as determined by statistical analysis. In a year, the rainfall is 636

mm | 25.0 inch. The geographical location under consideration lies in the region of the Southern Hemisphere. The onset of summer commences towards the conclusion of January and culminates by December. The season is characterized by a sequence of months, namely: December, January, February, March.

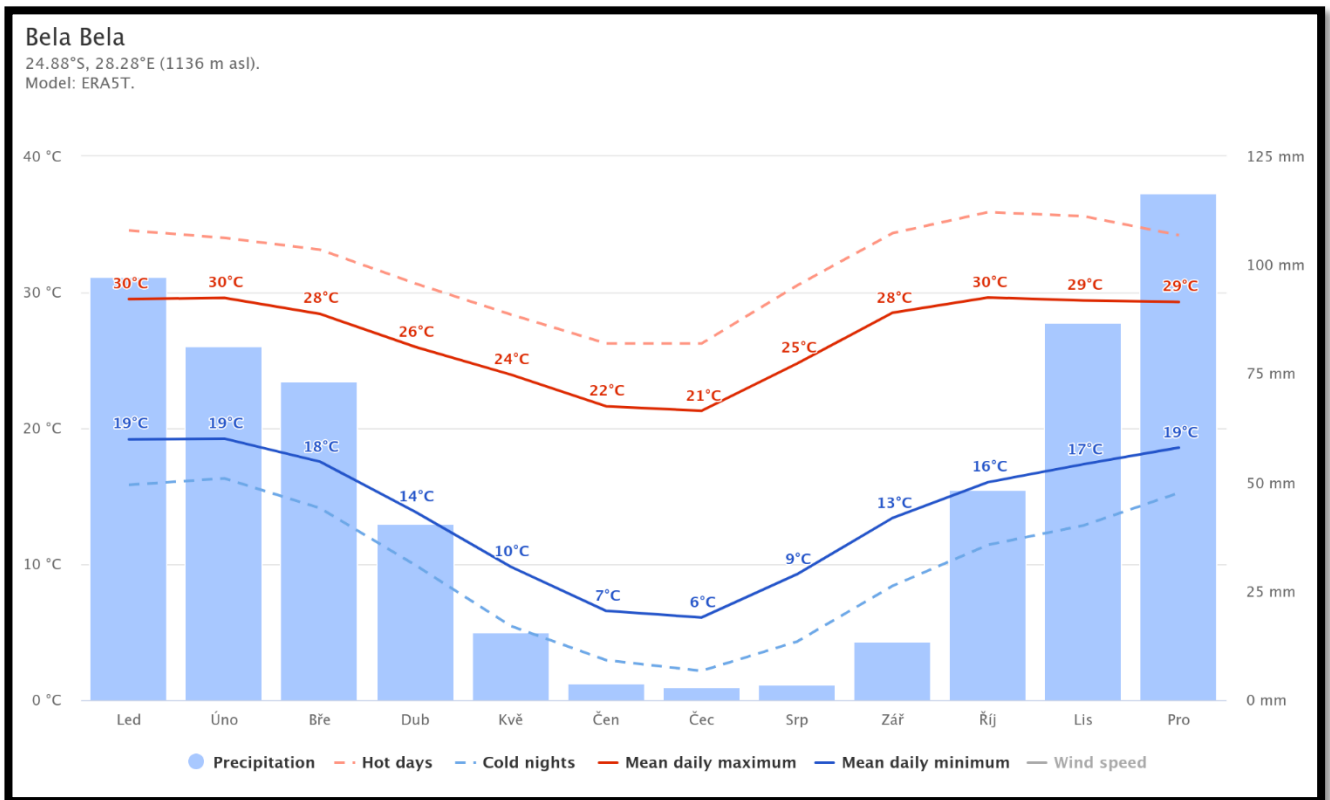


Figure 3: Average climate conditions for Bela-Bela town (<https://www.meteoblue.com>)

The current windspeed in Bela-Bela is around 6 meters per second from the Southwest direction as shown in the wind rose below.

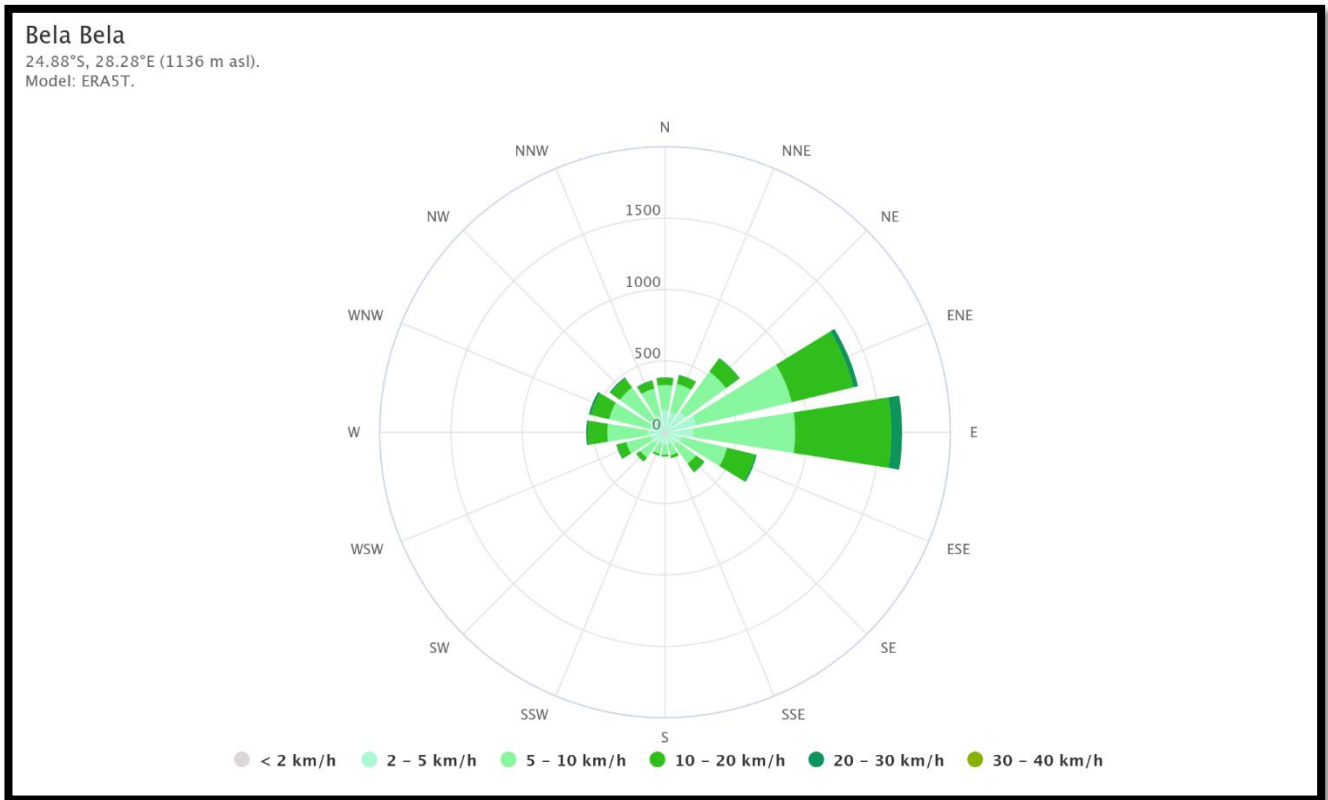


Figure 4: Wind Rose for Bela-Bela (<https://www.meteoblue.com>)

Geology and Soils

The proposed prospecting area falls under the Letaba Subgroup, which is the geological formation located in the Limpopo Province of South Africa. The Letaba subgroup dates back to the Paleoproterozoic era, approximately 2.5-2.0 billion years ago. The subgroup consists mainly of metamorphic rocks including quartzites, schists, and gneisses. The rocks have undergone intense deformation, resulting in complex folding and faulting. The Letaba subgroup supports a variety of soil types, including sandy loams, sandy clay loams and granite derived soils.

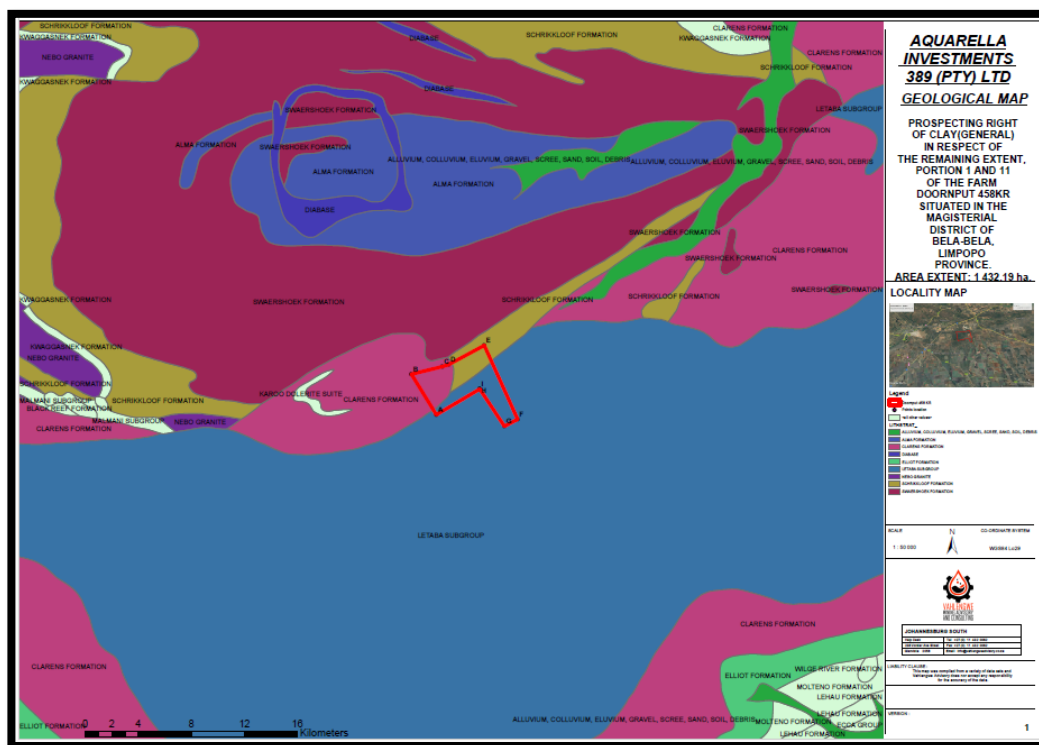


Figure 5: Geological map indicating the geological formation of proposed prospecting area.

Topography and Land Capability

Bela-Bela town and its surrounding areas in both Bela-Bela Local Municipality exhibit diverse topography and land capability. The land uses include agriculture, conservation, urbanization and tourism. The water includes the Letaba River and Bela-Bela Dam which provides a mix of opportunities. Sustainable land management and conservation practices are essential to maximize the land’s potential while protecting environmental resources. See the figure below.

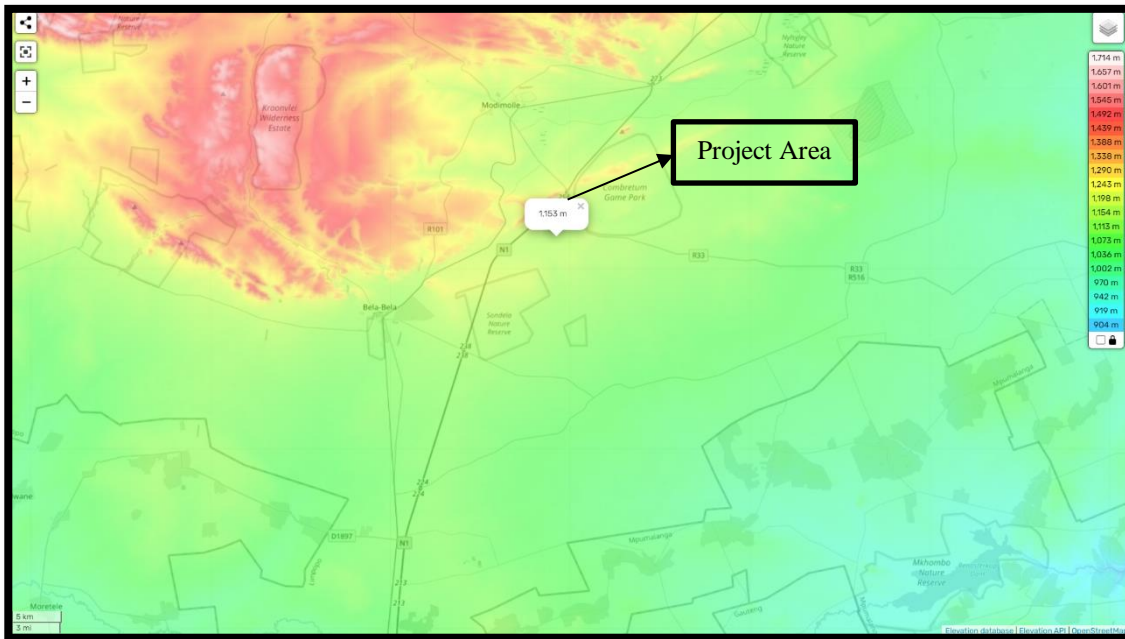


Figure 6: Topographical map of the project area.

Hydrology

The hydrology of Bela-Bela Local Municipality in Limpopo is comprised of the Letaba River and Bela-Bela Dam, with significant contributions from various dams and groundwater resources. These water systems are vital for agriculture, domestic use, industrial activities, and ecological health. Effective management of water resources, including flood control, water quality maintenance, and conservation of wetlands, is essential to sustain the district's hydrological health and support its diverse needs. The prospecting area consists of an artificial dam as depicted in Figure 8 below.

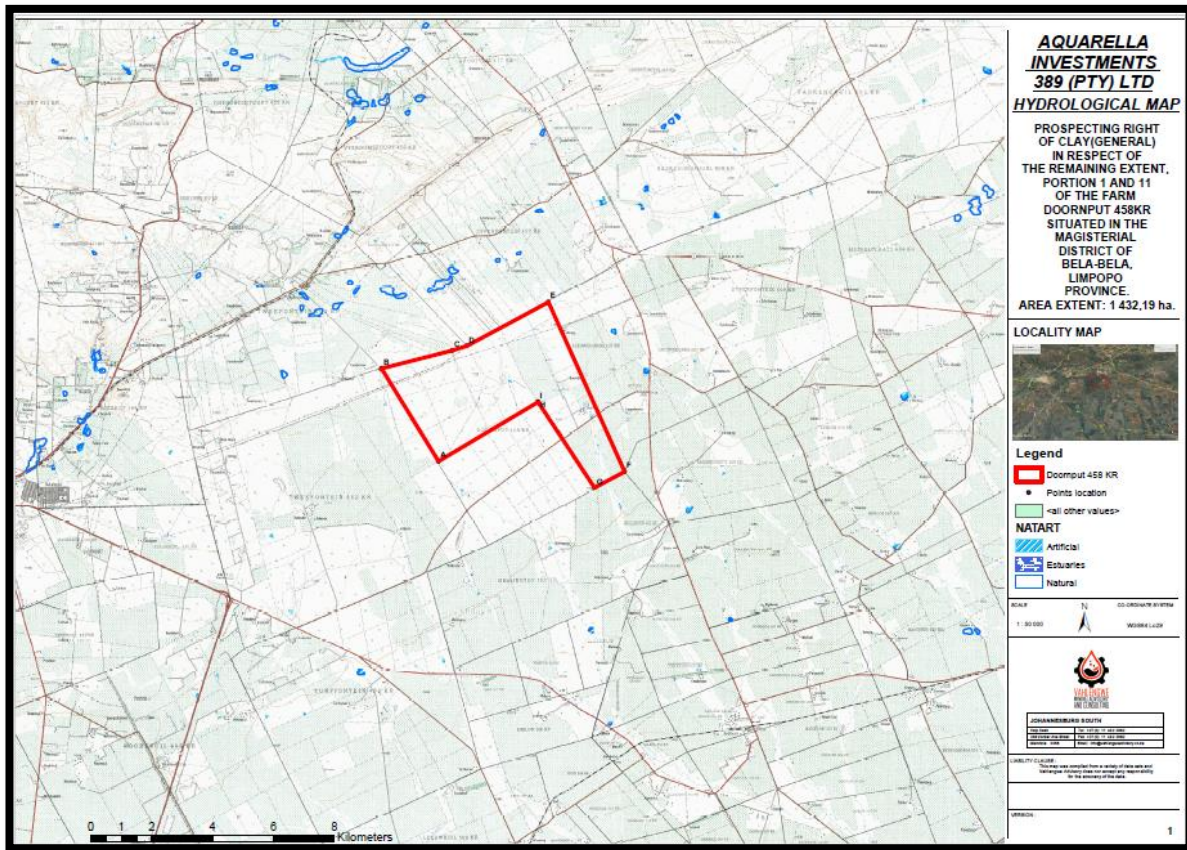


Figure 7:Hydrological Map

Biodiversity

Biomes

The proposed project area is situated within the Savannah Biome, the Savannah biome is a distinct ecological zone characterized by a mix of open grasslands and scattered trees. This biome is prevalent in tropical and subtropical regions and is most associated with the expansive landscapes of Africa but can also be found in South America, India, and Australia. The savannah experiences warm temperatures throughout the year, typically ranging from 20°C to 30°C (68°F to 86°F). The savannah climate features a marked seasonal variation in precipitation, with a distinct wet season and a prolonged dry season. Annual rainfall ranges from about 500 to 1500 mm. The wet season lasts for approximately 6 to 8 months, providing the necessary moisture for grasses and other vegetation to thrive. The landscape is dominated by various species of grasses, such as elephant grass, Rhodes grass, and Bermuda grass, which can grow up to several meters tall. Trees in the savannah are typically drought-resistant and adapted to withstand fires. Common tree species include acacias, baobabs, and eucalyptus. These trees are widely spaced to reduce competition for water and sunlight. Many plants have developed deep root systems to access groundwater, thick

bark to resist fires, and leaves that reduce water loss. The savannah supports a diverse array of large herbivores like zebras, giraffes, elephants, antelopes, and wildebeests. These animals often migrate to follow the seasonal availability of water and fresh grazing grounds. Predatory animals such as lions, cheetahs, leopards, and hyenas are key components of the savannah ecosystem, maintaining the balance by preying on herbivores. Birds such as ostriches, secretary birds, and various raptors are common. Insects, particularly termites, play a crucial role in nutrient cycling and as a food source for other animals. Rivers, lakes, and seasonal waterholes are critical for the survival of savannah wildlife, especially during the dry season when surface water is scarce. Efforts to preserve savannah ecosystems include establishing protected areas, promoting sustainable land management practices, and restoring degraded lands. Conservation programs often focus on maintaining biodiversity, supporting local communities, and mitigating the effects of climate change. The savannah biome is a complex and dynamic environment that plays a crucial role in global biodiversity. Its unique combination of grasses and scattered trees supports a wide variety of life forms and ecological processes, making it an essential component of the Earth's natural heritage.

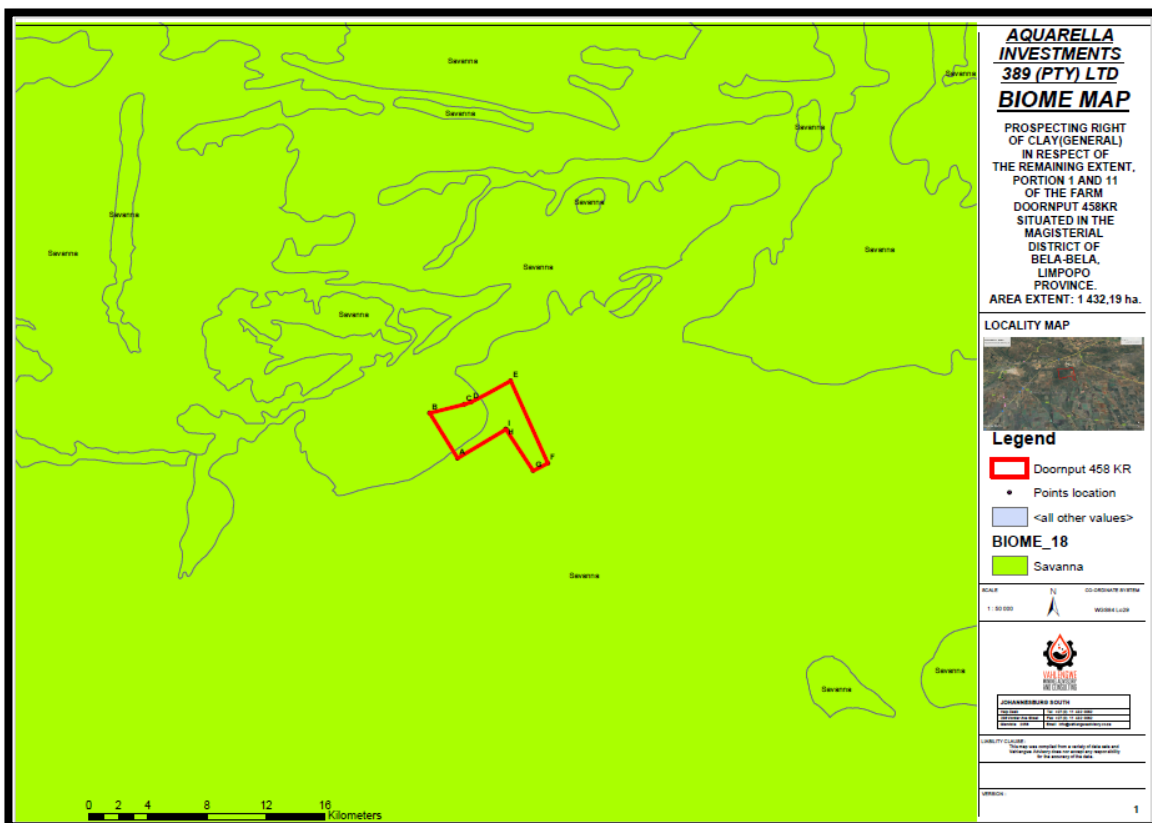


Figure 8: Biome map

Bioregions

Bela-Bela town falls under the Central Bushveld Bioregion. This bioregion is a distinct ecological area within the Savanna Biome. It spans across the provinces of Limpopo and Mpumalanga, covering approximately 14.5 million hectares. It is characterized by the mixed woodland, savanna, and grassland vegetation. The climate in this bioregion is typically subtropical, with warm summers and mild winters. The bioregion is often a hotspot for conservation areas due to its unique position and varied habitats, to mention a few; Kruger National Park, Pilanesberg Game Reserve, Waterberg Biosphere Reserve River Canyon Nature Reserve and many private game reserves. It provides essential economic activities such as agriculture (cattle, maize, cotton), mining (coal, platinum), tourism, game farming and forestry.

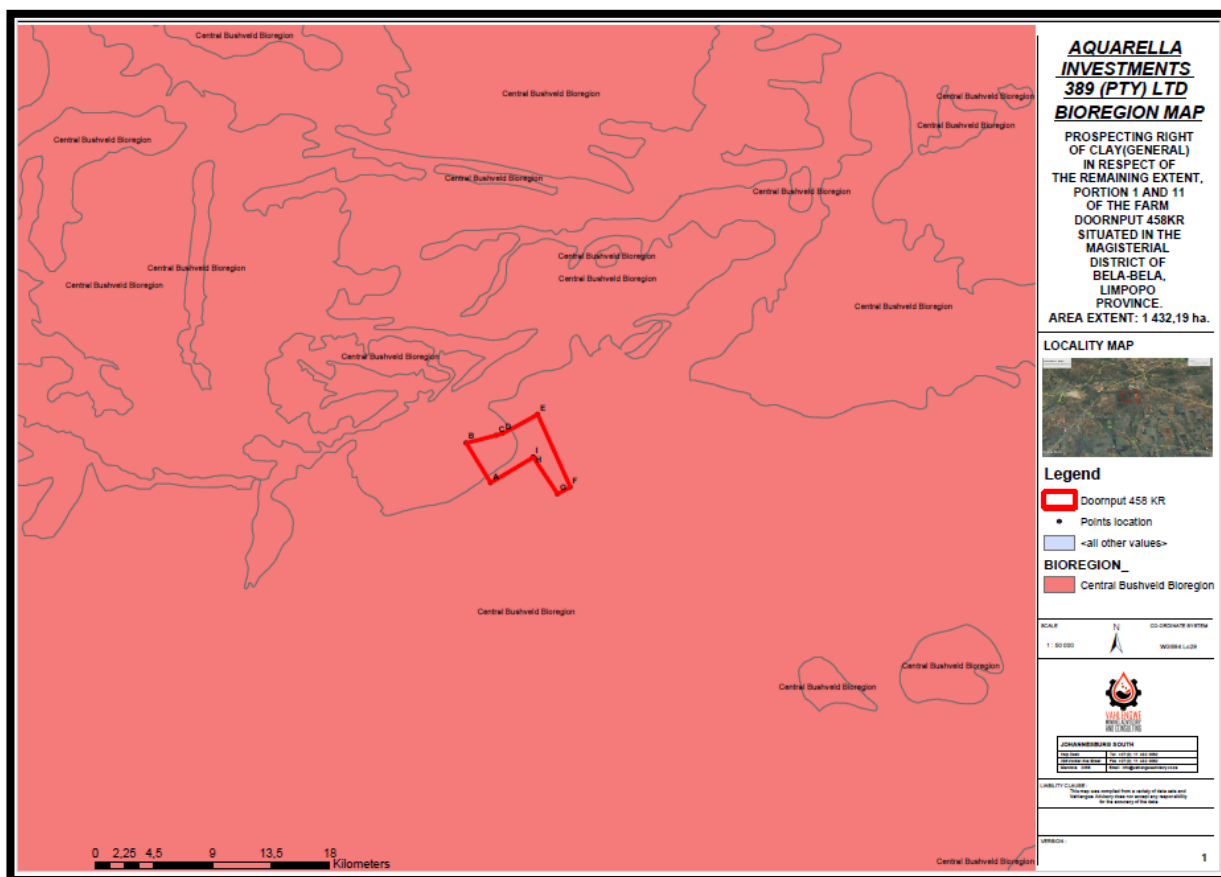


Figure 9: Bioregions Map

Vegetation Type

The prospecting area falls under the Springbokvlakte Thornveld vegetation type. The Springbokvlakte Thornveld is a vegetation type with an open woodland to dense thicket structure, the canopy cover is between 10-50% and the height ranges from 2-10 meters with a

density between medium to high. This vegetation type it falls under a subtropical climate with warm summers and mild winters. The average rainfall is 400-800 mm per year and the topography is flat to gently sloping. The conservation status according to SANBI’s vegetation map, it is listed as Least Concern. It is a habitat for various game species (antelope, giraffe, elephant), supports diverse birdlife. The benefit of this vegetation also includes fuelwood and fencing materials and soil stabilization including erosion control.

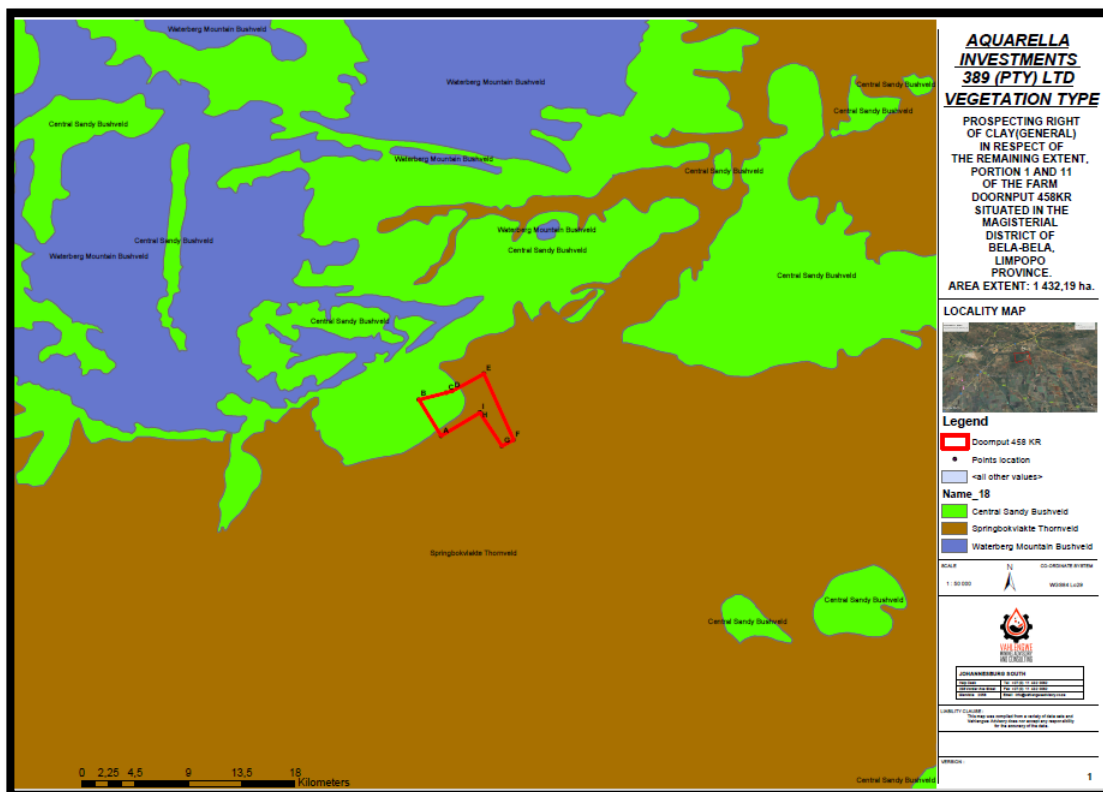


Figure 10:Vegetation type

Fauna

The Bela-Bela Local Municipality is rich in fauna, encompassing a diverse array of mammals, birds, reptiles, and insects adapted to its unique environment. Mammals include large herbivores such as elephant, giraffe, hippopotamus, white rhino, and various antelope species. The predators are lion, leopard, cheetah, hyena, and smaller carnivores like Mongooses and Genets. Vervet Monkeys, baboons and bushbabies. Waterbirds includes herons, egrets, storks and various duck species, the raptors include eagles (African fish eagle), hawks and owls. Game birds which are guineafowl, francolins, and quails they feed on fish, frogs and aquatic insects.

Table 9: Common mammal species that are known to exist in the district of Bela Bela, including their preferred habitat.

Common mammal species	Preferred habitat
Elephant	savanna and open woodlands.
Mongoose	open grasslands
Genets	Woodlands and bushlands
White rhino	Savannas and open woodlands
Vervet Monkey	woodlands, riverine forests, and coastal areas
Bush babies	Woodlands, bushlands and rocky outcrops

Conservation Plan

Critical Biodiversity Areas are areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan. Ecological Support Areas are not essential for meeting biodiversity targets but play an important role in supporting the ecological functioning of Critical Biodiversity Areas and/or in delivering ecosystem services.

Critical Biodiversity Areas 1 & 2 are irreplaceable areas which includes Threatened species, threatened ecosystems that need to be kept in their natural or near natural state. Ecological Support Areas 1 & 2 (ESAs) are supporting zones (ecological) or areas required to prevent degradation of Critical Biodiversity Areas and formal Protected Areas, usually located adjacent to or which link

CBA and/or Protected Areas. Some of these areas may already be transformed or degraded, but they still support ecological processes. The figure below depicts a conservation map that the proposed prospecting area falls within.



Figure 11: Areas of conservation importance.

✚ Socio-Economic Status

Bela-Bela is a town in the Waterberg District Municipality in Limpopo, has a socio-economic profile that reflects both the challenges and opportunities that are reflective of its diverse landscape, which includes urban centres, rural areas, and significant natural attractions such as the Waterberg Mountains. The district has a sizeable population, predominantly Sepedi speaking with a mix of urban and rural communities. Waterberg District Municipality is characterized by challenges including high unemployment, poverty, and disparities in access to services and opportunities. However, there are also opportunities for growth and development, particularly in agriculture, tourism, and community-driven initiatives. Efforts to improve education, healthcare, and infrastructure are ongoing, and addressing these challenges is critical for the sustainable development of the district.

✚ Population profile

Table 10: Population profile of Bela Bela Town

Group	Percentage
Black African	84,8%
Coloured	1,5%
Indian/Asian	0,6%
White	12,9%
Other	0,3%

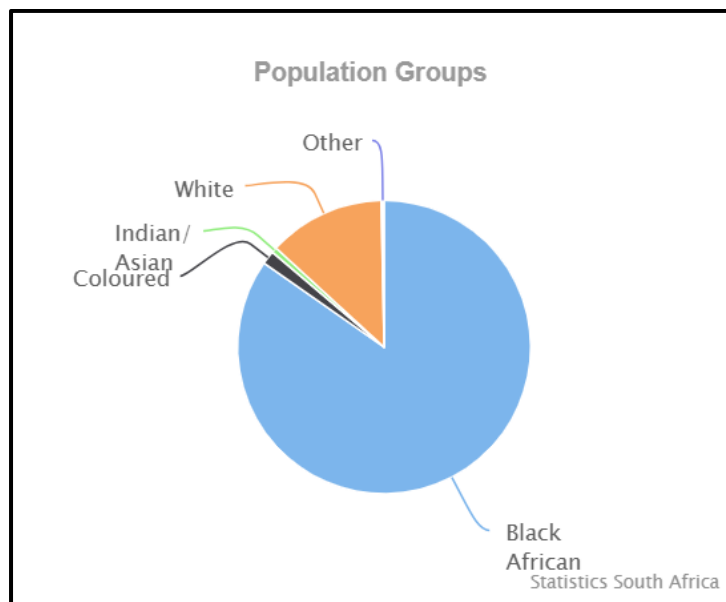


Figure 12: Population groups in Bela-Bela Town (Source: Stats SA 2011 Census)

The figure below depicts sex and age distribution for Bela-Bela local municipality derived from demographic breakdowns within Bela-Bela Town population. The population of Bela-Bela Local Municipality is relatively young, with a significant portion under the age of 24. There is also a slightly higher number of males compared to females. The working-age population constitutes the bulk of the population, which has implications for local economic development, employment, and social services.

Gender profile

The gender composition is slightly skewed towards the male. A conclusion can be drawn for Bela-Bela where both shares of migrated population and female population are lowest in the district. The figure below illustrates the information as captured above.

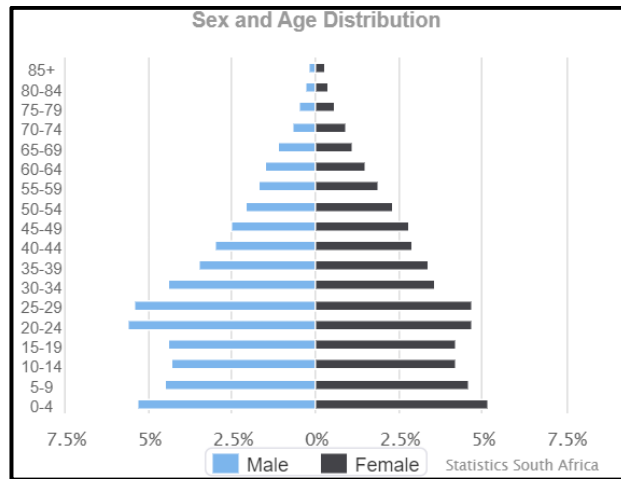


Figure 13: Sex and Age distribution of Bela Bela Town (Source: Stats SA 2011 Census)

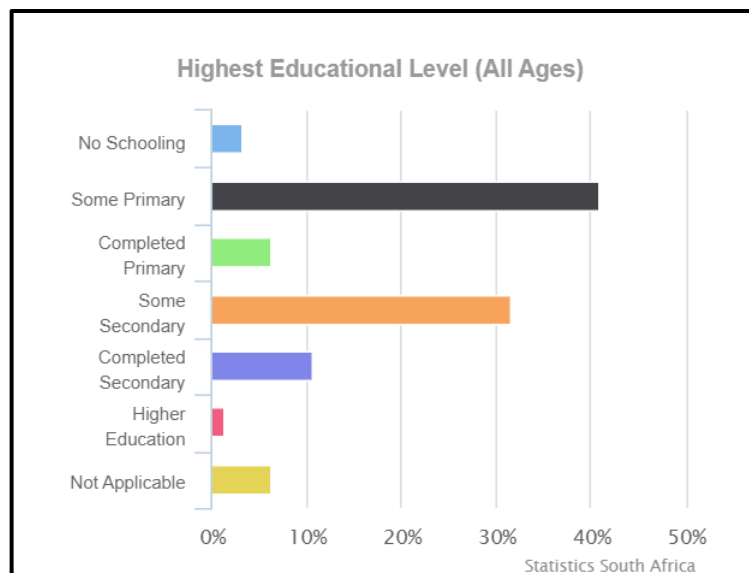


Figure 14: Education level of Bela-Bela Town (Source: Stats SA 2011 Census)

Between 2001 and 2011 there has been an increase in the number of households that have access to electricity, piped water and formal dwellings. The Figure below shows that majority of people

in the municipality depend on the regional or local scheme water supply and the groundwater from boreholes.

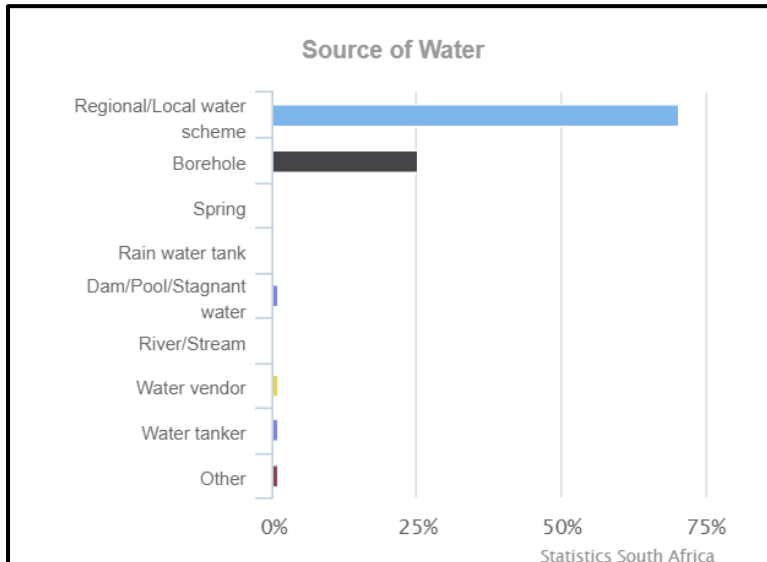


Figure 15: Sources of water at Bela-Bela Town (Source: Stats SA 2011 Census)

The figure below shows the average household income in 2011. It shows that a greater number of people are earning in the R19 601 to R38 200 income category. This reflects inequality level which undermine efforts to address poverty levels in the municipality.

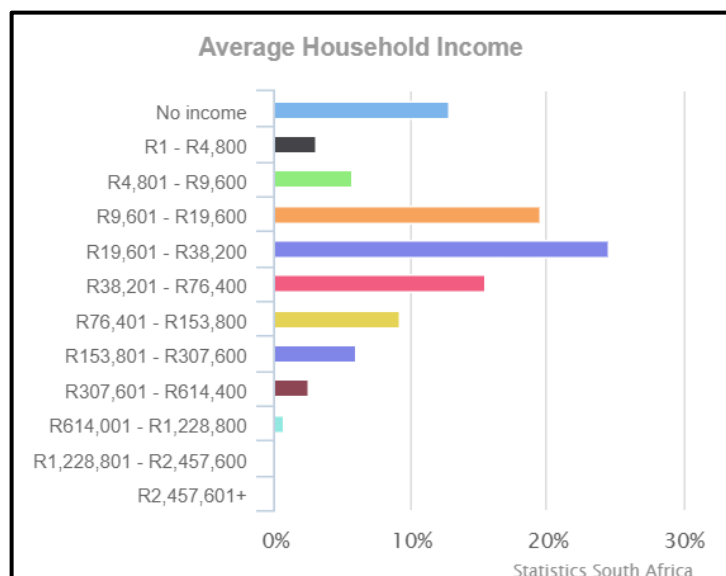


Figure 16: Bela Bela Town Household Annual Income (Source: Stats SA 2011 Census)

9.4.1.2. Description of the current land uses.

Waterberg District Municipality is characterized by its diverse landscape and socio-economic challenges, including high unemployment and poverty. Its economy relies heavily on agriculture and conservation, with some industrial and mining activities. Key minerals found in the district include coal, gold, copper, chrome, sand and vanadium, manganese, and iron ore, contributing to the local economy, particularly in construction and infrastructure development. Development initiatives aim to improve living conditions, infrastructure, and economic opportunities for the residents.

The district comprises a diverse range of land uses. Agriculture is a significant sector occupying approximately 38.51% of the provincial agricultural area. Game farming and tourism play a crucial role in the local economy, with numerous game reserves and tourist facilities. Conservation efforts are prominent, with protected areas and nature reserves. Human settlements, including urban and rural areas, are scattered throughout the municipality. Additionally, infrastructure development is ongoing, focusing on improving roads, water supply and other essential services. Mining activities, particularly coal and platinum, also take place in the area while urban development continues to expand, with new residential, commercial and industrial areas emerging.

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

The area is an open veld with some environmental features on site. There are several settlements occurring outside the proposed area boundaries. There is a natural wetland within the proposed project and the Buffelspruit river is on the western side of the proposed site.

9.4.1.4. Environmental and current land use map

(Show all environmental, and current land use features).

The environmental and current land use of the proposed area is shown on the map below

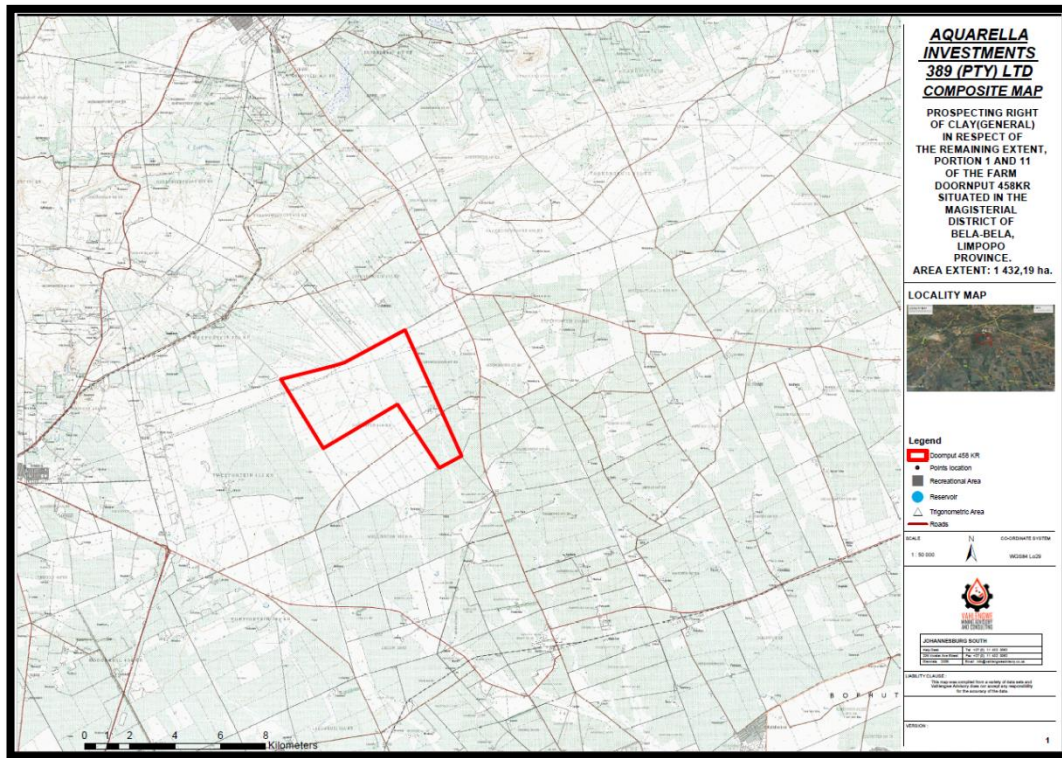


Figure 17: Environmental and Land Use Map

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

(Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultations with affected parties together with the significance, probability, and duration of the impacts. Please indicate the extent to which they can be reversed, the extent to which they may cause irreplaceable loss of resources, and can be avoided, managed, or mitigated).

Project activities

The prospecting activities will include the following activities:

- ✚ Establishment of the office and equipment storage site.
- ✚ Installation of mobile offices and ablution facilities;
- ✚ Construction of temporal access road to the camp;
- ✚ Drilling; and
- ✚ Rehabilitation and closure.

Impacts associated with the proposed project.

- ✚ Topsoil disturbance and soil erosion due to the vegetation clearance during the site establishment and drill sites establishment during the operational phase of the proposed project;

- ✚ Disturbance on the flora and fauna;
- ✚ Dust generation and noise disturbance due to the movement of the vehicles and operating equipment;
- ✚ Soil contamination and groundwater resources contamination due to the hydrocarbon spillages from the fuel storages and/or leakages from the operating vehicles;
- ✚ Impacts of socio-economic environments such as the farming and grazing lands; and
- ✚ Impacts on cultural, heritage and palaeontological resources

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

(Describe how the significance, probability, and duration of the aforesaid identified impacts that were identified through the consultation process was determined to decide the extent to which the initial site layout needs revision).

10.1 Criteria to Consider when Determining Severity of impacts:

The ranking of impacts/determination of significance is estimated using two criteria, namely Consequence and Probability. These consider the contributing factors / criteria listed in the legislation. The definitions of each are provided below.

The **Consequence** of an impact resulting from an aspect is expressed as a combination of:

- **Nature** of impact: An indication of the extent of the damage (negative impacts) or benefit (positive impacts) the impact inflicts on natural, cultural, and/or social functions (environment).
- **Extent** of impact: A spatial indication of the area impacted (i.e., how far from activity the impact is realised).
- **Duration** of impact: A temporal indication of the how long the effects of the impact will persist, assuming the activity creating the impact ceases. For example, the impact of noise is short lived (impact ceases when activity ceases) whereas the impact of removing topsoil exists for a much longer period.
- **Frequency** of the impact occurring: An indication of how often an aspect, because of a particular activity, is likely to occur. Note that this does not assess how often the impact occurs. It applies only to the aspect. For example, driving takes place daily whilst other activities take place monthly while the resultant frequency of the impacts occurring will vary based on several factors.

Magnitude/Severity of an impact determines to what extent will the environment be destroyed or its functions be altered by the activity.

Significance of the impact is an indication of the importance of the impact in terms of both the physical extent and the time scale. It indicates the level of mitigation required

Table 11: Environment impact assessment criteria.

PROBABILITY	Nature of Impact:		
	Low	Impacts affect the environment in such a way that natural, cultural. and / or social functions and processes are not affected.	1
	Low-Medium	Impacts affect the environment in such a way that natural, cultural. and / or social functions and processes are affected insignificantly.	2
	Medium	Impacts affect the environment in such a way that natural, cultural. and / or social functions and processes are altered.	3
	Medium-High	Impacts affect the environment in such a way that natural, cultural. and / or social functions and processes are severely altered. Impacts affect the environment in such a way that natural, cultural	4
	High	and / or social functions and processes will temporarily or permanently cease.	5
	Scale/Extent of Impact:		
	Local	The impacted area will only extend as far as the activity being conducted, e.g., the activity footprint	1
	Site	Impact occurs within a 20km radius of the site.	2
	Regional	Impact occurs within a 100km radius of the site.	3
	National	Impact occurs within South Africa.	4
	Duration of Impact:		
	Short-term	The impact will either disappear with mitigation or will be mitigated through the natural processes in shorter time span.	1
	Medium-term	The impact will last up to the end of the project phases, where after it will be negated. The impact will cease within 5 years if the activity is stopped.	3
	Long-term	The impact will last for the entire operational phase and after the operational life of the operation but will be mitigated by direct human action or by natural processes thereafter.	4
	Permanent	Intervention will not occur in such a way or in such a time span. that the impact can be considered transient.	5
	Frequency of the Occurrence of the Impact:		
	Annually or less	Impact occurs at least once in a year or less frequently.	1
	6 months	Impact occurs at least once in 6 months.	2
	Monthly	Impact occurs at least once a month.	3
	Weekly	Impact occurs at least once a week.	4
	Daily	Impact occurs daily.	5
	Probability of the Occurrence of the impact:		
	Improbable	The possibility of the impact materializing is very low either. because of design or historic experience.	1

	Probable	The possibility of the impact materializing will occur to the extent that provision must be made thereof.	2
	Highly Probable	It is most	4
	Definite	The impact will occur regardless of any prevention measures.	5
	Magnitude of the impacts:		
	Low	The impact alters the affected environment in such a way that natural processes are not affected.	2
	Medium	The affected environment is altered; however, the functions and processes continue in a modified way.	6
	High	Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.	8
	Significance of the impact: Sum (Duration, Extent, Duration) x Probability		
SIGNIFICANCE	Negligible	The impact is non-existent or unsubstantial and is of no or little importance to any stakeholder and can be ignored.	< 20
	Low	The impact is limited in extent, with low to medium intensity and whatever the probability of the occurrence may be, the impact will not have a material effect on the decision and is likely to require the management intervention with increased costs.	< 40
	Moderate	The impact is of importance to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and management intervention will be required.	< 60
	High	The impact could render development options controversial or the project unacceptable if it cannot be reduced to acceptable levels; and/or the cost of management intervention will be a significant factor in mitigation	> 60

This rating system is weighted in such a way as to set impacts that are very likely to occur, but have very little consequence, as negligible significance. Similarly, impacts with serious consequences but that are unlikely to occur are rated lower, than impacts with serious consequences that are likely to occur.

Table 12: Impacts and risks identified.

Element	Impacts	Mitigation	Post-mitigation					
			Extent	Duration	Probability	Significance	Reversibility	Replaceability
Soils and Land Capability	Soil compaction, erosion and contamination which may disrupt the land purposes for the current land use	<ul style="list-style-type: none"> ✚ Rehabilitate each site as soon as the drilling is completed. ✚ Conducting preventative soil erosion control measures. ✚ Heavy equipment movement over replaced soils should be minimised; ✚ Minimise compaction during smoothing of replaced soils by using dozers rather than graders. 	Site	Short-term	Probable	Low	Reversible	Replaceable
Vegetation	<p>Loss of vegetation cover due to clearance during the site preparation.</p> <p>Vehicle movement and compaction of soil minimising plant growth of indigenous flora.</p> <p>Alteration of natural environment and habitat loss.</p> <p>Spreading of invasive alien plants. The altered environment will also favour species that are better adapted to disturbed/transformed areas.</p> <p>Exposed disturbed area with no indigenous vegetation.</p>	<ul style="list-style-type: none"> ✚ Environmental awareness and training to the contractors; ✚ Drillers to comply with all EMPr procedures. ✚ Drilling sites to be located in less sensitive areas as far as possible; ✚ Rehabilitate the disturbed areas as far as possible. ✚ Vehicles should only use designated roadways to access the site. ✚ Have a biodiversity protocol and rehabilitation plan in place that will be implemented upon closure. ✚ Invasive plant material should be disposed by incineration, or alternatively, composting to break down seeds. If seedbank persists, invasive alien plant management and eradication measures should be implemented. ✚ Implement effective rehabilitation measures upon closure. 	Site	Short-term	Probable	Low	Reversible	Replaceable

	Long-term or permanent degradation and modification of the receiving environment resulting to the loss of important habitats.	<ul style="list-style-type: none"> No fires to be made in the prospecting area. 						
Animal life	<p>Loss of priority fauna species from important habitats.</p> <p>Loss of resident fauna through increased disturbance.</p> <p>Displacement of resident fauna species through increased disturbance.</p>	<ul style="list-style-type: none"> Implementing noise monitoring measures and management. If any animals are encountered, they must not be killed or injured but should rather be removed or chased away from the site. Avoid vegetation clearance during the breeding season. An Alien Invasive Species Management Plan should be compiled and implemented during construction phase. 	Site	Short-term	Possible	Low	Reversible	Irreplaceable
Surface Water	Surface water resources contamination due to hydrocarbons spills, siltation, and disruption to natural drainage systems.	<ul style="list-style-type: none"> Implement stormwater management systems to prevent contaminated runoff from entering nearby streams. Implementing measures to prevent hydrocarbons spills. Maintain vegetative buffer zones along non-perennial streams to filter runoff and protect aquatic ecosystems. 	Local	Medium-term	Probable	Moderate	Irreversible	Replaceable
Ground water	<p>Changes in runoff and infiltration during the operation phase leading to reduce groundwater recharge.</p> <p>Groundwater contamination from fuel & hydrocarbons leakages and spillages from the storage and transporting vehicles.</p>	<ul style="list-style-type: none"> Implementing measures to minimise the removal of vegetation and opportunities for revegetation will be maximised. Monitor groundwater levels during operations to detect potential drawdown and implement controlled pumping measures where necessary. Implementation of the mitigation measures to minimise hydrocarbon spills. Conducting prospecting activities in low groundwater sensitivity area. 	Site	Short-term	Probable	Low	Irreversible	Replaceable

	Baseflow reduction caused by proposed activity.							
Air Quality/ Dust	Dust generation by vehicle movement on dust roads and during drilling operations.	<ul style="list-style-type: none"> ✚ Implement management measures to minimise the generation of dust such as dust suppression. ✚ Ensure compliance to speed limits. 	Site	Short-term	Highly Probable	Low	Irreversible	Replaceable
Noise	Noise nuisance will be created by the drilling rig, operating equipment, and vehicle movement.	<ul style="list-style-type: none"> ✚ Ensure vehicles and equipment is maintained; ✚ Silencers should be fitted on all engines. 	Site	Short-term	Probable	Low	Irreversible	Replaceable
Cultural Heritage	<p>Destruction of archaeological remains.</p> <p>Disturbance of graves.</p> <p>Disturbance of buildings and structures older than 60 years old.</p> <p>Destruction public monuments and plaques.</p>	<ul style="list-style-type: none"> ✚ Use chance find procedure to cater for accidental finds. ✚ Maintaining a 100m buffer from all identified 'no-go' areas with heritage resources. ✚ Encountered heritage resources, including fossils, graves, or human remains must be reported to the relevant authorities. 	Site	Short-term	Improbable	Low	Reversible	Replaceable
Visual	Visual disturbance of the movement of drilling equipment and other vehicles.	<ul style="list-style-type: none"> ✚ Rehabilitate drill sites and access tracks. 	Site	Short-term	Probable	Low	Reversible	Irreplaceable
Socio-economic	Disruption to the economic agricultural practices and accommodation business.	<ul style="list-style-type: none"> ✚ Practice concurrent rehabilitation to minimise the time and financial resources to rehabilitate the area to return to its continuous economic practices. 	Site	Short-term	Probable	Low	Irreversible	Replaceable
Safety	Equipment theft and property vandalism	<ul style="list-style-type: none"> ✚ controlled access to the site by deploying security personnel who would also conduct security patrols to monitor the perimeters of the project site. ✚ All project infrastructure should be contained in a safe and secured area. 	Local	Short-term	Probable	Low	Reversible	Replaceable
Health	Health impact due to dust inhalation, occupational injuries.	<ul style="list-style-type: none"> ✚ Implementation of the dust generation mitigation measures and dust monitoring measures 	Local	Medium term	Probable	Moderate	Reversible	Replaceable

		<ul style="list-style-type: none"> ✚ Issue with instructions to wear the appropriated personal protective equipment (PPE) to the working personnel. ✚ Place safety signs and put barricades where there's possible danger to health and safety of the community. 						
Waste Generation	Waste nuisance and littering	<ul style="list-style-type: none"> ✚ Ensure implementation of the waste management programme with the application of waste classification and separation. ✚ Proper waste collection and disposal. ✚ Conduct environmental awareness training. 	Site	Short Term	Probable	Low	Reversible	Replaceable
Traffic and access	Prospecting activities will generate very limited additional traffic. Prospecting vehicles are to access the property via existing roads and tracks only.	<ul style="list-style-type: none"> ✚ Comply with traffic regulations. ✚ Ensure compliance to speed limits. 	Site	Short Term	Probable	Low	Reversible	Replaceable

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

(Provide a discussion in terms of advantages and disadvantages of the initial site layout compared to alternative layout options to accommodate concerns raised by affected parties).

The impacts assessed has highlighted potential risks, important management strategies and control measures associated with the Project. It is considered there are opportunities to substantially enhance and improve the current and on-going impacts by undertaking a well-planned and effective prospecting operation. The project has associated positive and negative impacts and such impacts are described in the table below:

Table 13: Positive and Negative impacts

Aspect	Description
Positive	
Soils and Land Capability	Potential for neighbouring communities to benefit from assistance with shared land management responsibilities.
Animal Life	The opportunity of implementing processes around feral animal control.
Socio-economic	<ul style="list-style-type: none"> • Opportunities for indigenous employment and economic development. • Requirement for the supply of the goods and services from the local businesses; and • Requirement for short-term accommodation and thus benefiting the house rental and accommodation sector.
Waste	<ul style="list-style-type: none"> • Supporting local recycling centre and local scrap metal merchant; and • Metals such as steel and copper wire will be collected in designated areas prior to removal from site for recycling.
Negative	
Soils and Land Capability	<ul style="list-style-type: none"> • Landscape disturbance. • Soil compaction and soil erosion due to the movement of heavy vehicles in the on-site; and • Soil contamination due to hydrocarbon spillages from the fuel storages and vehicles.
Flora and Fauna	Introduction of alien vegetation; and Loss of flora and fauna and habitat destruction
Surface water resources	Erosion and sedimentation leading to soil scouring and increased turbidity of water courses and drainage lines downstream.
Groundwater resources	Localized lowering of groundwater levels due to dewatering activities, which could affect nearby users and ecological systems.
Noise	Noise nuisance due to moving vehicles and equipment.
Air Quality/Dust	Dust creation during clearance, placement of infrastructure and the drilling operations
Visual	Increased visual intrusion due to operation infrastructure and the movement of the operating equipment and vehicles.
Socio-economic	Project is unsustainable in terms of job security due to the life of project.
Cultural and Heritage Resources	Indigenous resources, values, and aspirational impacts.
Waste	Waste generation including the domestic, scrap and hazardous waste
Health and Safety	Inheritance of occupational health problems and exposure to occupational hazards.

Traffic and Access	Addition to the existing traffic of the movement of vehicles.
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Table 14: Positive and negative impacts of the proposed activity.

Impact	Rating Pre-Mitigation	Construction	Operation	Decommission	Rating Post-Mitigation
Positive (+)	Low	Job creation	<ul style="list-style-type: none"> ✚ Employment opportunities and job security ✚ Support to local businesses ✚ Income generation for accommodation business sector ✚ Supporting local recycling centre and local scrap metal merchant 	<ul style="list-style-type: none"> ● Increased employment opportunities 	Low
Negative (-)	Low	<ul style="list-style-type: none"> ✚ Visual nuisance ✚ Health and Safety impacts ✚ Surface and groundwater contamination ✚ Impacts on traffic. ✚ Disturbance on the landscape ✚ Waste generation 	<ul style="list-style-type: none"> ✚ Visual nuisance ✚ Health and Safety impacts ✚ Surface and groundwater contamination ✚ Impacts on traffic. ✚ Unsustainable job security ✚ Disturbance on the landscape ✚ Waste generation 	<ul style="list-style-type: none"> ✚ Visual nuisance ✚ Health and Safety impacts ✚ Surface and groundwater contamination ✚ Impacts on traffic. ✚ Job losses 	Low
Negative (-)	Medium	<ul style="list-style-type: none"> ● Habitat disturbance ● Vegetation disturbances ● Loss of biodiversity ● Soil erosion ● Soils contamination ● Visual nuisance to moving equipment and vehicles. 	<ul style="list-style-type: none"> ● Habitat disturbance ● Vegetation disturbances ● Loss of biodiversity ● Alien vegetation species invasion ● Soil erosion ● Impacts on groundwater quality. ● Soils contamination 	<ul style="list-style-type: none"> ● Habitat disturbance ● Vegetation disturbances due to vegetation clearance ● Alien vegetation species invasion ● Soil erosion ● Impacts on groundwater quality. ● Waste generation 	Medium

		<ul style="list-style-type: none">• Noise disturbances	<ul style="list-style-type: none">• Visual nuisance due to moving equipment and vehicles.• Noise disturbances	<ul style="list-style-type: none">• Visual nuisance due to moving equipment and vehicles	
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10.1.2. The possible mitigation measures that could be applied and the level of 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).

All possible mitigation measures that could be applied to risks regarding the site layout discussed and considered as part of the EIA process. The proposed mitigation measures for the assumed risks will be confirmed during the EIA process.

10.1.3. Motivation where no alternative sites were considered.

The prospecting activities are intended to be conducted in search of the general clay deposits. These minerals occur in specific areas depending on the geology of the area. The historical data shows that there could be the occurrence of clay in the area, and therefore, the prospecting activities are ought to be undertaken in the proposed site. The proposed site has existing access roads that will be used during the operational phase of the project and minimal infrastructure will be established due to the site location.

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

(Provide a statement motivating the final site layout that is proposed)

Because this area will not necessitate any complex surface infrastructure, no design and layout alternatives for the proposed area have been identified. Alternatives for the camp site's location were considered. Among the options were a fixed location near the site's entrance, a mobile campsite, and an offsite campsite. The alternative sites were chosen based on the proposed area's sensitivity.

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

(Including (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process and (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.)

Environmental Impact Assessment (EIA):

The purpose of the EIA Phase is to investigate the potential negative and positive impacts of a proposed project activities on the environment. The potential impacts will then be quantified to

assess the significance that an impact may pose on the receiving environment. The objectives of the EIA process are to:

- Ensure that the potential biophysical and socio-economic impacts of the proposed project, are taken into consideration during the decision-making process.
- Ensure that the project activities to be undertaken do not have a substantial detrimental impact on the environment by presenting management and mitigation measures that will avoid and/or reduce those impacts.
- Ensure that I&APs are informed, including the landowner, about the proposed Project and the public participation process is properly followed.
- Ensure that I&APs are given an opportunity to raise concerns, and make input to understand their needs and expectations; and
- Provide a process aimed at enabling authorities to make an informed decision, especially in respect of their obligation to take environmental and social considerations into account when making those decisions.

The EIA process will assess the overall aspects affected by the proposed project in relation to the activities to be conducted. A sensitivity report has been conducted to determine the sensitivity of the proposed area to make sound decision on the consideration and implementation of the mitigation measures of the impacts posed by the proposed activity.

Using the significance criteria, impacts can be assigned a rating of a potential risk, uncertain risk, and significant risk.

- **Extreme**

These are unacceptable risks that are primarily critical in nature in terms of the extent and long-term environmental harm, permanent sacred site damage, fatality, and massive economic impacts that are effectively regarded as a possibility to almost certain to occur. Such risks significantly exceed the risk acceptance threshold and necessitate comprehensive control measures as well as additional urgent and immediate attention to the identification and implementation of risk-reduction measures.

- **High**

Typically refer to significant to critical consequences, such as significant environmental or heritage damage, as well as significant safety, social, or economic consequences that are likely to cut across the possible to almost certain likelihood ratings. These are also likely to exceed the risk acceptance threshold, and while proactive control measures have been planned or implemented, a very close monitoring regime and additional actions to reduce risk are required.

- **Medium**

As the classification suggests, medium level risks encompass a range of risk combinations ranging from relatively low consequence / high likelihood to mid-level consequence / low likelihood scenarios across environmental, social, and economic domains. Because they are effectively positioned on the risk acceptance threshold, these risks are likely to necessitate active monitoring.

- **Low**

These risks are below the risk acceptance threshold and although they may require additional monitoring in certain cases are not considered to require active management. In general, such risks represent relatively low likelihood and low to mid-level consequence scenarios.

- **Very Low**

Impacts risks that are below the risk acceptance threshold and would at the most require additional monitoring and in many cases would not require active management. These risks can include unlikely to rare events with minor consequences and in essence relate to situations around very low probabilities of relatively minor impacts occurring.

The probability of occurrence has been categorised within the context of reasonable timeframes and frequencies given the nature of the anticipated project life. The following table defines the levels of likelihood and severity for the types of consequences that comprise the risk rating determination:

Table 15: Likelihood rating system

Rating	Likelihood	Definitions
5	Almost certain	The event is expected to occur in most circumstances (The event is likely to occur once per year).
4	Likely	The event will probably occur in most circumstances (The event is likely to occur once every 1 - 2 years).
3	Possible	The event might occur at some time (The event is likely to occur once every 2 - 5 years).
2	Unlikely	The event could occur at some time (The event is likely to occur once every 5 - 10 years).
1	Rare	The event may occur only in exceptional circumstances (The event is unlikely to occur in any 10-year period).

Risk Analysis Matrix

The risk controls are linked to the level of risk and the opportunity for risk reduction to meet the project rehabilitation objectives and goals, which are linked to an environmentally and socially responsible operation, and these requirements are part of the regulatory obligations and impact assessment guidelines. The table below summarizes the qualitative risk matrix used, as well as the risk levels for the various consequence and likelihood combinations.

Table 16: Risk Analysis Matrix

		Severity of Consequence				
		Critical (5)	Major (4)	Significant (3)	Moderate (2)	Minor (1)
Likelihood of Consequence	Almost Certain (5)	Extreme	Extreme	High	High	Medium
	Likely (4)	Extreme	High	High	Medium	Medium
	Possible (3)	Extreme	High	Medium	Medium	Low
	Unlikely (2)	High	Medium	Medium	Low	Very Low
	Rare (1)	Medium	Medium	Low	Low	Very Low

The impact assessment will focus on the invasive activities of the project since they will have the potential to impact on the biophysical and the social environment of the proposed area. These activities include:

- ✚ Vegetation clearance for site (camp and drill sites) establishment.
- ✚ Installation of mobile offices and ablutions.
- ✚ Construction of temporal access roads to the site camp and drill sites.
- ✚ Drilling; and
- ✚ Rehabilitation of the overall site and closure.

The impact assessment is furthermore separated into three distinct phases, namely:

- Site establishment/construction phase.

The site establishment will include the clearance of vegetation to establish the camp and drill sites. Various aspects of the environment will be subjected to the disturbances due to this activity.

- Operational phase; and

The operational phase will include the drilling operation whereby the drill cores will be logged and taken to the lab for analysis.

- Decommissioning.

This phase will entail the removal of all temporal infrastructure and the rehabilitation of all the disturbed area at the prospecting site.

Table 17: Identified and assessed impacts and risks the activity will impose on the preferred site.

Aspect	Impact	Mitigation Measures	*C	*L	*R
Vegetation	<p>Loss of vegetation cover due to clearance during the site preparation. Vehicle movement and compaction of soil minimising plant growth of indigenous flora. Alteration of natural environment and habitat loss. Spreading of invasive alien plants. The altered environment will also favour species that are better adapted to disturbed/transformed areas. Exposed disturbed area with no indigenous vegetation. Long-term or permanent degradation and modification of the receiving environment resulting to the loss of important habitats. Loss of vegetation cover due to clearance during the site preparation. Vehicle movement and compaction of soil minimising plant growth of indigenous flora. Alteration of natural environment and habitat loss. Spreading of invasive alien plants. The altered environment will also favour species that are better adapted to disturbed/transformed areas. Exposed disturbed area with no indigenous vegetation. Long-term or permanent degradation and modification of the receiving environment resulting to the loss of important habitats.</p>	<p>Environmental awareness and training to the contractors; Drilling sites to be located in less sensitive areas as far as possible; Rehabilitate the disturbed areas as far as possible. Vehicles should only use designated roadways to access the site. Have a biodiversity protocol and rehabilitation plan in place that will be implemented upon closure. Invasive plant material should be disposed by incineration, or alternatively, composting to break down seeds. If seedbank persists, invasive alien plant management and eradication measures should be implemented. Implement effective rehabilitation measures upon closure.</p>	Pre - Mitigation		
			2	3	M
			Post - Mitigation		
			1	3	L
Animal Life	<p>Loss of priority fauna species from important habitats. Loss of resident fauna through increased disturbance. Displacement of resident fauna species through increased disturbance.</p>	<p>Environmental awareness and training for workers about the animal life on site. Killing of animals on site will be strictly prohibited and animal found on site must be safely removed from the operation. Implementing noise monitoring measures and management. Avoid vegetation clearance during the breeding season.</p>	Pre - Mitigation		
			2	3	M
			Post - Mitigation		
1	3	L			
Soils and Land Capability	<p>The removal of vegetation associated with the prospecting activities will allow for increased surface water runoff, which may lead to change in topographical characteristics of the area. Land clearance during establishment of infrastructure will disturb the natural sequence of soil layers thereby changing the soil and land capability. The movement of heavy vehicles in the operation area will result in compaction of soil, water runoff and soil erosion especially during the rainy season. The equipment and vehicles may contaminate the soil due to hydrocarbon spillages.</p>	<p>Removal of vegetation must be undertaken in a phased approach to limit the number of exposed areas at a time. Regular roads maintenance of eroded shoulders. A cleaned-up of any hydro-carbon spills on soil must be undertaken by trained personnel using commercially available emergency clean-up kits. An emergency response contingency plan should be put in place to address clean-up measures should a spill and/or a leak occur, as well as preventative measures to prevent contamination</p>	Pre - Mitigation		
			3	3	M
			Post - Mitigation		
			1	3	L
			Pre - Mitigation		

Surface water resources	Contamination of water resources and deterioration of water quality; and Disturbance of free drainage and runoff.	Remediate using commercially available emergency clean up kits; and Implement stormwater management systems to prevent contaminated runoff from entering nearby streams.	4	3	H
			Post - Mitigation		
			3	3	M
Groundwater resources	Changes in runoff and infiltration during the operation phase leading to reduce groundwater recharge. Groundwater contamination from fuel & hydrocarbons leakages and spillages from the storage and transporting vehicles. Baseflow reduction caused by proposed activity. Contamination of Shallow groundwater	Implementing measures to minimise the removal of vegetation and opportunities for revegetation will be maximised. Implement groundwater monitoring to detect groundwater contamination. Implementation of the mitigation measures to minimise hydrocarbon spills. Conducting prospecting activities in low groundwater sensitivity area. Implement spill containment systems. Use drip trays and proper waste disposal. Conduct regular equipment maintenance to prevent leaks.	2	2	L
Noise	Increase in ambient noise levels during the operational phase; Disturbances to faunal species behaviour during the operational phase.	Limiting the site establishment activities working hours to daylight hours (07h00 to 17h00) and not undertaking such activities at all on Sundays and public holidays. Applying an operating buffer of a minimum 50m, but preferably 100m between drill site and any dwellings.	Pre - Mitigation		
			3	3	M
			Post - Mitigation		
			2	3	M
Air Quality/Dust	Possible dust generation in some areas including the drilling during operations; Heavy dust deposition can have detrimental effects on plants if the leaves are smothered to the extent where transpiration and photosynthesis are affected. Health impacts on livestock and people in proximity to the project site due to fine particulate emissions during construction and operational phases.	Conduct dust fall-out monitoring. Enforcing the speed limits to reduce dust created by moving vehicles. Haul roads in use will be subjected to dust suppression management measures. Implement concurrent rehabilitation activities to minimise the number of exposed surfaces that would result in dust generation. It must be noted that the speed limit for driving within a community and prospecting right shall be limited to 40Km/h on exposed surfaces.	Pre - Mitigation		
			2	3	M
			Post - Mitigation		
			1	3	L
Visual	Visual disturbance due to site clearance. Dust generated during site establishment. View disturbance due to the operating of the equipment	Ensure that all exposed surfaces are subjected to dust suppression. Clearing of vegetation must be undertaken within the demarcated boundaries of the designated area only.	Pre - Mitigation		
			3	3	M
			Post - Mitigation		
			2	2	L
Socio-economic		Skill development and transfer.	Pre - Mitigation		

	The effect of this prospecting activity for employment and socio-economic regime would be positive, but very limited in extent and duration. Disturbance on the current commercial activities.	Maximise procurement of goods and services from local providers.	1	3	L
			Post - Mitigation		
			2	2	L
Cultural and Heritage Resources	Destruction of archaeological remains. Disturbance of graves. Disturbance of buildings and structures older than 60 years old. Destruction public monuments and plaques.	Use chance find procedure to cater for accidental finds. Maintaining a 100m buffer from all identified 'no-go' areas with heritage resources. Encountered heritage resources, including fossils, graves, or human remains must be reported to the relevant authorities.	2	2	L
Waste	Waste Generation including general, scrap and hazardous waste. If this waste is not stored correctly, can lead to environmental pollution including soil and water resources.	Classification and separation of the waste into general or hazardous must be implemented onsite into different coloured and labelled bins. Uncontrolled disposal of waste must strictly be prohibited on site	Pre - Mitigation		
			2	2	L
			Post - Mitigation		
			1	2	VL
Safety	Theft of equipment and the damage of infrastructure.	Ensure that there is a controlled access to the site by deploying security personnel who would also conduct security patrols to monitor the perimeters of the project site thereby providing an increased security presence. Consult with the local police branch to establish standard operating procedures for the control and/or removal of loiterers. All project infrastructure should be contained in a fenced and secured area to prevent unauthorized access and potential health and safety risks.	Pre - Mitigation		
			2	3	M
			Post - Mitigation		
			1	3	L
Health	The dust generation with potentially particulate matter, which can be inhaled, causing respiratory diseases.	All area that are sources of dust must be subjected to dust suppression. Continuous dust monitoring should be carried out throughout the project undertakings. All employees will be issued with and instructed to wear the appropriated personal protective equipment (PPE).	Pre - Mitigation		
			2	3	M
			Post - Mitigation		
			1	3	L
*C - Consequences *L - Likelihood of consequences *R - Residual Risks VL - Very Low L - Low M - Medium H - High					

11. Assessment of each identified potentially significant impact and risk.

(This section of the report must consider all the known typical impacts of each of the activities (including those that could or should have been identified by knowledgeable persons) and not only those that were raised by registered interested and affected parties).

Table 18: Assessment of the potentially significant impact and risk

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
-Site establishment -Construction of access roads -Prospecting activities (Drilling)	<u>Vegetation</u> Destruction of natural vegetation Loss of threatened plant species Invasion of alien and invasive vegetation Exposure to erosion Loss of biodiversity	Vegetation (flora)	Construction, Operational, and Decommissioning	Moderate	Environmental awareness and training to the contractors. Drilling sites to be located in less sensitive areas as far as possible. Rehabilitate the disturbed areas as far as possible. Vehicles should only use designated roadways to access the site. Have a biodiversity protocol and rehabilitation plan in place that will be implemented upon closure. Implement effective rehabilitation measures upon closure.	Low
	<u>Animal Life</u> Loss of priority fauna species Loss of resident fauna through increased disturbance.	Animal life (fauna)	Construction, Operational, and Decommissioning	Moderate	Environmental awareness and training for workers about the animal life on site. Killing of animals on site will be strictly prohibited and animal found on site must be safely removed from the operation.	Low

	Displacement of resident fauna species.				Implementing noise monitoring measures and management. Avoid vegetation clearance during the breeding season.	
	Noise Noise nuisance due to the drilling activities and movement of operating equipment and vehicle	Air quality Animal life	Construction, Operational, and Decommissioning	Low	Conducting regular equipment maintenance to minimise noise generated by the operating equipment. Limiting the operation times to daylight hours (07h00 to 17h00) on Mondays to Fridays, Saturdays (07h00 to 14h00) and no activities to be conducted on Sundays and public holidays. Maintaining a buffer of 100m between the operation area and dwellings.	Low
	Visual Visual disturbance to the surrounding due to the project activities Visual impact on observers travelling along the roads and residents	Aesthetic beauty of the surrounding Social practices around the area	Construction, Operational, and Decommissioning	Low	Minimise unvegetated areas as far as possible. Concurrent rehabilitation of all disturbed areas.	Low
	Air Quality Dust generation	Dust fall & nuisance from prospecting activities	Construction, Operational, and Decommissioning	Low	Implementation of the dust suppression system. Low vehicle speeds enforcement on unpaved surfaces. Maintain a buffer of 500m- 1000m between operational site and dwellings.	Low
	Soils and land Capability Soil Compaction leading to erosion and sedimentation. Destruction on current land use	Soil and vegetation Land use	Construction, Operational, and Decommissioning	Moderate	Provide adequate erosion control measures where required. No mixing of fertile soils with sub soils during construction. Implement concurrent and re-vegetate all disturbed with locally indigenous species as soon as possible.	Low

	<p>Surface water Sedimentation and siltation of water courses Alteration of natural drainage patterns Contamination of water resources Degradation of surface quality</p>	<p>Surface water quality</p>	<p>Construction, Operational, and Decommissioning</p>	<p>Moderate</p>	<p>Remedy the possible effects of alteration to natural drainage lines. Implementing the hydrocarbon spillages management plan. Ensure that wastewater is appropriately managed. Implement the erosion control measures.</p>	<p>Low</p>
	<p>Groundwater resources Changes in runoff and infiltration Groundwater contamination from fuel & hydrocarbons leakages and spillages Baseflow reduction</p>	<p>Groundwater quality</p>	<p>Construction, Operational, and Decommissioning</p>	<p>Moderate</p>	<p>Implementing measures to minimise the removal of vegetation and opportunities for revegetation will be maximised. Implement groundwater monitoring to detect groundwater contamination. Implementation of the mitigation measures to minimise hydrocarbon spills. Conducting prospecting activities in low groundwater sensitivity area.</p>	<p>Low</p>
<p>-Site establishment -Construction of access roads -Prospecting activities (Drilling)</p>	<p>Health and Safety Health and safety of employees and surrounding communities</p>	<p>Human health and safe working environment</p>	<p>Construction, Operational, and Decommissioning</p>	<p>Low</p>	<p>All employees or sub-contractors entering site must be inducted to ensure the awareness of the developed health and safety plan; Appoint a health and safety representatives to be appointed during operations; Conduct daily inspections and observations of on-site activities shall take place; All incidents to be reported, recorded, investigated, and mitigated. Employees or sub-contractors must be informed as to what required PPE is applicable in working sections, and must always be equipped with appropriate PPE; Safety signs to be provided in areas considered as high-risk areas;</p>	<p>Low</p>

					<p>Provided adequate first aid services on site; and</p> <p>Promote ongoing health and safety awareness campaigns.</p>	
<p>-Site establishment</p> <p>-Construction of access roads</p> <p>-Prospecting activities (Drilling)</p>	<p>Socio-economic Increased employment opportunities</p> <p>Local economic development</p>	<p>Economic activities such as the commercial farming</p>	<p>Construction, Operational, and Decommissioning</p>	<p>Moderate</p>	<p>Conduct consultation with local communities through the appropriate channels to ensure the use of local skills and businesses where possible.</p> <p>Ensure local employment and local services providers are appointed where possible from the local area; and</p> <p>Ensure that goods and services are procured from within the local area as far as possible.</p>	<p>Low</p>
<p>-Site establishment</p> <p>-Construction of access roads</p> <p>-Prospecting activities (Drilling)</p>	<p>Heritage Destruction of archaeological remains.</p> <p>Disturbance of graves.</p> <p>Disturbance of buildings and structures older than 60 years old.</p> <p>Destruction public monuments and plaques.</p>	<p>Loss of heritage & palaeontological resources</p>	<p>Construction, Operational, and Decommissioning</p>	<p>Low</p>	<p>Use chance find procedure to cater for accidental finds.</p> <p>Maintaining a 100m buffer from all identified 'no-go' areas with heritage resources.</p> <p>Encountered heritage resources, including fossils, graves, or human remains must be reported to the relevant authorities.</p>	<p>Low</p>
<p>-Site establishment</p> <p>-Construction of access roads</p> <p>-Prospecting activities (Drilling)</p>	<p>Traffic Management Construction vehicles and access roads Operation staff transportation trips, maintenance, and delivery trips</p>	<p>Pressure on public transport infrastructure Socio-economic conditions</p>	<p>Construction, Operational, and Decommissioning</p>	<p>Low</p>	<p>The surface quality of the road is not negatively impacted resulting from vehicle movement;</p> <p>Sections of existing road surfaces which have been impacted on by the vehicle movement and</p> <p>Existing road surfaces must be utilised and maintained within baseline levels.</p>	<p>Low</p>
<p>-Site establishment</p> <p>-Construction of access roads</p> <p>-Prospecting activities (Drilling)</p>	<p>Waste Management General waste generation and hazardous waste generation</p>	<p>Soil contamination</p> <p>Contamination of water resources</p> <p>Impacts on human health</p>	<p>Construction, Operational, and Decommissioning</p>	<p>Low</p>	<p>Promoting the reduction, re-use, or recycle of waste where prevention is not possible;</p> <p>Disposal of waste to local waste disposal sites;</p> <p>Littering should be strictly prohibited; and</p> <p>Implement waste classification and separation system.</p>	<p>Low</p>

12. Summary of specialist reports.

(This summary must be completed if any specialist reports informed the impact assessment and final site layout process and must be in the following tabular form):

A Screening Report for an Environmental Authorization was generated from the DFFE Web-based Environmental Screening Tool (Appendix 4). The following is a summary of the environmental sensitivities at the site where the proposed prospecting activities are to be undertaken. Consequently, the drilling activities will be undertaken on an area where there are no sensitivities.

Table 19: Environmental Sensitivity of the proposed area

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
Palaeontology Theme		X		
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

As indicated above, a low rating indicates that the impacts are unlikely to occur. A medium rating indicates that the impact is likely/almost likely to occur, and a high rating means that the impact is possible/almost certain. A very high rating indicates that the impact on the proposed environment is certain to occur.

The screening tool indicates that the Agriculture, Aquatic and Biodiversity and Terrestrial Biodiversity Theme of the proposed site is very high. Indicating that the likelihood of the impact occurring is high. The Archaeological and Cultural Heritage Theme and Defence theme sensitivities are low. Therefore, no specialist report was conducted as part of this application.

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.
Agriculture Impact Assessment	<ul style="list-style-type: none"> ✚ The footprint of the proposed development and construction activities should be clearly demarcated to restrict vegetation clearing activities to within the infrastructure footprint as far as practically possible; ✚ Bare soils within the access roads should be regularly dampened with water to suppress dust during the construction phase, especially when strong wind conditions are predicted according to the local weather forecast; ✚ All disturbed areas adjacent to the proposed residential development areas should be re-vegetated with an indigenous grass mix, where necessary, to re-establish a protective cover to minimise soil erosion and dust emission; and ✚ Temporary erosion control measures such as berms should be used to protect the disturbed soils during the construction phase until adequate vegetation has been established. <p style="text-align: center;"><u>SOIL CONTAMINATION MANAGEMENT:</u></p> <ul style="list-style-type: none"> ✚ An emergency response contingency plan should be put in place to address clean-up measures should a 	X	Table 12, Page 42 Table 19, Page 57

	<p>spill and/or a leak occur, as well as preventative measures to prevent contamination; and</p> <ul style="list-style-type: none"> ✦ Burying of any waste including rubble, domestic waste, empty containers on the site etc. should be strictly prohibited and all construction waste must be removed to an approved disposal site. <p style="text-align: center;"><u>SOIL COMPACTION MANAGEMENT:</u></p> <ul style="list-style-type: none"> ✦ Soil Compaction is usually greatest when soils are moist, so soils should be stripped when moisture content is as low as possible. If they have to be moved when wet, shovel and truck should be used as bowl scrapers create excessive compaction when moving wet soils; ✦ Minimize compaction during the stockpile phase by keeping stockpile soil loose and limit stockpile height to 2-3 meters height, to limit internal soil compaction (Coaltech: chamber of mines, 2007); ✦ Heavy equipment movement over replaced soils should be minimised; ✦ Minimise compaction during smoothing of replaced soils by using dozers rather than graders; ✦ Following placement, compacted soils should be ripped to full rooting depth (at least 60 cm or 30 cm as the bare minimum seedbed) to allow penetration of plant root); ✦ All vehicular traffic should be restricted to the existing service roads and the selected road servitude as far as practically possible; to avoid unnecessary compaction of the surrounding soils; ✦ Direct surface disturbance of the identified high clay content (i.e., Calcic Vertisols and Ferric Luvisols.) soils should be limited within demarcated areas where possible to minimise the intensity of compaction due to 		
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	<p>the susceptibility of these soils to prolonged waterlogging conditions (inundation);</p> <ul style="list-style-type: none"> ✚ Compacted soils adjacent to the proposed activities footprints and associated infrastructure footprint can be lightly ripped to at least 25 cm below ground surface to alleviate compaction prior to re-vegetation, and ✚ Compaction of soil can be mitigated by ripping the footprint and introducing both organic and inorganic fertilizers. <p style="text-align: center;"><u>SOIL STOCKPILE MANAGEMENT</u></p> <ul style="list-style-type: none"> ✚ Prior to the commencement of the proposed activities, topsoil should be removed, and stockpiled for future use; ✚ Surface and subsoil material should be stockpiled separately. This is to prevent the mixing of the fertile topsoil with the nutrient limited subsoils; ✚ Ensure all stockpiles (especially topsoil) are clearly and permanently demarcated and located in defined no-go Stockpile height should be restricted to that which can be deposited without additional traversing by machinery. A Maximum height of 2-3 m is therefore proposed, and the stockpile should be treated with temporary soil stabilisation methods, such as the application of organic matter to promote soil aggregate formation, leading to an increased infiltration rate, thereby reducing soil erosion. Also, the use of lime to stabilise soil pH levels; areas; ✚ Temporary berms can be installed around stockpile areas whilst vegetation cover has not been established to avoid soil loss through erosion ✚ A short-term fertiliser program should be based on the soil chemical status after levelling. It should consist of a 		
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	<p>pre-seeding lime and fertiliser application, an application with the seeding process, and a maintenance application for 2 to 3 years after rehabilitation or until the area can be declared as self-sustaining by an appropriately qualified soil scientist.</p>		
<p>Geohydrological Investigation Report</p>	<p><u>QUALITY PROTECTION - PREVENTING CONTAMINATION:</u></p> <ul style="list-style-type: none"> ✚ Implement robust containment measures to prevent spills and leaks during prospecting operations. ✚ Establish buffer zones around sensitive areas, including drainage systems and recharge zones. ✚ Design and enforce strict waste disposal protocols to prevent seepage into the subsurface. ✚ Regularly monitor groundwater quality for early detection of contaminants and immediately address deviations from baseline conditions. <p><u>QUANTITY PROTECTION:</u></p> <ul style="list-style-type: none"> ✚ Minimize surface disturbance to maintain natural recharge patterns. ✚ Avoid dewatering activities near critical recharge zones or fracture-connected aquifers. ✚ Conduct detailed monitoring of groundwater levels to identify any significant drawdown or adverse impacts. <p><u>MANAGING RECHARGE:</u></p> <ul style="list-style-type: none"> ✚ Minimize surface disturbance to maintain natural recharge zones. ✚ Use erosion control measures, such as vegetative buffers and silt traps, to reduce sedimentation in drainage systems. ✚ Rehabilitate mined areas with permeable cover materials to restore natural recharge capacity. <p><u>PROTECTING GROUNDWATER QUANTITY:</u></p>	<p>X</p>	<p>Table 12, Page 43 Table 13, Page 46 Table 17, Page 55 Table 19, Page 59</p>

	<ul style="list-style-type: none"> ✚ Avoid significant excavation near major recharge zones or fracturing networks to limit water table disruption. ✚ Monitor groundwater levels during operations to detect potential drawdown and implement controlled pumping measures where necessary. <p style="text-align: center;"><u>MANAGING SURFACE WATER RISKS:</u></p> <ul style="list-style-type: none"> ✚ Implement stormwater management systems to prevent contaminated runoff from entering nearby streams. ✚ Maintain vegetative buffer zones along non-perennial streams to filter runoff and protect aquatic ecosystems. 		
Wetland Assessment	<ul style="list-style-type: none"> ✚ The assessment suggests and conclude that there is a presence of a wetland in the area. According to the available resources (NFEPA) the type of wetland is a seep. It is presumed that the activities will in one form or another have an impact on the wetland. Therefore, a field visit to ground truth and assess the wetland and delineate its borders/zones is recommended. This ground truthing assessment exercise will be able to recommend and provide appropriate measures and way forward to minimise impacts. This shall be conducted by a wetland or aquatic specialist. 		
Biodiversity Study	<ul style="list-style-type: none"> ✚ An Alien Invasive Species Management Plan should be compiled and implemented during construction phase. ✚ Furthermore, a pre-construction walkthrough by an Ecologist is recommended in order to determine if there are any species of conservation concern, and to provide relevant recommendations. 	X	Table 13, Page 47 Table 19, Page 57
Palaeontological Impact Assessment	<ul style="list-style-type: none"> ✚ The protection of significant fossil sites, rock units or other palaeontological resources and/or excavation, recording and sampling of fossil heritage that might be 	X	Table 12, Page 43

	<p>lost during development, together with pertinent geological data.</p> <ul style="list-style-type: none"> ✚ In situations where the area is considered paleontologically sensitive (e. g. Karoo Supergroup Formations, ancient marine deposits in the interior or along the coast) the palaeontologist might need to monitor all newly excavated bedrock. ✚ When a Phase 2 palaeontological impact study is recommended, permission for the development to proceed can be given only once the heritage resources authority has received and approved a Phase 2 report and is satisfied that (a) the palaeontological resources under threat have been adequately recorded and sampled, and (b) adequate development on fossil heritage, including, where necessary, in situ conservation of heritage of high significance. Careful planning, including early consultation with a palaeontologist and heritage management authorities, can minimise the impact of palaeontological surveys on development projects by selecting options that cause the least amount of inconvenience and delay. ✚ Care must be taken during the grading of roads, digging of foundations and removing topsoil, subsoil and overburden or blasting of bedrock if applicable. ✚ If any palaeontological material is exposed during digging, excavating, drilling or clearing SAHRA must be notified. All drilling activities must be stopped, a 30 m no-go barrier constructed, and a palaeontologist should be called in to determine proper mitigation measures ✚ This report must be submitted to SAHRA. 		
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13. Environmental impact statement

13.1. Summary of the key findings of the environmental impact assessment.

Direct, physical disturbance of environmental aspects and their contexts is the primary cause of environmental impacts. The primary impacts are likely to occur during site preparation, drilling, and road construction. During the movement of heavy prospecting vehicles, indirect impacts may occur. Prior to beginning prospecting activities, it is critical to identify environmental impacts and risks and assess their significance.

The purpose of the EIA is to assess the environmental sensitivity of the area and to avoid or reduce the potential impacts of prospecting through mitigation measures. Because the majority of prospecting activities are non-invasive, they have no environmental or social impact. Because the overall site establishment and drill sites will be confined to an area of approximately 0.1 hectares, the invasive activities that include site establishment and the drilling of approximately 10 drill holes will have a minimal environmental and social impact.

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

Table 20: Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.

Proposed Activity	Aspects
Non - Invasive Activities	No impacts on site
Positive	
Invasive Activities: Site establishment, Operation and decommission	Potential for neighbouring communities to benefit from assistance with shared land management responsibilities.
	The opportunity of implementing processes around feral animal control.
	<ul style="list-style-type: none"> • Opportunities for indigenous employment and economic development. • Requirement for the supply of the goods and services from the local businesses; and • Requirement for short-term accommodation and thus benefiting the house rental and accommodation sector.
	<ul style="list-style-type: none"> • Supporting local recycling centre and local scrap metal merchant; and • Metals such as steel and copper wire will be collected in designated areas prior to removal from site for recycling.
	Potential for neighbouring communities to benefit from assistance with shared land management responsibilities.
	The opportunity of implementing processes around feral animal control.
Negative	

Invasive Activities: Site establishment, Operation and decommission	<ul style="list-style-type: none"> • Soil compaction and soil erosion due to the movement of heavy vehicles in the on-site; and • Soil contamination due to hydrocarbon spillages from the fuel storages and vehicles.
	<ul style="list-style-type: none"> • Introduction of alien vegetation; and • Loss of flora and fauna and habitat destruction.
	Erosion and sedimentation leading to soil scouring and increased turbidity of water courses and drainage lines downstream.
	Contamination of groundwater due to chemicals and hydrocarbons seepage.
	Noise nuisance due to moving vehicles and equipment.
	Dust creation during clearance, placement of infrastructure and the drilling operations.
	Increased visual intrusion due to operation infrastructure and the movement of the operating equipment and vehicles.
	Project is unsustainable in terms of job security due to the life of project.
	Indigenous resources, values, and aspirational impacts.
	Waste generation including the domestic, scrap and hazardous waste.
	Inheritance of occupational health problems and exposure to occupational hazards.
	Addition to the existing traffic of the movement of vehicles

13.3. 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.

The objectives of the EMPr will be to:

- Provide sufficient information to strategically plan the prospecting activities as to avoid unnecessary social and environmental impacts.
- Ensure that the prospecting activities are conducted in a sustainable manner.
- Develop an approach that will ensure compliance with relevant legislations; and
- Provide a management plan that is effective and practical for implementation.

Through the implementation of the proposed mitigation measures it is anticipated that the identified environmental impacts can be managed and mitigated effectively.

- ✚ Heritage/cultural resources can be managed by avoidance of known resources and through consultation with landowners/stakeholders. Contractor personnel will also be briefed of these sensitivities and consequences of any damage/removal of such features; Should the exploration program advance to the drilling stage, a phase 1 heritage assessment will be undertaken prior to identification of drill sites once areas of drilling interest have been determined.
- ✚ Noise generation can be managed through consultation and restriction of operating hours and by maintaining equipment and applying noise abatement equipment if necessary.
- ✚ Visual intrusion can be managed through consultation with landowners/stakeholders and by suitable siting of drill pads and use of screens (natural vegetation or shade cloth etc).
- ✚ Dust generation can be managed by limiting as far as possible the exposure of surfaces, application of dust suppression methods on exposed surfaces and use of water during drilling.
- ✚ Soil disturbance and clearance of vegetation at drill pad areas will be limited to the absolute minimum required and disturbed areas will be re-vegetated with locally indigenous species as soon as possible.
- ✚ Protecting biodiversity by conducting the ecological impact assessment prior to any invasive activities being conducted to ensure that impacts of protected and vulnerable species are prevented and where impacts cannot altogether be prevented minimised and mitigated.
- ✚ Manage as far as possible the soil, surface water and groundwater contamination by hydrocarbons by conducting proper vehicle maintenance, refuelling with care to minimise the chance of spillages and by having a spill kit available on each site where prospecting activities are in progress.
- ✚ Conduct an appropriate public consultation and conflict resolution during stakeholder consultation phases. All prospecting personnel will be made aware of the local conditions and sensitivities in the prospecting area and that they treat local residents with respect and courtesy at all times.

13.4. Aspects for inclusion as conditions of Environmental Authorisation.

(Any aspects which must be made conditions of the Environmental Authorisation)

It is the opinion of the EAP that the following conditions should form part of the authorisation:

- Maintain a buffer of 100m from sensitive areas;
- Maintain a minimum 500m (preferably 1000m) buffer from any infrastructure or dwelling;
- Conduct an ecology and wetland survey of any identified drill sites and access routes that may fall within any critical endangered ecosystems; and
- Landowners and land occupiers should be engaged (re-consulted) at least 1 month prior to any site activities being undertaken once drill sites are known.

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

(Which relate to the assessment and mitigation measures proposed)

The location of site camp and drill sites is not yet known and will be identified through the phased approach of the prospecting programme. This assessment is therefore based on a desktop approach at a broad scale and assuming that the site camping and drilling could occur anywhere within the proposed prospecting area.

Once camp and drill sites have been identified, then specific focus will be given to ecological and Heritage screening and assessment along possible access routes in order to ensure that valued ecological components, threatened species and heritage artefacts are not inadvertently damaged. In addition, landowners will be engaged with regards to the progress of the operation and to discuss the proposed invasive prospecting activities and identified locations with the landowner at that point in time.

It is Vahlengwe Mining Advisory and Consulting (Pty) Ltd opinion that no knowledge gaps or uncertainties exist regarding the investigations undertaken as part of the Aquarella Investments 389 (Pty) Ltd Prospecting Right and associated Environmental Authorisation Application.

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

13.6.1. Reasons why the activity should be authorized or not.

The applicant is committed to conduct the prospecting activities in a sustainable manner and to comply with the prescribed environmental legislations in order to protect the environment and

manage as far as possible the impacts associated with the project. Therefore, the applicant will ensure that:

- The prospecting program will be developed in a phased manner commencing with non-invasive activities to bring refinement to understanding of the geological anomaly.
- The environmental impacts associated with the prospecting activities are deemed to be minimal provided that the proposed mitigation is implemented.
- If the success exceeds expectations/assumptions, the financial guarantee will be reviewed annually and variation in the planned work programme will be revised in line with Section 102 of the MPRDA.
- With appropriate care and consideration, the impacts resulting from the prospecting activities can be suitably avoided, minimised, or mitigated.
- With implementing the appropriate rehabilitation activities, the impacts associated with the prospecting activities can be reversed; and
- Without implementation of prospecting activities, the knowledge concerning the potential mineral resource within the prospecting right area will not be confirmed.

13.6.2. Conditions that must be included in the authorisation.

The following conditions could form part of the authorisation:

- Maintain a 100m buffer from sensitive areas;
- Maintain a 500m (preferably 1000m) buffer from any infrastructure or dwelling.
- Conduct an independent ecology and wetland survey of the identified camp and drill sites, as well as access routes to be built on undeveloped land. A special emphasis should be placed on assessing any critical endangered ecosystems in the prospecting area; and
- Once the camp and drill sites have been determined, landowners and land occupiers should be consulted before any site activities begin.

13.7. Period for which the Environmental Authorisation is required.

The authorisation is required for the duration of the prospecting right which is an initial five (5) years plus a potential to extend the right by an additional three (3) years. Therefore, a period of approximately eight (8) years is required.

13.8. Undertaking:

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 is provided at the end of the EMPr.

13.9. Financial Provision:

State the amount that is required to both manage and rehabilitate the environment in respect of rehabilitation.

A financial provision of approximately R44 854.00 has been budgeted for the prospecting programme over five (5) years, for rehabilitation activities.

13.9.1. Explain how the aforesaid amount was derived.

The financial provision calculations were undertaken in terms of the guidelines provided within the “DMR Guideline Document for The Evaluation of The Quantum of Closure-Related Financial Provision Provided by a Mine” (DMR, 2005). The closure components for the prospecting activities are summarised on the table below:

Table 21: Closure components to the prospecting activities

Components	Extent	Description
1.Dismantling of processing plant and related structures	0m ³	There will not be a processing of the material for this project
2(A). Demolition of steel buildings and structures	0m ²	There will be no steel structures
2(B). Demolition of reinforced concrete buildings and structures	0m ²	Only mobile offices and ablutions will be put on site and removed upon closure of the project
3. Rehabilitation of access roads	150m ²	There are temporary access roads that will require rehabilitation

4(A). Demolition and rehabilitation of electrified railway lines	0m	There will be no electrified railway lines
4(B). Demolition and rehabilitation of non-electrified railway lines	0m	There will be no demolition and rehabilitation non-electrified railway lines
5. Demolition of housing and/or administration facilities	0m ²	There is no housing that will require demolition
6. Opencast rehabilitation including final voids and ramps	0	No excavation will be required to be undertaken
7. Sealing of shafts, adits, and inclines	0m ³	There are no shafts, adits nor inclines on site
8(A). Rehabilitation of overburden and spoils	0ha	The spoils from the drilling will be used to backfill the drillholes.
8(B). Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	0ha	There will be no processing waste deposits and evaporation ponds
8(C). Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	0ha	There will be no wastewater being generated on site
9. Rehabilitation of subsided areas	0ha	The prospecting activities will not be associated with subsidence
10. General surface rehabilitation	0,205ha	The area that will require rehabilitation will include the site camp, drill sites and access roads
11. River diversions	0m	The prospecting activities will not involve the river diversions.
12. Fencing	0m	Fencing would not be required
13. Water management	0ha	There will be no circulation of dams that will require to be rehabilitated
14. 2 to 3 years of maintenance and aftercare	0ha	All disturbances will be subjected to rehabilitation

13.9.2. 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).

The above-mentioned amount has been provided for from operating expenditure within the Prospecting Work Programme. The amount is also reflected in the Prospecting Work Programme submitted to the DMRE.

Table 22: Cost estimate of the expenditure to be incurred for each phase of the proposed prospecting operation.

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5

ACTIVITY	Expenditure (R')	Expenditure (R')	Expenditure (R')	Expenditure (R')	Expenditure (R')
PHASE 1 (e.g., 12 months)					
Desktop Studies and Reconnaissance	15 000.00				
Geological Field Mapping	25 000.00				
Geophysical Survey		140 000.00			
PHASE 2 (e.g., 24 months)					
Diamond Drilling and Core Logging			1 000 000.00		
Rehabilitation					41313 .00
Sample analysis and Geological Modelling				60 000.00	
PHASE 3 (e.g., 12 months)					
Environmental & Rehabilitation Studies					150 000.00
Banking & Feasibility Studies				50 000.00	
Phase 4 (e.g. 12 months)					
Rehabilitation					44 854.00
Annual Total	40 000.00	140 000.00	1 000 000.00	110 000.00	236 167.00
Total Budget					R 1 526 167.00

13.10. Specific Information required by the competent Authority.

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

14. Other Information required by the Competent Authority

14.1. 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 clay 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 an **Appendix**.)

The purpose of the consultation is to provide the interested and affected persons the opportunity to raise any potential concerns. A public participation process was initiated with the intent to consult with I&APs including the landowners and the nearby communities. Concerns raised during a public participation process were captured and addressed within the public participation section of this report to inform the decision-making process. The comments, concerns and suggestions received are recorded in the Comment and Response Report (CRR). The CRR is included in this Basic Assessment Report to be submitted to the DMRE.

14.2. 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).

Since the positioning of the drill sites will only be determined in phase 2 of the prospecting works programme, and in order to ensure that there is no impact on unknown heritage sites, a recommendation has been made to undertake a heritage survey of the drill sites in order to identify any cultural or heritage resources of significance. Mitigation measures proposed in this report include that no drill site will be located within 50m of any identified heritage site (which may occur during the prospecting programme).

15. 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 an **Appendix**).

The proposed prospecting activities (including the drilling) requested as part of this authorisation is the viable way a mineral resource can be identified and used to generate a SAMREC compliant resource which is a minimum requirement to determine whether it is viable to invest in a future mine. Therefore, the proposed prospecting activities to be undertaken will be part of the feasibility studies to determine whether the minerals of interest will be economically viable to mine.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

16. Environmental Management Programme Introduction.

16.1. Details of the EAP

(Confirm that the requirement for the provision of the details and expertise of the EAP are already included in PART A, section 2 herein as required).

This has already been covered. Refer to Part A, Section 2 of this document.

16.2. Description of the Aspects of the Activity

(Confirm that the requirement to describe the aspects of the activity that are covered by the environmental management programme is already included in PART A, section (5) herein as required).

This has already been covered. Refer to Part A, Section 5 of this document.

16.3. Composite Map

(Provide a map (Attached as an Appendix) 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)

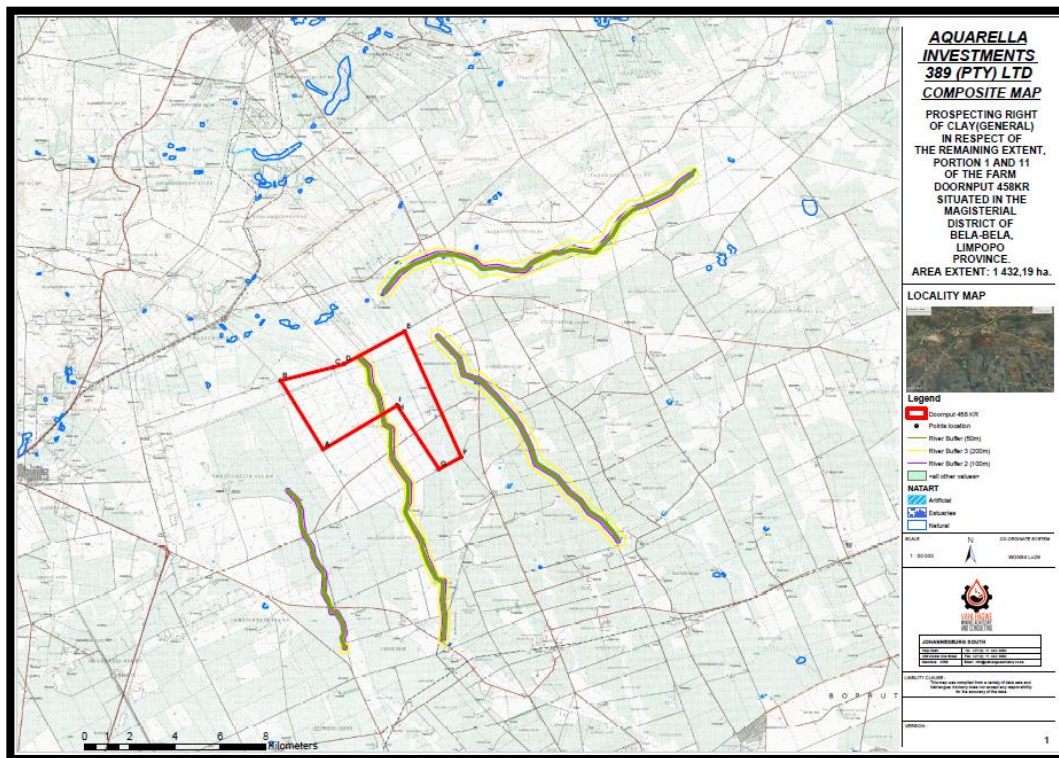


Figure 18:Composite Map

17. Description of Impact management objectives including management statements

The proposed impact management objectives and management statements are informed by the environmental setting of the site where the proposed prospecting activities will be undertaken, and the desired state post rehabilitation of the site.

17.1. Determination of closure objectives

The vision, and consequent objectives and targets for rehabilitation, decommissioning, and closure, are intended to reflect the local environmental and socio-economic context of the project, as well as to reflect both the corporate requirements and stakeholder expectations.

The receiving environment within which the prospecting activities will be undertaken include the following key land-uses:

- Residential areas
- Livestock grazing
- Nature Conservation; and
- Agricultural activities.

The post-closure land-use will be determined by the pre-prospecting land-use applicable to the proposed area given that the exact locations of the intended prospecting activities have been identified and assessed, it can be said that the closure plan will sufficiently address the objectives for the preferred alternative. This EMPr, on the other hand, aims to address the key closure objectives, which are likely to remain consistent over most prospecting activities.

The rehabilitation plan shall outline the closure objectives, which are focused at restoring the landform, land use, and vegetation units to their pre-prospecting state, unless the landowner requests a specified, justifiable replacement land use. As a result, the disturbed prospecting areas' planned end use and closure objectives will be specified in consultation with the relevant landowner. Evidence of such consultation will be given with an application for Closure Certificate. The overall goal of the rehabilitation plan is to rehabilitate the environment to as close to its pre-prospecting condition as possible. This will be accomplished through a series of established objectives.

- Making the area safe. i.e., Decommission prospecting activities to ensure that the environment is safe for people and animals. This entails the back filling and sealing of boreholes, etc;
- Recreating a free draining landform. This entails the recreation of the topography as close as possible to its original state and to ensure a free draining landscape;

- Re-vegetation. This involves either reseeded or allowing natural succession depending on the area, climate etc;
- Verification of rehabilitation success. Entails monitoring of rehabilitation; and
- Successful closure and obtaining a closure certificate.

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

The water required for prospecting activities will be obtained through an arrangement with an existing authorised water user, which might be either the landowner or the local municipality. Prior to drilling, the department responsible for water resources will be consulted about any water-related agreement with either the landowner or the local municipality. The main uses for the water during the undertakings of the proposed project will be as follows:

- ✚ Dust suppression on the access roads, and
- ✚ Domestic purposes such as the ablution facilities and drinking etc.

No water will be abstracted in terms of section 21(a) of National Water Act, 1998 (Act No. 36 of 1998).

17.3. Has a water use licence been applied for?

The Department of Water and Sanitation (DWS) will be consulted to ascertain whether the aforementioned water uses necessitate a General Authorization or a Water Use License in accordance with Section 21 of the National Water Act (Act 36 of 1998).

17.4. Impacts to be mitigated in their respective phases.

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

Table 23: Impacts Mitigation

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Site Clearance	<ul style="list-style-type: none"> Construction Operation 	0.205 ha, short term and localized	<ul style="list-style-type: none"> Minimize clearance of vegetation as much possible. In instances where it is possible, cut vegetation instead of clearing to minimize soil disturbance. Use of hand cutting techniques wherever possible and minimise the usage of heavy machines when clearance of vegetation is undertaken to prevent soil disturbance. Any larger fauna species discovered prior to and during vegetation clearance should be given the opportunity to relocate away from the machinery that will be used for construction and prospecting activities. Sensitive areas should be demarcated and treated as No-Go areas. Methods for minimizing potential harm to fauna species should be used during vegetation clearance. To maximize the potential for mobile species to move to adjacent areas, clearing must be gradual and slow, beginning from the interior of the site and continuing outwards towards the boundary. Indigenous vegetation, even secondary communities should not be fragmented under any circumstances or further disturbed. To avoid the spread of exotic or invasive species or the unlawful collection of plants, no plant species, whether indigenous or exotic, shall be brought into or taken from the proposed project area. Utilize local labour if possible. Vehicle movement should be restricted to provided access roads. Implement alien vegetation management. Implementing mitigation measures to prevent and manage hydrocarbon spills. Conducting water quality and quantity monitoring. No prospecting activities to be conducted at or near sensitive water resource areas. 	NEMA MPRDA NEMBA NEMAQA Dust regulations NWA	Throughout prospecting
Site Access	<ul style="list-style-type: none"> Construction Operation 	Short term and localized	<ul style="list-style-type: none"> When on site, the Applicant and/or contractors must take into consideration not to interfere with current land uses and practices. All site employees and visitors must be taken through a site induction, which includes basic environmental awareness as well as site-specific environmental requirements such as site sensitivities and appropriate protocols/procedures. Wherever possible, the Contractor's Environmental Officer should be present or facilitate this induction. 	NEMA OHS and MHSA	Throughout prospecting
Establishment Of site infrastructure	<ul style="list-style-type: none"> Operation 	0.09 ha, short term and localized	<ul style="list-style-type: none"> Vehicles and machinery must use existing access routes as far as possible to prevent unnecessary construction of new routes. Ensure proper and adequate drainage. 	NEMA MPRDA NEMBA	Throughout prospecting process

			<ul style="list-style-type: none"> Dust suppression should be undertaken when required to reduce the usage of water. Dust suppression strategies should be in accordance with applicable standards for PM₁₀ AND PM_{2.5}. Ensure that prospecting is in accordance with occupational health and safety regulations. All drill sites must be protected, with security access control and warning signs to ensure no person or animal can access these sites. All laydown, chemical toilets should be restricted to least sensitive areas. Noise must be kept to an absolute minimum during all the prospecting phases to minimize the impact of the development on the fauna that lives on the site. Permanent structures should not be permitted on site. Buildings should preferably be prefabricated or constructed from reusable/recyclable materials. Contractors working on the project should have spill kits available to ensure that any fuel or oil spills are cleaned up and disposed of properly. 	NEMAQA Dust regulations NWA	
Storage of hazardous substances	<ul style="list-style-type: none"> Construction Operational 	Short term and localized	<ul style="list-style-type: none"> To prevent pollution of the environment or harm to humans or animals, all hazardous substances such as fuel, grease, oil, brake fluid, hydraulic fluid must be handled, stored, and disposed of in a safe and responsible manner. Appropriate spillage prevention measures must be implemented. If there are any major spills of hazardous materials, they must be reported in accordance with Section 30 of the NEMA. All chemicals and toxicants used in the construction must be stored away from sensitive areas and in a bunded area. 	NWA NEMWA NEMA	Throughout prospecting process
Waste management	<ul style="list-style-type: none"> Construction Operation 	Short term and localised	<ul style="list-style-type: none"> Waste generated on-site must be classified and separated using the color-coding method. Waste management must be prioritized, and all waste must be properly collected and disposed of. Recyclable waste must not be stored on site for extended periods to prevent risk of environmental pollution. To prevent rodents and pests from entering the site, it is recommended that all waste be removed on a weekly basis. A Waste Management System must be put in place, with adequate waste storage in a form of covered containers, waste separation for recycling, and frequent removal of non-recyclable waste for permanent disposal at an appropriately licensed waste disposal facility. On-site waste disposal will be prohibited. 	NEMWA	Throughout prospecting activities
Storage of construction vehicle	<ul style="list-style-type: none"> Construction Operation 	Short term and localised	<ul style="list-style-type: none"> Any equipment that may leak and is not required to be transported on a regular basis must be placed on watertight drip trays to catch any possible pollutant spills. The drip trays must be large enough to accommodate the equipment. Drip trays must be cleaned on a regular basis and must not overflow. All spilled hazardous substances must be collected and disposed of properly at a properly licensed facility. Soil compacting must be avoided as much as possible, and the use of heavy machinery 	NWA	Throughout prospecting activities

			<ul style="list-style-type: none"> must be restricted in areas of the intended prospecting sites. Storage spaces must be located outside of the buffer zones. 		
Transportation/ access to and from drill sites	<ul style="list-style-type: none"> Construction Operation 	short term and localized	<ul style="list-style-type: none"> Drill sites should be located along existing access roads whenever possible to minimize the need for additional access roads. All prospecting/operational and access must make use of the existing roads as far as possible. Under no circumstances may the contractor damage any existing structures on the where the prospecting activities are to be undertaken On-site vehicles must be restricted to approved access routes and locations on the site in order to reduce excessive environmental disturbance to the soil and vegetation on site. Damage to public roads caused by prospecting activities must be repaired in consultation with the appropriate municipal authorities. 	NEMA NEMBA CARA NEMAQA NWA Dust Regulations	Throughout prospecting
Prospecting boreholes	Operation	0.1 ha, short term and localized	<ul style="list-style-type: none"> To minimize the period of disturbance on fauna and flora, the duration of prospecting activities should be kept as short as possible. To minimize the disturbance footprint, vegetation clearance for prospecting sites should be kept to a minimum. Always adhere to approved plans to avoid encroachment on the sensitive areas. The recommended buffer zones must be strictly adhered to. Buffer zones must be clearly demarcated and monitored as No-Go areas. Adequate sanitary ablution facilities on the servitude must be provided for all personnel throughout the project area. Prepare action plans and train contractors and staff in the case of spills, leaks, or other impacts to aquatic systems. To prevent soil compaction, soil compacting must be avoided as much as possible, and the use of heavy machinery must be restricted in areas outside of the intended prospecting sites. Dust-reducing mitigation measures must be implemented and strictly enforced, particularly for all roads and spoils. This includes watering exposed soft soil surfaces and not conducting activities on windy days, which increase the risk of dust generation. Any potentially noisy activities or work should be undertaken at suitable times of the day. These works should not be carried out at night or on weekends. Noise must be kept to an absolute minimum during the evenings and at night to minimize all possible disturbances to amphibian species and nocturnal mammals. Outside lights should be directed away from sensitive environments such as wetlands. Fluorescent and mercury vapor lighting should be avoided, and instead use sodium vapor (yellow) illumination whenever possible. To avoid migrating, nesting, and breeding seasons, prospecting activities and operations should be scheduled during the least sensitive periods. The holes need to be sealed to ensure that no fauna species can fall in the drill hole. On-site vehicles must be restricted to approved access routes and areas on the site in 	SANS 10103 Noise Regulations NEMAQA Dust Regulations NWA	Throughout prospecting and decommissioning

			<p>order to reduce excessive environmental disturbance to the soil and vegetation on the site.</p> <ul style="list-style-type: none"> • Workforce should be kept within defined boundaries and to agreed access routes. • No invasive prospecting activities to be undertaken within 50m of a watercourse. • Should any watercourse be affected, then the necessary water use licences should be obtained from the Department of Water and Sanitation • No ablution or site laydown areas are to be located within 150m of a watercourse. 		
Borehole closure	<ul style="list-style-type: none"> • Decommissioning • Closure 	Short term and localised	<ul style="list-style-type: none"> • When drilling and groundwater is encountered with, all affected prospecting boreholes that will not be required for any useful purposes should be closed and sealed with cement to minimize possible cross flow and contamination between aquifers. • Because of the very high pH of the material and the chemicals contained within cement and liquid concrete, they are hazardous to the natural environment. Consequently, the contractor must ensure that: <ul style="list-style-type: none"> ○ Concrete shall not be mixed directly on the ground. ○ The visible residues of concrete, whether solid or from washings, must be physically removed and disposed of as waste as soon as possible. ○ All excess aggregate shall also be removed. 	NWA NEMWA NEMA	Throughout Decommissioning and Closure
Waste removal	Decommissioning	Short term and localised	<ul style="list-style-type: none"> • Excess or waste material or chemicals, including drilling muds, must be removed from the site and, if possible, recycled (for example, oil and other hydrocarbon waste products). Any waste materials or chemicals that cannot be recycled must be disposed of at a waste facility that is properly licensed. 	NEMWA	Decommissioning
Surface infrastructure removal	Decommissioning	Short term and localised	<ul style="list-style-type: none"> • All infrastructure, equipment, and other items erected during prospecting activities shall be removed from the site. • Soil compaction should be avoided as much as possible. Heavy machinery use must be prohibited in areas outside of proposed prospecting sites to reduce soil compaction. 	<ul style="list-style-type: none"> • MPRDA • Rehab Plan 	Decommissioning
Rehabilitation	Rehabilitation	All disturbed areas	<ul style="list-style-type: none"> • Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. • Clearing of vegetation should be minimized and avoided where possible. • Maintain small patches of natural vegetation within the prospecting site to accelerate restoration and succession of cleared patches. • Areas that are denuded during prospecting need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species. • All structure footprints to be rehabilitated and landscaped concurrently as the prospecting activities progress is complete. • Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are endemic to this vegetation type. • Progressive rehabilitation will enable topsoil to be returned more rapidly, thus ensuring more recruitment from the existing seedbank. 	<ul style="list-style-type: none"> • NEMA • OHS and MHSA • MPRDA Rehab Plan 	Decommissioning

			<ul style="list-style-type: none"> Any woody material removed can be shredded and used in conjunction with the topsoil to augment soil moisture and prevent further erosion 		
Consultation	<ul style="list-style-type: none"> Planning Construction Operation 	Medium term, localised	<ul style="list-style-type: none"> Stakeholder engagement will continue throughout the prospecting process to ensure that the community and landowners are kept informed and could address their concerns. 	<ul style="list-style-type: none"> NEMA 	Throughout Planning, construction and operation

18. Financial Provision

18.1. Determination of the amount of Financial Provision

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

Prospecting activities should be carried out in a manner that enables for site rehabilitation and the restoration of existing land capacities. The following are the primary objectives of rehabilitation:

- ✚ The facilitation of the re-establishment of the land use and capability to as close as reasonable to the original conditions;
- ✚ Removal of all infrastructure and material introduced to site;
- ✚ Removal of all wastes and their disposal;
- ✚ Promotion of the rapid re-establishment of the natural vegetation and the restoration of the site ecology;

The disturbed areas shall be rehabilitated to ensure that:

- ✚ The biodiversity habitat is encouraging the new land use after the prospecting activities;
- ✚ Eliminate any safety risk associated with drill holes and sumps through adequate drillhole capping and backfilling;
- ✚ Environment and resources are not subjected to physical and chemical deterioration;
- ✚ The site is reversed to almost its original state;
- ✚ The after-use of the site is beneficial and sustainable in a long term; and
- ✚ All socio-economic benefits are maximized

Removal of all generated wastes constructed infrastructure, and materials, re-vegetation of disturbed and cleared areas, rehabilitation of access roads to ensure the growth of existing grasses and plant species, and clean-up of hydrocarbon spillages form part of the rehabilitation plan.

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

A draft Basic Assessment Report and Environmental Management Programme was subjected to a public consultation process and all documents were made available to the landowners and the I&APs.

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

Because of the nature of the activities, the impacts will be confined and temporary. The management plan was created in such a manner that concurrent rehabilitation is attainable.

Following the completion of planned invasive activities, Aquarella will ensure that the site is returned to its former state by carrying out the following measures:

- ✚ Removing all infrastructures, including the drill rig, the mobile diesel tank, the mobile water tank, and the chemical toilet;
- ✚ The whole drill site will be inspected for any signs of hydrocarbon spillages. Any identified soil which has been polluted because of the drilling activities will be removed and disposed of in a registered landfill site;
- ✚ Ensure that no material (plastics, papers, pipes) is left behind on the drill site; and
- ✚ Any area compacted because of the drill rig will be ripped and any furrows created by accessing or leaving the site for the drilling activity will be filled in to ensure that no future erosion shall occur on site.

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

The areas where drilling will take place will be the most impacted. The activities in this instance will be transient in nature, and a detailed management plan has been developed to address any potential repercussions.

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

A financial provision of approximately R44 852.00 has been budgeted for the prospecting programme over 5 years, for rehabilitation activities.

The financial provision calculations were undertaken in terms of the guidelines provided within the “DMR Guideline Document for The Evaluation of The Quantum of Closure-Related Financial Provision Provided by a Mine” (DMR, 2005). The closure components for the prospecting activities are summarised on the table.

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

Should Prospecting Right be granted, Aquarella will make provision for the estimated closure cost by means of a Bank Guarantee or any other means available and accepted by the Competent Authority.

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

19.1. Monitoring of Impact Management Actions

19.2. Monitoring and reporting frequency

19.3. Responsible persons

19.4. Time period for implementing impact management actions

19.5. Mechanism for monitoring compliance

Table 24: Compliance Monitoring and Frequency

Source Activity	Impacts Requiring Monitoring Programmes	Functional Requirements for Monitoring	Roles and Responsibilities	Monitoring and Reporting Frequency and Time Periods for Implementation
Desktop studies and acquisition of historic data	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None
Geological field mapping	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None
Remote sensing and Geophysical Surveys	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None
Site establishment -Vegetation clearance -Alien vegetation removal -Vehicle and equipment movement	<ul style="list-style-type: none"> Disturbance of Flora and Fauna; Impacts on soils and land capability; 	<ul style="list-style-type: none"> Document control; Site Inspections and checklists; and Report review and 	<ul style="list-style-type: none"> Contractors Environmental Representative; Environmental 	<ul style="list-style-type: none"> Once-off control of documents, site visit and reporting; Monthly site visits;

<p>Placing of infrastructure</p>	<ul style="list-style-type: none"> • Contamination of water resources and deterioration of water quality • Groundwater quality deterioration; • Noise and dust generation; and • Visual and topography disturbance 	<p>Development of actions plans</p>	<p>specialist, ECO; and</p> <ul style="list-style-type: none"> • Senior Environmental Management Officer 	<ul style="list-style-type: none"> • Monthly Reports; and • Annual Performance Assessment
<p>Target Prospecting Boreholes</p>	<ul style="list-style-type: none"> • Alien vegetation management; • Noise nuisance; • Air quality due to dust generation; and • Surface and groundwater management 	<ul style="list-style-type: none"> • Site Inspections and checklists; • Report review and development of corrective action plans; • Inspection of surface water features; and • Survey of groundwater users and use within 5km of the invasive prospecting sites. 	<ul style="list-style-type: none"> • Contractors Environmental Representative; • Environmental specialist; • ECO; • Senior Environmental Management; and • Geohydrologist (if required) 	<ul style="list-style-type: none"> • Once-off control of documents site visit and reporting; • Monthly site visits; • Monthly Reports Annual Performance; and • Prior to invasive prospecting activities and monitoring post-prospecting.
<p>Ablutions - Chemical Toilets</p>	<ul style="list-style-type: none"> • Groundwater contamination; and • Health impacts on workers 	<p>Site Inspections and checklists</p>	<ul style="list-style-type: none"> • Contractor Environmental Representative 	<ul style="list-style-type: none"> • Daily inspections and checklists

Access Route (Existing roads to be utilised)	<ul style="list-style-type: none"> Dust generation 	<ul style="list-style-type: none"> Site Inspections and checklists 	<ul style="list-style-type: none"> Contractors Environmental Representative 	<ul style="list-style-type: none"> Monthly inspections and checklists
Temporary general waste storage (General/domestic waste)	<ul style="list-style-type: none"> Visual disturbances; Soils contamination; and Surface water and Groundwater contamination 	<ul style="list-style-type: none"> Site Inspections and checklists 	<ul style="list-style-type: none"> Contractors Environmental Representative 	<ul style="list-style-type: none"> Monthly inspections and checklists
Temporary hazardous waste storage (Hazardous waste - Sealed Container)	<ul style="list-style-type: none"> Surface water and groundwater contamination; and Soils contamination 	<ul style="list-style-type: none"> Site Inspections and checklists 	<ul style="list-style-type: none"> Contractors Environmental Representative 	<ul style="list-style-type: none"> Weekly inspections and checklists
Undertake decommissioning and rehabilitation as per the rehabilitation plan	<ul style="list-style-type: none"> Alien vegetation management; Fire management plan; Noise generation; and Air quality 	<ul style="list-style-type: none"> Site Inspections and checklists; and Report review and development of corrective action plans 	<ul style="list-style-type: none"> Contractors Environmental Representative; Environmental specialist, ECO; Senior Environmental Management Officer; and Surface water specialist 	<ul style="list-style-type: none"> Monthly site visits; and Monthly Reports and Annual Performance Assessments
Monitoring of rehabilitation efforts	<ul style="list-style-type: none"> All Impacts Identified in the EMPr 	<ul style="list-style-type: none"> Site Inspections and checklists 	<ul style="list-style-type: none"> ECO; and Independent Environmental Auditor 	<ul style="list-style-type: none"> Monthly reports

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

Annual environmental performance audit report will be undertaken alternating between internal and independent EAP after the granting of the authorisation. It requires the holder of the authorisation to ensure compliance with all the conditions of the EA and/or the EMPr, and of which the conduct of the proposed activities must be audited against these conditions. It is also recommended that an internal audit specified in the previous section be carried out on an annual basis, at least before the independent audit. This audit report must then be submitted to the competent authority. This audit report must adhere to the following conditions:

- Be prepared by an **independent** person with the relevant environmental auditing expertise.
- Provide verifiable findings, in a structured and systematic manner, on-
 - (i) the level of performance against and compliance of an organization or project with the provisions of the requisite environmental authorisation or EMPr and, where applicable, the closure plan; and
 - (ii) the ability of the measures contained in the EMPr, and where applicable the closure plan, to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity.
- Contain the information set out in Appendix 7 of GN R. 326; and
- Be conducted and submitted to the competent authority at intervals as indicated in the environmental authorisation.

The purpose of this audit report is also defined in the regulations and is as follows:

- Determine the ability of the EMPr, and where applicable the closure plan, to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an ongoing basis and to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the project area; and
- Determine the level of compliance with the provisions of environmental authorisation, EMPr and where applicable the closure plan.

21. Environmental Awareness Plan and Training

Training and environmental awareness is an integral part of a complete EMPr. The overall aim of the training will be to ensure that all site staff are informed of their relevant requirements and obligations pertaining to the relevant authorizations, licenses, permits and the approved EMPr and protection of the environment.

The applicant and contractor must ensure that all relevant employees are trained and capable of carrying out their duties in an environmentally responsible and compliant manner and can comply with the relevant environmental requirements. To obtain buy-in from staff, individual employees need to be involved in:

- ✚ Identifying the relevant risks;
- ✚ Understanding the nature of risks;
- ✚ Devising risk controls; and
- ✚ Given incentive to implement the controls in terms of legal obligations.

The applicant shall ensure that adequate environmental training takes place. All employees shall be given an induction presentation on environmental awareness. Where possible, the presentation needs to be conducted in the language of the employees. All training must be formally recorded, and attendance registers retained. The environmental training should, as a minimum, include the following:

- ✚ General background and definition to the environment;
- ✚ The importance of compliance with all environmental policies;
- ✚ The environmental impacts, actual or potential, of their work activities;
- ✚ Compliance with mitigation measures proposed for sensitive areas;
- ✚ The environmental benefits of improved personal performance;
- ✚ Their roles and responsibilities in achieving compliance with the environmental policy and procedures and with the requirement of the applicant's environmental management systems including emergency preparedness and response requirements;
- ✚ The potential consequences (legal and/or other) of departure from specified operating procedures;
- ✚ The mitigation measures required to be implemented when carrying out their work activities;
- ✚ Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of Red / Orange List species, their identification, conservation status and importance, biology, habitat requirements and management requirements of the Environmental Authorisation and within the EMPr; and
- ✚ All operational risks must be identified, and processes established to mitigate such risk, proactively. Thus, the applicant needs to inform the employees of any environmental risks that may result from their work, and how these risks must be dealt with to avoid pollution and/or degradation of the environment.

In the case of new staff (including contract labour) the contractor / applicant shall keep a signed register of attendance for proof and record of adequate environmental induction training.

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

Environmental awareness could be fostered by induction course for all personnel on site, before commencing site visits. Personnel should also be alerted to environmental concerns associated with their tasks for the area in which they are working. Courses must be given by suitably qualified personnel and in a language and medium understood by personnel. The environmental awareness training programme will include the following:

- ✚ Occupational Health and Safety Training (OHS)
- ✚ Environmental Awareness Training on EMPr management actions.

Environmental awareness training will focus on the following specific aspects and be undertaken in “Toolbox talk “topics prior to site access:

- ✚ Waste collection and disposal;
- ✚ Sensitive environmental receptors;
- ✚ Identification of Red/ Orange List species, conservation status and importance, biology, habitat requirements and management requirements of the environmental authorisation and EMPr; and
- ✚ EMPr management options and application.

23. Manner in which risks will be dealt with to avoid pollution or degradation.

The broad measures to control or remedy any causes of pollution or environmental degradation because of the proposed prospecting activities taking place are provided below:

- ✚ Contain potential pollutants and contaminants (where possible) at source;
- ✚ Handling of potential pollutants and contaminants (where possible) must be conducted in bunded areas and on impermeable substrates;
- ✚ Ensure the timeous clean-up of any spills;
- ✚ Implement a waste management system for all waste stream present on site; and
- ✚ Investigate any I&AP claims of pollution or contamination because of prospecting activities

It is of critical importance that the broad measures to control or remedy any causes of pollution or environmental degradation are applied during onsite prospecting activities.

24. Specific information required by the Competent Authority

(Among others, confirm that the financial provision will be reviewed annually).

In accordance with the provisions of Regulation 23(3) of the EIA 2014 Regulations (as amended) the EIA should include all information required as set out in Appendix 3 and in terms of Regulation 23(4) the Environmental Management Plan (EMP) should contain all information required as set out in Appendix 4. The EIA report must include the following:

- ✚ Details of the EAP who prepared the report and the expertise of the EAP, including a curriculum vitae;
- ✚ A plan, which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale;
- ✚ A description of the scope of the proposed activity;
- ✚ 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;
- ✚ 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;
- ✚ A full public participation process including a CRR in the BAR;
- ✚ Impact Assessment, including methodology, of the necessary environmental aspects, including the nature, significance, extent, duration, and probability of the impacts occurring, positive and negative impacts, including mitigation and monitoring measures;
- ✚ An assessment of the proposed alternatives;
- ✚ A complete EMPr;
- ✚ The financial provision for the environmental liability which will be reviewed annually;
- ✚ An impact statement from the EAP, specific information the Competent Authority may require, and conditions for approval; and
- ✚ An EAP oath regarding the correctness of information provided in the report.

25. UNDERTAKING

The EAP herewith confirms;

- ✚ the correctness of the information provided in the reports;
- ✚ the inclusion of comments and inputs from stakeholders and I&APs;

- ✚ the inclusion of inputs and recommendations from the specialist reports where relevant; and

- ✚ that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein .

//////abaso

Signature of the Environmental Assessment Practitioner:

Name of company: Vahlegwe Mining Advisory and Consulting

Date: 11 February 2025

-END-

BAR/EMPr

Aquarella Investments 389 (Pty) Ltd

LP30/5/1/1/2/15699 PR



Appendix 1:

CV of the EAPs

SUNDAY MISHACK MABASO

12 Thaxted Ave Mulbarton 2190 · 0745697312/0824614251

Email - sunday@vahleingweadvisory.co.za · [LinkedIn Profile](#) - Sunday Mabaso · [Twitter @Sun.dayMabaso](#)

BIOGRAPHY

Mr. Sunday Mabaso is the founder and CEO of Vahleingwe Mining Advisory and Consulting. He's got extensive experience in mineral regulation gained from spending over 20 years (2000 – 2021) with the Department of Mineral Resources and Energy (DMRE) where he served his last seven years as Regional Manager (3 years in Northern Cape and 4 years in Gauteng) before his resignation to advance his career in business. In 2020 was nominated to the Task Team that developed the "South Africa's Exploration Implementation Plan" where he served to its completion and officially gazetted by Minister of Mineral Resources and Energy in 2022.

He holds a National Diploma in Mine Surveying and a National Higher Diploma in Mineral Resource Management from Technikon Witwatersrand in 1999 and 2000 respectively, a Graduate Diploma (GDE) in Mining Engineering from University of Witwatersrand in 2009 and a Master of Business Administration (MBA) from Milpark Business School in 2021. Sunday also completed a Post Graduate Certificate in Climate Change and Energy Law from University of the Witwatersrand in 2021, a Certificate in Energy Efficiency and Sustainability from the University of Cape Town (UCT) in 2022 and Certificate in Mine Closure and Land Rehabilitation from University of Pretoria (UP) in 2022.

Sunday is a registered member of the Institute of Directors of South Africa (IoDSA), the Southern Institute of Mining and Metallurgy (SAIMM) and is an Environmental Assessment Practitioner registered with EAPASA, also a member of the International Association of Impact Assessment South Africa (IAIASa). A committee member of the Environmental, Social and Governance (SAMESG) working group of the SAMCODES Standard Committee (SSC) responsible for developing the South African Mineral Reporting Codes. He has authored opinion and journal articles about South African mining legislation with interests focused on social and environmental impacts on mine communities affected by mining operations, past and present. Some of his articles are published in academic journals and books internationally.

PUBLICATIONS

Mabaso, SM. (2023) Legacy Gold Mine Sites & Dumps in the Witwatersrand: Challenges and Required Action. *Natural Resources*, 14, 65-77. <https://doi.org/10.4236/nr.2023.145005>

Mabaso, SM. (2023). Social and Environmental Challenges caused by Legacy Gold Mining in Johannesburg: Government's Action Plan. eBook: ISBN: 978-81-19491-53-7. DOI: 10.9734/bpi/npgees/v9/10672F

Ramontja, T. and Mabaso, S. 2022. *Evolution of South Africa's Mining Regulatory Framework as it Relates to the Empowerment and Participation of Mining Communities*. https://doi.org/10.1007/978-3-031-07048-8_6

PROFESSIONAL AFFILIATIONS

- EAPASA: Environmental Assessment Practitioner (EAP) No 2022/4485
- International Association of Impact Assessment South Africa (IAIASa) No 7442
- Southern Institute of Mining and Metallurgy (SAIMM) No 709244
- Institute of Directors in South Africa (M.Inst.D)
- Land Rehabilitation Society of Southern Africa (LaRSSA)
- International Society for Development and Sustainability (ISDS)

COMMITTEES

- South African Mineral Reporting Codes (SAMCODES) Standards Committee, 2016 to 2021
- SAMCODES-ESG Subcommittee – 2021 to date

EXPERIENCE

01 MAY 2021 – DATE

FOUNDER AND CEO: VAHLENGWE MINING ADVISORY AND CONSULTING

CORE SERVICES

- MPRDA and NEMA
- Mining Charter
- Environmental, Social and Governance - ESG
- Mine Closure and Rehabilitation
- Waste Management
- Carbon Tax Reporting
- Compliance Inspections
- Assistance to junior and small-scale miners

01 AUGUST 2014 – 30 APRIL 2021

REGIONAL MANAGER, DEPARTMENT OF MINERAL RESOURCES AND ENERGY

(NORTHERN CAPE –AUGUST 2014 TO APRIL 2017 AND GAUTENG – MAY 2017 TO APRIL 2021)

- Effective implementation and administration of the MPRDA
- Implementation and administration of Environmental Management policies and regulations in terms of NEMA and NEM: Waste Act
- Implementation and administration of Social and Labour Plans in terms of MPRDA
- Evaluation of Mining and Prospecting Work Programs and monitoring compliance
- Management of Land Use in mining areas to promote development and coexistence.
- Management of community development through implementation of the Mining Charter
- Promoting participation of Historically Disadvantaged South Africans in the mining economy and the value chain
- Management of relations and conflict resolutions between mining communities and mining companies
- Management of Financial and Administrative systems and procedures in the Regional Office
- Provide support and advisory to the Deputy Director General in the department

01 APRIL 2007 – 31 JULY 2014

DEPUTY DIRECTOR: MINE ECONOMICS, DEPARTMENT OF MINERAL RESOURCES

- Adjudication of mineral rights applications and manage sustainability of mining operations in line with the Mining/Prospecting Work programs.
- Monitor compliance through inspections and issuing of compliance directives.
- Assisting junior coal miners to access export markets through the Quattro Task team.
- Assist new entrants and junior miners in the mining industry.
- Conduct asset and mineral valuations for tax purposes and Section 11 applications

01 DECEMBER 2000 – 31 MARCH 2007

INSPECTOR OF MINES, DEPARTMENT OF MINERALS AND ENERGY

- Monitor compliance with the Mine Health and Safety Act in the mines.
- Provide technical advice on conflict between land development and mining operations.

25 JANUARY 2000 – 30 NOVEMBER 2000

MINE SURVEYOR, TAVISTOCK COLLIERIES

05 AUGUST 1994 – 31 DECEMBER 2000

LEARNER OFFICIAL AND BURSAR, TAVISTOCK COLLIERIES

EDUCATION

FEBRUARY 2018 TO JULY 2021

MASTER OF BUSINESS ADMINISTRATION, MILPARK BUSINESS SCHOOL

- Advanced Business Research Methodology
- Business Ethics and Corporate Governance
- Business in Emerging Markets
- Business Report Writing, Quantitative Analysis and Presentation Skills
- Dissertation
- General Management Environment

- Global Trade (Macro-economic – BRICS – Developing Markets)
- Integrated Business Strategy
- Leadership and Change Management
- Management Accounting and Finance (part 1)
- Management Accounting and Finance (part 2)
- Marketing and Sales Management
- Operations and Technology Management
- People Management
- Social Responsibility and Environmental Management

JUNE 2022 TO NOVEMBER 2022

CERTIFICATE: MINE CLOSURE AND LAND REHABILITATION, UNIVERSITY OF RETORIA (UP)

- Closure Design
- Regional Planning considerations and operational mitigation
- Land preparation and soil management
- Land cover/surface stabilization-economic value
- Maintenance and land management systems
- Identifying closure planning challenges and problem areas
- Mine closure planning consideration
- Closure document required Baseline environment and closure risks
- Closure success criteria and rehabilitation monitoring
- Financial provisioning and social planning

OCTOBER 2021 TO DECEMBER 2021

CERTIFICATE: ENERGY EFFICIENCY AND SUSTAINABILITY, UNIVERSITY OF CAPE TOWN (UCT)

- Energy -importance, Strategy and Challenges
- Energy Metrics, Economics and Efficiency
- Energy-efficient and Sustainable Buildings
- Energy-efficiency management and technologies in buildings
- Energy-efficiency management and technologies in industrial sector
- Energy auditing
- Energy measurement verification and management systems

MARCH 2021 TO JULY 2021

POST GRADUATE CERTIFICATE: CLIMATE CHANGE AND ENERGY LAW, UNIVERSITY OF WITWATERSRAND

- Climate Change and Energy
- Energy Law Concepts and Economics
- Theories of Energy and Climate Regulation
- Sources of Energy: Fossil Fuels
- Sources of Energy: Petroleum Sector
- Sources of Energy: Gas Sector
- The South African Electricity Supply Industry
- Climate Change Law and Policy Framework
- Energy, Climate Change & Just Transition
- Nuclear as a Source of Electricity

- Energy Efficiency and Demand Side Management
- Regulation of Energy Procurement

OCTOBER 2014 TO JANUARY 2015

**CERTIFICATE IN BASIC TRAINING FOR ENVIRONMENTAL MINERAL RESOURCE INSPECTORS,
UNIVERSITY OF PRETORIA**

- Constitutional Background
- NEMA and MPRDA framework legislation
- Sustainable Development
- EIA process, Scoping reports, and review of EA applications and Integrated EAs
- WASTE Act
- The Air Quality Act
- The Environmental Conservation Act
- The National Water Act
- The Integrated Coastal Management Act
- The Biodiversity Act
- The Protected Areas Act
- Administrative Law
- Criminal Enforcement
- Special forms of Liability
- Powers of Environmental Mineral Resources Inspectors-EMRI
- Ethics, Health and Safety and relevant issues
- Sampling
- Inspections
- Investigations
- Appeals
- Exemptions and exceptional circumstances

MARCH 2006 TO NOVEMBER 2008

GRADUATE DIPLOMA IN MINING ENGINEERING, UNIVERSITY OF WITWATERSRAND

- Mineral Economics
- Mineral Policy and Investment
- Compliance and Reporting Rules in the Mining Industry
- Economic Geology of South African Coal
- Coal extraction and Exploitation
- Coal and the Environment

JULY 1999 TO JULY 2000

**NATIONAL HIGHER DIPLOMA, MINERAL RESOURCE MANAGEMENT, TECHNIKON
WITWATERSRAND**

JULY 1996 TO MAY 1999

NATIONAL DIPLOMA, MINE SURVEYING, TECHNIKON WITWATERSRAND

SKILLS

- In-depth understanding of the mining industry and its economic value chain
- In-depth understanding of the regulatory and compliance regime in the mining industry
- In-depth understanding of the value of mining in the South African and Global economy
- Good communication skills
- Conflict resolution
- Good decision making
- Ability to work under pressure.
- Time management
- Good Leadership and management

PERSONAL INFORMATION

I'm a male South African Tsonga speaking citizen, born on 29 November 1976 in Bushbuckridge, Mpumalanga Province where I started my primary schooling at Mpikaniso Primary school in 1983 and matriculated at Orhovelani High School in 1993.

I'm currently married with four children and residing in Mulbarton, Johannesburg South since June 2017 after my transfer from the Kimberly as the Regional Manager of the Northern Cape to the Johannesburg office where I also served as Regional Manager for the Gauteng Region until 30 April 2021 upon resignation.

COMMUNITY INVOLVEMENT AND PERSONAL HOBBIES

I'm currently involved in community development projects in Bushbuckridge through career guidance, cultural activities, and sport to guide the youth to focus on their vision and education goals as part of giving back to my community and assist the future generation. I have sponsored soccer kits, traditional dancing activities and motivational seminars in my village since 2009.

My personal hobbies include playing golf, watching, and following soccer, rugby, and other national sporting codes. Mentoring my kids through schoolwork and sport. I spend more time outside work with my family to groom my kids to become better citizens and leaders of the future generation.

REFERENCES

Mr Mosa Mabuza
Chief Executive Officer
Council for Geoscience
012 841 1911
082449 8650
mmabuza@geoscience.org.za

Dr Thibedi Ramontja
Former Director General: DMRE
Currently Director: School of Mining
University of Witwatersrand
083 388 9122
thibedi.ramontja@wits.ac.za /
Ramontja2@gmail.com

Dr Tania Marshall
Director: School of Mining
University of Witwatersrand
082 611 3388
marshall.tania@gmail.com

**Environmental Assessment
Practitioners Association
of South Africa**



Registration No. 2022/4485

Herewith certifies that

Sunday Mishack Mabaso

is registered as an

Environmental Assessment Practitioner

***Registered in accordance with the prescribed criteria of Regulation 15. (1)
of the Section 24H Registration Authority Regulations
(Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the
National Environmental Management Act (NEMA), Act No. 107 of 1998, as
amended).***

Effective: 01 March 2024

Expires: 28 February 2025

Chairperson

Registrar



DIMAKATSO ELIZABETH LEHOLI

NAME: Dimakatso Elizabeth Leholi

DATE OF BIRTH: 15 May 2002

PROFESSION/ SPECIALIZATION: Environmental Consultant

YEARS OF EXPERIENCE: 2 Years 5 Months

LANGUAGES: English, Sesotho

KEY QUALIFICATIONS

Dimakatso Elizabeth Leholi holds a Diploma in Environmental Sciences from the Tshwane University of Technology. She is an environmental consultant with experience in conducting environmental impact assessments, environmental management systems, regulatory compliance and stakeholder engagement.

EXPERIENCE

[Environmental Consultant]

[Vahlengwe Mining Advisory and Consulting]

[October 2024- Present]

DUTIES:

- ✚ Conducting environmental impact assessments (EIAs) for prospecting, mining rights and mining permits to identify potential environmental impacts and develop mitigation measures.
- ✚ Preparing and reviewing EIA reports, including scoping reports, basic assessment reports, environmental management plans/programmes and environmental authorization applications.
- ✚ Conducting environmental audits and risk assessments to identify areas for improvement.

- ✚ Providing guidance to mining clients on environmental management best practices.
- ✚ Ensuring compliance with environmental regulations, laws, and standards relevant to the mining industry, including the National Environmental Management Act (NEMA) and the Mineral and Petroleum Resources Act (MPRDA).
- ✚ Liaising with regulatory authorities such as the Department of Mineral Resources and Energy and the Department of Environment, Forestry and Fisheries (DEFF).
- ✚ Preparing and submitting environmental authorization applications and reports.
- ✚ Conducting stakeholder engagement and public participation processes for mining or prospecting projects, including community meetings and other form of engagement.
- ✚ Liaising with local communities and other stakeholders.
- ✚ Coordinating with multidisciplinary teams, including engineers, scientists, and other stakeholders environmental consultants.
- ✚ Ensuring projects are delivered on time, within budget, and to the required quality standards.
- ✚ Maintaining professional registration with EAPASA.
- ✚ Participating in continuing professional development (CDP) activities.
- ✚ Staying current with industry developments and trends.

EDUCATION

INSTITUTION: Tshwane University of Technology

QUALIFICATION: Diploma in Environmental Sciences

STATUS: Completed (2023)

PROFESSIONAL AFFILIATIONS

Candidate EAP- Environmental Assessment Practitioners Association of South Africa (EAPASA)

Registration Number: 2023/6647

SKILLS

- ✚ Strong communication.
- ✚ Analytical and logical thinking.
- ✚ Gathering and analysing information.
- ✚ Conflict resolution and negotiation.

- ✚ Presentation and public speaking.
- ✚ Multidisciplinary problem solving.
- ✚ Technical writing skills



**Environmental Assessment
Practitioners Association
of South Africa**



Registration No. 2023/6647

Herewith certifies that

Dimakatso Elizabeth
Leholi

is registered as an

**Candidate Environmental Assessment
Practitioner**

***Registered in accordance with the prescribed criteria of Regulation 15. (1)
of the Section 24H Registration Authority Regulations
(Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the
National Environmental Management Act (NEMA), Act No. 107 of 1998, as
amended).***

Effective: 01 March 2024

Expires: 28 February 2025

Chairperson

Registrar



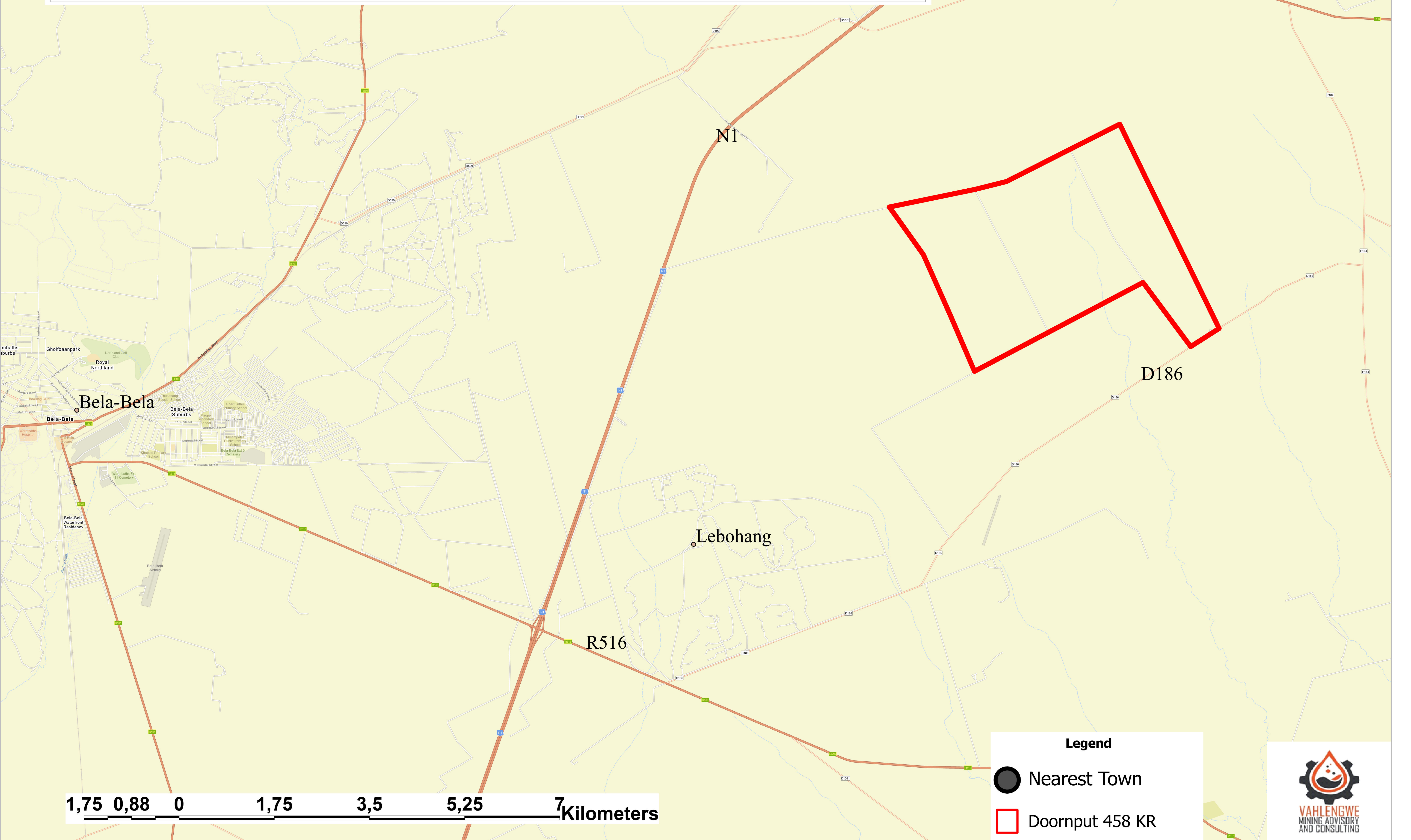
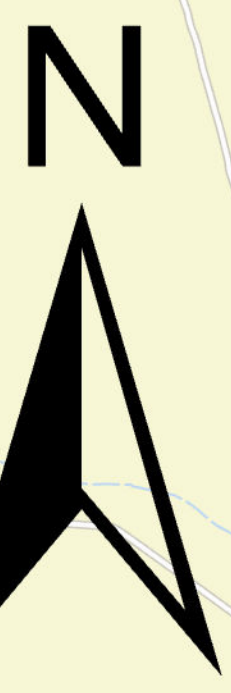
Appendix 2

2A: Locality Map and Regulation 2(2)

Aquarella Investments 389 (Pty) LTD

Prospecting Right of Clay in respect of the Remaining Extent, Portion 1 and 11 of the Farm Doornput 458 KR, in the Bela-Bela District, Limpopo Province.

Area Extent: 1 432, 19 ha.



Legend

- Nearest Town
- Doornput 458 KR



Aquarella Investments 389 (Pty) LTD

Prospecting Right of Clay in respect of the Remaining Extent, Portion 1 and 11 of the Farm Doornput 458 KR, in the Bela-Bela District, Limpopo Province.

AQUARELLA INVESTMENTS 389 (Pty) Ltd

REGULATION 2(2)
THE APPLICATION OF THE PROSPECTING RIGHT IN TERMS OF SECTION 104 OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT ACT, 2002 (ACT 28 OF 2002)

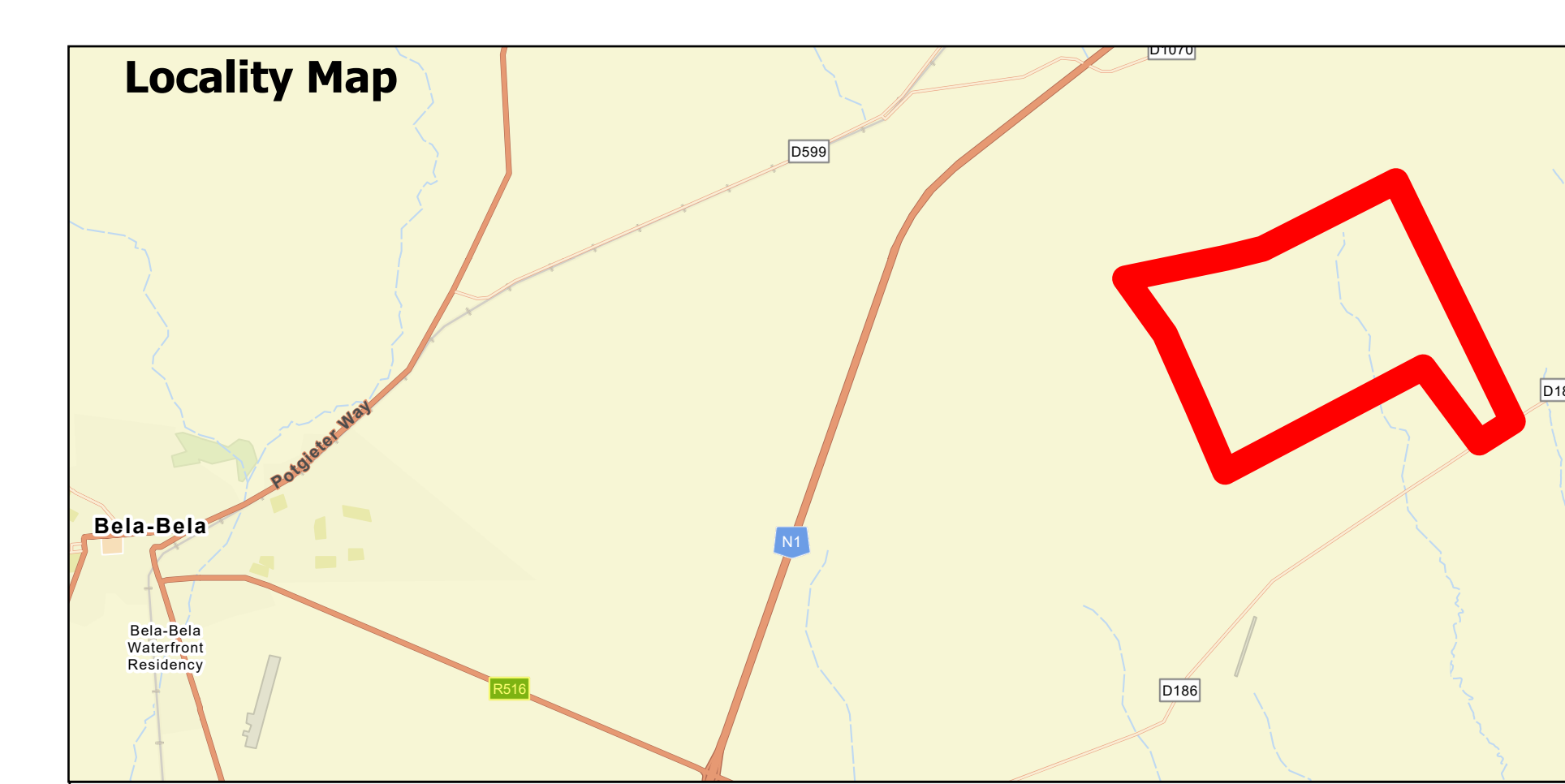
Total Application Area Extent: 1 432,19 ha

Legend

- Points location
- Prospecting Right Area

Plan Approval
Applicant
Signature:.....
Date:.....
Surveyor
Signature:.....
Date:.....

Plan approved
Regional Manager
Gauteng REGION
Department of Mineral and Energy
Date _____
Signature _____



PREPARED BY

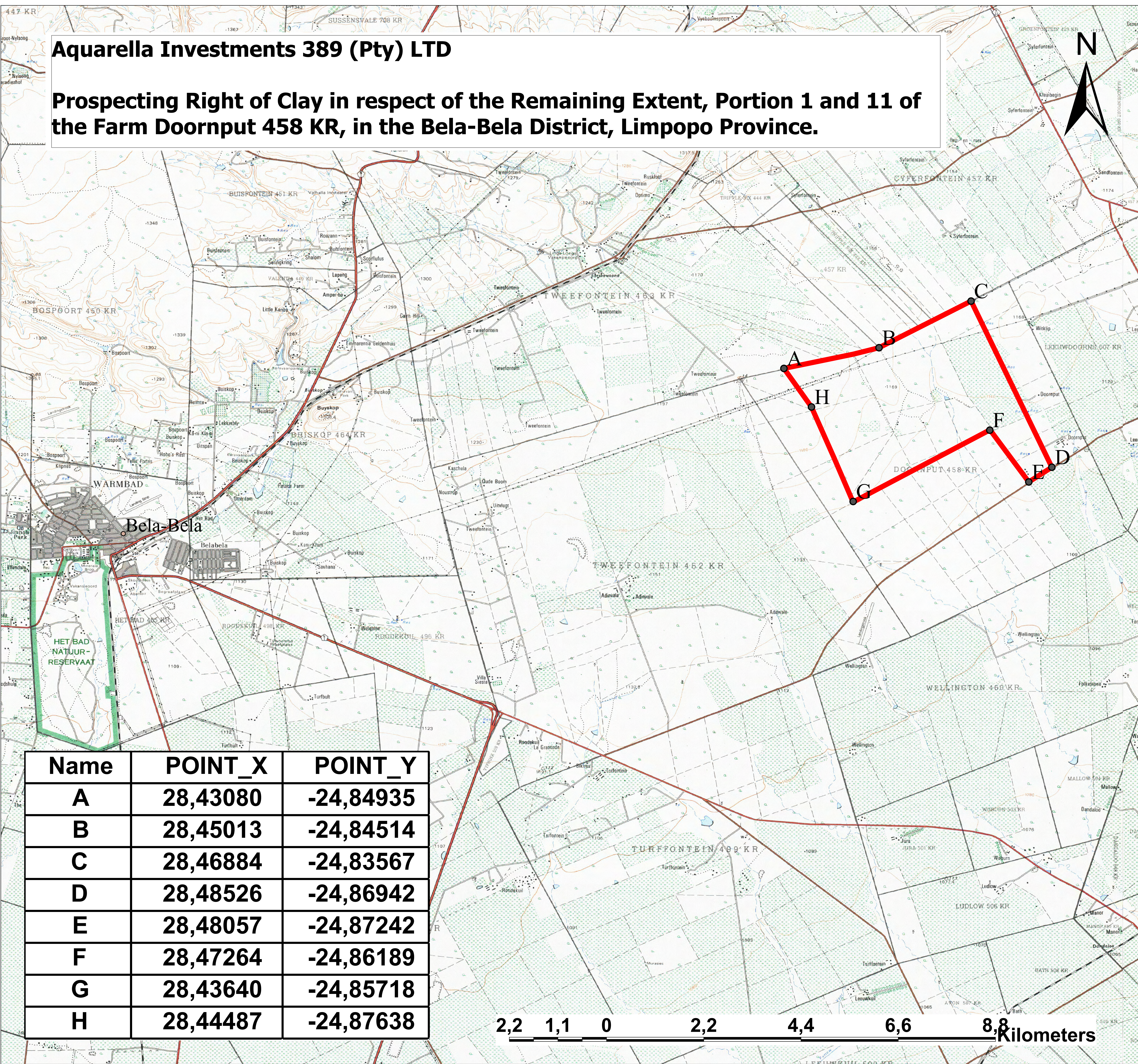


Johannesburg South
Help Desk Tel +27 (0) 11432 0062
230 Voster Ave Street Tel +27 (0) 11432 0062
Glenvister 2058 Email info@vahlengweadvisory.co.za

LIABILITY CLAUSE:
This map was compiled from a variety of data sets and Vahlengwe Advisory does nor accept any responsibility for the accuracy of the data.

Coordinate System: WGS 84

Name	POINT_X	POINT_Y
A	28,43080	-24,84935
B	28,45013	-24,84514
C	28,46884	-24,83567
D	28,48526	-24,86942
E	28,48057	-24,87242
F	28,47264	-24,86189
G	28,43640	-24,85718
H	28,44487	-24,87638



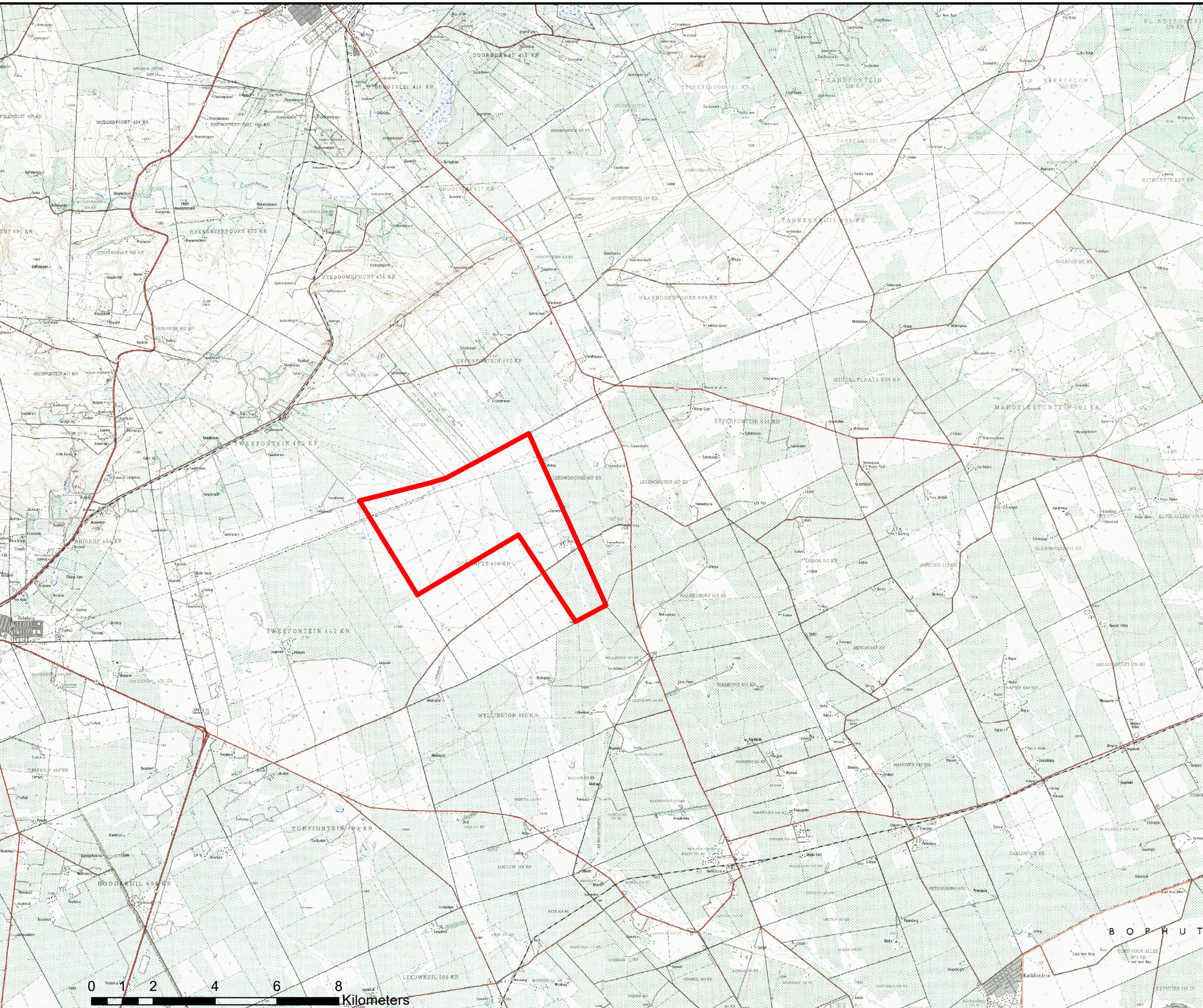
Appendix 2B:

Environmental and Land Use Map

AQUARELLA INVESTMENTS 389 (PTY) LTD COMPOSITE MAP

PROSPECTING RIGHT OF CLAY(GENERAL) IN RESPECT OF THE REMAINING EXTENT, PORTION 1 AND 11 OF THE FARM DOORNPOT 458KR SITUATED IN THE MAGISTERIAL DISTRICT OF BELA-BELA, LIMPOPO PROVINCE. AREA EXTENT: 1 432,19 ha.

LOCALITY MAP



- Legend**
- Doornpot 458 KR
 - Points location
 - Recreational Area
 - Reservoir
 - △ Trigonometric Area
 - Roads

SCALE: 1 : 50 000

N

CO-ORDINATE SYSTEM: WGS84 Lo29



JOHANNESBURG SOUTH	
Help Desk	Tel +27 (0) 11 432 0062
238 Vorster Ave Street	Fax +27 (0) 11 432 0062
Glenvista 2058	Email info@vahlengweadvisory.co.za

LIABILITY CLAUSE:
This map was compiled from a variety of data sets and Vahlengwe Advisory does not accept any responsibility for the accuracy of the data.



Appendix 2C:

Composite Map

**AQUARELLA
INVESTMENTS
389 (PTY) LTD
COMPOSITE MAP**

**PROSPECTING RIGHT
OF CLAY(GENERAL)
IN RESPECT OF
THE REMAINING EXTENT,
PORTION 1 AND 11
OF THE FARM
DOORPUT 458KR
SITUATED IN THE
MAGISTERIAL
DISTRICT OF
BELA-BELA,
LIMPOPO
PROVINCE.
AREA EXTENT: 1 432,19 ha.**

LOCALITY MAP



Legend

- Doornput 458 KR
- Points location
- River Buffer (50m)
- River Buffer 3 (200m)
- River Buffer 2 (100m)
- <all other values>
- NATART**
- Artificial
- Estuaries
- Natural

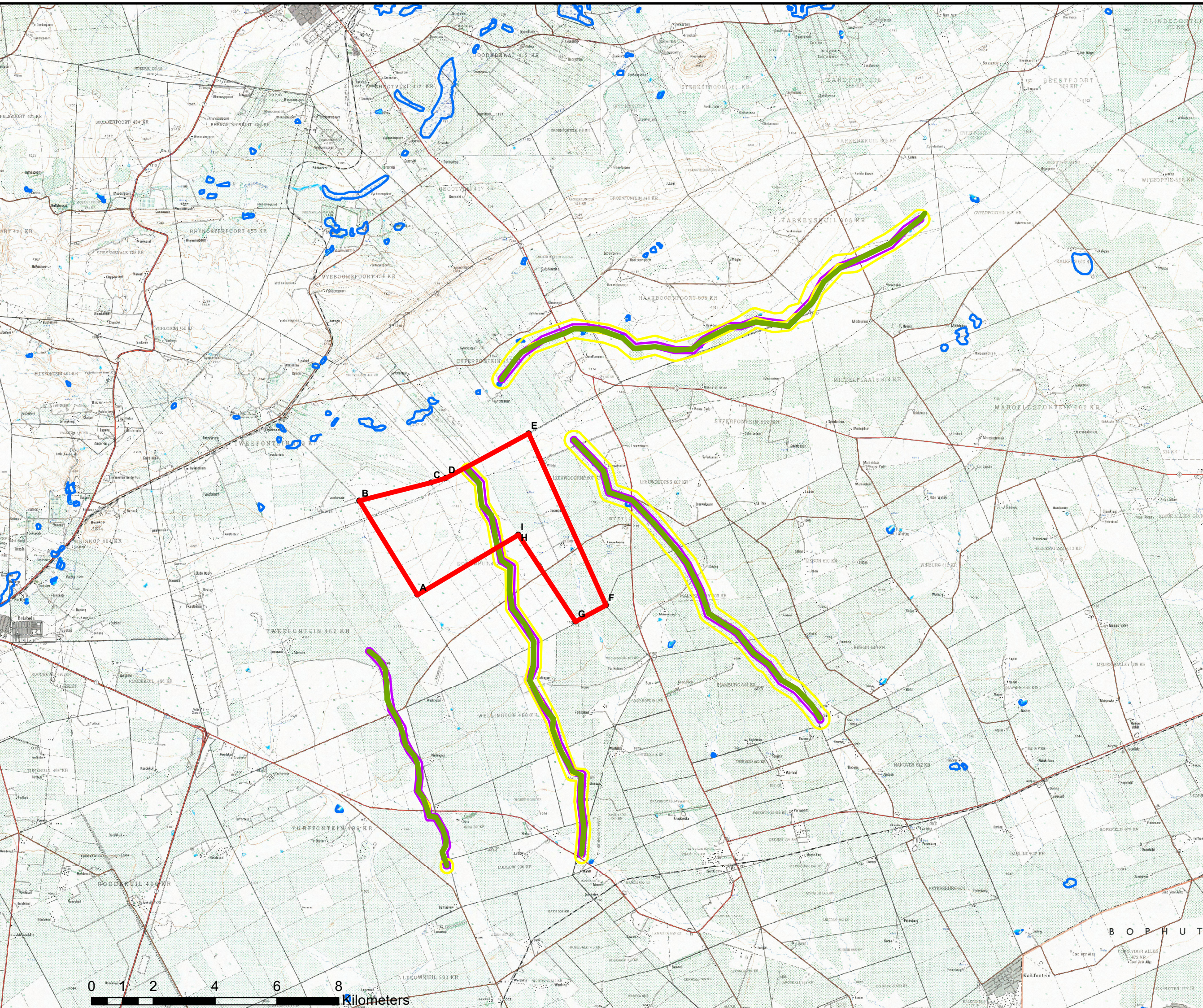
SCALE: 1 : 50 000
 CO-ORDINATE SYSTEM: WGS84 Lo29



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VERSION:



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Aquarella Investments 389 (Pty) Ltd
LP30/5/1/1/2/15699 PR



Appendix 3: Public Participation Process

Appendix 3A: Proof of Newspaper Advert

February 2025

Karwagte in spervuur ná onderonsie



Johan van Niekerk
vanniekerkjoan5@gmail.com

'n Herrie het losgebars by die SuperSpar-winkelkompleks in Bela-Bela nadat 'n motorwag na bewering 'n minderjarige kind aangerand het.

Volgens getuies het die voorval op Dinsdag, 15 Oktober kort na 17:00 plaasgevind. Daar word onder andere beweer dat die motorwag die kind met 'n knuppel (batton) oor die kop geslaan het. Op sosiale groepe is stem-boodschappe gestuur oor dié voorval en is gevra vir 'n ambulans om die seun medies te ondersteun. Die persone het ook gevra dat die polisie se aandag dringend nodig was.

Dit het later geblyk dat die seun, wat volgens inligting tussen 13 en 16 jaar oud is, na die Bela-Bela Provinsiale Hospitaal geneem is vir

behandeling. Navrae van *Die Pos* oor die toestand van die seun het egter niks opgelewer nie.

Volgens inligting wat *Die Pos* kon bekom, het die motorwag, wat slegs bekend is as 'Hannes' die vorige dag, Maandag, 14 Oktober, in 'n onderonsie betrokke geraak met leegleërs op die SuperSpar-parkeerterrein, aan Pretoriastraat se kant. Een van die vermeende leegleërs het 'n mes te voorskyn gebring en klaarblyklik vir Hannes gedreig, waarna hulle weggehardloop het. Die betrokke slagoffer was glo tussen die groep van die vorige dag, maar dit was nie hy wat die mes te voorskyn gebring het nie.

Op dié dag, het Hannes glo weer die seun op die perseel opgemerk en hom genader en gekonfronteer oor waar sy vriend met die mes is? Daar het 'n argument ontstaan tussen die partye, waarna Hannes na bewering die seun met sy knuppel oor die kop geslaan het.

Die plaaslike polisie het op Woensdag, 16

Oktober met die kind by SuperSpar opgedaag en met die bestuur van NCIS Crime Solutions, onder wie die motorwagte werk, gekonsulteer.

Op navrae van *Die Pos*, het ene 'Annemarie' van NCIS se bestuur, gesê die betrokke motorwag is nie meer in hul diens nie. Hulle is tans besig met 'n interne ondersoek en wil geen verdere kommentaar of inligting deel nie. NCIS is gevestig in Modimolle van waar die motorwagte geplaas en beheer word.

Op Dinsdag, 22 Oktober het *Die Pos* navraag gedoen by Annemarie van NCIS, oor die interne ondersoek se uitslag. Sy het haar misnoeë uitgespreek oor die inligting wat *Die Pos* op hul Facebook-blad gedeel het en geweier om enige verdere inligting oor die ondersoek wat volgens haar op Maandag afgehandel is, te deel. Sy beskuldig *Die Pos* daarvan dat hul die rede is dat tien karwagte nou werkloos is. Dit is egter van alle waarheid ontbloot. *Die Pos* dien onder andere as 'n waghond in die gemeenskap en gee net ware feite oor gebeure in die Waterberg aan sy lesers mee.

Intussen is daar geen karwagte by SuperSpar se parkeerterrein ontplooi nie.

Dassie in dorp gekry na brande



Die dassie nadat sy pootjies verbind is.



Ronel van Jaarsveld
dieposmodimolle@gmail.com

Die klein bruin diertjie wat in die sonnetjie voor die skuifhek sit, het Burger Heyneke se oog gevang toe hy die oggend voor sy werk stop. Dit was, vreemd genoeg, 'n dassie.

Heyneke, wat die onderneming Bush Tech in Van Ryneveldstraat in Modimolle besit, het nader gegaan om die diertjie te vang. "Ek het in al my jare nog nooit 'n dassie in die dorp gesien nie," het hy vertel. "Die dassie het stadig beweeg asof dit pynlik is. Ek het die dassie probeer vang, maar die diertjie het onder die masjinerie wat onder 'n skadunet toegemaak is, ingekruip." Dit is toe dat hy die hulp van slangvanger, Theunis Victor, ingeroep het om die dassie te vang.

Dassies word nie in die dorp aangetref nie en is meestal te sien in klipperige gebiede naby kranse.

Die dassie is na die Kranskop-diereklyniek geneem waar die veearts, Marina Bredell sy beseerde pootjies onder narkose verbind het. "Die arme dingetjie het net 800 g geweeg en sy tandjies was klein. Hy was baie swak met sy aankoms," het sy gesê. Hulle het hom narkose gegee sodat hulle die wonde kon skoonmaak en verbind.

Die volgende dag was die diertjie baie beter en het gulsig aan die moederblare gesmul wat vir hom voorgeskryf is om te eet.

Daar is heelwat bespiegel oor hoe die dassie in die dorp beland het. Heyneke dink dat hy sy pootjies gebrand het tydens die onlangse brande langs die dorp en toe skuiling onder 'n voertuig gesoek het. "Hy het dalk ingeklim en toe die voertuig dorp toe gekom het, het hy uitgeval."

Nadat sy pootjies verbind is, is die dassie oorgeplaas na die Johannesburg Wildlife Vets wat hom verder sou versorg het totdat hy vrygelaat kon word.

Die storie het ongelukkig 'n hartseer na-draai. Ten spyte van 'n goeie eelrus en tekens van verbetering, het die spesialis wildveearts besef dat die dassie blind is, moontlik vanweë 'n harde hou teen die kop. Hy is van kant gemaak om hom lyding te spaar. "Dit mag moontlik ook die rede wees hoekom die dassie gebrand het," het Bredell aan *Die Pos* gesê.

McDonald's victim of burglars



Johan van Niekerk
vanniekerkjoan5@gmail.com



The McDonald's Drive Thru at Bela Mall, in Bela-Bela appears to have fallen prey to burglars.

According to information received from the Bela-Bela police, two employees, Johannes Molobi, and his co-worker, Alphious Legoabe closed the restaurant at approximately 00:20 on Friday morning, 18 October. They remained in the shop, as the restaurant is known for its 24-hour service.

At around 05:40 Molobi noticed through the office window that the outside door was forced open. Molobi went to investigate and he saw that the alarm system was damaged and also that the safe had been forced open. He then noted that the cameras had been damaged by an unknown person or persons.

It appears as though the suspect had gained entrance through the roof. The money inside the safe that was stolen amounted to about R5000. The total damage suffered amounts to more or less R8000.

The suspects are unknown, and the camera system of McDonald's is not in working order. Lt Col Annemarie Smith of the Bela-Bela Police has confirmed that a case of Business Burglary is being investigated.

McDonald's Bela-Bela refused to comment on the case and only confirmed that the restaurant is open 24 hours. It is unclear at this stage why the employees 'closed the shop', and how many people were on duty for the night shift. It is also unclear what the two employees were doing in the shop from 00:20 to 05:40 when the theft was noticed.

AQUARELLA INVESTMENTS 389 (PTY) LTD

**NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT PROCESS
INVITATION TO REGISTER AS AN INTERESTED AND AFFECTED PARTY AND COMMENT ON THE DRAFT BASIC ASSESSMENT REPORT.**

NOTICE OF ENVIRONMENTAL AUTHORISATION FOR THE PROSPECTING RIGHT APPLICATION OF CLAY (GENERAL) IN RESPECT OF PORTIONS 1 AND 11 OF THE FARM DOORPUT 458 KR IN THE MAGISTERIAL DISTRICT OF BELA-BELA/WATERBERG, LIMPOPO PROVINCE.

DMR REFERENCE NO.: LP 30/5/11/1/2/ 15699 PR

Notice of hereby given in the intent to conduct Environmental Authorisation process for an application of a prospecting right of clay (general), for Aquarella Investment 389 (Pty) Ltd in terms of National Environmental Management Act - NEMA (Act 107 of 1998) as amended, and the Environmental Impact Assessment (EIA) Regulations, 2014. Notification is hereby given to all Interested and Affected Parties (I&APs) in terms of Section 39 to 44 of GNR 982 (as amended). The EIA process would be undertaken in terms of these guidelines and to be submitted to the Competent Authority Department of Mineral Resources and Energy (DMRE).

THE ABOVE ACTIVITIES TRIGGERS:

Activity 20 of GN R 983 (as amended): 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.

PROPOSED SITE LOCATION.

The proposed project is situated in the Magisterial District of Bela-Bela/Waterberg Limpopo Province, 13,51 km South west of Bela-Bela town and 26,41 km South east of Seabe Village and access road to the farm is via the R516 and N1 road.

PUBLIC MEETING:

Public meeting will be held to facilitate discussions on the Draft Basic Assessment Report to obtain comments and inputs from the Interested and Affected Parties (I&APs), therefore you are requested to register your names as I&AP within 15 days, thus, on/before 08 November 2024. You are further requested to submit your comments within 30 days from the date this notice was published. Take note that your comments must be submitted on or before 23 November 2024 to the details below:

Consultant : **Vahlengwe Mining Advisory and Consulting**
 Contact person : Sunday Mabaso
 Postal address : 238 Voster Ave, Glenvista Extension 3,
 Johannesburg South, 2058
 Contact : +27 11 432 0062
 E-mail : info@vahlengweadvisory.co.za



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**CONTACT US
014 736 6424**

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 * Kampeertoerusting * Huishoudelike ware
 * Meubels en nog meer.
Inskrywings altyd welkom!
Platrivier Afslaers
 ± 8km buite Warmbad op die ou Pretoria-pad (R101)
ONS KOOP & VERKOOP DAAGLIKS.

KWEKERY
 VERSKEIDENHEID PLANTE
 EN POTTE TEEN LAE PRYSE
 Besigheidsure: 8vm - 5nm
 Adriaan: 083 482 8980.
 Danie: 072 601 1867
 Sel: 083 505 5482

HAMBSCH
Commercial Fuel Injection Services

Contact: 060 784 0088
 Adres: Cnr of Von Willich
 & Silica Street
 Modimolle 0510

*We test, repair and sell
diesel injectors and pumps*

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Aquarella Investments 389 (Pty) Ltd
LP30/5/1/1/2/15699 PR



Appendix 3B:

Site Notice Report

February 2025

Site Notice Report
Aquarella Investments 389 (Pty) Ltd
LP30/5/1/1/2/15699 PR



AQUARELLA INVESTMENTS 389 (PTY) LTD

FILE REFERENCE NUMBER: LP30/5/1/1/2/15699 PR

SITE NOTICE REPORT

Basic Assessment Report (Bar) and Environmental Management Programme Report for the proposed Prospecting Right application for clay(general) in respect of the remaining extent, portions 1 and 11 of the Farm Doornput 458 KR situated in the Magisterial District of Bela-Bela/Waterberg, Limpopo Province.

Site notices were distributed at various areas in the Magisterial District of Bela-Bela on the 29th of October 2024.

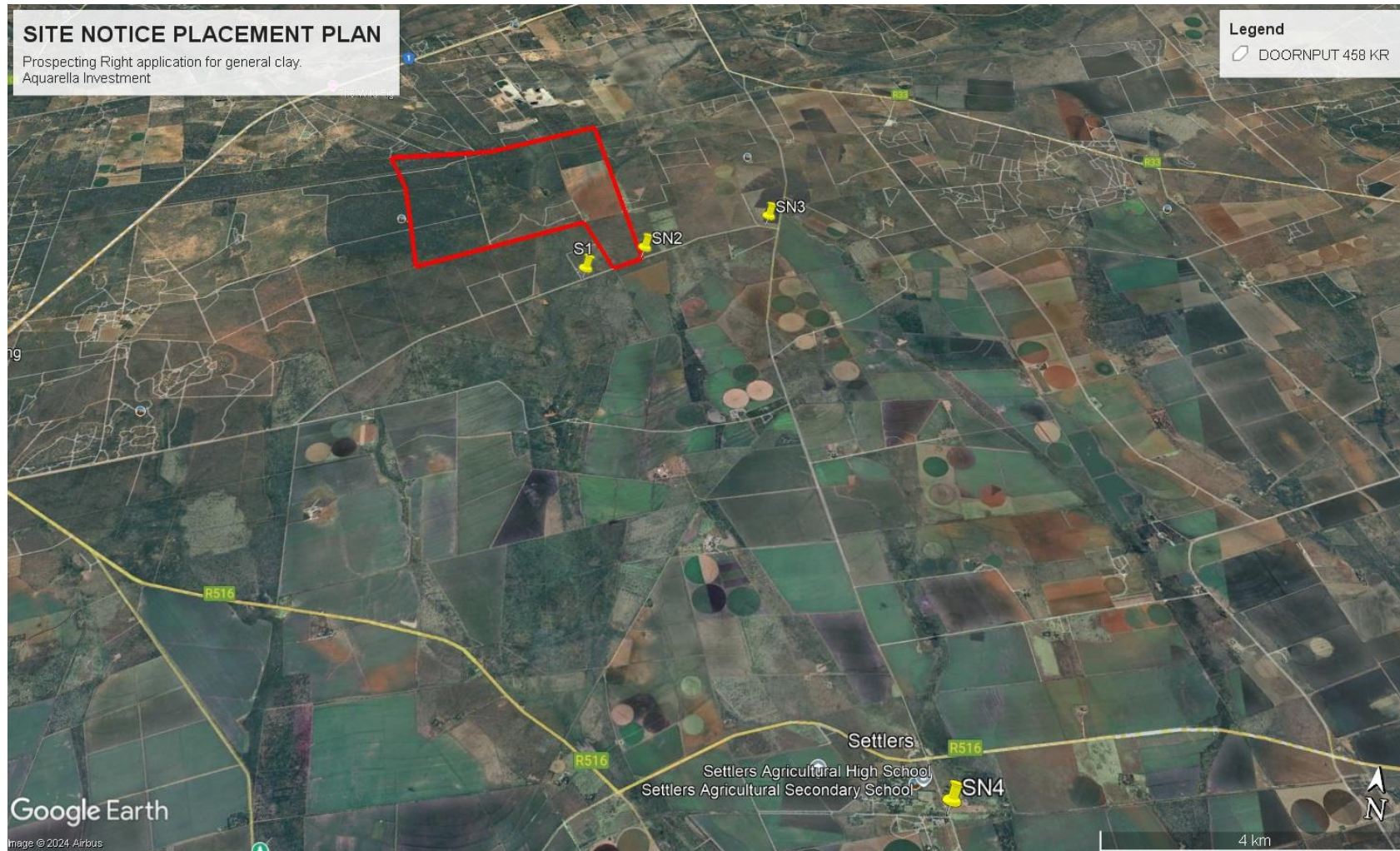


Figure 1: Location map of areas where the site notices were placed.

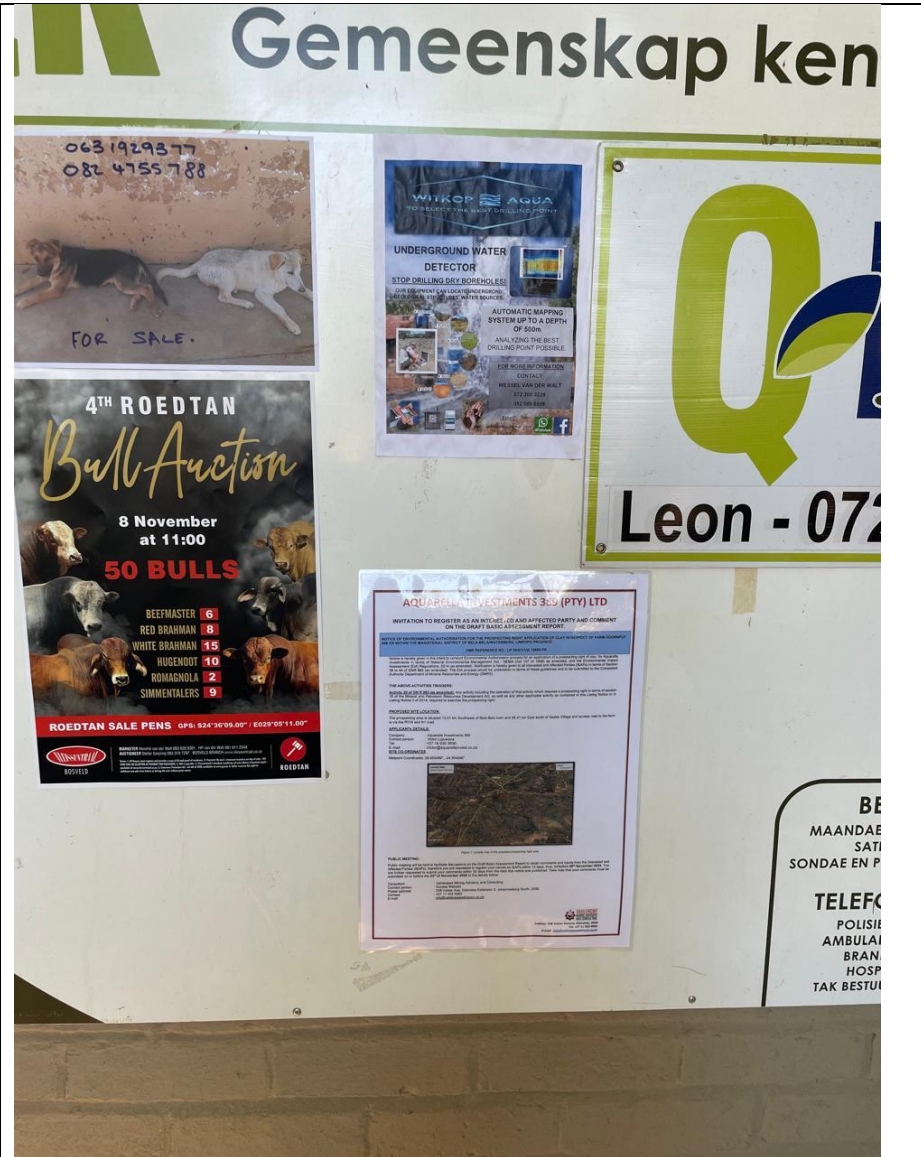
Site Notice 1 was placed at Portion 11 of the Farm Doornput 458 KR.



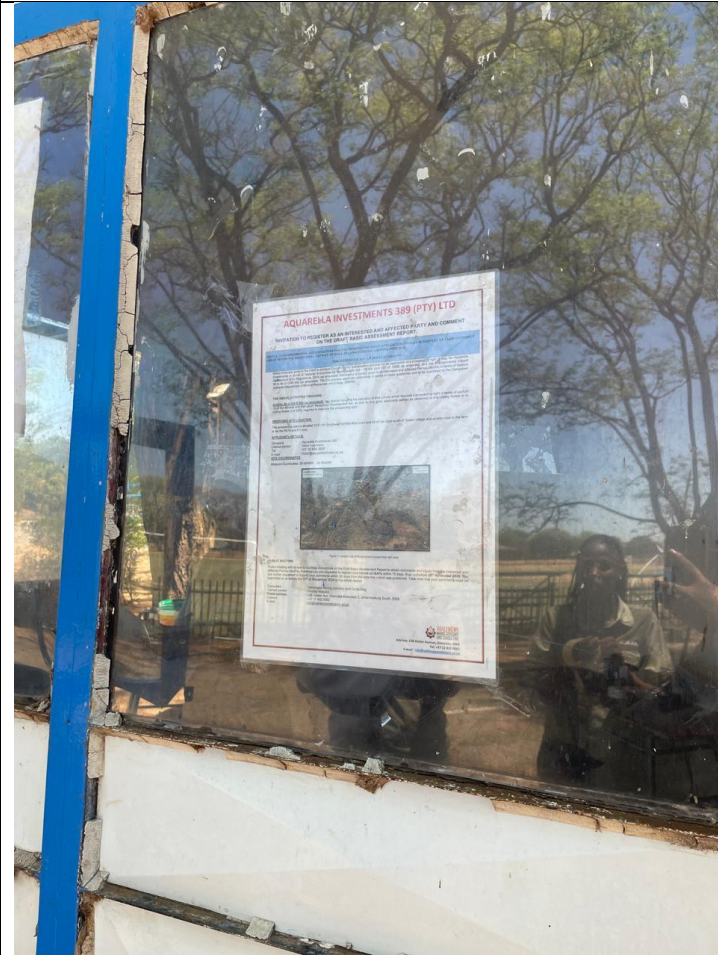
Site Notice 2 was placed 2.51 km away from the boundary line of the proposed prospecting area.



Site Notice 3 was placed at NTK Settlers (Farm equipment supplier).



Site Notice 5 was placed at Settlers Agricultural High School.



Appendix 3C:

Background Information Docu
ment and Interested & Affected Parties Form

**BACKGROUND INFORMATION DOCUMENT FOR THE
ENVIRONMENTAL AUTHORIZATION: PROSPECTING RIGHT APPLICATION.**

**ENVIRONMENTAL AUTHORISATION FOR THE PROSPECTING RIGHT APPLICATION OF
CLAY(GENERAL) IN RESPECT OF FARM DOORNPOT 458 KR IN THE MAGISTERIAL
DISTRICT OF BELA-BELA/WATERBERG , LIMPOPO PROVINCE.**

DMRE REFERENCE NO.: LP 30/5/1/1/2/ 15699 PR

PURPOSE OF THIS DOCUMENT

This Background Information Document (BID) has been prepared as part of the notification and consultation process required in terms of the National Environmental Management Act (NEMA) (Act 107 of 1998). It describes the following:

- Background information regarding the proposed project;
- Information about the site and the proposal being considered;
- Public participation process; and
- Suggestions on how the stakeholders including the I&APs can participate on the process.

APPOINTED OF ENVIRONMENTAL ASSESSMENT PRACTITIONERS

Vahlegwe Mining Advisory and Consulting as an Environmental Assessment Practitioner (EAP) will conduct Environmental Authorization process for the prospecting right application for clay(general) in respect of Farm Doornput 459 KR in the Magisterial District of Bela-Bela, Limpopo Province, for an extent area of is 1 413 ha.

PROJECTION LOCATION

The prospecting area is situated approximately 13,51 km southwest of Bela-Bela town and about 26,41 km east south of Seabe village and access road to the farm is via the R516 and N1 road, Limpopo Province.



Figure 1: Locality Map of the proposed area

PROJECT DESCRIPTION

Aquarella proposes to undertake clay(general) prospecting activities in respect of the remaining extent, portions 1 and 11 situated in the Farm Doornput 458 KR in the Magisterial District of Bela-Bela, Limpopo Province. The project entails the drilling of about twenty (20) boreholes to determine the mineral deposition, quantity, economic viability, and possibilities of the project leading to a viable mine. Vahlangwe Mining Advisory and Consulting (Pty) Ltd will compile the Basic Assessment and Environmental Management Programme for the Prospecting Right Application and facilitate the PPP.

PUBLIC PARTICIPATION PROCESS.

The purpose of public consultation process is to enable landowners, lawful occupiers, directly affected individuals, and/or other Interested and Affected Parties (I&APs) to raise any issues, concerns and or comments regarding the prospecting activities. A proof of consultation report will be developed and submitted to the Department of Mineral Resources and Energy (DMRE). The proposed project requires Environmental Impact Assessment process in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (as amended).

Following step will be followed while conducting public participation.

- Issuing of notification of this project to:
 - Owners and occupiers of the farms as well as those adjacent to the site
 - Municipal Councillor
 - The municipality which has jurisdiction, and any organ of state having jurisdiction
- Placing an advert in a local newspaper
- Placing a notice on the site notice
- Meetings with landowners and key I&APs, as required
- Public review of Basic Assessment Report and Environmental Management Programme

PUBLIC INVOLVEMENT

Public involvement is an essential component of the process. It addresses the right of Interested and affected Parties (I&APs) to be informed of the proposed activities.

All Interested and Affected parties (I&APs) are invited to submit their issues, concerns, and comments regarding the proposed prospecting activities to Saqondisana Investment via email, registered post or telephonically. The Interested and Affected parties (I&APS) Form is made available below for you to fill in your personal details and comments, kindly do so and submit it back to us.

HOW TO OBTAIN FURTHER INFORMATION.

Registering as I&APs will ensure that you are placed on a database to be informed of any progress regarding the project. You can do so by filling in the form below and return it to the relevant person listed below.

We encourage the I&APs to review the information presented to you in this Background Information Document (BID) and to register as an I&AP for the attached respondent sheet and return it to us.

PUBLIC CONSULTATION CONTACTS:

Name: : Sunday Mabaso
Postal address : 238 Voster Ave, Glenvista Ext 3, Glenvista, 2058
Contact : +27 11 432 0062
E-mail : info@vahlengweadvisory.co.za

APPLICANT CONTACTS

Name : Victor Lupuwana
Postal Address : PO Box 2247, Vereeniging, 1930
Tel : +27 16 930 3600
E-mail : Victor@aquarellainvest.co.za

Interested & Affected Party Registration Form

LP /30/5/1/1/2 15699 PR

Aquarella Investments 389 (Pty) Ltd

AQUARELLA INVESMTENTS 389 (PTY) LTD

Interested & Affected Party Registration Form

Project Reference No.: LP/30/5/1/1/2 15699 PR

Name and Surname	
Physical Address	
Contact Details	Telephone No.: Fax No.: Cell No.: E-mail Address:
<i>Please indicate any issues, comments and concerns with regard to the proposed project</i>	
<i>Please indicate in which aspects you would require more information</i>	
<i>Please indicate any I&APs whom you think should be contacted</i>	
To be registered as an I&AP for this project mail, or e-mail the completed registration form to: Sunday Mabaso Postal address: 238 Voster Ave, Glenvista Ext 3, Glenvista, 2058 Contact : +27 11 432 0062 E-mail : info@vahleengweadvisory.co.za	

BAR/EMPr
Aquarella Investments 389 (Pty) Ltd
LP30/5/1/1/2/15699 PR



Appendix 3D:

Interested and Affected Parties Database

AQUARELLA (PTY) LTD DATABASE OF INTERESTED AND AFFECTED PARTIES.

NAME AND SURNAME	ORGANIZATION/ COMMUNITY	ADDRESS	CONTACT DETAILS	EMAIL ADDRESS
STATE ORGANS				
Lindiwe Victoria Dlamini	Departme of forestry, fisheries, and the environment	473 Steve Biko, Pretoria		
Mmatlala Rabothatha	Departme of forestry, fisheries, and the environment	473 Steve Biko, Pretoria		
Kobel	Department of Water and Sanitation			
Ngoesheng Tlhagala	Limpopo Department of Economic Development, Environment and Tourism	20 Hans van Rensburg street, Polokwane		
Letsoalo Mmakotoj	Limpopo Department of Economic Development, Environment and Tourism	20 Hans van Rensburg street, Polokwane		

AQUARELLA INVESTMENT 389 (PTY) LTD

LP 30/5/1/1/2/ 15699 PR



Dolo Raetsetja	Limpopo Department of Economic Development, Environment and Tourism	20 Hans van Rensburg street, Polokwane		
Morakan	Bela-Bela Local Municipality	Bela-Bela		
Peter Moloto	Bela-Bela Local Municipality	Bela-Bela		
Gloria Seleke	Bela-Bela Local Municipality	Bela-Bela		
ntuwiseni mmbi	Bela-Bela Local Municipality	Bela-Bela		
INTERESTED AND AFFECTED PARTIES/ ADJACENT FARM OWNERS				
Ian Jansen Van Rensburg	Sondela nature Reserve	Tweefontein 562 KR		
Jan Louw	Voltaia SA	9 Lower Burg str, Cape town		
Dorset Farm		Wellington 460 KR		
Johann Minnaar	Landowner's representative	Suite 39 Northriding		
M J De Jager		Malmesburg		
J De Jager	Hofste			
FARM OWNER				
Lardus Erasmus	portion 1 of Doornput	Portion 1 of Doornput		

AQUARELLA INVESTMENT 389 (PTY) LTD
LP 30/5/1/1/2/ 15699 PR



Appendix 3E:

Public Participation Meeting Presentation

PUBLIC PARTICIPATION MEETING

Draft Basic Assessment Report for a prospecting right application
of clay(general).

Applicant: Aquarella Investments 389 (Pty) Ltd

DMRE Reference Number: LP 30/5/1/1/2/ (15699) PR

29 January 2025



AGENDA

1. Opening and Introduction
2. Purpose of the Meeting
3. Presentation: Draft Basic Assessment Report
4. Discussions
5. Closure

TEAM

1. Sunday Mabaso (Registered EAP)
 2. Dimakatso Leholi (Candidate EAP)
 3. Khanyile Mgiba
 4. Lusizo Nqasha
 5. Keabetswe Mmolotsi
-

INTRODUCTION

- ❖ Aquarella Investments 389 (Pty) Ltd has applied for a prospecting right in terms of Section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (as amended) (MPRDA).
- ❖ Application has been accepted by DMRE (Limpopo) Regional Office under the reference number LP 30/5/1/1/2 (15699) PR.
- ❖ Mineral applied for: Clay (General).
- ❖ Locality: The project area falls within the Magisterial District of Waterberg Limpopo Province.
- ❖ The area covers an area extent of 1 432,19 ha.

CONTINUATION OF INTRODUCTION

LOCALITY	
Farm Name	Portion Number
Doornput 458 KR	Remaining Extent
	Portion 1
	Portion 11

CURRENT LAND USES
Agriculture
Game farming
Tourism
Construction
Mining

LOCALITY MAP



REGULATORY FRAMEWORK

- ❖ Application: Prospecting right in terms of Section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (as amended) (MPRDA).
- ❖ Environmental Authorization in terms of Sec. 24 of NEMA, 1998 (Act 107 of 1998) (as amended).
- ❖ GN R 984 (Listing Notice No. 1); Activity 20: Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 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.
- ❖ Associated activities : The National Environmental Management Act and Environmental Impact Assessment (as amended in 2017) (Listing Notice No. 1)

PROJECT DESCRIPTION: ACTIVITIES

- ❖ Prospecting activities will be divided into non-invasive activities and invasive activities.

Non-Invasive Activities	Invasive Activities
Desktop Studies.	Site Establishment (30 mx30 m).
Geophysical Survey.	Installation of ablutions facilities.
Remote geological sensing .	Drilling 10 boreholes.
Environmental and Rehabilitation Studies.	Sample analysis.
Banking and Feasibility Studies.	Rehabilitation.

PUBLIC PARTICIPATION PROCESS

- ❖ Draft Basic Assessment Report : Subjected to a 30-day Public Participation Process.
- ❖ The purpose of public consultation process is to enable landowners or lawful occupiers of the land and stakeholders including the Interested and Affected Parties (I&APS) to raise any issues, concerns and or comments regarding the prospecting activities.
- ❖ A Comments and Response Report (CRR) will be developed and incorporated into the final Basic Assessment Report to be submitted to the Department of Mineral Resources and Energy (DMRE) for decision making.
- ❖ Announcement of the Draft Basic Assessment Report And PPP To Be Followed
- ❖ Availability of the Draft Basic Assessment Report from the 29 October 2024.

PUBLIC PARTICIPATION PROCESS

- ❖ A Background Information Document (BID) including a registration form handed and distributed to the identified I&AP.
- ❖ Site notices placed at the project site and at strategic locations visible to the public on the 29th of October 2024.
- ❖ Newspaper advertisement on Die Pos Newspaper on the 24th of October 2024.;
- ❖ A public participation meeting on the 29th of January 2025.
- ❖ An electronic copy will be available on the website (www.vahlengweadvisory.co.za).

SPECIALIST STUDIES UNDERTAKEN

- ❖ Terrestrial Impact Assessment
- ❖ Geohydrological Impact Assessment
- ❖ Palaeontology Impact Assessment
- ❖ Agriculture Impact Assessment
- ❖ Wetland Impact Assessment

SPECIALIST STUDIES CONDUCTED	RECOMMENDATIONS
Geohydrological Impact Assessment	Monitor groundwater levels during operations to detect potential drawdown and implement controlled pumping measures where necessary.
Palaeontology Impact Assessment	Care must be taken during the grading of roads, digging of foundations and removing topsoil, subsoil and overburden or blasting of bedrock if applicable. The following should be conserved: if any palaeontological material is exposed during digging, excavating, drilling or clearing SAHRA must be notified. All drilling activities must be stopped, a 30 m no-go barrier constructed, and a palaeontologist should be called in to determine proper mitigation measures.
Agriculture Impact Assessment	Minimize compaction during the stockpile phase by keeping stockpile soil loose and limit stockpile height to 2-3 meters height, to limit internal soil compaction (Coaltech: chamber of mines, 2007)
Wetland Impact Assessment	A field visit to ground truth and assess the wetland and delineate its borders/zones is recommended. This ground truthing assessment exercise will be able to recommend and provide appropriate measures and way forward to minimise impacts. This shall be conducted by a wetland or aquatic specialist.
Terrestrial Impact Assessment	An Alien Invasive Species Management Plan should be compiled and implemented during construction phase. Furthermore, a pre-construction walkthrough by an Ecologist is recommended in order to determine if there are any species of conservation concern, and to provide relevant recommendations.

POTENTIAL IMPACTS SUMMARY (POSITIVE)

Environmental Aspects	Potential Impacts	Management and Mitigation Measures
Socio-economic	<p>Job creation: Clay prospecting can create employment opportunities for local communities.</p>	<p>Prioritize local employment and provide training and development opportunities. Skill development programs to enhance local capacity.</p>
	<p>Economic growth : The discovery of clay deposits can attract investment, stimulate local economic growth, and contribute to the municipality's revenue base.</p>	<p>Implement local procurement policies to support local business. Support enterprise development initiatives to promote local entrepreneurship.</p>
	<p>Increased government revenue: The municipality and national government can benefit from tax revenues, and other income generated from clay prospecting.</p>	<p>Ensure tax compliance and contribute to government revenue.</p>
	<p>Local business opportunities: Clay prospecting can create opportunities for local businesses, such as transportation, accommodation, and supply services.</p>	<p>Support local supplier development initiatives. Facilitate market access for local business.</p>
	<p>Potential for value- added products: Clay deposits can be used to produce value-added products, such as ceramics, bricks, and tiles which can create additional economic opportunities and stimulate local industrial development.</p>	<p>Develop business plans to produce value-added products, including market analysis, financial projections, and operational plans.</p>

CONCLUSION

- Based on the information provided, it is concluded that the application for a prospecting right application for general clay has the potential to yield significant economic benefits while minimizing environmental impacts.
- The proposed prospecting activities are expected to contribute to the local economy.
- However, it is acknowledged that the proposed activities may have potential environmental impacts.
- To mitigate these impacts, the applicant propose to implement various management and mitigation measures including Environmental Management Plans, Environmental Management Programme and Specialist studies recommendations.

THANK YOU FOR YOUR TIME!

DISCUSSION.

ENVIRONMENTAL ASSESSMENT
PRACTITIONER

PROSPECTING RIGHT
APPLICANT



011 432 0062



info@vahleNgweadvisory.co
.za



www.vahleNgweadvisory.co.
za



238 Voster Ave, Glenvista
Ext 5, Johannesburg
South, 2091

Appendix 3F:

Public participation meeting minutes

PUBLIC PARTICIPATION MEETING MINUTES

PUBLIC PARTICIPATION PROCESS OF AN APPLICATION FOR ENVIRONMENTAL AUTHORISATION FOR A PROSPECTING RIGHT FOR COAL TO CONSULT DRAFT BASIC ASSESSMENT REPORT IN TERMS OF REGULATION 41- 44 OF THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATION, 2014 (AS AMENDED) READ WITH THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT 107 OF 1998) (AS AMENDED) IN RESPECT OF THE REMAINING EXTENT, PORTIONS 1 AND 11 OF THE FARM DOORNPOT 458 KR: SITUATED IN THE MAGISTERIAL DISTRICT OF BELA-BELA/WATERBERG, LIMPOPO PROVINCE.

Date: 29 January 2025

Company: Aquarella Investments 389 (Pty) Ltd, DMRE Ref No: LP 30/5/1/1/2/ 15699 PR

Venue: Open Day

Time: 11:59 am - 13:50 pm

MEETING AGENDA

1. Opening and Introduction
2. Purpose of the meeting
3. Presentation: Draft Basic Assessment Report
4. Discussions
5. Closure

1. OPENING AND INTRODUCTION

Mr. Sunday Mabaso explained that VahleNgwe Mining advisory and consulting is an Independent Environmental Assessment Practitioners (EAP)(consultant) appointed by Aquarella Investments 389 (Pty) Ltd the “applicant” in terms of regulation 12 of the Environmental Impact Assessment Regulation, 2014 to facilitate an application for an Environmental Authorisation (EA) for a prospecting right.

2. PURPOSE OF THE MEETING

Mr. Sunday Mabaso explained that the purpose of the open day was because Aquarella Investment applied for a prospecting right simultaneously Environmental Authorisation for Clay, as a result, they wanted to consult the draft Basic Assessment Report, to provide Interested and Affected Parties (I&APs), and adjacent farmers with sufficient information about the proposed prospecting project, and to give them an opportunity to comment, raise concerns, and to contribute towards the process.

3. PRESENTATION

Mr. Mabaso gave a brief background presentation to the Interested Affected Parties (I&APs) and adjacent farmers.

4. DISCUSSIONS (Q &A)

After the brief background presentation, the discussion progressed to an interactive session in which the adjacent farmers were given an opportunity to ask questions, make comments, and express their opinions, concerns for incorporation in the proposed prospecting application.

NAME OF THE PARTICIPANT	COMMENTS/ISSUES	RESPONSES
Gareth Dorset Farm	Is it open cast?	<p>Sunday Mabaso</p> <p>Yes, it is open cast.</p> <p>They only mine when they need a stock and take it for their ceramic businesses, so at times there is no mining, and when it's wet and full of water, they don't mine because their machinery can't move and clay becomes difficult to mine.</p>
	What do they use water for in the mining?	<p>Sunday Mabaso</p> <p>They actually don't utilize water on site.</p>

	Is it for normal consumption?	Sunday Mabaso Indeed, they don't go deep to possibly affect ground water.
MJ de Jager	Is Aquarella going to bring more employees into this project? Because we are concerned about the level of crime in our area. We don't support the project unless you manage the influx of people causing crime.	The question is noted, and it will be addressed in the CRR.
J de Jager	Are they going to use borehole water? Because we rely on boreholes here?	The question is noted, and it will be addressed in the CRR.

5. CLOSURE.

At 13:50, the open day was officially closed after visiting Mr. Lardus Erasmus “the landowner’s” for consultation, however there was no response.

Appendix 3G:

Attendance Register

Appendix 3H:

Comments and Response Report

Interested and Affected Parties		Date Comments Received	Issues and/or comments raised	EAP responses
Names	Consultation Method			
Gareth Rhodes	Door to door	29 January 2025	Is it open cast?	Sunday Mabaso Yes, the prospecting right if it graduates to a mining right, then they will use an open cast mining method. The applicant will only mine when they need a stock and take it for their ceramic businesses, so at times there is no mining, and when it's wet and full of water, they don't mine because their machinery can't move, and clay becomes difficult to mine.
M.J de Jager	Door to door	29 January 2025	Is Aquarella going to bring more employees into this project? Because we are concerned about the level of crime in our area. We don't support the project unless you manage the influx of people causing crime.	Sunday Mabaso The applicant plans to hire a certain number of employees. They are willing to take some of the employees from their Mining operation adjacent to the prospecting application area. So, the level of crime might not increase.
J de Jager	Door to door	29 January 2025	Are they going to use borehole water? Because	No, the applicant is going to use water from the

			we rely on boreholes here?	local municipality, for domestic purposes only.
Ian Jansen van Rensburg	Email	11 November 2024	We are a neighbouring owner, and the prospecting activities may well impact upon our water source.	Dimakatso Leholi A Geohydrological Impact Assessment was conducted and the specialist recommended that the applicant should implement the following mitigation measures for this raised aspect: <ol style="list-style-type: none"> 1. Regularly monitor groundwater quality for early detection of contaminants and immediately address deviations from baseline conditions. 2. Implement stormwater management systems to prevent contaminated runoff from entering nearby streams.
			We would like full copies of all scoping reports, basic assessment reports and environmental	Dimakatso Leholi A copy of a draft BAR was sent via email and a final copy of the BAR and EMPr

			impact assessment reports.	will be shared to you also.
Lardus Erasmus (Landowner)	Email	08 November 2024	Portion 11 of the Farm Doornput 458 KR is a wetland and critical biodiversity area 1 where no mining or prospecting should be conducted on any portion of this property. The same applies for certain areas of portion 1 of Farm Doornput 458 KR.	Dimakatso Leholi According to the Desktop Wetland Assessment conducted, the area indeed has a seep wetland. A 100m buffer will be adhered to in order to protect the wetland.
Jan Louw (Voltaia SA)	Email	06 November 2024	Environmental protection: adherence to NEMA standards and effective pollution controls.	Dimakatso Leholi The EMPr includes measures includes: <ol style="list-style-type: none"> 1. Air quality management through conducting air monitoring and implementing dust suppression measures 2. Water quality management: Conducting water quality monitoring to determine baseline conditions. 3. Waste management: A waste

				management plan to minimize, reuse and recycle waste.
			Soil and water impact: concerns over soil erosion, dust generation, water contamination, and site disturbance mitigation.	Dimakatso Leholi <ol style="list-style-type: none"> 1. Temporary erosion control measures such as berms should be used to protect the disturbed soils during the construction phase until adequate vegetation has been established. 2. Bare soils within the access roads should be regularly dampened with water to suppress dust during the construction phase, especially when strong wind conditions are predicted according to the local weather forecast.
			Rehabilitation plans: emphasis on restoring the	Dimakatso Leholi

			area post-prospecting to support Solar Springs PV continuity.	Concurrent rehabilitation will be put in place. Re-vegetation: planting native species to restore vegetation and prevent soil erosion. Regularly monitor the area and perform maintenance tasks to ensure rehabilitation success.
			Stakeholder communication: request for regular updates and consultation to manage their inter-project impacts. Given the interconnected nature of both projects on Portion 11, consistent updates and clear lines of communication will help ensure that any potential conflicts can be proactively managed	Dimakatso Leholi According to the Public Participation Process, the I&APs should be provided with all relevant documentations.
Gareth Rhodes	Email	05 November 2024	Increased traffic volume.	Dimakatso Leholi Traffic Control Measures: Install traffic signs and markings: 1. Ensure clear signages and road markings to guide

				<p>traffic and prevent accidents.</p> <p>2. Assigning traffic marshals: Train personnel to direct traffic ensuring safe and efficient movement.</p>
			Increased crime.	<p>Dimakatso Leholi Personnel Management: Background checks should be conducted on all employees, contractors and visitors. Community Engagement: Engage with local communities to build trust and encourage cooperation. Collaboration with law enforcement: Foster relationships with local enforcement agencies to ensure effective response to incidents.</p>
			Polluted water (underground water).	<p>Dimakatso Leholi Water quality management: Conducting water quality monitoring to determine baseline conditions.</p>
			Potential increase in flash flooding or high volumes	<p>Dimakatso Leholi</p>

			<p>of water eroding my property.</p>	<p>An emergency preparedness response plan will be put in place to respond to flooding events, including evacuation procedures, emergency contact information and communication protocols. Development of a water management plan to manage water during flooding events, including water diversion, storage and disposal.</p>
			<p>Increase in crop pest control (porcupines, pigs, kudus)</p>	<p>Dimakatso Leholi Personnel will be trained on Integrated Pest Management strategies; pesticide use and environmental protection.</p>

Appendix 3I:

Proof of Consultation with Landowner and Landowner's Response

Re: Letter of Responses: Draft EA/EMPr - Applications for EA and PR - Portions of the Farm Doornput 458 KR - Applicant Aquarella Investment 389 (Pty) Ltd

From info <info@vahlengweadvisory.co.za>

Date Thu 12/5/2024 1:00 PM

To

2 attachments (6 MB)

Regulation 2.2 Amended.pdf; Doornput SAMRAD.png;

Dear

As per request of response of your letter dated 04th December 2024 with reference to the exclusion of the remaining extent of the Farm Doornput 458 KR.

There was an omission of the remaining extent in the Regulation 2(2) and therefore it was amended to include the remaining extent, further see the attached amended Regulation 2(2) and the picture of the property captured on SAMRAD system. The BAR was sent because of the amendments made from the sketch plans.

Please feel free to contact us if you have any questions or enquiries in regards to the Prospecting Right application.

Best regards,

From: info <info@vahlengweadvisory.co.za>

Sent: Wednesday, 04 December 2024 22:09

Cc: info <info@vahlengweadvisory.co.za>

Subject: RE: Letter of Responses: Draft EA/EMPr - Applications for EA and PR - Portions of the Farm Doornput 458 KR - Applicant Aquarella Investment 389 (Pty) Ltd

Dear I&AP (Minaar)

Comments received and acknowledged.

We'll address the concerns with priority and revert soon, further, we'll include such in the CRR and make available the final BAR with the concerns addressed.

Kind Regards



Email Disclaimer:

This transmission (including any attachments) may contain confidential information, privileged material (including material protected by the solicitor-client or other applicable privileges), or constitute non-public information. Any use of this information by anyone other than the intended recipient is prohibited. If you have received this transmission in error, please immediately reply to the sender and delete this information from your system. Use, dissemination, distribution, or reproduction of this transmission by unintended recipients is not authorized and may be unlawful.

Fr

Sent: Wednesday, 04 December 2024 21:57

To: info <info@vahlengweadvisory.co.za>

Subject: Re: Letter of Responses: Draft EA/EMPr - Applications for EA and PR - Portions of the Farm Doornput 458 KR - Applicant Aquarella Investment 389 (Pty) Ltd

Dear EAP,

Find attached Letter of Responses re the contents of the Annexures as attached to your E Mail dated 28 November 2024 written on behalf of my client, details of which are referred to in my said letter.

Groete/Regards

JM Property and Mineral Rights Consultants

This E Mail is intended solely for the use of the individual or entity named above as it may contain information that is confidential and privileged. If you are not the intended recipient be advised that any dissemination, distribution, or copying of this E Mail is strictly prohibited. We cannot be held liable by any person, other than the addressee, in respect of any opinions, conclusions, advice or other information contained in this E Mail.

Die Skrywer ondersteun die behoud van Afrikaans as akademiese-, kulturele- en volkstaal.

On 25 Nov 2024, at 12:15, info <info@vahlengweadvisory.co.za> wrote:

Good day,

Your client's concerns are noted and we would like to meet and consult with your client to discuss the Environmental Authorisation application for a prospecting right in detail and get a consent for our client to undertake the proposed project on the land as follows:

Date: 28 November 2024

Time: 12:30 pm

Venue: Cyferfontein Mine (next to Imerys)(The mine behind Doornput farm)

Please let us know if the date is suitable for you. Looking forward to meeting with you.

Kind regards,
Vahlengwe Mining Advisory and Consulting

Sent: Thursday, 21 November 2024 23:22

To: info <info@vahlengweadvisory.co.za>

Subject: Letter of Responses: Draft EA/EMPr - Applications for EA and PR - Portions of the Farm Doornput 458 KR - Applicant Aquarella Investment 389 (Pty) Ltd

Dear EAP,

I attach, on behalf of my clients, Japnine Boerdery CC, Doornput Farm (Pty) Ltd, and Leeuwdoorns Farm (Pty) Ltd the Letter of Responses re the above.

Kindly acknowledge receipt.

Groete/Regards
JM Property and Mineral Rights Consultants

This E Mail is intended solely for the use of the individual or entity named above as it may contain information that is confidential and privileged. If you are not the intended recipient be advised that any dissemination, distribution, or copying of this E Mail is strictly prohibited. We cannot be held liable by any person, other than the addressee, in respect of any opinions, conclusions, advice or other information contained in this E Mail.

Die Skrywer ondersteun die behoud van Afrikaans as akademiese-, kulturele- en volkstaal.

<Doornput_pwp.pdf><Acceptance Letter 15699 PR- Aquarella Investments 389 PTY LTD.pdf><Draft Basic Assessment Report Doornput 458 KR.pdf>

PER E MAIL:

Attention: Mr. Sunday M Mabaso

4 December 2024

The Environmental Assessment Practitioner
Vahlengwe Mining Advisory and Consulting (Pty) Ltd

COMMENTS AND RESPONSES TO DRAFT BASIC ASSESSMENT REPORT AND DRAFT ENVIRONMENTAL MANAGEMENT REPORT: APPLICATIONS FOR A PROSPECTING RIGHT FOR CLAY AND AN ENVIRONMENTAL AUTHORISATION – THE REMAINING EXTENT, PORTIONS 1, AND 11 OF THE FARM DOORNPOT 458 KR, LIMPOPO PROVINCE
APPLICANT: AQUARELLA INVESTMENTS 389 (PTY) LTD
INTERESTED AND AFFECTED PARTIES: JAPNINE BOERDERY CC, DOORNPOT FARM (PTY) LTD AND LEEUWDOORNS FARM (PTY)
DEPARTMENT OF MINERAL RESOURCES AND ENERGY REFERENCE NO: LP30/5/1/1/2/ 15699 PR

My clients as Affected and Interested Parties have been registered on your data base for the Project as requested in my Letter of Responses dated 21 November 2024.

I refer to your E Mail dated 25 November 2024 to which was attached copies of the Acceptance Letter of the DMRE dated 13 September 2024, the draft Prospecting Work Programme (“PWP”), and a draft Basic Assessment Report and draft Environmental Management Programme Report (“EMPr”), hereinafter refers to as (“the second BAR/EMPr”).

I also refer to my E Mail dated 26 November 2024 in reply to the contents of your E Mail dated 25 November 2024.

I will now deal with the documents as received as follows:

DRAFT PWP

It is noted in paragraph 2 of the draft PWP that the Regulation 2(2) Map referred to as Figure 1 indicates the proposes prospecting area as “*Portions of Portions (sic Poition) 1 and 11 of the Farm Doornput 458 KR*”.

The Locality map referred to as Figure 2 also refers to *“Portion of portions 1 and 11 of the farm Doornput 458 KR”*

There are no co-ordinates in both maps to identify the portions of the registered Portions of the Farm Doornputs where the prospecting area are proposed, and the boundary lines of Portions 1 and 11 are not indicated on these maps.

It is clear that these maps, especially with regards to the regards to co-ordinate points to indicate the portions of Portions which form the proposed prospecting area, are contrary to the provisions of Regulation 2(2) of the MPRDA, and does not meet the statutory requirements.

THE ACCEPTANCE LETTER

The description of the properties in the Acceptance Letter in terms of which the application for a prospecting right for clay (general) was accepted by the Regional Manager, Limpopo Region of the DMRE refers to *“ THE REMAINING EXTENT, PORTIONS 1 AND 11 OF THE FARM DOORNPOT 458KR”*

THE DRAFT BAR/EMPR

The draft BAR/EMPr to which we have submitted responses as per our Letter of Responses dated 21 November 2024 also refers on page vii to *“Aquarella Investments 389, hereafter referred as ‘the applicant’ or ‘Aquarella’ has applied for a prospecting right for clay(general) in respect of the remaining extent, portions 1 and 11 of the Farm Doornput 458 KR”* , although no Regulation 2(2) map was included in the draft BAR/EMPr as was pointed out in our Letter of Responses as referred to above.

CONCLUSSION

The Sketch Plans as included in the PWP do not meet the statutory provisions of Regulation 2(2) of the MPRDA;

The Sketch Plans as referred to above also do not meet the requirements of Regulation 7(b) of the MPRDA as the Sketch Plans included in the PWP must also conform to the requirements of Regulation 2(2) of the MP

The PWP does not address any proposed prospecting in respect of the portions which do not form part of the proposed prospecting area, including the Remaining Extent of the Farm

Doornputs (“the excluded portions), with the consequence that the Applicant is not entitled to apply for an environmental authorisation on the excluded portions of the relevant Properties, as no listed activities are allowed to take place on the excluded properties.

THE SECOND DRAFT BAR/EMPR

There is no explanation from you of the reason why a second BAR/EMPr was attached to your E mail under reply.

We have comprehensibly responded and commented on the first draft BAR/EMPR which was referred to in your Notice when you announced the prospecting project and called for affected and interested parties to registered on or before 8 November 2024.

REPLY TO RESPONSES

You must reply to the responses as set out in our Letter of Responses in the Schedule attached to the Final BAR/EMPr as required in terms of Regulation 44 (1) which states *“The applicant must ensure that the comments of interested and affected parties are recorded in reports and plans and that such written comments, including responses to such comments and records of meetings, are attached to the reports and plans that are submitted to the competent authority in terms of these Regulations”*.

We are awaiting the Final BAR/EMPr with your responses.

WITHOUT PREJUDICE

The letter is written without prejudice to the rights of my client which rights are reserved and remain reserved.

Regards,

A handwritten signature in red ink, consisting of a stylized, cursive name followed by a horizontal line and a small flourish.

PER E MAIL:

Attention: Mr. Sunday M Mabaso

21 November 2024

The Environmental Assessment Practitioner
Vahlengwe Mining Advisory and Consulting (Pty) Ltd

COMMENTS AND RESPONSES TO DRAFT BASIC ASSESSMENT REPORT AND DRAFT ENVIRONMENTAL MANAGEMENT REPORT: APPLICATIONS FOR A PROSPECTING RIGHT FOR CLAY AND AN ENVIRONMENTAL AUTHORISATION – THE REMAINING EXTENT, PORTIONS 1, AND 11 OF THE FARM DOORNPOT 458 KR, LIMPOPO PROVINCE
APPLICANT: AQUARELLA INVESTMENTS 389 (PTY) LTD
INTERESTED AND AFFECTED PARTIES: JAPNINE BOERDERY CC, DOORNPOT FARM (PTY) LTD AND LEEUWDOORNS FARM (PTY)
DEPARTMENT OF MINERAL RESOURCES AND ENERGY REFERENCE NO: LP30/5/1/1/2/ 15699 PR

I act under instructions and a mandate received from Japnine Boerdery CC, Doornput Farm (Pty) Ltd and Leeuwdoorns Farm (Pty) all entities represented by Mr. Johannes Elardus Erasmus. (hereinafter jointly and severally referred to as "my client").

Japnine Boerdery CC is the registered owner of the Remaining Extent of Portion 11 of the Farm Doornput 458 KR.

Doornput Farm (Pty) Ltd is the registered owner of Portion 1 of the Farm Doornput 458 KR.

The above-mentioned two properties fall within the proposed prospecting area, and are hereinafter jointly and severally referred to as ("the affected property").

Japnine Boerdery CC is also the registered owner of the following properties situated adjacent to the affected property, namely, the Remaining Extent of Portion 8 and the Remaining Extent of Portion 9 of the Farm Doornput 458 KR.

Leeuwdoorns Farm (Pty) Ltd is the registered owner of the Remaining Extent of Portion 4 and of the Farm Leeuwdoorns 607 KR.

All the above three properties are hereinafter jointly and severally referred to as (“the neighbouring property”).

It must be recorded that the affected property and neighbouring property are commercially farmed as a single farming units, meaning that a portion(s) of a property cannot be separated from the whole, otherwise the balance will not form a viable agricultural farming units and businesses.

My client has received the draft Basic Assessment Report (BAR”) and draft Environmental Management Report (“EMPr”).

A. DESCRIPTION OF COMMERCIAL FARMING AND GAME FARMING ON THE AFFECTED PROPERTIES.

My client utilises Portion 11 of the Farm Doornput as a game farm, and this property is situated in an ecological sensitive area, bearing in mind that the Sondella Nature Reserve and Holiday Resort is situated adjacent to this property. A dam and water boreholes also supply water for the game on this property.

Portion 1 of the Farm comprises arable and irrigation land for the planting and harvest of sunflower, sorghum and maize, as well as grazing veld for cattle. A farm homestead with farm infrastructures and water boreholes are also established on this property.

My client will suffer irreparable financial loss and damages due to the proposed establishment of exploration drilling areas on its affected property, and the subsequent establishment of an open cast clay mine thereon, and will not in future be able to produce crops, and fodder for its livestock, or keep game on the affected property, with the consequence that it will suffer financial damage, loss and hardship.

B. AFFECTED AND INTERESTED PARTIES IN TERMS OF APPLICABLE LEGISLATION.

My clients, as landowners and commercial farmers of the above-mentioned affected property and neighbouring property, are Interested and Affected Parties in terms of the provisions of the Mineral and Petroleum Resources Development Act, No. 28 of 2002 (“MPRDA”), as amended by the Mineral and Petroleum Resources Development Amendment Act, No. 49 of 2008 (“MPRDAA”) the Environmental Impact Assessment Regulations, No. R 982 of 4 December 2014 as amended by GN 326 dated 7 April 2027

(EIAR”), read with the National Environmental Management Act, No.107 of 1998 (“NEMA”), and the National Water Act, No. 36 of 1998 (“NWA”).

C. REGISTRATION ON THE DATA BASE FOR THE PROJECT

You as the Environmental Assessment Practitioner (“ EAP”) must register my client as Interested and Affected Party as such, and put its detail, and my firm as its authorized consultant, on your data base for this Project, and notify and advise the writer, as its authorised consultant, with all public consultation notices and future documents and correspondences regarding the consultation process.

D. REQUEST FOR ADDITIONAL DOCUMENTATION RELEVANT IN TERMS OF THE MPRDA AS AMENDED BY THE MPRDAA

Your attention is drawn to the provisions of Regulation 40(2) of the EIAR which states that *“The public participation process contemplated in this regulation must provide access to all information that has or may have the potential to influence any decision with regard to an application...”*

In order for my client to be placed in apposition to ascertain how its rights as land owner and commercial farmer may be affected by the above-mentioned applications, and to be able to study and to scrutinize the contents of the above statutory required documentation, you are requested to provide my client with copies of the following documentation which the Applicant has submitted to the DMR when it has applied for a prospecting right in terms of the provisions of Section 16 of the MPRDA, namely:

1. Acceptance Letter received from the Department of Mineral Resources confirming the acceptance of the application for an Environmental Authorisation;
2. Draft Prospecting Work Programme;

It must be borne in mind that the Applicant has applied for a prospecting right in terms of the provisions of the MPRDA and the MPRDAA, and my client as affected and interested party per definition in that Act is entitled to all the documents submitted by the Applicant pertaining to such application in order for my client to ascertain how and to what extent its rights as landowner will be affected by the proposed prospecting operations.

My client has the right in terms of Section 10 of the MPRDA to object against the application for a prospecting right by the Applicant, but his right to object is frustrated by the fact that the Applicant has not provided as yet the above-mentioned documents.

A plan drawn in terms of regulation 2 of the Regulations of the MPRDA as amended by the MPRDAA, and which must contain the information as set out in regulation 2(2) (a) to (h) must be provided to my client, bearing in mind that the Applicant has applied for a prospecting right, and my client is entitled to have knowledge and detail of the proposed prospecting area.

E. OBJECTIONS AGAINST THE GRANTING OF A PROSPECTING RIGHT

My client, not only as affected and interested party, but as part of the local farming community in general, objects against the granting of a prospecting right and an environmental authorisation to the Applicant for the following reasons, based on the fact that prospecting is a precursor to mining:

1. Prime agricultural lands will be totally loss for future food production, with the consequence that food security for future generations will be under risk. In this respect it should be noted that prime agricultural land must be protected and preserved;
2. The game farming area and the nature reserve area will sacrifice the tranquillity which is common to nature reserve areas, and the local tourist attraction will deplete, especially if a clay mine is establish right on the doorstep of these nature reserve and game areas. It is common cause that game will avoid these areas or just disappear, especially with regards to Portion 11 of Doornput.
3. The development of more mines in the area will have an detrimental effect on water sources, and will most likely enhance the risk of water depletion and water pollution. Water is of paramount importance to the farming communities and landowners for their respective farming operations;
4. Farm labours, and labourers in the tourist businesses and their dependants will suffer financially should farming businesses and enterprises have to lay off workers due to the scaling down or shutting down of businesses because of the taking up of agricultural land due to mining operations;

5. My client, will suffer irreparable financial loss and damages due to the proposed establishment of exploration drilling areas on its affected property, and the subsequent establishment of an open cast clay mine on its affected property, and will not in future be able to produce crops, and fodder for its livestock, with the consequence that it will suffer financial damage, loss and hardship as pointed out above.

Sustainable development is a concept enshrined in section 24 of the Constitution in addition to NEMA. It entails the integration of social, economic, and environmental factors into planning, implementation, and decision-making for the benefit of present and future generations. These principles have been overlooked when applications for the prospecting right and environmental authorisation have been made by the Applicant.

It is common cause that prime quality agricultural land should normally be protected against permanent development or irreversible damage, which is certainly not the case if this proposed mine, and other proposed mines, are developed on prime and high potential agricultural areas. Mines in the area will make agricultural activities, and farming in general, unsustainable, for the present, and for the future.

It is submitted that the risk of sterilising viable commercial agricultural land, and farming enterprises in general, as well as nature and game areas, as referred to above, and the ability of providing food security for present and future generations far outweighs the risk of not proceeding with the proposed project which has detrimental environmental, social, economic, and cultural impacts as pointed out above, present and in future.

Regulation 1(d) of the EIA Regulations states that when identifying and confirming the preferred site through a detailed site selection process such must include an impact and risk assessment of the process inclusive of cumulative impacts.

“Cumulative Impact” is defined in Regulation 1 of the EIA Regulations as: *“in relation to any activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities.”*

It is the my client’s submission that it is crucial to understand the context within which the impact will occur. For example, if the context for the area is to protect agricultural land use potential, the anticipated cumulative impacts associated with the establishment of exploration drilling areas and a future mine will be significant.

F. COMMENTS AND RESPONSES TO DRAFT BAR AND DRAFT EMPr

The following comments and responses to the draft BAR and Draft EMPr are herewith documented for inclusion into the final BAR and EMPr.

G. NEED AND DESIRABILITY OF THE PROJECT

It is common cause that prospecting is undertaken with a view to find economical mineable clay reserves with a view to mine and extract the clay for commercial gain, and that an application for a mining right, as a logic consequence, will be made if the exploration results warrant the mining of clay reserves. Comments and concerns with regards to future mining by the Applicant must therefore be considered by the Applicant as part of the concerns raised during the prospecting phase of the project. The Applicant should provide interested and affected parties with a well-motivated reason why clay should be mined in future in, on, and under the proposed prospecting area.

The need and desirability which the Applicant is using as motivations for the granting of a prospecting right and an environmental authorisation, as referred to on pages 13 of the draft BAR, are very generalized, and it cannot be used as a motivation that the future mining of clay on the affected property will be beneficial and that *“The success of the proposed prospecting activities and quantification of resources would lead to a potential viable economic mining activity. This will consequently boost the countries’ current struggling economy, should the project advance to the mining phase. Mining will significantly contribute to local economic growth through direct job creation, future business opportunities, royalties, also contributing to the national gross domestic product and tax revenues.”*

The Applicant further uses as a motivation for the need and desirability of the proposed clay exploration *“that significant benefits from the area, should minerals be discovered, will accrue to the immediate area, the sub-region, and the Limpopo Province”.*

There is no basis and motivation for need and desirability that *“These benefits must be balanced against the costs of the area, including the impacts to the landowner. There is no reason why this proposed project should not be considered at this time, given the high likelihood of a reserve as demonstrated by other resources discoveries in the area”*, if the socio- economic impact of commercial and game farming, and the socio- economic impact of

the tourist industry in the area have not been researched in terms of an environmental specialist study in this sphere of discipline.

In terms of the provisions of Section 23(2)(b), Chapter 5 of the National Environmental Management Act, No.107 of 1998 ("NEMA"), the general objective of integrated environmental management is, inter alia, to *"identify, predict and evaluate the actual *and potential impact on the socio-economic conditions...with a view to minimizing negative impacts..."*

In the absence of such an socio-economic study it is impossible to balance the need and desirability between a proposed clay mine compare to the need and desirability of commercial and game farming, and the tourist industry in the area of interest.

H. GEOLOGICAL RECONNAISSANCE SURVEY

It is noted on page 5 of the BAR that in respect with proposed geological reconnaissance surveys to be undertaken, namely that *"A geological reconnaissance survey of the proposed area will be undertaken to assess the potential coal deposit and to comparatively evaluate the preferred deposit. This survey will generally be carried out for examination of the general geological features and characteristics of a region"*.

The Applicant is alluded to the definition of *"prospecting"* in the Mineral Petroleum Resources Development Act, No.28 of 2002 as amended ("MPRDA") which is defined as *"the intentional searching for any mineral by means of any method which *disturbed the surface or subsurface of the earth..."*

"reconnaissance operations" mean, in terms of the definition of the MPRDA *"any operation carried out in connection with the search for a mineral...by geological, * geophysical and photogeological surveys, and includes any remote sensing techniques, * but does not include any prospecting...operation"*

* Writer's underlining

It is thus clear that geological reconnaissance surveys do not disturbed the surface or subsurface of the earth and cannot be carried out under a granted prospecting right, as such surveys per definition are not prospecting.

Reconnaissance operations can only take place if the Applicant has applied and be granted a Reconnaissance Permit in terms of the provisions of Section 13 of the MPRDA, in which case

the Applicant has to apply for an environmental authorisation to the leading authorities, namely the Department of Mineral Resources and Energy (“DMRE”), which application must be subjected to the public consultation process as envisaged in terms of the EIAR.

Affected and Interested Parties, including my client, have not been notified of such applications, and consequently geological reconnaissance surveys are not legally permitted over the proposed prospecting areas or surrounding areas, which include my client’s affected properties.

My client will not allow any geological reconnaissance surveys over the affected properties.

It is noted that the quoted extraction in the BAR refers to “coal”. Affected and Interested Parties, including my client, are equally unaware that the Applicant has applied for a prospecting right for coal on the affected property. This aspect needs to be clarified by the Applicant.

I. LISTING ACTIVITIES

It is noted that the listing activities which requires an environmental authorisation as referred to in the schedule under paragraph 5.1 on page 4 of the draft BAR, have not been described as per the project description, but as per the wording of the relevant Government Notice, which is contra the provisions of Regulation 3(1)(d)(i) and (ii) of Appendix 1 of the EIAR which states:

3(1(d) a description of the scope of the proposed activity, including—

(i) all listed and specified activities triggered and being applied for; and

(ii) a description of the activities to be undertaken including associated structures and infrastructure;

It is noted on page 4 and 5 of the draft BAR that “mobile site offices” and “site camp offices” will also established on the proposed prospecting site. These listed activities have not been included in the listing activity schedule, and is contra the provisions of the above quoted Regulation of the EIAR.

J. LOCALITY AND LISTING ACTIVITIES PLANS

Regulation 3(1) read with regulation 3(1)(c) of Appendix 1 of the EIAR states –

3(1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include—

3(1)(c) a plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale.

No Plans as required in terms of the above quoted regulations have been included in the BAR. There is also no Plan which indicates the infrastructure of a drill site.

K. PROPOSED EXPLORATION DRILLING

The following statement on page 6 of the BAR, namely *“At least ten (10) boreholes will be drilled using a grid drilling pattern at a maximum depth of 50 m. The exact of respective borehole positions will heavily rely on the data received from geophysical survey. The spacing between boreholes shall be decreased appropriately where significant quality changes occur in structurally complex area and along the seam sub-outcrop”*.

It is clear from the above statement that it is envisaged by the Applicant that more than 10 exploration drill hole can be drilled, and that the spacing between drill holes can be nearer to each other.

Reference is made on page 7 of the BAR that *“A mineral resource estimation will be conducted and compiled into a Mineral Resources and Reserves Statement to be signed by a competent person. The estimation will include the tonnages and quality of the mineral. Should the results prove positive, the preparations for mining right application and any other relevant applications will commence”*.

* writer’s underlining

From the underlining paraphrase inference can be drawn that the Applicant will prepare a Mineral and Resource and Reserves Statement in accordance with SAMREC Code.

The definition of a “Mineral Resource” *“in terms of the SAMREX code “Is a concentration or occurrence of solid material of economic interest in or on the Earth’s crust in such form,*

grade or quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling”.

* writer’s underlining

The SAMREX Code also provides how the geological evidence obtained from exploration drilling must be obtained, namely, *“Geological evidence and knowledge required for the estimation of Mineral Resources must include sampling data of a type, and at spacings, appropriate to the geological, chemical, physical, and mineralogical complexity of the mineral occurrence, for all classifications of Inferred, Indicated and Measured Mineral Resources”.*

From the aforesaid it is common cause that the criteria as referred to in the above extraction of the SAMREX Code cannot be achieved by the drilling of at least 10 exploration boreholes over a proposed prospecting area of *“about 1 432,19 ha”*. It is therefore clear that infill drilling will take place in order to satisfied the requirements of a Mineral and Resource and Reserves Statement in accordance with SAMREC Code, although the BAR is silent on this aspect.

It is in the light of the above of paramount importance that the Applicant provides a copy of its Prospecting Works Programme in order for my client to respond and to comment on the proposed Mineral Resource Estimation as referred to on page 7 of the BAR.

L. LOCALITIES OF EXPLORATION DRILL SITES

It is clear that the amount of drill holes could, and will likely, exceed 10 boreholes as indicated in the BAR, and because the location of the boreholes is unknown at this stage, it is therefore practical possible that exploration drill holes could be established within arable lands, irrigation lands and in game protection areas on the affected property.

M. THE AREA OF THE PROPOSED EXPLORATION SITES

It is noted in Table 5.1 of the BAR that a total area which will be disturbed and affected by the drilling operations, is indicated as 0,1 hectares for the total 10 drill sites.

The area of each drill site must be clearly indicated, including the areas outside the drill site, in square meters. The actual size of a drill site is not clear from the Table as *“Mobile offices and portable ablutions will be installed on the established site”*.

If one takes into account the area of the tracks to the exploration drill sites, and the movement of equipment from one site to another, and the fact that machinery and vehicles cannot be restricted to just the drill site and road tracks, which is a common fact from past experiences, especially because the location of the drill sites are not yet determined.

Serious degradation of the environment and damage to cultivation and grazing lands on the affected property will occur. This degradation will enhance even further if the proposed boreholes exceed the proposed initial 10 boreholes.

Serious degradation of the environment will occur when site clearing of the initial ten borehole sites, and any addition borehole sites are made by a bulldozer. *“The applicant intends to utilise a bulldozer to clear vegetation for site establishment and the construction of the access roads.”* This method of site clearance will inevitably destroy natural and indigenous trees and plants. Mitigation measures for this type of site clearance has not been addressed in the EMPr.

Vehicle tracks will inevitably cause damage to the grazing areas and in arable lands.

My client will not allow any access in principle to it affected property during the raining, ploughing and harvest seasons. This statement must not be construed in any manner whatsoever that my client agree to allow exploration activities on the affected property. The contrary is rather true. Equally so, my client will not allow the establishment of roads or tracks on the affected property.

It is common cause that the soil within the drill sites and access tracks will be compacted during exploration activities, as well as the soil caused by the drill tracks. The mitigation measures as proposed in the EMPr, namely to revegetated the exploration sites when such sites are situated in grazing veld is inadequate, as the compacted soil must first be ripped before revegetation methods can take place.

In the event that proposed drill holes are situated in arable lands, which possibility cannot be ignored, the drill site area will increase, because the “wenackers” (turning points of farming machinery will take up more lands where crops cannot be planted and harvest, as well as the tracks caused by the exploration drill as it moves from drill site to drill site.

It is a common fact that the contours established in the arable land to prevent soil erosion, and to create a planting bed will be destroyed. In short, the direction of planting and harvesting will be disrupted which will also increase the area affected by the proposed exploration drilling.

Serious damage to irrigation lands, and their pivot systems will be caused if exploration drilling will take place in irrigation lands. My client will not under any circumstances allow exploration drilling in irrigation lands.

The mitigating measures as proposed throughout the EMPr only deal with the rehabilitation of vegetation and does not deal with rehabilitation of irrigation and arable lands, and game protection areas It is clear that the EMPr is inadequate if exploration drilling is increased and exploration drilling takes place in irrigation lands, arable lands and in game protection areas.

My client will suffer irreparable loss and damage due to the proposed exploration drilling as explained above.

In the case *Earthlife Africa Johannesburg v The Minister of Environmental affairs and Others* (2017) All SA 519 (GP) at paragraph 107 the Court emphasized the need for a full assessment of impacts prior to the granting of an Environmental Authorisation.

* writer's underlining

N. PROPOSED DEPTH OF EXPLORATION DRILL HOLLES AND INFLUENCE ON UNDERGROUND WATER SOURCES

It is noted on page 6 in the BAR that “*at a maximum depth of 50 m*”. It is apparent that exploration drilling will be conducted to the aforesaid depths in order to intercept the clay layers.

A Geohydrological Impact Assessment Report was conducted in June 2024 where it was pointed out that the groundwater depth is approximately 10.5 mbgl. It is therefore clear that the borehole depth will traverse (pass through) the ground water depth.

No reference with regards to the impact on water sources are addressed in the BAR or mitigation measures are proposed to mitigate damage to water sources in the event that drilling pass through into underground water, aquifers or water veins, which is clearly the case in this instance, and causes damage to the underground water strata with the result that depletion or the drying up of water boreholes will occur.

[Leaders in Mining Law Environmental Law Mine Health and Safety](#)

No environmental studies in the above regard has been undertaken and no mitigation in the EMPr has been proposed.

The objections to the granting of the environmental authorisation and prospecting right re the water depletion and quality as referred to in this letter bears reference.

O. ANOMALIES IN THE BAR AND EMPr

The following anomalies appear in the BAR and EMPr, which bears no relevance to the proposed prospecting activities, namely:

Reference is made to “coal” as pointed out,

“Haul roads in use will be subjected to dust suppression management measures.”

“The visible residues of concrete, whether solid or from washings, must be physically removed and disposed of as waste as soon as possible”.

“Supporting local recycling centre and local scrap metal merchant; and Metals such as steel and copper wire will be collected in designated areas prior to removal from site for recycling”.

“Surface water resources (Tugela River) contamination”

It is clear that the above anomalies originated from a different BAR and EMPr, but reference to these anomalies have an influence on the mitigations measures as proposed in the EMPr.

P. FUEL STORAGE AND STORAGE OF HYDROCARBONS ON EXPLORATION SITES

No mitigation measures are proposed with regard to fire hazards due to the fact that prospecting operations will be located in grazing veld and natural bush.

In winter veld fires and burning down of crops are common in the bushveld, especially during the August wind.

Q. CAVEAT

It must not be construed or implied that my client necessarily agrees with the contents of the BAR and EMPr which we do not specifically address in this letter, and my client's rights are reserved to comments in future on any of those issues if it deems it necessary.

R. ADDITIONAL DOCUMENTATION REQUIRED

My client reserves further the right to amplify its responses to the BAR and EMPr when the documents as required and as referred to above have been received.

S. AVAILABILITY OF FINAL EMPr

You are requested to advise my client and the writer when the Final EMPr is available and to make a electronic copy available to the writer and my client.

T. WITHOUT PREJUDICE

The letter is written without prejudice of any of the rights of my client, and all its rights are reserved and remain reserved.

U. ACKNOWLEDGEMENT OF RECEIPT

Kindly acknowledge receipt of the letter and confirm that the necessary information as affected and interested party has been included into your database for this project.

Regards

A handwritten signature in red ink, consisting of a large, stylized initial 'J' followed by a horizontal line and a small flourish.

Johann Minnaar

Appendix 4:

Public Consultation with Departments

Fw: STATE ORGANS CONSULTATION OF THE ENVIRONMENTAL AUTHORISATION FOR COMMENTS

From Mulalo Mafunisa <Mulalo@vahleingweadvisory.co.za>

Date Tue 2/4/2025 9:43 AM

To info <info@vahleingweadvisory.co.za>; Dimakatso Leholi <dimakatso@vahleingweadvisory.co.za>

📎 1 attachment (278 KB)

SIGNED DBAR COMMENTS FOR THE PROSPECTING RIGHTS ON AQUARELLA INVESTMENTS 389 (002).pdf;

Good day colleagues,

Please find attached comments from DFFE for Doornput, Aquarella Investments 15699 PR for your further handling.

Kind regards,



Email Disclaimer:

This transmission (including any attachments) may contain confidential information, privileged material (including material protected by the solicitor-client or other applicable privileges), or constitute non-public information. Any use of this information by anyone other than the intended recipient is prohibited. If you have received this transmission in error, please immediately reply to the sender and delete this information from your system. Use, dissemination, distribution, or reproduction of this transmission by unintended recipients is not authorized and may be unlawful.

F

Sent: Tuesday, 04 February 2025 08:26

To: Mulalo Mafunisa <Mulalo@vahleingweadvisory.co.za>

Subject: RE: STATE ORGANS CONSULTATION OF THE ENVIRONMENTAL AUTHORISATION FOR COMMENTS

Good day Mulalo

The Directorate: Biodiversity Conservation forwarded the comments on the 12/12/2024. Kindly find the attached signed comments for your attention and implementation. Apologies for any inconvenience, should the comments did not make it on your side.

Kind regards,

473 Steve Biko Road|Private Bag X477|Pretoria|001
Cell: 0606295852|Email: lvdlamini@dffe.gov.za
Website: www.environment.gov.za

From: Mulalo Mafunisa <Mulalo@vahlengweadvisory.co.za>
Sent: Monday, 03 February 2025 14:52
To: MMatlala Rabothata <MRABOTHATA@dffe.gov.za>; Lindiwe Victoria Dlamini <LVDlamini@dffe.gov.za>
Cc: Sunday Mabaso <sunday@vahlengweadvisory.co.za>; info <info@vahlengweadvisory.co.za>; Victor Lipuwana <victor@squarellainvest.co.za>; Siduduzo Mdanda <smdanda@ceramic.co.za>; Dimakatso Leholi <dimakatso@vahlengweadvisory.co.za>
Subject: Re: STATE ORGANS CONSULTATION OF THE ENVIRONMENTAL AUTHORISATION FOR COMMENTS

Good day,

I hope this email finds you well.

I am writing to follow up on the consultation of the draft Basic Assessment Report (BAR) dated November 4, 2024, for the Department of Forestry, Fisheries and the Environment (DFFE) to comment in terms of section 24k of the National Environmental Management Act, 1998 (Act no. 107 of 1998, as amended) for an Environmental Authorisation application for a prospecting right for Aquarella Investments 389 (Pty) Ltd, DMRE ref no 15699 PR.

Looking forward to your comments.

Kind regards,



Email Disclaimer:

This transmission (including any attachments) may contain confidential information, privileged material (including material protected by the solicitor-client or other applicable privileges), or constitute non-public information. Any use of this information by anyone other than the intended recipient is prohibited. If you have received this transmission in error, please immediately reply to the sender and delete this information from your system. Use, dissemination, distribution, or reproduction of this transmission by unintended recipients is not authorized and may be unlawful.

From: Mulalo Mafunisa <Mulalo@vahlengweadvisory.co.za>
Sent: Wednesday, 15 January 2025 15:34

Cc: Sunday Mabaso <sunday@vahlengweadvisory.co.za>; info <info@vahlengweadvisory.co.za>; Victor Lipuwana <victor@squarellainvest.co.za>; Siduduzo Mdanda <smdanda@ceramic.co.za>; Dimakatso Leholi <dimakatso@vahlengweadvisory.co.za>
Subject: Re: STATE ORGANS CONSULTATION OF THE ENVIRONMENTAL AUTHORISATION FOR COMMENTS

Good day,

I hope this email finds you well.

I am writing to follow up on the consultation of the draft Basic Assessment Report (BAR) dated November 4, 2024 for the Department of Forestry, Fisheries and the Environment (DFFE) to comment in terms of section 24k of the National Environmental Management Act, 1998 (Act no. 107 of 1998, as amended) for Aquarella Investments 389 (Pty) Ltd, DMRE ref no 15699 PR.

Please see draft Basic Assessment Report attached for your review and comments.

Looking forward to your comments.

Kind regards,



Email Disclaimer:

This transmission (including any attachments) may contain confidential information, privileged material (including material protected by the solicitor-client or other applicable privileges), or constitute non-public information. Any use of this information by anyone other than the intended recipient is prohibited. If you have received this transmission in error, please immediately reply to the sender and delete this information from your system. Use, dissemination, distribution, or reproduction of this transmission by unintended recipients is not authorized and may be unlawful.

Sent: Wednesday, 20 November 2024 16:09

To: Mulalo Mafunisa <Mulalo@vahlengweadvisory.co.za>

Subject: FW: STATE ORGANS CONSULTATION OF THE ENVIRONMENTAL AUTHORISATION FOR COMMENTS

Dear Sir/Madam

DFFE Directorate: Biodiversity Conservation hereby acknowledge receipt of the invitation on the 05 November 2024 to review and comment on the project mentioned on the subject line. Kindly note that the project has been allocated to Mrs M Rabothata and Ms Lindiwe Dlamini (Copied on this email). In addition, kindly share the shapefiles of the development footprints/application site with the Case Officers.

Please note: All Public Participation Process documents related to Biodiversity EIA review and any other Biodiversity EIA queries must be submitted to the Directorate: Biodiversity Conservation at Email for attention of Mr Seoka Lekota.

Kind regards,

Website: www.environment.gov.za

From: Mulalo Mafunisa <Mulalo@vahlegweadvisory.co.za>

Sent: Tuesday, 05 November 2024 15:31

Cc: Sunday Mabaso <sunday@vahlegweadvisory.co.za>; Dimakatso Leholi <dimakatso@vahlegweadvisory.co.za>; Victor Lipuwana <victor@aquarellainvest.co.za>; Siduduzo Mdanda <smdanda@ceramic.co.za>

Subject: STATE ORGANS CONSULTATION OF THE ENVIRONMENTAL AUTHORISATION FOR COMMENTS

Good day,

CONSULTATION OF THE DRAFT BASIC ASSESSMENT REPORT OF AN APPLICATION FOR AN ENVIRONMENTAL AUTHORISATION IN TERMS OF SECTION 24 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT 107 OF 1998) READ WITH REGULATION 19 OF THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REGULATIONS, 2014 (AS AMENDED) FOR A PROSPECTING RIGHT IN TERMS OF SECTION 16 OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 FOR CLAY (GENERAL) IN RESPECT OF REMAINING EXTENT , PORTIONS 1 AND 11 OF THE FARM DOORNPUT 458 KR, SITUATED IN THE MAGISTERIAL DISTRICT OF CITY OF BELA-BELA, LIMPOPO PROVINCE. LP 30/5/1/1/2/ 15699 PR

I hope this email finds you well.

My name is Mulalo Mafunisa, I am a stakeholder engagement consultant at Vahlegwe Mining Advisory and Consulting.

Aquarella Investment 389 (Pty) Ltd , hereafter referred as "the applicant" has applied for an environmental authorisation in terms of section 24 of the National Environmental Management Act, 1998 (Act 107 of 1998) read with regulation 19 of the Environmental Impact Assessment (EIA) regulations, 2014 (as amended) for a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) for clay (general) in respect of remaining extent, portions 1 and 11 of the farm Doornput 458 KR, within the Magisterial District of Bela-Bela, Limpopo Province.

Vahlegwe Mining Advisory and Consulting hereafter referred as "Vahlegwe" has been appointed by Aquarella Investments as the independent EAP in terms of regulation 12 of the to facilitate the Environmental Authorisation application for the proposed prospecting right activities.

In accordance with section 24k of the National Environmental Management Act (Act 107 of 1998) (as amended), we would like to consult the draft Basic Assessment Report (BAR) for your comments for the aforementioned application.

Should you require any further information, please do not hesitate to contact me. looking forward to your comments.

Kind regards,



 VAHLENGWE MINING ADVISORY
AND CONSULTING

MULALO MAFUNISA

Stakeholder Engagements
and Social Labour Plans-SLP

-  mulalo@vahlengweadvisory.co.za
-  011 432 0062 | 079 293 8585
-  www.vahlengweadvisory.co.za
-  238 Vorster Ave, Glenvista,
Johanneburg





forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Private Bag X447, Pretoria, 0001, Environment House, 473 Steve Biko Road, Pretoria, 0002 Tel: +27 12 399 9000, Fax: + 27 86 625 1042

Reference: LP30/5/1/1/2/15699 PR

Enquiries: Ms M Rabothata/ Ms L Dlamini

Telephone: (012) 399 9174 **E-mail:** MRabothata@environment.gov.za

Mr. Sunday M Mabaso
Vahlengwe Mining Advisory and Consulting (Pty) Ltd
238 Voster Ave
Glenvista Extension 3
JOHANNESBURG SOUTH
2058

Telephone Number: (+ 27) 11 432 0062
Email Address: info@vahlengweadvisory.co.za

PER E-MAIL

Dear Mr. Mabaso

COMMENTS ON THE DRAFT BASIC ASSESSMENT REPORT (BAR) AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT FOR THE PROPOSED PROSPECTING RIGHT APPLICATION FOR CLAY (GENERAL) IN RESPECT OF THE REMAINING EXTENT, PORTIONS 1 AND 11 OF THE FARM DOORNPOT 458 KR SITUATED IN THE MAGISTERIAL DISTRICT OF BELA-BELA/WATERBERG, LIMPOPO PROVINCE.

The Directorate: Biodiversity Conservation reviewed and evaluated the aforementioned report.

Based on the information provided in the report, it is noted that the proposed project area is situated within the savannah Biome, the savannah biome is a distinct ecological zone characterized by a mix of open grasslands and scattered trees. The prospecting area falls under the Springbokvlakte Thornveld vegetation type. The proposed prospecting area falls within Critical Biodiversity Areas (CBA) 1 & 2, Ecological Support Areas 1 & 2 (ESAs) and Other Natural Areas (ONA). The prospecting area consists of an artificial dam.

It has also been noted that specialist studies were not conducted. The environmental screening results and assessment outcomes have identified the environmental sensitivity for the proposed development footprint as high. Therefore, specialist assessments studies must be conducted and must be submitted with the revised Basic Assessment Report.



Batho pele - putting people first



The processing of personal information by the Department of Forestry, Fisheries and the Environment is done lawfully and not excessive to the purpose of processing in compliance with the POPI Act, any codes of conduct issued by the Information Regulator in terms of the POPI Act and / or relevant legislation providing appropriate security safeguards for the processing of personal information of others.

COMMENTS ON THE DRAFT BASIC ASSESSMENT REPORT (BAR) AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT FOR THE PROPOSED PROSPECTING RIGHT APPLICATION FOR CLAY(GENERAL) IN RESPECT OF THE REMAINING EXTENT, PORTIONS 1 AND 11 OF THE FARM DOORNPOT 458 KR SITUATED IN THE MAGISTERIAL DISTRICT OF BELA-BELA/WATERBERG, LIMPOPO PROVINCE.

The Directorate Biodiversity Conservation recommends that the revised Basic Assessment Report must comply with the following:

- It is the responsibility of the EAP to confirm the list of the specialist studies and to motivate in the assessment report, the reason for not including any of the identified specialist study.
- The sensitivity layout map must be updated with the findings of the specialist reports accordingly.
- The procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5) (A) and (H) and 44 of the National Environmental Management Act, 1998.
- All the requirements as outlined in the 2013 Mining and Biodiversity guideline for mainstreaming Biodiversity into the mining sector.

The Directorate does not support any development within a highly sensitive area and that will result in significant negative residual impacts after mitigation.

All Public Participation Process documents related to Biodiversity EIA review and any other Biodiversity EIA queries must be submitted to the Directorate: Biodiversity Conservation at Email: [\[redacted\]](#) for attention of **Mr Seoka Lekota**.

Yours faithfully



Mr. Seoka Lekota
Control Biodiversity Officer Grade B: Biodiversity Conservation
Department of Forestry, Fisheries & the Environment
Date: 04/12/2024



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Re: STATE ORGANS CONSULTATION OF THE ENVIRONMENTAL AUTHORISATION APPLICATION FOR COMMENTS_AQUARELLA INVESTMENTS_15699 PR

From Mulalo Mafunisa <Mulalo@vahlengweadvisory.co.za>

Date Mon 2/3/2025 2:44 PM

To

Cc info <info@vahlengweadvisory.co.za>; Dimakatso Leholi <dimakatso@vahlengweadvisory.co.za>; Sunday Mabaso <sunday@vahlengweadvisory.co.za>

📎 1 attachment (479 KB)

doc00594620241114085825.pdf;

Good day,

I hope this email finds you well.

I am writing to follow up on the consultation of the draft Basic Assessment Report (BAR) dated November 6, 2024 and the hard copy was couriered to the Department's offices in Polokwane on November 13, 2024, as requested on the email below dated November 08, 2024, for the Limpopo Department of Economic Development, environment and Tourism to comment in terms of section 24k of the National Environmental Management Act, 1998 (Act no. 107 of 1998, as amended) on the Environmental Authorisation application for a prospecting right for Aquarella Investment 389 (Pty) Ltd, DMRE REF no 15699 PR.

Looking forward to your comments.

Kind regards,



MULALO MAFUNISA
Stakeholder Engagements
and Social Labour Plans-SLP

**VAHLENGWE MINING ADVISORY
AND CONSULTING**

mulalo@vahlengweadvisory.co.za
011 432 0062 | 079 293 8585
www.vahlengweadvisory.co.za
238 Vorster Ave, Glenvista,
Johannesburg

ISO 9001:2015
ISO 14001:2015
ISO 45001:2018

Sent: Friday, 08 November 2024 15:04

To: Mulalo Mafunisa <Mulalo@vahlengweadvisory.co.za>

Subject: Fw: STATE ORGANS CONSULTATION OF THE ENVIRONMENTAL AUTHORISATION APPLICATION FOR COMMENTS_AQUARELLA INVESTMENTS_15699 PR

Good day,

Kindly submit hard copy to our Department at 20 Hans van Rensburg street, Polokwane, for further processing.

Regards,
Tthagala

Public Consumption - Information can be used externally

From: Mulalo Mafunisa <Mulalo@vahlengweadvisory.co.za>

Sent: 06 November 2024 15:36

Cc: Victor Lipuwana <victor@aquarellainvest.co.za>; Siduduzo Mdanda <smdanda@ceramic.co.za>; Sunday Mabaso <sunday@vahlengweadvisory.co.za>; Dimakatso Leholi <dimakatso@vahlengweadvisory.co.za>

Subject: STATE ORGANS CONSULTATION OF THE ENVIRONMENTAL AUTHORISATION APPLICATION FOR COMMENTS_AQUARELLA INVESTMENTS_15699 PR

Good day,

CONSULTATION OF THE DRAFT BASIC ASSESSMENT REPORT OF AN APPLICATION FOR AN ENVIRONMENTAL AUTHORISATION IN TERMS OF SECTION 24 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT 107 OF 1998) READ WITH REGULATION 19 OF THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REGULATIONS, 2014 (AS AMENDED) FOR A PROSPECTING RIGHT IN TERMS OF SECTION 16 OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 FOR CLAY (GENERAL) IN RESPECT OF REMAINING EXTENT , PORTIONS 1 AND 11 OF THE FARM DOORNPOT 458 KR, SITUATED IN THE MAGISTERIAL DISTRICT OF CITY OF BELA-BELA, LIMPOPO PROVINCE. LP 30/5/1/1/2/ 15699 PR

I hope this email finds you well.

My name is Mulalo Mafunisa, I am a stakeholder engagement consultant at Vahlengwe Mining Advisory and Consulting.

Aquarella Investment 389 (Pty) Ltd , hereafter referred as "the applicant" has applied for an environmental authorisation in terms of section 24 of the National Environmental Management Act, 1998 (Act 107 of 1998) read with regulation 19 of the Environmental Impact Assessment (EIA) regulations, 2014 (as amended) for a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) for clay (general) in respect of remaining extent, portions 1 and 11 of the farm Doornput 458 KR, within the Magisterial District of Bela-Bela, Limpopo Province.

Vahlengwe Mining Advisory and Consulting hereafter referred as "Vahlengwe" has been appointed by Aquarella Investments as the independent EAP in terms of regulation 12 of the to facilitate the Environmental Authorisation application for the proposed prospecting right activities.

In accordance with section 24k of the National Environmental Management Act (Act 107 of 1998) (as amended), we would like to consult the draft Basic Assessment Report (BAR) for your comments for the aforementioned application.

Should you require any further information, please do not hesitate to contact me. Looking forward to your comments.

Kind regards,

**VAHLENGWE MINING ADVISORY
AND CONSULTING**

MULALO MAFUNISA
Stakeholder Engagements
and Social Labour Plans-SLP

- ✉ mulalo@vahlegweadvisory.co.za
- ☎ 011 432 0062 | 079 293 8585
- 🌐 www.vahlegweadvisory.co.za
- 📍 238 Vorster Ave, Glenvista, Johannesburg

ISO 9001
ISO 14001
ISO 45001

Re: STATE ORGANS CONSULTATION OF THE ENVIRONMENTAL AUTHORISATION APPLICATION FOR COMMENTS_AQUARELLA INVESTMENTS_ LP 15699 PR

From Mulalo Mafunisa <Mulalo@vahlengweadvisory.co.za>

Date Wed 1/15/2025 3:05 PM

To

Cc Victor Lipuwana <victor@aquarellainvest.co.za>; Sunday Mabaso <sunday@vahlengweadvisory.co.za>; Dimakatso Leholi <dimakatso@vahlengweadvisory.co.za>; info <info@vahlengweadvisory.co.za>; Siduduzo Mdanda <smdanda@ceramic.co.za>

📎 1 attachment (1 MB)

Draft Basic Assessment Report Doornput 458 KR_.pdf;

Good day,

I hope this email finds you well.

I am writing to follow up on the consultation of the draft Basic Assessment Report (BAR) dated November 6, 2024 for the Department of Water and Sanitation (DWS) to comment in terms of section 24k of the National Environmental Management Act, 1998 (Act no. 107 of 1998, as amended).

Looking forward to your comments.

Kind regards,



Email Disclaimer:

This transmission (including any attachments) may contain confidential information, privileged material (including material protected by the solicitor-client or other applicable privileges), or constitute non-public information. Any use of this information by anyone other than the intended recipient is prohibited. If you have received this transmission in error, please immediately reply to the sender and delete this information from your system. Use, dissemination, distribution, or reproduction of this transmission by unintended recipients is not authorized and may be unlawful.

From: Mulalo Mafunisa <Mulalo@vahlengweadvisory.co.za>

Sent: Wednesday, 06 November 2024 15:33

Cc: Victor Lipuwana <victor@aquarellainvest.co.za>; Sunday Mabaso <sunday@vahlengweadvisory.co.za>; Dimakatso Leholi <dimakatso@vahlengweadvisory.co.za>; info <info@vahlengweadvisory.co.za>

Subject: STATE ORGANS CONSULTATION OF THE ENVIRONMENTAL AUTHORISATION APPLICATION FOR COMMENTS_AQUARELLA INVESTMENTS_ LP 15699 PR

Good day,

CONSULTATION OF THE DRAFT BASIC ASSESSMENT REPORT OF AN APPLICATION FOR AN ENVIRONMENTAL AUTHORISATION IN TERMS OF SECTION 24 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT 107 OF 1998) READ WITH REGULATION 19 OF THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REGULATIONS, 2014 (AS AMENDED) FOR A PROSPECTING RIGHT IN TERMS OF SECTION 16 OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 FOR CLAY (GENERAL) IN RESPECT OF REMAINING EXTENT , PORTIONS 1 AND 11 OF THE FARM DOORNPOT 458 KR, SITUATED IN THE MAGISTERIAL DISTRICT OF CITY OF BELA-BELA, LIMPOPO PROVINCE. LP 30/5/1/1/2/ 15699 PR

I hope this email finds you well.

My name is Mulalo Mafunisa, I am a stakeholder engagement consultant at Vahlengwe Mining Advisory and Consulting.

Aquarella Investment 389 (Pty) Ltd , hereafter referred as "the applicant" has applied for an environmental authorisation in terms of section 24 of the National Environmental Management Act, 1998 (Act 107 of 1998) read with regulation 19 of the Environmental Impact Assessment (EIA) regulations, 2014 (as amended) for a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) for clay (general) in respect of remaining extent, portions 1 and 11 of the farm Doornput 458 KR, within the Magisterial District of Bela-Bela/waterberg, Limpopo Province.

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In accordance with section 24k of the National Environmental Management Act (Act 107 of 1998) (as amended), we would like to consult the draft Basic Assessment Report (BAR) for your comments for the aforementioned application.

Should you require any further information, please do not hesitate to contact me. looking forward to your comments.

Kind regards,

MULALO MAFUNISA
Stakeholder Engagements
and Social Labour Plans-SLP

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238 Vorster Ave, Glenvista,
Johannesburg

ISO 9001:2015
ISO 14001:2015
ISO 45001:2018

Appendix 5:

Environmental Sensitivity Screening Report

**SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS
REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE
ENVIRONMENTAL SENSITIVITY**

EIA Reference number: 15699 PR

Project name: Prospecting Right

Project title: Prospecting Right

Date screening report generated: 31/10/2024 09:25:00

Applicant: Aquarella Investments 389 Pty Ltd

Compiler: Dimakatso Lehli

Compiler signature: D. Lehli

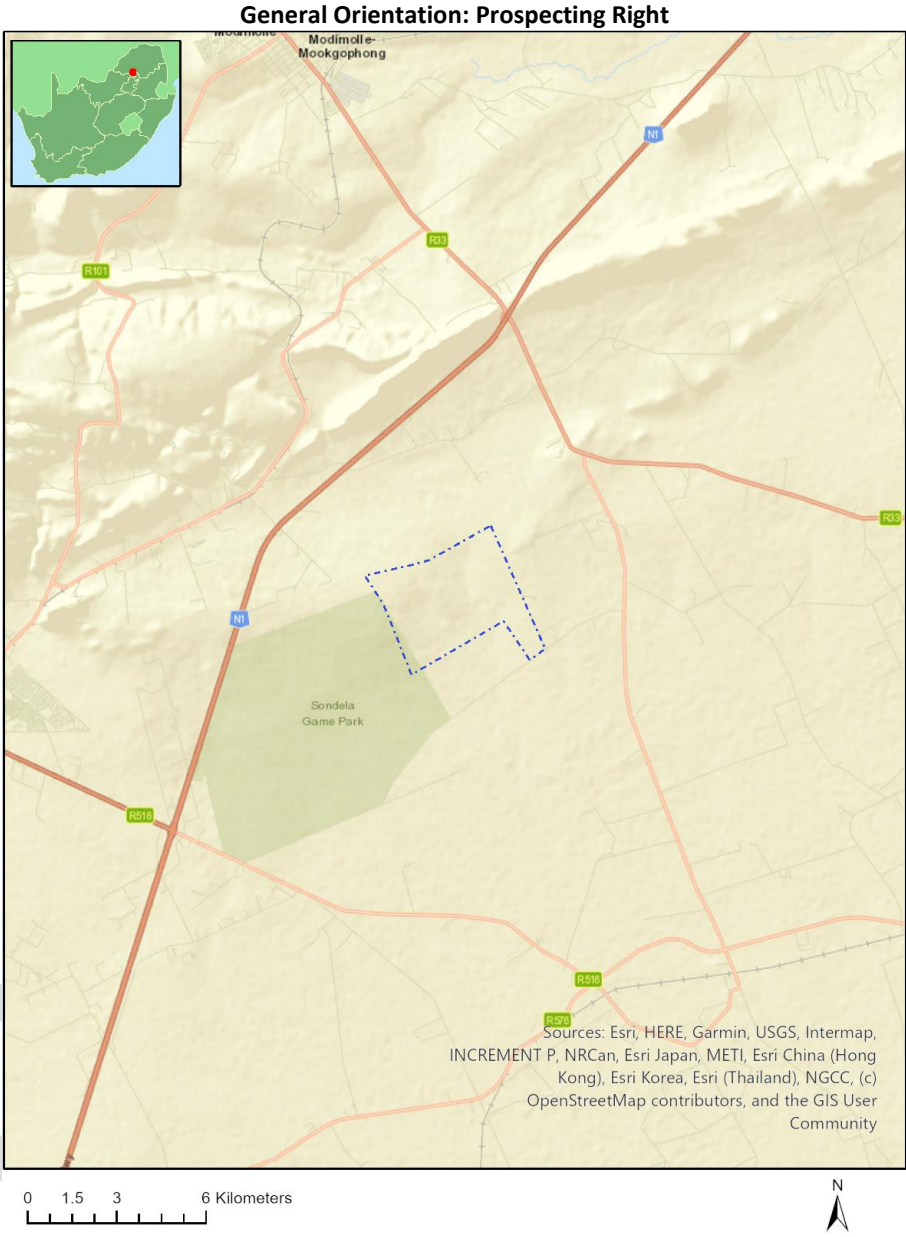
Application Category: Mining|Prospecting rights

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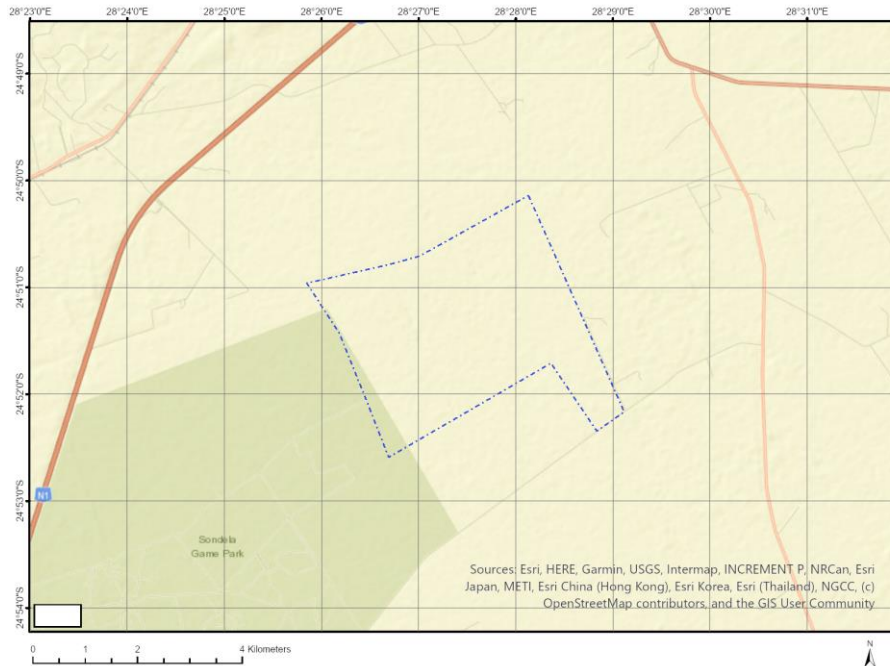
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 - Orientation map 1: General location 3
- Map of proposed site and relevant area(s) 4
 - Cadastral details of the proposed site 4
 - Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area 4
 - Environmental Management Frameworks relevant to the application 5
- Environmental screening results and assessment outcomes 5
 - Relevant development incentives, restrictions, exclusions or prohibitions 6
 - Proposed Development Area Environmental Sensitivity 6
 - Specialist assessments identified 6
- Results of the environmental sensitivity of the proposed area 8
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Proposed Project Location

Orientation map 1: General location



Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	TWEEFONTEIN	463	0	24°50'7.73S	28°23'22.6E	Farm
2	DOORNPOT	458	0	24°52'3.77S	28°27'49.32E	Farm
3	TWEEFONTEIN	463	161	24°50'32.91S	28°25'4.67E	Farm Portion
4	DOORNPOT	458	11	24°51'17.3S	28°27'31.77E	Farm Portion
5	DOORNPOT	458	1	24°51'30.39S	28°28'50.31E	Farm Portion
6	DOORNPOT	458	9	24°52'37.18S	28°28'35.16E	Farm Portion
7	DOORNPOT	458	0	24°51'41.38S	28°26'26.38E	Farm Portion

Development footprint¹ vertices:

No development footprint(s) specified.

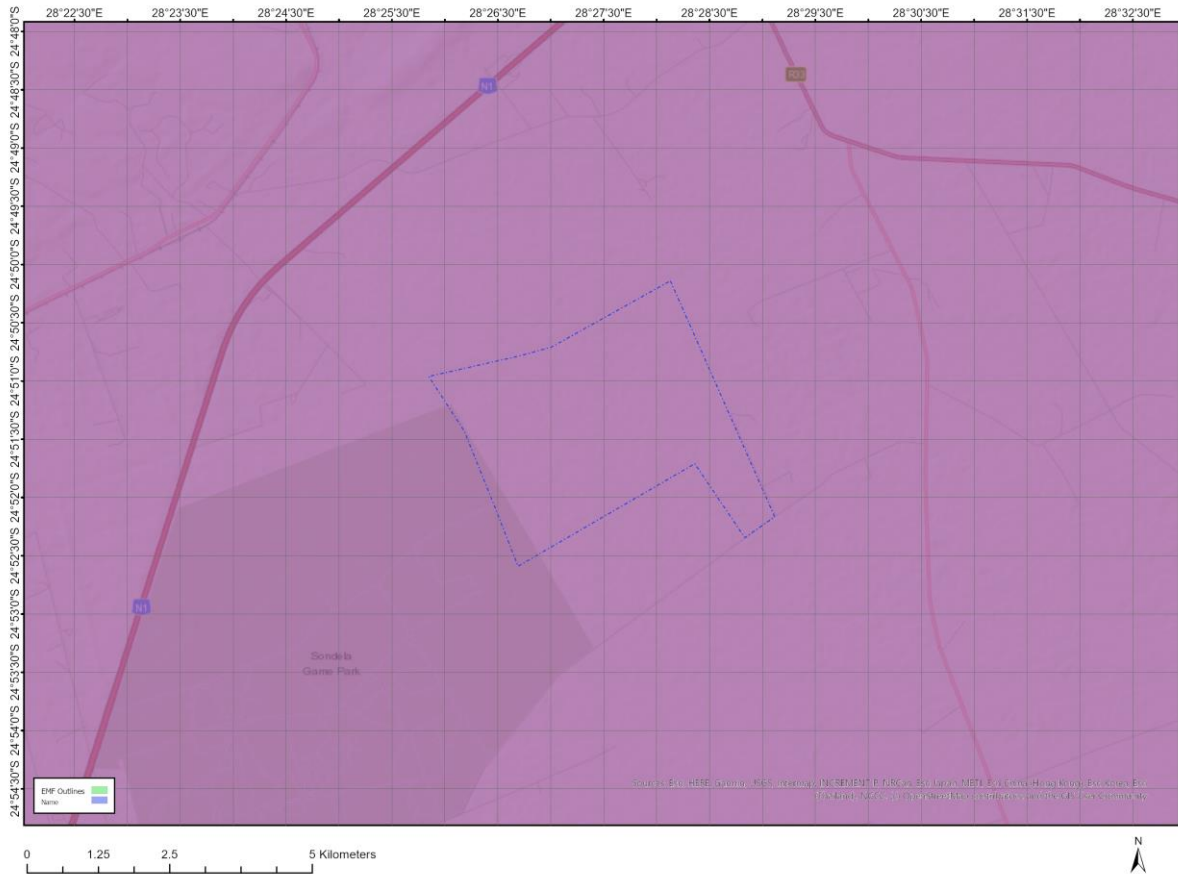
Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No	EIA Reference No	Classification	Status of application	Distance from proposed area (km)
1	14/12/16/3/3/1/2664	Solar PV	Approved	4.4

¹ "development footprint", means the area within the site on which the development will take place and includes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

2	12/12/20/2130/AM3	Solar PV	Approved	4.4
3	14/12/16/3/3/2/2266	Solar PV	Approved	11.9
4	14/12/16/3/3/2/688	Solar PV	Approved	4.4
5	14/12/16/3/3/2/688/AM1	Wind	Approved	4.4
6	14/12/16/3/3/2/576	Solar PV	Approved	11.6
7	12/12/20/2130	Solar PV	Approved	4.4

Environmental Management Frameworks relevant to the application



Environmental Management Framework	LINK
Waterberg District Municipality EMF	https://screening.environment.gov.za/ScreeningDownloads/EMF/WDEM_F_Final_EMF_Report.pdf
Olifants EMF	https://screening.environment.gov.za/ScreeningDownloads/EMF/Zone_4_6, 67, 78, 80, 92, 103, 122, 129.pdf

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is:

Mining | Prospecting rights.

Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	Implication
Air Quality-Waterberg-Bojanala Priority Area	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/gg39489_nn1207a.pdf
South African Protected Areas	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SAPAD_OR_2024_Q1_Metadata.pdf

Proposed Development Area Environmental Sensitivity

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

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

Specialist assessments identified

Based on the selected classification, and the known impacts associated with the proposed development, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

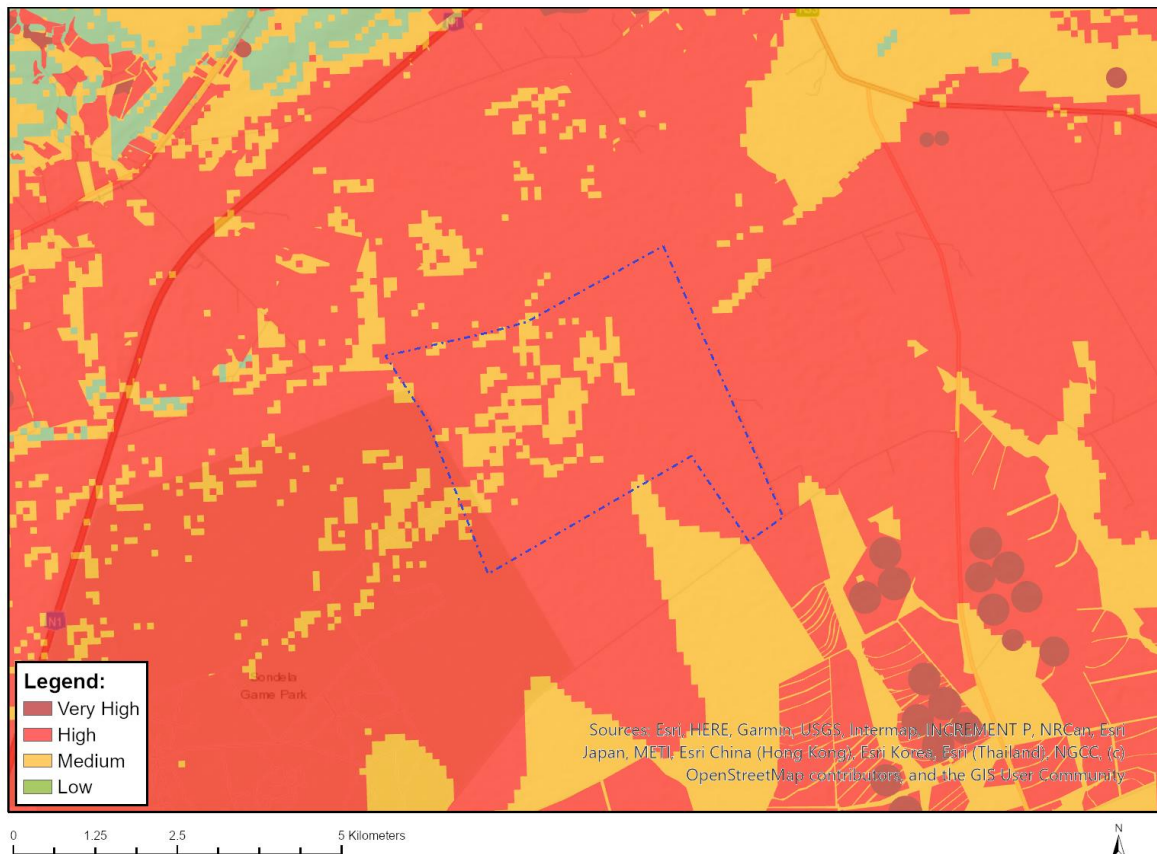
No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf

4	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted Terrestrial Biodiversity Assessment Protocols.pdf
5	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted Aquatic Biodiversity Assessment Protocols.pdf
6	Noise Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted Noise Impacts Assessment Protocol.pdf
7	Radioactivity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted General Requirement Assessment Protocols.pdf
8	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted Plant Species Assessment Protocols.pdf
9	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted Animal Species Assessment Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

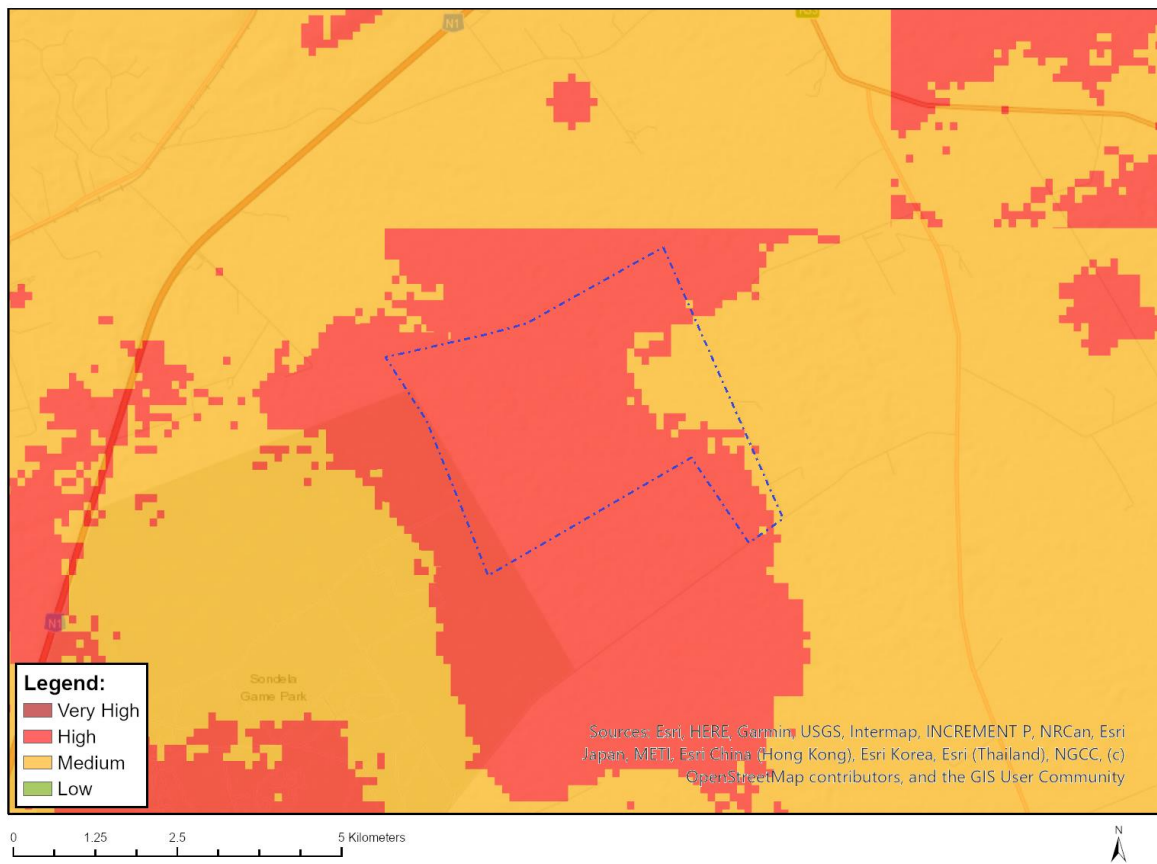


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

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

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



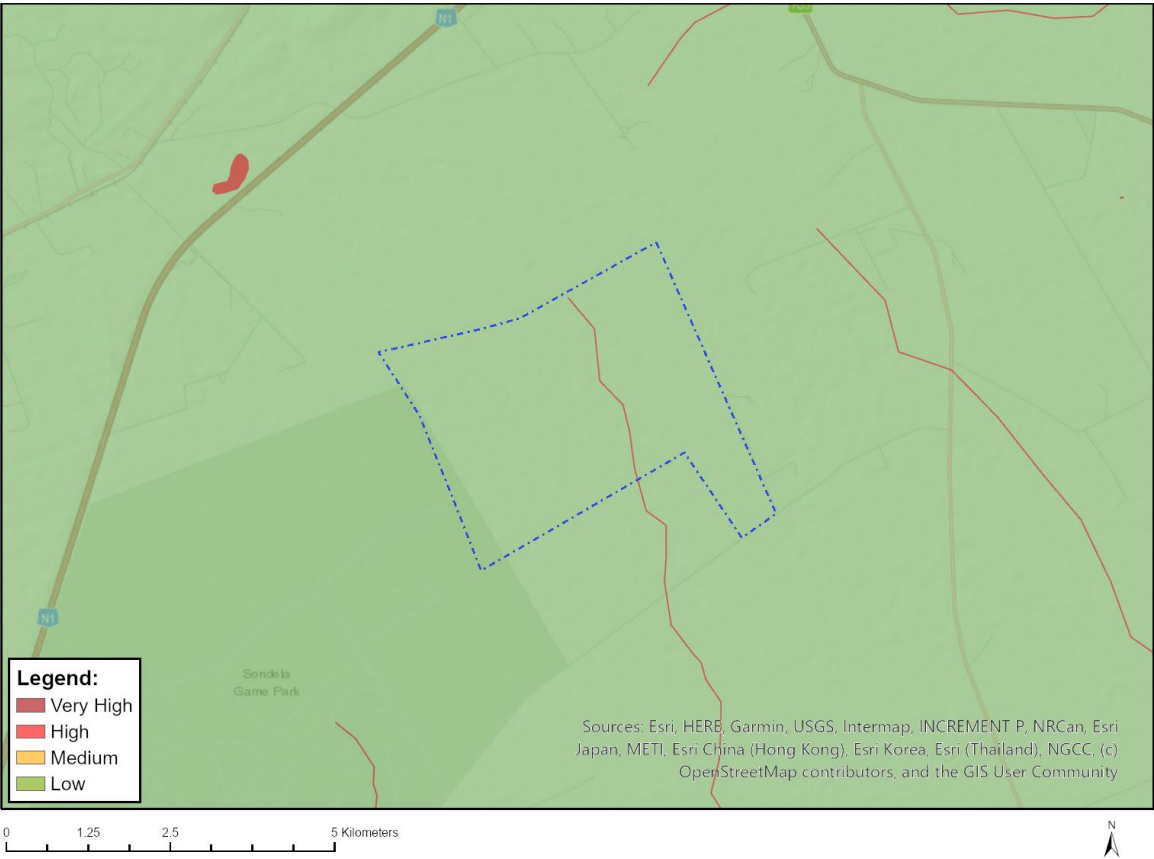
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Aves-Neotis denhami
High	Aves-Torgos tracheliotos
High	Aves-Polemaetus bellicosus
Medium	Aves-Aquila rapax
Medium	Aves-Eupodotis senegalensis
Medium	Sensitive species 5
Medium	Mammalia-Crocidura maquassiensis
Medium	Mammalia-Dasymys robertsii
Medium	Mammalia-Lycaon pictus
Medium	Mammalia-Neamblysomus julianae
Medium	Reptilia-Kinixys lobatsiana

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

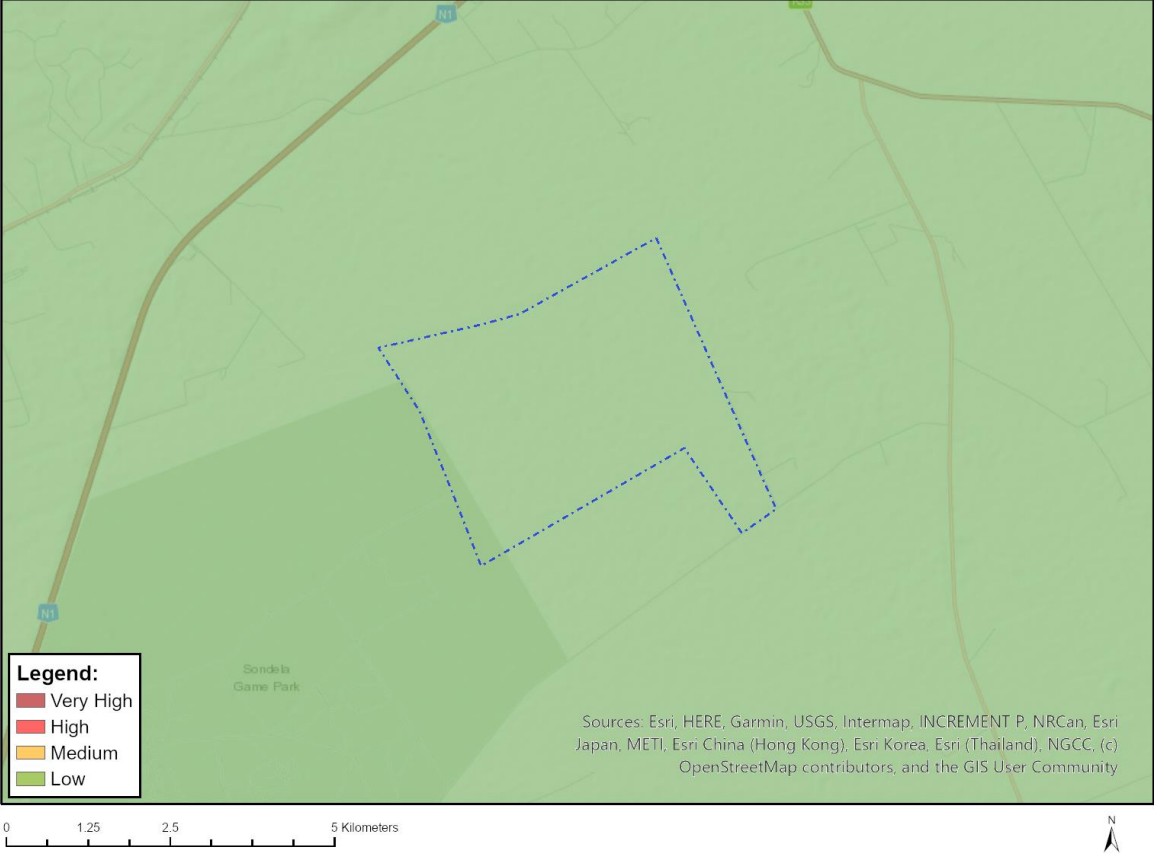


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	Rivers_C

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

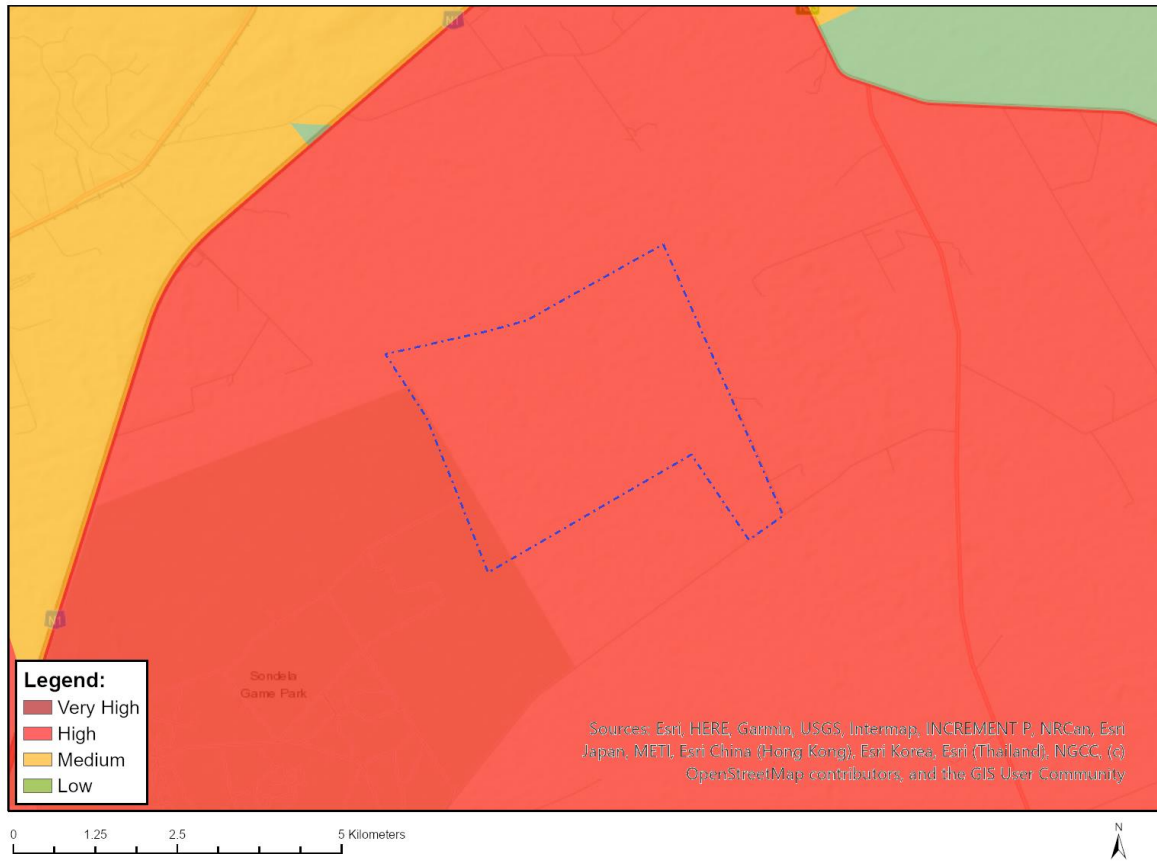


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Dangerous and restricted airspace as demarcated
Medium	Between 8 and 15 km of other civil aviation aerodrome

MAP OF RELATIVE DEFENCE THEME SENSITIVITY

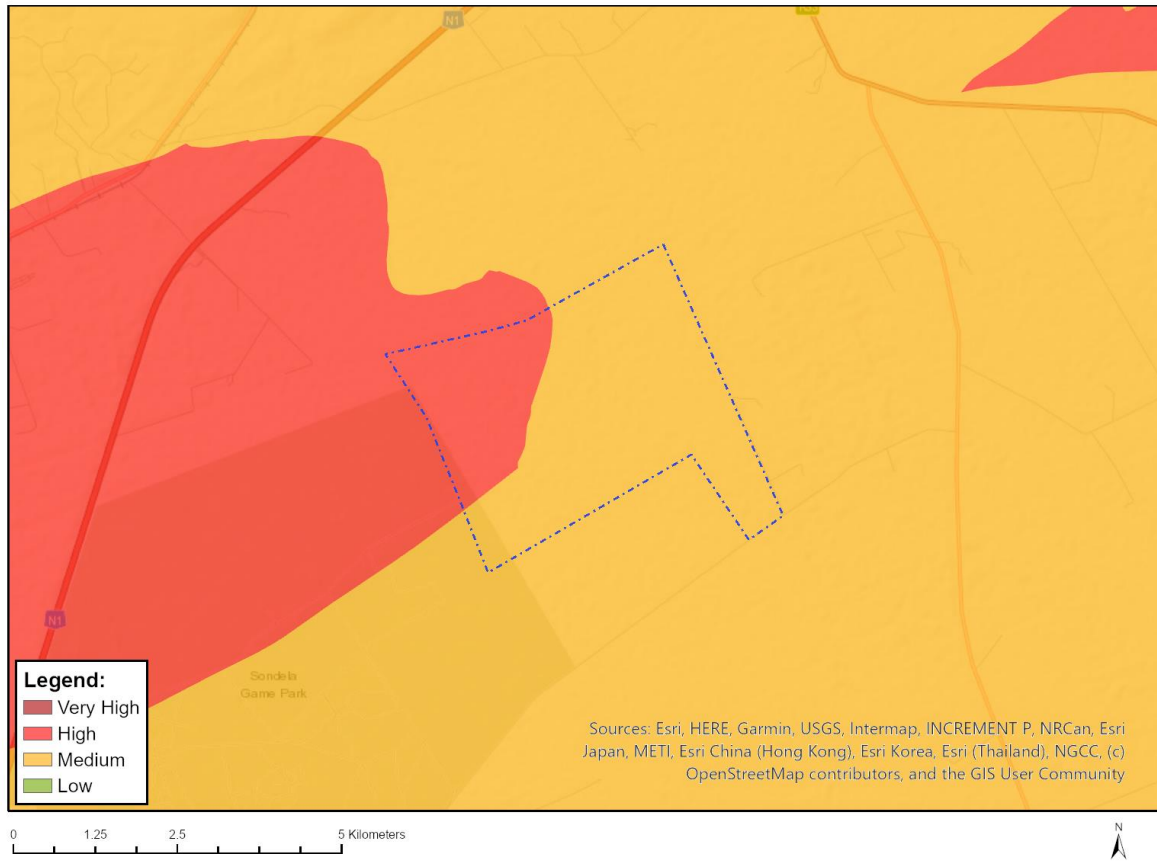


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

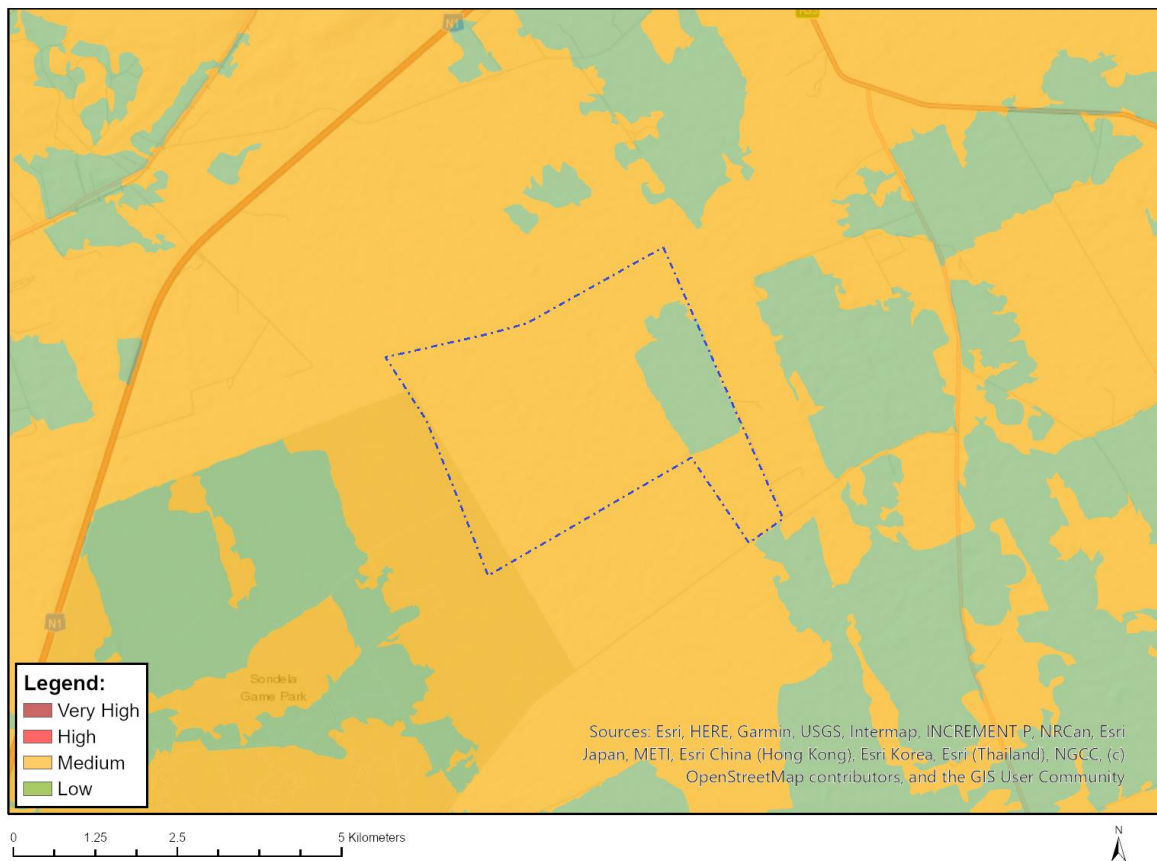


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

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

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



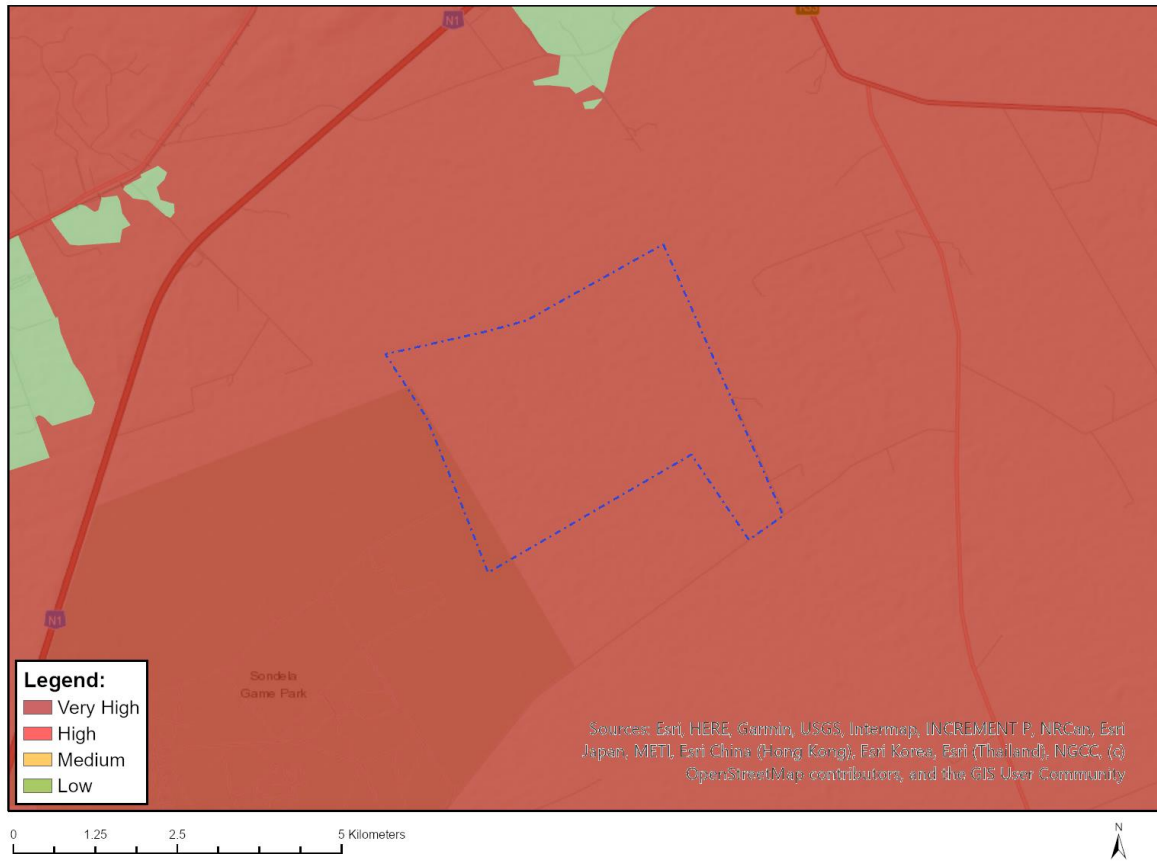
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Medium	Sensitive species 1252
Medium	Justicia minima
Medium	Cullen holubii

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Rissik Private Nature Reserve
Very High	CBA 2
Very High	ESA 2
Very High	VU_Springbokvlakte Thornveld

BAR/EMPr
Aquarella Investments 389 (Pty) Ltd
LP30/5/1/1/2/15699 PR



Appendix 6:

Specialist Report

February 2025

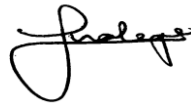



DESKTOP BIODIVERSITY STUDY

**PROPOSED PROSPECTING RIGHTS FOR
CLAY IN RESPECT OF THE REMAINING
EXTENT, PORTIONS 1 AND 11 OF THE
FARM DOORNPOT 458 KR IN LIMPOPO
PROVINCE, SOUTH AFRICA**

M. Molepo

DOCUMENT CONTROL

REPORT NAME	MOLEPO, M., MOTHWA, R. 2024. DESKTOP BIODIVERSITY STUDY FOR PROPOSED PROSPECTING RIGHT APPLICATION OF CLAY IN RESPECT OF THE REMAINING EXTENT, PORTIONS 1 AND 11 OF THE FARM DOORNPOT 458 KR IN THE MAGISTERIAL DISTRICT OF BELA-BELA/WATERBERG, LIMPOPO PROVINCE, SOUTH AFRICA	
REFERENCE	BIA-SBLKW/29-10	
SUBMITTED TO	VAHLENGWE MINING ADVISORY AND CONSULTING	
AUTHORS	MOKGATLA MOLEPO <i>PR. SCI. NAT</i> (009509)	
	RAMOKONE MOTHWA (SAAB)	

EXECUTIVE SUMMARY

This desktop biodiversity study was undertaken by MORA Ecological Services (Pty) Ltd (the specialist) for Vahlangwe Mining Advisory and Consulting (the client) in support of a proposed prospecting right for clay(general) in respect of the remaining extent, Portions 1 and 11 of the Farm Doornput 458 KR in the Magisterial District of Bela-Bela/Waterberg, Limpopo Province. The prospecting area is situated 13,51 km South-west of Bela -Bela and 26,41 km East south of Seabe and access road to the farm is via the R516 and N1 road, in the Bela- Bela District in Limpopo Province.

STATUS OF LOCAL ECOSYSTEMS

VEGETATION

The study area crosscuts two vegetation types as described by Mucina & Rutherford (2006), which are Central Sandy Bushveld and Springbokvlakte Thornveld. No remnants of the vegetation type are present due to the area being highly transformed.

FAUNA

From the desktop assessment, the study area has a potential to support small fauna, and previous study agrees with the desktop assessment. Historical records of mammals, frogs, reptiles, birds and trees are listed in the appendix.

LIMPOPO CONSERVATION PLAN (LCP)

Critical Biodiversity Areas (CBAs) are defined by Berliner & Desmet (2007) as: "CBAs are terrestrial and aquatic features in the landscape that are critical for conserving biodiversity and maintaining ecosystem functioning". These areas are classified as natural to near-natural landscapes. In addition to the CBA's the LCP also defines Other Natural Areas (ONA). In terms of LCP, the study area falls within Critical Biodiversity Area 1.

CONCLUDING REMARKS

A desktop study can never replace a study that involves a detailed site visit and the collection of physical floristic, faunal, habitat data and other ecological information. The data and information in this report are of a basic nature and may over or underestimate the current biodiversity of the project area. This study gives a broad scale assessment of the species diversity over an area, which includes the project area. It also highlights some important aspects relating to protected and red data species and threatened ecosystems and provincial biodiversity management guidelines.

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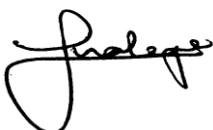
DECLARATION OF INDEPENDENCE

I, Mokgatla Molepo, in my capacity as a lead specialist consultant, hereby declare that I:

- Act/acted as an independent specialist to Vahlangwe Mining Advisory and Consulting for this project.
- Do not have any personal, business or financial interest in the project expect for financial remuneration for specialist investigations completed in a professional capacity as specified by the Environmental Impact Assessment Regulations, 2014.
- Will not be affected by the outcome of the environmental process, of which this report forms part of.
- Do not have any influence over the decisions made by the governing authorities.
- Do not object to or endorse the proposed developments but aim to present facts and my best scientific and professional opinion regarding the impacts of the development.
- Undertake to disclose to the relevant authorities any information that has or may have the potential to influence its decision or the objectivity of any report, plan or document required in terms of the Environmental Impact Assessment Regulations, 2014.

INDEMNITY

- This report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken.
- This report is based on a desktop investigation using available information and data related to the site to be affected, in situ fieldwork, surveys and assessments and the specialists best scientific and professional knowledge.
- The Precautionary Principle has been applied throughout this investigation.
- The findings, results, observations, conclusions and recommendations given in this report are based on the specialist's best scientific and professional knowledge as well as information available at the time of study.
- Additional information may become known or available during a later stage of the process for which no allowance could have been made at the time of this report.
- The specialist reserves the right to modify this report, recommendations and conclusions at any stage should additional information become available.
- Information and recommendations in this report cannot be applied to any other area without proper investigation.
- This report, in its entirety or any portion thereof, may not be altered in any manner or form or for any purpose without the specific and written consent of the specialist as specified above.
- Acceptance of this report, in any physical or digital form, serves to confirm acknowledgement of these terms and liabilities.



Mokgatla Molepo *Pr. Nat. Sci* (009509)

10 December 2024

INTRODUCTION AND PROJECT LOCATION AND DESCRIPTION

This desktop biodiversity study was undertaken by MORA Ecological Services (Pty) Ltd (the specialist) for Vahlengwe Mining Advisory and Consulting (the client) in support of a proposed prospecting right for clay(general) in respect of the remaining extent, portions 1 and 11 of the Farm Doornput 458 KR in the Magisterial District of Bela-Bela/Waterberg, Limpopo Province (Figure 1).

MORA Ecological Services (Pty) Ltd was appointed to provide on a desktop level, a description of the vegetation, fauna, aquatic and current ecological status of the proposed site and provide appropriate management recommendations for the proposed activities.

Objectives of this study

- To provide a desktop description of the vegetation and faunal features occurring around the proposed project area.
- To provide a list of any threatened species likely to occur within the study area.

Assumptions, Limitations, uncertainties and gap analysis

- The findings, results, observations, conclusions and recommendations provided in this report are based on the author's best scientific and professional knowledge as well as available information regarding the potential impacts on terrestrial environment.
- A description of vegetation was based on the Vegetation of South Africa, Lesotho, and Swaziland (Mucina & Rutherford 2006).
- It should be highlighted that a desktop study can by no means produce a comprehensive species list of the plants and animals occurring on the site.



Figure 1: Location of the study site.

VEGETATION OF THE STUDY SITE

Vegetation units are broadly classed and may include several distinct vegetation communities within a unit. The study area has two vegetation types as described by Mucina & Rutherford (2006). The vegetation types are Central Sandy Bushveld as well as Springbokvlakte Thornveld (Fig. 2).

a. Central Sandy Bushveld

The vegetation type is found within the Limpopo, Mpumalanga, Gauteng and North West Provinces: Undulating terrain occurs mainly in a broad arc south of the Springbokvlakte from the Pilanesberg in the west through Hammanskraal and Groblersdal to Ga Masemola in the east. A generally narrow irregular band along the northwestern edge of the Springbokvlakte (including Modimolle) extending into a series of valleys and lower-altitude areas within the Waterberg including the upper Mokolo River Valley near Vaalwater, the corridor between Rankins Pass and the Doorndraai Dam, and the lowlands from the Mabula area to south of the Hoekberge. Some isolated sandy rises are found on the Springbokvlakte. Altitude about 850–1 450 m

Vegetation & Landscape Features: Low undulating areas, sometimes between mountains, and sandy plains and catenas supporting tall, deciduous *Terminalia sericea* and *Burkea africana* woodland on deep sandy soils (with the former often dominant on the lower slopes of sandy catenas) and low, broadleaved *Combretum* woodland on shallow rocky or gravelly soils. Species of *Acacia*, *Ziziphus* and *Euclea* are found on flats and lower slopes on eutrophic sands and some less sandy soils. *A. tortilis* may dominate some areas along valleys. Grass-dominated herbaceous layer with relatively low basal cover on dystrophic sands.

Geology & Soils: The large southern and eastern parts of this area are underlain by granite of the Lebowa Granite Suite and some granophyre of the Rashoop Granophyre Suite (both Bushveld Complex, Vaalian). In the north, the sedimentary rocks of the Waterberg Group (Mokolian Erathem) are most important. Specifically, sandstone, conglomerate and siltstone of the Alma Formation and sandstone, siltstone and shale of the Vaalwater Formation. Well-drained, deep Hutton or Clovelly soils often with a catenary sequence from Hutton at the top to Clovelly on the lower slopes; shallow, skeletal Glenrosa soils also occur. Land types mainly Bb, Fa, Ba, Bd and Ac

Climate: Summer rainfall with very dry winters. Effectively three seasons, namely a cool dry season from May to mid-August, a hot dry season from mid-August to about October and a hot wet season from about November to April. MAP from about 500–700 mm. Frost fairly infrequent. Mean monthly maximum and minimum temperatures for Goedeheop (in the northern part of this vegetation unit) 35.3°C and –3.1°C for November and June, respectively.

b. Springbokvlakte Thornveld

This vegetation type is found within the Limpopo, Mpumalanga, North-West and Gauteng Provinces: Flats from Zebediela in the northeast to Hammanskraal and Assen in the southwest as well as from Bela-Bela and Mookgophong in the northwest to Marble Hall and Rust de Winter in the southeast. Altitude about 900–1 200 m.

Vegetation & Landscape Features: Open to dense, low thorn savanna dominated by Acacia species or shrubby grassland with a very low shrub layer. Occurs on flat to slightly undulating plains.

Geology & Soils: Rocks are part of the volcano-sedimentary Karoo Supergroup. Most abundant in the area are the mafic volcanics (tholeitic and olivine basalts and nephelinites) of the Letaba Formation, then the mudstones of the Irrigasie Formation and the shale, with sandstone units, of the Ecca Group. Soils are red-yellow apedal, freely drained with high base status and self-mulching, black, vertic clays. The vertic soils, with a fluctuating water table, experience prolonged periods of swelling and shrinking during wet and dry periods, considerable soil cracking when dry, a loose soil surface, high calcium carbonate content and gilgai micro-relief. Land types mainly Ae and Ea

Climate: Summer rainfall with very dry winters. MAP about 500– 650 mm. Frost fairly infrequent in winter. Mean monthly maximum and minimum temperatures for Warmbaths–Towoomba are 35.2°C and –2.0°C for October and July, respectively. Corresponding values are 36.8°C and –1.2°C for Marble Hall for January and June, respectively.

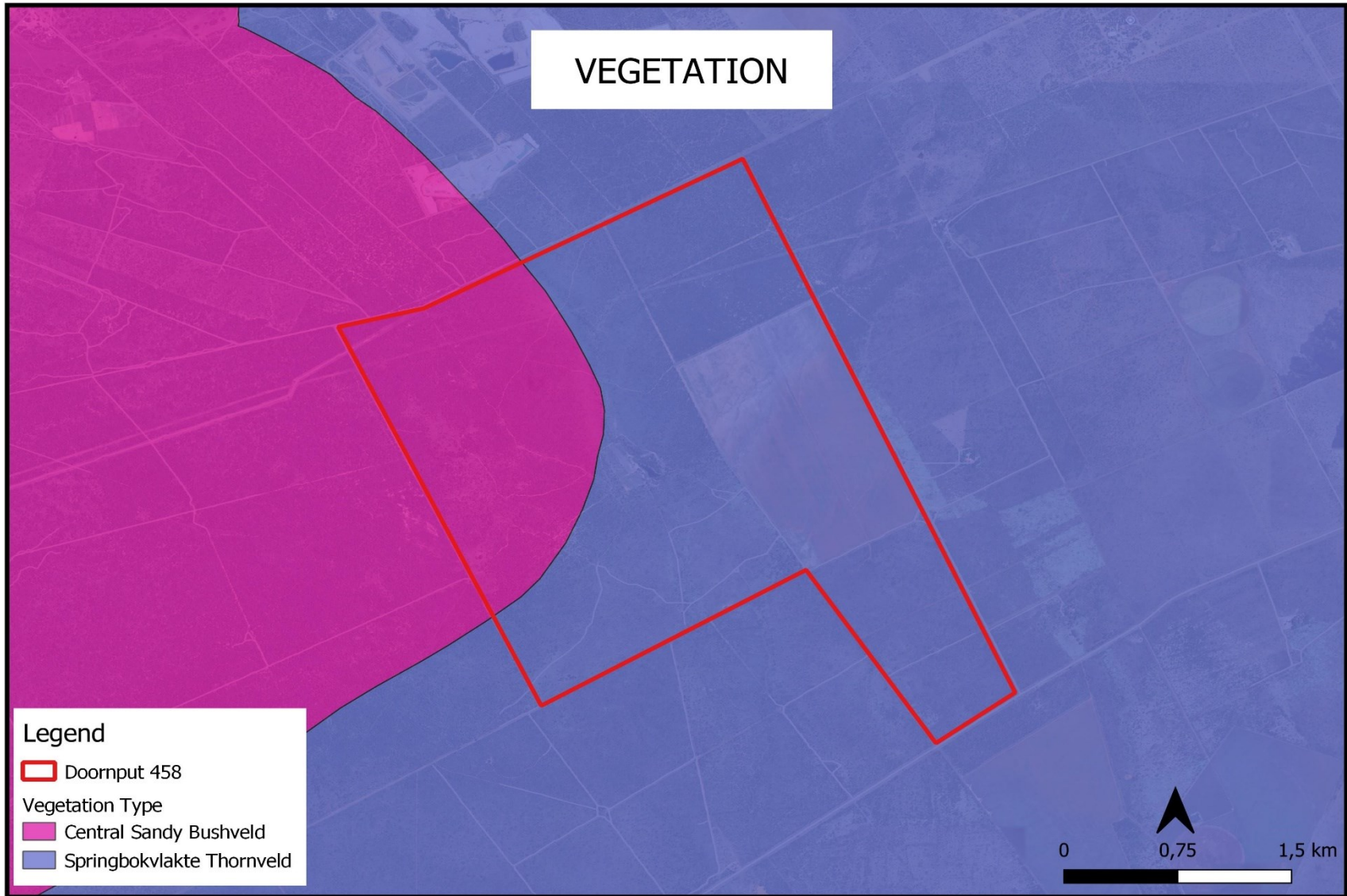


Figure 2: Vegetation map of the study site.

LEGAL REQUIREMENTS

Provincial legislation

In addition to national legislation, some of South Africa's nine provinces have their own provincial biodiversity legislation, as nature conservation is a concurrent function of national and provincial government in terms of the Constitution (Act 108 of 1996).

National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEMBA).

NEMBA provides for the management and conservation of biological diversity and components thereof; the use of indigenous biological resources in a sustainable manner; the fair and equitable sharing of benefits rising from bio-prospecting of biological resources; and cooperative governance in biodiversity management and conservation within the framework of NEMA.

CMS

The Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or Bonn Convention) aims to conserve terrestrial, aquatic and avian migratory species throughout their range. It is an intergovernmental treaty, concluded under the aegis of the United Nations Environment Programme, concerned 22 with the conservation of wildlife and habitats on a global scale. Since the Convention's entry into force, its membership has grown steadily to include 117 (as of 1 June 2012) Parties from Africa, Central and South America, Asia, Europe and Oceania. South Africa is a signatory to this convention.

AEWA

The African-Eurasian Waterbird Agreement. The Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) is the largest of its kind developed so far under the CMS. The AEWA covers 255 species of birds ecologically dependent on wetlands for at least part of their annual cycle, including many species of divers, grebes, pelicans, cormorants, herons, storks, rails, ibises, spoonbills, flamingos, ducks, swans, geese, cranes, waders, gulls, terns, tropic birds, auks, frigate birds and even the South African penguin. The agreement covers 119 countries and the European Union (EU) from Europe, parts of Asia and Canada, the Middle East and Africa.

Limpopo Conservation Plan (LCP)

This Biodiversity Plan delineates on a map, commonly known as a Critical Biodiversity Areas (CBA), biodiversity priority areas called Critical Biodiversity Areas, Ecological Support Areas and Protected Areas. These areas are the portfolio of sites that are required to meet the region's biodiversity targets and need to be maintained in the appropriate condition for their category. It is highly recommended that this Conservation Plan be a primary biodiversity consideration in Environmental Impact Assessments.

Critical Biodiversity Areas (CBAs) are terrestrial and aquatic areas of the landscape that need to be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. In other words, if these areas are not maintained in a natural or near-natural state then biodiversity targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity compatible land uses and resource uses.

Criteria of Identifying CBA

A CBA is an area that must remain in good ecological condition in order to meet biodiversity targets for ecosystem types, species of special concern or ecological processes. CBAs can meet biodiversity targets for terrestrial or aquatic features, or both. Together with protected areas, the portfolio of CBAs identified in a biodiversity plan must collectively meet biodiversity targets for representation of ecosystem types and species of special concern, and may also meet biodiversity targets for some ecological processes. Ecological Support Areas (ESAs) are terrestrial and aquatic areas that are not essential for meeting biodiversity representation targets (thresholds), but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. The degree or extent of restriction on land use and resource use in these areas may be lower than that recommended for CBAs.

Criteria for Identifying ESAs

An ESA is an area that must remain in at least fair ecological condition in order to: meet biodiversity targets for ecological processes that have not been met in CBAs or protected areas; meet biodiversity targets for representation of ecosystem types or species of special concern when it is not possible to meet them in CBAs; support ecological functioning of a protected area or CBA (e.g. protected area buffers); or a combination of these. ESAs can meet biodiversity targets for terrestrial or aquatic features, or both. All ecological processes important for the long-term persistence of ecosystems and species should be adequately included in the portfolio of protected areas, CBAs and ESAs. Sites selected to form part of ESAs could include sites in good, fair or even severely modified

ecological condition, as long as the current ecological condition is compatible with fulfilling the purpose for which the ESA has been selected. The desired state/management objective for most ESAs is to maintain them in at least fair ecological condition. For ESAs that are severely modified, the management objective is no further deterioration in the current ecological condition.

Sensitivity Analysis

In terms of LCP, majority of the study area falls within Critical Biodiversity Area 1, with the remainder falling within Ecological Support Area 1 and 2 (Fig 3).

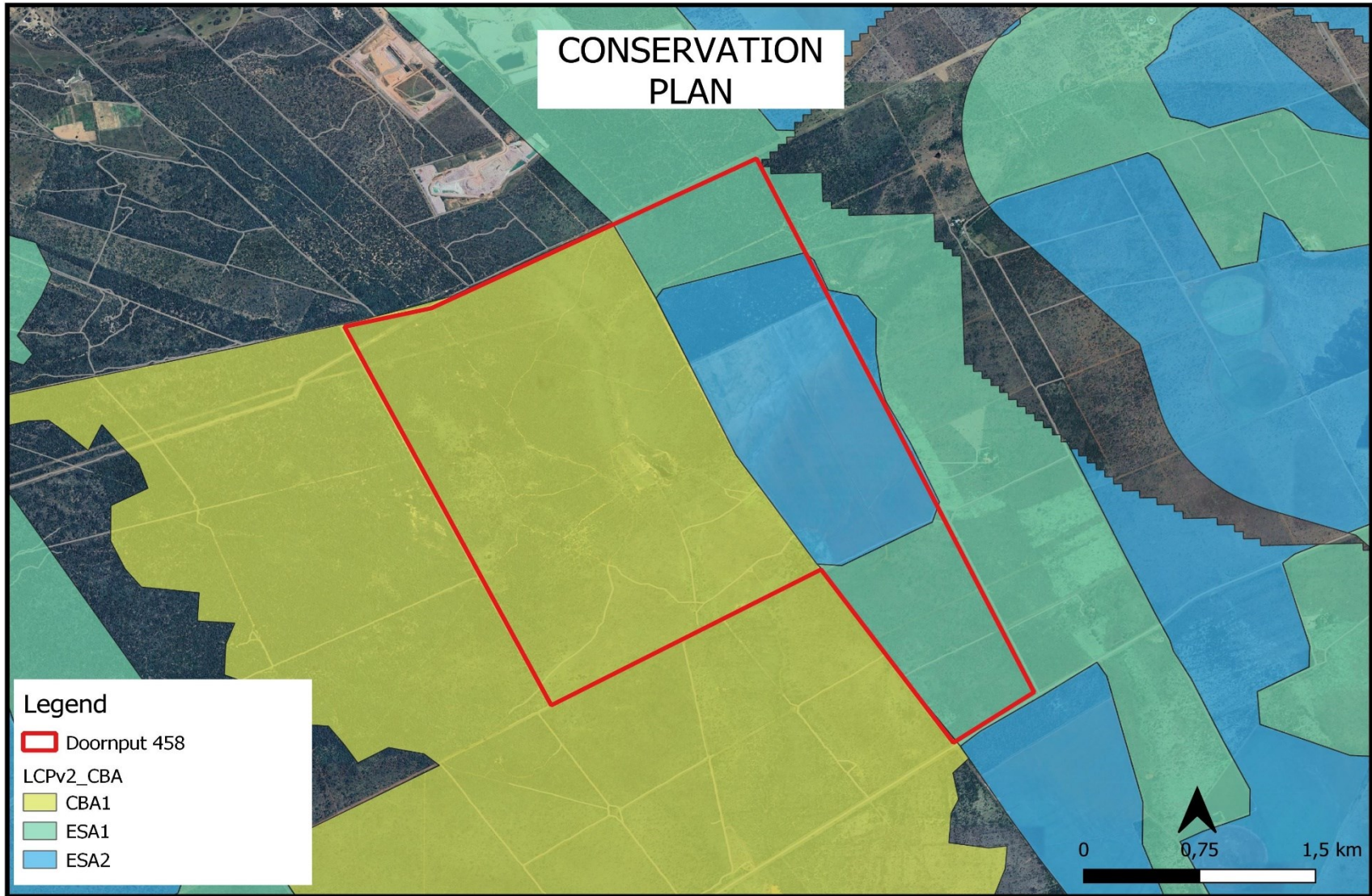


Figure 3: Limpopo Conservation Plan in relation to the study site.

Red Data Analysis and Floral Assessment

South African National Biodiversity Institute (SANBI) Red List website is used to determine the conservation status of the species. This is done to conserve sensitive species and their immediate environment. The status is determined in Table 1 below.

Table 1: Red Data Status definitions (SANBI, 2010).

p- protected Species		
M- Medicinal species		
EX	Extinct	A taxon is Extinct when there is no reasonable doubt that the last individual has died. Taxa should be listed as extinct only once exhaustive surveys throughout the historic range have failed to record an individual.
EW	Extinct in the Wild	A taxon is Extinct in the Wild when it is known to survive only in cultivation or as a naturalized population (or populations) well outside the past range.
CR PE	Critically Endangered (Possibly Extinct)	Critically Endangered (Possibly Extinct) taxa are those that are, on the balance of evidence, likely to be extinct, but for which there is a small chance that they may be extant. Hence, they should not be listed as Extinct until adequate surveys have failed to record the taxon.
CR	Critically Endangered	A taxon is Critically Endangered when the best available evidence indicates that it meets any of the five IUCN criteria for Critically Endangered and is therefore facing an extremely high risk of extinction in the wild.
EN	Endangered	A taxon is Endangered when the best available evidence indicates that it meets any of the five IUCN criteria for Endangered and is therefore facing a very high risk of extinction in the wild.
VU	Vulnerable	A taxon is Vulnerable when the best available evidence indicates that it meets any of the five IUCN criteria for Vulnerable and is therefore facing a high risk of extinction in the wild.
NT	Near Threatened	A taxon is Near Threatened when available evidence indicates that it nearly meets any of the five IUCN criteria for Vulnerable and is therefore likely to qualify for a threatened category in the near future.
CRITICALLY RARE		A taxon is Critically Rare when it is known to occur only at a single site but is not exposed to any direct or plausible potential threat and does not qualify for a category of threat according to the five IUCN criteria.
RARE		A taxon is Rare when it meets any of the four South African criteria for rarity but is not exposed to any direct or plausible potential threat and does not qualify for a category of threat according to the five IUCN criteria.

DECLINING		A taxon is Declining when it does not meet any of the five IUCN criteria and does not qualify for the categories Critically Endangered, Endangered, Vulnerable or Near Threatened, but there are threatening processes causing a continuing decline in the population.
DDD	Data Deficient— Insufficient Information	A taxon is DDD when there is inadequate information to make an assessment of its risk of extinction, but the taxon is well defined. Data Deficient is not a category of threat. However, listing of taxa in this category indicates that more information is required, and that future research could show that a threatened classification is appropriate.
LC	Least Concern	A taxon is Least Concern when it has been evaluated against the five IUCN criteria and does not qualify for the categories Critically Endangered, Endangered, Vulnerable or Near Threatened, and it is not rare, and the population is not declining.

Ecological function

Ecological function relates to the degree of ecological connectivity between systems within a landscape matrix. Therefore, systems with a high degree of landscape connectivity amongst one another are perceived to be more sensitive and will be those contributing to ecosystem service (for example wetlands) or overall preservation of biodiversity. Conservation importance relates to species diversity, endemism (unique species or unique processes) and the high occurrence of threatened and protected species or ecosystems protected by legislation.

Sensitivity scale

- **High ecological function:** Sensitive ecosystems with either low inherent resistance or resilience towards disturbance factors or highly dynamic systems considered to be stable and important for the maintenance of ecosystems integrity for example pristine grasslands, pristine wetlands and pristine ridges.
- **Medium ecological function:** Relatively important ecosystems at gradients of intermediate disturbances. An area may be considered of medium ecological function if it is directly adjacent to sensitive/pristine ecosystem.
- **Low ecological function:** Degraded and highly disturbed systems with little or no ecological function.

- **No Go Areas:** Areas that have irreplaceable biodiversity or important ecosystem function values which may be lost permanently if these ecosystems are transformed, with a high potential of also affecting adjacent and/or downstream ecosystems negatively

Conservation status of the vegetation

- **High conservation importance:** Ecosystems with high species richness which usually provide suitable habitat for several threatened species. Usually termed 'no-go' areas and unsuitable for development and should be conserved.
- **Medium conservation importance:** Ecosystems with intermediate levels of species diversity without any threatened species. Low-density development may be accommodated, provided the current species diversity is conserved.
- **Low conservation importance:** Areas with little or no conservation potential and usually species poor (most species are usually exotic).

POTENTIAL IMPACTS

- Loss of micro habitats
- Loss of plant species
- Introduction of alien species

The species that may potentially occur in this area are listed in the appendix.

RECOMMENDATIONS AND CONCLUSIONS

A desktop study can never replace a study that involves a detailed site visit and the collection of physical floristic and habitat data and other ecological information. The data and information in this report are of a basic nature and may over or underestimate the current biodiversity of the area in question. It does, however, give a broad scale assessment of the species diversity over an area, which includes the studied area. It also highlights some important aspects relating to protected and red data plant species and also threatened ecosystems and provincial biodiversity management guidelines. It is impossible to accurately determine the ecological condition of the natural habitat of the study area from a desktop level. It is recommended that a site visit be undertaken and a full study be compiled.

An Alien Invasive Species Management Plan should be compiled and implemented during construction phase. Furthermore, a pre-construction walkthrough by an Ecologist is recommended in order to determine if there are any species of conservation concern, and to provide relevant recommendations.

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APPENDIX A: SHORT CV/SUMMARY OF EXPERTISE – MOKGATLA MOLEPO

Mokgatla Molepo is Director and Principal Ecologist at MORA Ecological Services and has over 10 years of experience in biodiversity measurement, management and assessment. He has provided specialist ecological input on more than 100 projects across South Africa. He is registered with the South African Council for Natural Scientific Professions (No. 009509).

TERTIARY EDUCATION:

- MSc Zoology, Nelson Mandela University

Research Project Topic: Foraging behaviour and thermal physiology in Cape Sugarbirds: sex-specific responses to temperature.

- BSc Honours in Zoology, University of Limpopo

Research Project Topic: Morphometrics and plumage variation in the South African Fiscal flycatcher *Sigelus silens* Shaw 1809.

- BSc Botany & Zoology, University of Venda

TRAINING:

- Hydropedology and Wetland Functioning, Terra Soil Science & Water Business Academy
- Section 21 (c) & (i) Water Use Authorisation Training, Department of Water and Sanitation
- Basic Project Management, Hudisa Business School

PROFESSIONAL MEMBERSHIP:

- South African Council for Natural Scientific Professions (SACNASP) – Professionally registered as Professional Natural Scientist.
Registration number: 009509
- British Ecological Society (BES). **Membership number:** 1010709
- Zoological Society of Southern Africa (ZSSA). **Membership number:** 691

WORK EXPERIENCE:

- MORA Ecological Services (Pty) Ltd: April 2018 – Current, I am an Environmental Specialist and my duties include (i) conducting

ecological and environmental impact writing specialist reports.

assessments, (ii) and

- Arcus Consulting: May - November 2017
- Centre for African Conservation Ecology (ACE), Nelson Mandela University: 2015 - 2016.
- South African National Biodiversity Institute (SANBI): May – December 2014.
- Department of Zoology, University of Venda: 2009 – 2013.
- Percy FitzPatrick Institute of African Ornithology: March – April 2014.

SELECTED ECOLOGICAL ASSESSMENT PROJECTS:

Year	Project	Location:	Role(s)
2022	Avifaunal Impact Assessment for the proposed 132kV for Musina-Makhado Special Economic Zone North Site	Musina, Limpopo	Avifaunal Specialist/Ornithologist
2022	Avifaunal Impact Assessment for the proposed Khauta PV Solar including 44kV and 132kV Powerline	Welkom, Free State	Avifaunal Specialist/Ornithologist
2022	Avifaunal Impact Assessment for the proposed NAOS PV Solar including 132kV Powerline	Free State	Avifaunal Specialist/Ornithologist
2022	Preconstruction Avifaunal Assessment for the proposed Lichtenburg PV Solar including 132kV Powerline	Lichtenburg, North West	Avifaunal Specialist/Ornithologist
2022	Preconstruction Botanical Assessment for the proposed Lichtenburg PV Solar including 132kV Powerline	Lichtenburg, North West	Ecologist
2022	Biodiversity Assessment, Land Capability and Veld Condition Assessment for PPC Cement SA Slurry	Slurry, North West	Ecologist
2021	Avifaunal Impact Assessment for the proposed Upington-Aries 2x 400kV	Upington, Northern Cape	Avifaunal Specialist/Ornithologist
2021	Habitat Assessment Post Rehabilitation for PPC Cement SA Dwaalboom Factory	Dwaalboom, Limpopo	Ecologist

2021	Habitat Assessment Post Rehabilitation for Gibson Bay Wind Energy Farm	Humansdorp, Eastern Cape	Ecologist
2021	Wetland Rehabilitation for the sewer pipeline construction in Daveyton	Ekurhuleni East College Campus, Daveyton, Gauteng	Wetland Ecologist
2021	12 Months Wetland Rehabilitation Supervision for Ekangala Ext F Waterborne Sanitation Project	City of Tshwane Metropolitan Municipality, Ekangala, Gauteng	Aquatic Ecologist
2021	Bi-annual Aquatic Biomonitoring for Ekangala Ext F Waterborne Sanitation Project	City of Tshwane Metropolitan Municipality, Ekangala, Gauteng	Aquatic Ecologist
2021	12 Months Surface water and Groundwater monitoring for Ekangala Ext F Waterborne Sanitation Project	City of Tshwane Metropolitan Municipality, Ekangala, Gauteng	Aquatic Ecologist
2021	Estuarine Impact Assessments for the Proposed Mkhambathi and Mbotyi Beach Developments, Ingquza Hill Municipality, Eastern Cape	Ingquza Hill Municipality, Eastern Cape	Ecologist
2021	Botanical Search and Rescue Monitoring Report for A 140 Megawatt Roggeveld Wind Farm and Associated Infrastructure.	Karoo Hoogland Local Municipality, Northern Cape & Laingsburg Local Municipality, Western Cape Provinces	Ecologist
2021	Ecological walkthrough for the proposed National Route 3 (N3) between Cato Ridge and Camperdown in KwaZulu-Natal.	Cato Ridge, KwaZulu-Natal	Ecologist
2021	Avifaunal Impact Assessment for the proposed Musina-Makhado Special Economic Zone South Site	Musina-Makhado, Limpopo	Avifaunal Specialist/Ornithologist
2021	Ecological Impact Assessment for the proposed prospecting on Farm In Die Kom 345 JQ	North West	Ecologist
2021	Rehabilitation Plan for Roggeveld Wind Energy Facility and associated Substation and 33kV and 132kV transmission powerlines.	Karoo Hoogland Local Municipality, Northern Cape & Laingsburg Local Municipality, Western Cape Provinces	Rehabilitation Specialist
2021	Rehabilitation Plan of the sewage effluent in Bethal.	Bethal, Mpumalanga	Rehabilitation Specialist
2021	Invasive Alien Plants Species Eradication and Control Program for Castle Gate Shopping Centre.	Pretoria, Gauteng	Ecologist
2020	Avifaunal Impact Assessment for the proposed 33kV overhead powerlines on Roggeveld Wind Energy Farm.	Karoo Hoogland Local Municipality, Northern Cape & Laingsburg Local	Avifaunal Specialist/Ornithologist

		Municipality, Western Cape Provinces	
2020	Avifaunal & Ecological Impact Assessment for the proposed solar farm on Vaalkloof Nature Reserve.	Breede Valley Municipality, Western Cape	Ecologist
2020	Wetland assessment for the proposed water pipeline upgrade.	Daveyton, Gauteng	Ecologist
2020	Biodiversity Impact Assessment (BIA) for the proposed bridge and access road construction in Nonyentu, Engcobo Local Municipality, Eastern Cape.	Pretoria, Gauteng	Ecologist
2020	Freshwater impact assessment for the proposed water Kagiso Regional Park.	Kagiso, Gauteng	Ecologist
2019	Basic Assessment Report and EMPr for the proposed borehole drilling to supplement water supply for broiler in Delmas, Mpumalanga Province.	Delmas, Mpumalanga	Environmental Assessment Practitioner
2019	Wetland and Ecological Assessment for the proposed upgrading of bulk sewer pipeline in Amsterdam.	Amsterdam, Mkhondo Local Municipality	Ecologist
2019	Ecological assessment for the proposed mine on Farm Palmietfontein 189 IP situated within JB Marks Local Municipality, North West Province.	Ventersdorp, North West	Ecologist
2019	Biodiversity Management Plans for Evander Gold Mine.	Evander, Mpumalanga	Ecologist
2019	Avifaunal assessment for the proposed granite mine outside Mokopane.	Mogalakwena Local Municipality, Limpopo	Avifaunal Specialist/ Ornithologist
2019	Wetland assessment for the proposed grey water pipeline for irrigation.	Makhado Municipality, Limpopo	Ecologist
2019	Ecological assessment for the proposed for Nandoni mixed development.	Nandoni, Thulamela Local Municipality, Limpopo	Ecologist
2019	Ecological assessment for the proposed cultural village on farm Mphaphuli 278MT.	Mukomaasinandu, Thulamela Local Municipality, Limpopo	Ecologist
2019	Ecological assessment for the proposed Musina mixed development.	Musina, Limpopo	Ecologist
2019	Preliminary Ecological assessment for the prospecting on Kroomdrai farm, Mokopane.	Mokopane, Mogalakwena Local Municipality, Limpopo	Ecologist

2018	Invasive Alien Plants Species Eradication and Control Program Plan for Kwazenzele Ext. 1 Phase 2.	Lesedi Local Municipality, Gauteng province	Ecologist
2018	Biodiversity Assessment & Management Plan for Cullinan Diamond Mine.	Cullinan, Gauteng province	Ecologist (Faunal Specialist)
2017	Preconstruction Avifaunal Assessment for the Proposed Highlands Wind Energy Farm.	Somerset East, Eastern Cape province.	Ornithologist

APPENDIX B: HISTORICAL SPECIES RECORDS. ANIMAL DEMOGRAPHIC UNIT.

A. Mammals

Scientific name	Common name	Red List
<i>ORDER Chiroptera</i>	Unidentified bat	
<i>Cryptomys sp.</i>	Mole-rats	
<i>Cryptomys hottentotus</i>	Southern African Mole-rat	Least Concern (2016)
<i>Aepyceros melampus</i>	Impala	Least Concern
<i>Antidorcas marsupialis</i>	Springbok	Least Concern (2016)
<i>Connochaetes taurinus</i>	Blue Wildebeest	Least Concern (ver 3.1, 2017)
<i>Kobus ellipsiprymnus</i>	Waterbuck	Least Concern (ver 3.1, 2016)
<i>Sylvicapra grimmia</i>	Bush Duiker	Least Concern (2016)
<i>Taurotragus oryx</i>	Common Eland	Least Concern (2016)
<i>Tragelaphus angasii</i>	Nyala	Least Concern (2016)
<i>Tragelaphus scriptus</i>	Bushbuck	Least Concern
<i>Tragelaphus strepsiceros</i>	Greater Kudu	Least Concern (2016)
<i>Canis mesomelas</i>	Black-backed Jackal	Least Concern (2016)
<i>Chlorocebus pygerythrus</i>	Vervet Monkey	Least Concern (2016)
<i>Papio ursinus</i>	Chacma Baboon	LC (IUCN, 2016)
<i>Taphozous (Taphozous) mauritanus</i>	Mauritian Tomb Bat	Least Concern
<i>Equus quagga</i>	Plains Zebra	Near Threatened (IUCN, 2016)
<i>Atelerix frontalis</i>	Southern African Hedgehog	Near Threatened (2016)
<i>Acinonyx jubatus</i>	Cheetah	Vulnerable (2016)
<i>Panthera pardus</i>	Leopard	Vulnerable (2016)
<i>Galago moholi</i>	Mohol Bushbaby	Least Concern (2016)
<i>Galago senegalensis</i>	Senegal Bushbaby	
<i>Giraffa giraffa giraffa</i>	South African Giraffe	Least Concern (2016)
<i>Graphiurus (Graphiurus) murinus</i>	Forest African Dormouse	Least Concern
<i>Atilax paludinosus</i>	Marsh Mongoose	Least Concern (2016)
<i>Herpestes sanguineus</i>	Slender Mongoose	Least Concern (2016)
<i>Mungos mungo</i>	Banded Mongoose	Least Concern (2016)
<i>Crocuta crocuta</i>	Spotted Hyaena	Near Threatened (2016)

<i>Hyaena brunnea</i>	Brown Hyena	Near Threatened (2015)
<i>Hystrix africaeaustralis</i>	Cape Porcupine	Least Concern
<i>Lepus saxatilis</i>	Scrub Hare	Least Concern
<i>Elephantulus brachyrhynchus</i>	Short-snouted Elephant Shrew	Least Concern (2016)
<i>Elephantulus myurus</i>	Eastern Rock Elephant Shrew	Least Concern (2016)
<i>Tadarida aegyptiaca</i>	Egyptian Free-tailed Bat	Least Concern (2016)
<i>Aethomys ineptus</i>	Tete Veld Aethomys	Least Concern (2016)
<i>Aethomys namaquensis</i>	Namaqua Rock Mouse	Least Concern
<i>Gerbilliscus brantsii</i>	Highveld Gerbil	Least Concern (2016)
<i>Gerbilliscus leucogaster</i>	Bushveld Gerbil	Least Concern (2016)
<i>Lemniscomys rosalia</i>	Single-Striped Lemniscomys	Least Concern (2016)
<i>Mastomys natalensis</i>	Natal Mastomys	Least Concern (2016)
<i>Mus (Nannomys) minutoides</i>	Southern African Pygmy Mouse	Least Concern
<i>Rhodomys pumilio</i>	Four-striped Grass Mouse	Least Concern (2016)
<i>Thallomys sp.</i>	Acacia Rats (Tree Rats)	
<i>Thallomys paedulus</i>	Acacia Thallomys	Least Concern (2016)
<i>Aonyx capensis</i>	African Clawless Otter	Near Threatened (2016)
<i>Mellivora capensis</i>	Honey Badger	Least Concern (2016)
<i>Steatomys pratensis</i>	Common African Fat Mouse	Least Concern (2016)
<i>Nycteris thebaica</i>	Egyptian Slit-faced Bat	Least Concern (2016)
<i>Orycteropus afer</i>	Aardvark	Least Concern (2016)
<i>Pedetes capensis</i>	South African Spring Hare	Least Concern (2016)
<i>Rhinolophus sp.</i>	Horseshoe Bats	
<i>Rhinolophus clivosus</i>	Geoffroy's Horseshoe Bat	Least Concern (2016)
<i>Paraxerus cepapi</i>	Smith's Bush Squirrel	Least Concern (2016)
<i>Crocidura hirta</i>	Lesser Red Musk Shrew	Least Concern (2016)
<i>Phacochoerus africanus</i>	Common Warthog	Least Concern (2016)
<i>Potamochoerus larvatus</i>	Bush-pig	Least Concern (2016)
<i>Thryonomys swinderianus</i>	Greater Cane Rat	Least Concern (2016)
<i>Miniopterus natalensis</i>	Natal Long-fingered Bat	Least Concern (2016)
<i>Myotis welwitschii</i>	Welwitsch's Myotis	Least Concern (2016)

<i>Neoromicia capensis</i>	Cape Serotine	Least Concern (2016)
<i>Pipistrellus (Pipistrellus) rusticus</i>	Rusty Pipistrelle	Near Threatened
<i>Scotophilus dinganii</i>	Yellow-bellied House Bat	Least Concern (2016)
<i>Genetta maculata</i>	Common Large-spotted Genet	Least Concern
<i>Civettictis civetta</i>	African Civet	Least Concern (2016)

B. Reptiles

Scientific name	Common name	Red List
<i>Acanthocercus atricollis</i>	Southern Tree Agama	Least Concern (SARCA 2014)
<i>Agama aculeata distanti</i>	Distant's Ground Agama	Least Concern (SARCA 2014)
<i>Monopeltis capensis</i>	Cape Worm Lizard	Least Concern (SARCA 2014)
<i>Monopeltis infuscata</i>	Dusky Worm Lizard	Least Concern (SARCA 2014)
<i>Zygaspis quadrifrons</i>	Kalahari Dwarf Worm Lizard	Least Concern (SARCA 2014)
<i>Chamaeleo dilepis</i>	Common Flap-neck Chameleon	Least Concern (SARCA 2014)
<i>Crotaphopeltis hotamboeia</i>	Red-lipped Snake	Least Concern (SARCA 2014)
<i>Dasypeltis scabra</i>	Rhombic Egg-eater	Least Concern (SARCA 2014)
<i>Dispholidus typus viridis</i>	Northern Boomslang	Least Concern (IUCN 2021, sp. level)
<i>Philothamnus hoplogaster</i>	South Eastern Green Snake	Least Concern (IUCN 2021)
<i>Telescopus semiannulatus semiannulatus</i>	Eastern Tiger Snake	Least Concern (SARCA 2014)
<i>Thelotornis capensis capensis</i>	Southern Twig Snake	Least Concern (IUCN 2021, sp. level)
<i>Cordylus vittifer</i>	Common Girdled Lizard	Least Concern (SARCA 2014)
<i>Platysaurus guttatus</i>	Dwarf Flat Lizard	Least Concern (SARCA 2014)
<i>Platysaurus minor</i>	Waterberg Flat Lizard	Least Concern (SARCA 2014)
<i>Naja annulifera</i>	Snouted Cobra	Least Concern (SARCA 2014)
<i>Naja mossambica</i>	Mozambique Spitting Cobra	Least Concern (SARCA 2014)
<i>Chondrodactylus turneri</i>	Turner's Gecko	Least Concern (SARCA 2014)
<i>Lygodactylus capensis</i>	Common Dwarf Gecko	Least Concern (SARCA 2014)
<i>Pachydactylus affinis</i>	Transvaal Gecko	Least Concern (SARCA 2014)

<i>Pachydactylus capensis</i>	Cape Gecko	Least Concern (SARCA 2014)
<i>Gerrhosaurus flavigularis</i>	Yellow-throated Plated Lizard	Least Concern (SARCA 2014)
<i>Matobosaurus validus</i>	Common Giant Plated Lizard	Least Concern (SARCA 2014)
<i>Ichnotropis capensis</i>	Ornate Rough-scaled Lizard	Least Concern (SARCA 2014)
<i>Meroles squamulosus</i>	Common Rough-scaled Lizard	Least Concern (SARCA 2014)
<i>Nucras holubi</i>	Holub's Sandveld Lizard	Least Concern (SARCA 2014)
<i>Nucras intertexta</i>	Spotted Sandveld Lizard	Least Concern (SARCA 2014)
<i>Pedioplanis lineocellata lineocellata</i>	Spotted Sand Lizard	Least Concern (SARCA 2014)
<i>Pedioplanis lineocellata pulchella</i>	Common Sand Lizard	Least Concern (SARCA 2014)
<i>Amblyodipsas polylepis polylepis</i>	Common Purple-glossed Snake	Least Concern (SARCA 2014)
<i>Aparallactus capensis</i>	Black-headed Centipede-eater	Least Concern (IUCN 2021)
<i>Atractaspis bibronii</i>	Bibron's Stiletto Snake	Least Concern (SARCA 2014)
<i>Boaedon capensis</i>	Brown House Snake	Least Concern (SARCA 2014)
<i>Limaformosa capensis</i>	Common File Snake	Least Concern (SARCA 2014)
<i>Lycodonomorphus inornatus</i>	Olive House Snake	Least Concern (SARCA 2014)
<i>Lycodonomorphus rufulus</i>	Brown Water Snake	Least Concern (SARCA 2014)
<i>Lycophidion capense capense</i>	Cape Wolf Snake	Least Concern (SARCA 2014)
<i>Prosymna sundevallii</i>	Sundevall's Shovel-snout	Least Concern (SARCA 2014)
<i>Psammophis angolensis</i>	Dwarf Sand Snake	Least Concern (SARCA 2014)
<i>Psammophis brevirostris</i>	Short-snouted Grass Snake	Least Concern (SARCA 2014)
<i>Psammophis jallae</i>	Jalla's Sand Snake	Least Concern (SARCA 2014)
<i>Psammophylax tritaeniatus</i>	Striped Grass Snake	Least Concern (SARCA 2014)
<i>Pseudaspis cana</i>	Mole Snake	Least Concern (SARCA 2014)
<i>Xenocalamus bicolor australis</i>	Waterberg Quill-snouted Snake	Least Concern (SARCA 2014)
<i>Leptotyphlops sp.</i>		
<i>Leptotyphlops distanti</i>	Distant's Thread Snake	Least Concern (IUCN 2022)
<i>Leptotyphlops scutifrons scutifrons</i>	Peters' Thread Snake	Least Concern (IUCN 2021, sp. level)
<i>Python natalensis</i>	Southern African Python	Least Concern (SARCA 2014)
<i>Mochlus sundevallii</i>	Sundevall's Writhing Skink	Least Concern (SARCA 2014)
<i>Panaspis wahlbergii</i>	Wahlberg's Snake-eyed Skink	Least Concern (IUCN 2021)
<i>Trachylepis capensis</i>	Cape Skink	Least Concern (SARCA 2014)

<i>Trachylepis punctatissima</i>	Speckled Rock Skink	Least Concern (SARCA 2014)
<i>Trachylepis sp. (Transvaal varia)</i>	Skink sp. 1	
<i>Trachylepis varia sensu lato</i>	Common Variable Skink Complex	Least Concern (SARCA 2014)
<i>Kinixys lobatsiana</i>	Lobatse Hinged Tortoise	Least Concern (SARCA 2014)
<i>Stigmochelys pardalis</i>	Leopard Tortoise	Least Concern (SARCA 2014)
<i>Rhinotyphlops lalandei</i>	Delalande's Beaked Blind Snake	Least Concern (SARCA 2014)
<i>Varanus albigularis albigularis</i>	Rock Monitor	Least Concern (SARCA 2014)
<i>Varanus niloticus</i>	Water Monitor	Least Concern (SARCA 2014)
<i>Bitis arietans arietans</i>	Puff Adder	Least Concern (IUCN 2014)
<i>Causus defilippii</i>	Snouted Night Adder	Least Concern (IUCN 2021)
<i>Causus rhombeatus</i>	Rhombic Night Adder	Least Concern (IUCN 2021)

C. Frogs

Scientific name	Common name	Red List
<i>Breviceps adspersus</i>	Bushveld Rain Frog	Least Concern
<i>Poyntonophrynus fenoulheti</i>	Northern Pygmy Toad	Least Concern
<i>Schismaderma carens</i>	Red Toad	Least Concern
<i>Sclerophrys garmani</i>	Olive Toad	Least Concern (IUCN, 2016)
<i>Sclerophrys gutturalis</i>	Guttural Toad	Least Concern (IUCN, 2016)
<i>Hyperolius marmoratus</i>	Painted Reed Frog	Least Concern (IUCN ver 3.1, 2013)
<i>Kassina senegalensis</i>	Bubbling Kassina	Least Concern
<i>Phrynomantis bifasciatus</i>	Banded Rubber Frog	Least Concern
<i>Phrynobatrachus natalensis</i>	Snoring Puddle Frog	Least Concern (IUCN, 2013)
<i>Ptychadena anchietae</i>	Plain Grass Frog	Least Concern
<i>Ptychadena mossambica</i>	Broadbanded Grass Frog	Least Concern
<i>Amietia delalandii</i>	Delalande's River Frog	Least Concern (2017)
<i>Cacosternum boettgeri</i>	Common Caco	Least Concern (2013)
<i>Pyxicephalus adspersus</i>	Giant Bull Frog	Near Threatened

<i>Strongylopus fasciatus</i>	Striped Stream Frog	Least Concern
<i>Tomopterna sp.</i>		
<i>Tomopterna cryptotis</i>	Tremelo Sand Frog	Least Concern (IUCN 2016)
<i>Tomopterna natalensis</i>	Natal Sand Frog	Least Concern (IUCN 2013)

D. Birds

Ref	Common group	Common species	Genus	Species
731		Brubru	<i>Nilaus</i>	<i>afer</i>
72		Hamerkop	<i>Scopus</i>	<i>umbretta</i>
637		Neddicky	<i>Cisticola</i>	<i>fulvicapilla</i>
844		Quailfinch	<i>Ortygospiza</i>	<i>atricollis</i>
105		Secretarybird	<i>Sagittarius</i>	<i>serpentarius</i>
161		Shikra	<i>Accipiter</i>	<i>badius</i>
622	Apalis	Bar-throated	<i>Apalis</i>	<i>thoracica</i>
533	Babbler	Arrow-marked	<i>Turdoides</i>	<i>jardineii</i>
536	Babbler	Southern Pied	<i>Turdoides</i>	<i>bicolor</i>
432	Barbet	Acacia Pied	<i>Tricholaema</i>	<i>leucomelas</i>
431	Barbet	Black-collared	<i>Lybius</i>	<i>torquatus</i>
439	Barbet	Crested	<i>Trachyphonus</i>	<i>vaillantii</i>
673	Batis	Chinspot	<i>Batis</i>	<i>molitor</i>
404	Bee-eater	European	<i>Merops</i>	<i>apiaster</i>
410	Bee-eater	Little	<i>Merops</i>	<i>pusillus</i>
409	Bee-eater	White-fronted	<i>Merops</i>	<i>bullockoides</i>
812	Bishop	Yellow-crowned	<i>Euplectes</i>	<i>afer</i>

67	Bittern	Little	<i>Ixobrychus</i>	<i>minutus</i>
709	Boubou	Southern	<i>Laniarius</i>	<i>ferrugineus</i>
544	Bulbul	African Red-eyed	<i>Pycnonotus</i>	<i>nigricans</i>
545	Bulbul	Dark-capped	<i>Pycnonotus</i>	<i>tricolor</i>
873	Bunting	Cape	<i>Emberiza</i>	<i>capensis</i>
872	Bunting	Cinnamon-breasted	<i>Emberiza</i>	<i>tahapisi</i>
874	Bunting	Golden-breasted	<i>Emberiza</i>	<i>flaviventris</i>
723	Bushshrike	Grey-headed	<i>Malaconotus</i>	<i>blanchoti</i>
719	Bushshrike	Orange-breasted	<i>Chlorophoneus</i>	<i>sulfureopectus</i>
219	Bustard	Denham's	<i>Neotis</i>	<i>denhami</i>
154	Buzzard	Common	<i>Buteo</i>	<i>buteo</i>
628	Camaroptera	Grey-backed	<i>Camaroptera</i>	<i>brevicaudata</i>
860	Canary	Black-throated	<i>Crithagra</i>	<i>atrogularis</i>
866	Canary	Yellow	<i>Crithagra</i>	<i>flaviventris</i>
859	Canary	Yellow-fronted	<i>Crithagra</i>	<i>mozambica</i>
570	Chat	Familiar	<i>Oenanthe</i>	<i>familiaris</i>
630	Cisticola	Desert	<i>Cisticola</i>	<i>aridulus</i>
646	Cisticola	Levaillant's	<i>Cisticola</i>	<i>tinniens</i>
642	Cisticola	Rattling	<i>Cisticola</i>	<i>chiniana</i>
629	Cisticola	Zitting	<i>Cisticola</i>	<i>juncidis</i>
212	Coot	Red-knobbed	<i>Fulica</i>	<i>cristata</i>
50	Cormorant	Reed	<i>Microcarbo</i>	<i>africanus</i>
4131	Coucal	Burchell's	<i>Centropus</i>	<i>burchellii</i>
277	Courser	Temminck's	<i>Cursorius</i>	<i>temminckii</i>
203	Crake	Black	<i>Zaporina</i>	<i>flavirostra</i>
621	Crombec	Long-billed	<i>Sylvietta</i>	<i>rufescens</i>
522	Crow	Pied	<i>Corvus</i>	<i>albus</i>
341	Cuckoo	African	<i>Cuculus</i>	<i>gularis</i>
344	Cuckoo	Black	<i>Cuculus</i>	<i>clamosus</i>
352	Cuckoo	Diederik	<i>Chrysococcyx</i>	<i>caprius</i>
346	Cuckoo	Great Spotted	<i>Clamator</i>	<i>glandarius</i>

348	Cuckoo	Jacobin	<i>Clamator</i>	<i>jacobinus</i>
351	Cuckoo	Klaas's	<i>Chrysococcyx</i>	<i>klaas</i>
347	Cuckoo	Levaillant's	<i>Clamator</i>	<i>levaillantii</i>
343	Cuckoo	Red-chested	<i>Cuculus</i>	<i>solitarius</i>
317	Dove	Laughing	<i>Spilopelia</i>	<i>senegalensis</i>
318	Dove	Namaqua	<i>Oena</i>	<i>capensis</i>
314	Dove	Red-eyed	<i>Streptopelia</i>	<i>semitorquata</i>
316	Dove	Ring-necked	<i>Streptopelia</i>	<i>capicola</i>
940	Dove	Rock	<i>Columba</i>	<i>livia</i>
517	Drongo	Fork-tailed	<i>Dicrurus</i>	<i>adsimilis</i>
100	Duck	White-faced Whistling	<i>Dendrocygna</i>	<i>viduata</i>
96	Duck	Yellow-billed	<i>Anas</i>	<i>undulata</i>
142	Eagle	Martial	<i>Polemaetus</i>	<i>bellicosus</i>
135	Eagle	Steppe	<i>Aquila</i>	<i>nipalensis</i>
137	Eagle	Wahlberg's	<i>Hieraaetus</i>	<i>wahlbergi</i>
368	Eagle-Owl	Spotted	<i>Bubo</i>	<i>africanus</i>
60	Egret	Intermediate	<i>Ardea</i>	<i>intermedia</i>
61	Egret	Western Cattle	<i>Bubulcus</i>	<i>ibis</i>
601	Eremomela	Burnt-necked	<i>Eremomela</i>	<i>usticollis</i>
600	Eremomela	Yellow-bellied	<i>Eremomela</i>	<i>icteropygialis</i>
119	Falcon	Amur	<i>Falco</i>	<i>amurensis</i>
114	Falcon	Lanner	<i>Falco</i>	<i>biarmicus</i>
821	Finch	Cut-throat	<i>Amadina</i>	<i>fasciata</i>
820	Finch	Red-headed	<i>Amadina</i>	<i>erythrocephala</i>
833	Firefinch	African	<i>Lagonosticta</i>	<i>rubricata</i>
835	Firefinch	Jameson's	<i>Lagonosticta</i>	<i>rhodopareia</i>
837	Firefinch	Red-billed	<i>Lagonosticta</i>	<i>senegala</i>
707	Fiscal	Southern	<i>Lanius</i>	<i>collaris</i>
149	Fish Eagle	African	<i>Haliaeetus</i>	<i>vocifer</i>
682	Flycatcher	African Paradise	<i>Terpsiphone</i>	<i>viridis</i>
665	Flycatcher	Fiscal	<i>Melaenornis</i>	<i>silens</i>

661	Flycatcher	Marico	<i>Melaenornis</i>	<i>mariquensis</i>
662	Flycatcher	Pale	<i>Melaenornis</i>	<i>pallidus</i>
664	Flycatcher	Southern Black	<i>Melaenornis</i>	<i>pammelaina</i>
654	Flycatcher	Spotted	<i>Muscicapa</i>	<i>striata</i>
173	Francolin	Coqui	<i>Campocolinus</i>	<i>coqui</i>
174	Francolin	Crested	<i>Ortygornis</i>	<i>sephaena</i>
339	Go-away-bird	Grey	<i>Crinifer</i>	<i>concolor</i>
89	Goose	Egyptian	<i>Alopochen</i>	<i>aegyptiaca</i>
88	Goose	Spur-winged	<i>Plectropterus</i>	<i>gambensis</i>
162	Goshawk	Gabar	<i>Micronisus</i>	<i>gabar</i>
165	Goshawk	Pale Chanting	<i>Melierax</i>	<i>canorus</i>
6	Grebe	Little	<i>Tachybaptus</i>	<i>ruficollis</i>
550	Greenbul	Yellow-bellied	<i>Chlorocichla</i>	<i>flaviventris</i>
706	Grey Shrike	Lesser	<i>Lanius</i>	<i>minor</i>
192	Guineafowl	Helmeted	<i>Numida</i>	<i>meleagris</i>
171	Harrier-Hawk	African	<i>Polyboroides</i>	<i>typus</i>
141	Hawk-Eagle	African	<i>Aquila</i>	<i>spilogaster</i>
727	Helmetshrike	White-crested	<i>Prionops</i>	<i>plumatus</i>
55	Heron	Black-headed	<i>Ardea</i>	<i>melanocephala</i>
54	Heron	Grey	<i>Ardea</i>	<i>cinerea</i>
57	Heron	Purple	<i>Ardea</i>	<i>purpurea</i>
62	Heron	Squacco	<i>Ardeola</i>	<i>ralloides</i>
63	Heron	Striated	<i>Butorides</i>	<i>striata</i>
443	Honeybird	Brown-backed	<i>Prodotiscus</i>	<i>regulus</i>
440	Honeyguide	Greater	<i>Indicator</i>	<i>indicator</i>
442	Honeyguide	Lesser	<i>Indicator</i>	<i>minor</i>
418	Hoopoe	African	<i>Upupa</i>	<i>africana</i>
424	Hornbill	African Grey	<i>Lophoceros</i>	<i>nasutus</i>
4129	Hornbill	Southern Red-billed	<i>Tockus</i>	<i>rufirostris</i>
426	Hornbill	Southern Yellow-billed	<i>Tockus</i>	<i>leucomelas</i>
81	Ibis	African Sacred	<i>Threskiornis</i>	<i>aethiopicus</i>

84	Ibis	Hadada	<i>Bostrychia</i>	<i>hagedash</i>
851	Indigobird	Village	<i>Vidua</i>	<i>chalybeata</i>
228	Jacana	African	<i>Actophilornis</i>	<i>africanus</i>
125	Kestrel	Lesser	<i>Falco</i>	<i>naumanni</i>
402	Kingfisher	Brown-hooded	<i>Halcyon</i>	<i>albiventris</i>
130	Kite	Black-winged	<i>Elanus</i>	<i>caeruleus</i>
129	Kite	Yellow-billed	<i>Milvus</i>	<i>aegyptius</i>
224	Korhaan	Red-crested	<i>Lophotis</i>	<i>ruficrista</i>
247	Lapwing	African Wattled	<i>Vanellus</i>	<i>senegallus</i>
245	Lapwing	Blacksmith	<i>Vanellus</i>	<i>armatus</i>
242	Lapwing	Crowned	<i>Vanellus</i>	<i>coronatus</i>
468	Lark	Flappet	<i>Mirafra</i>	<i>rufocinnamomea</i>
457	Lark	Monotonous	<i>Mirafra</i>	<i>passerina</i>
458	Lark	Rufous-naped	<i>Mirafra</i>	<i>africana</i>
460	Lark	Sabota	<i>Calendulauda</i>	<i>sabota</i>
703	Longclaw	Cape	<i>Macronyx</i>	<i>capensis</i>
823	Mannikin	Bronze	<i>Lonchura</i>	<i>cucullata</i>
509	Martin	Brown-throated	<i>Riparia</i>	<i>paludicola</i>
506	Martin	Rock	<i>Ptyonoprogne</i>	<i>fuligula</i>
210	Moorhen	Common	<i>Gallinula</i>	<i>chloropus</i>
392	Mousebird	Red-faced	<i>Urocolius</i>	<i>indicus</i>
390	Mousebird	Speckled	<i>Colius</i>	<i>striatus</i>
391	Mousebird	White-backed	<i>Colius</i>	<i>colius</i>
734	Myna	Common	<i>Acridotheres</i>	<i>tristis</i>
69	Night Heron	Black-crowned	<i>Nycticorax</i>	<i>nycticorax</i>
373	Nightjar	Fiery-necked	<i>Caprimulgus</i>	<i>pectoralis</i>
374	Nightjar	Freckled	<i>Caprimulgus</i>	<i>tristigma</i>
521	Oriole	Black-headed	<i>Oriolus</i>	<i>larvatus</i>
1	Ostrich	Common	<i>Struthio</i>	<i>camelus</i>
361	Owl	Marsh	<i>Asio</i>	<i>capensis</i>
364	Owl	Southern White-faced	<i>Ptilopsis</i>	<i>granti</i>

359	Owl	Western Barn	<i>Tyto</i>	<i>alba</i>
365	Owlet	Pearl-spotted	<i>Glaucidium</i>	<i>perlatum</i>
748	Oxpecker	Red-billed	<i>Buphagus</i>	<i>erythrorynchus</i>
323	Pigeon	African Green	<i>Treron</i>	<i>calvus</i>
311	Pigeon	Speckled	<i>Columba</i>	<i>guinea</i>
692	Pipit	African	<i>Anthus</i>	<i>cinnamomeus</i>
694	Pipit	Plain-backed	<i>Anthus</i>	<i>leucophrys</i>
238	Plover	Three-banded	<i>Charadrius</i>	<i>tricoloris</i>
650	Prinia	Black-chested	<i>Prinia</i>	<i>flavicans</i>
649	Prinia	Tawny-flanked	<i>Prinia</i>	<i>subflava</i>
712	Puffback	Black-backed	<i>Dryoscopus</i>	<i>cubla</i>
830	Pytilia	Green-winged	<i>Pytilia</i>	<i>melba</i>
805	Quelea	Red-billed	<i>Quelea</i>	<i>quelea</i>
808	Red Bishop	Southern	<i>Euplectes</i>	<i>orix</i>
581	Robin-Chat	Cape	<i>Cossypha</i>	<i>caffra</i>
582	Robin-Chat	White-throated	<i>Cossypha</i>	<i>humeralis</i>
412	Roller	European	<i>Coracias</i>	<i>garrulus</i>
413	Roller	Lilac-breasted	<i>Coracias</i>	<i>caudatus</i>
415	Roller	Purple	<i>Coracias</i>	<i>naevius</i>
421	Scimitarbill	Common	<i>Rhinopomastus</i>	<i>cyanomelas</i>
363	Scops Owl	African	<i>Otus</i>	<i>senegalensis</i>
586	Scrub Robin	Kalahari	<i>Cercotrichas</i>	<i>paena</i>
588	Scrub Robin	White-browed	<i>Cercotrichas</i>	<i>leucophrys</i>
867	Seedeater	Streaky-headed	<i>Criethagra</i>	<i>gularis</i>
711	Shrike	Crimson-breasted	<i>Laniarius</i>	<i>atrococcineus</i>
724	Shrike	Magpie	<i>Urolestes</i>	<i>melanoleucus</i>
708	Shrike	Red-backed	<i>Lanius</i>	<i>collurio</i>
146	Snake Eagle	Black-chested	<i>Circaetus</i>	<i>pectoralis</i>
145	Snake Eagle	Brown	<i>Circaetus</i>	<i>cinereus</i>
786	Sparrow	Cape	<i>Passer</i>	<i>melanurus</i>
785	Sparrow	Great	<i>Passer</i>	<i>motitensis</i>

4142	Sparrow	Southern Grey-headed	<i>Passer</i>	<i>diffusus</i>
788	Sparrow	Yellow-throated Bush	<i>Gymnoris</i>	<i>superciliaris</i>
780	Sparrow-Weaver	White-browed	<i>Plocepasser</i>	<i>mahali</i>
159	Sparrowhawk	Black	<i>Accipiter</i>	<i>melanoleucus</i>
158	Sparrowhawk	Little	<i>Accipiter</i>	<i>minullus</i>
183	Spurfowl	Natal	<i>Pternistis</i>	<i>natalensis</i>
185	Spurfowl	Swainson's	<i>Pternistis</i>	<i>swainsonii</i>
743	Starling	Burchell's	<i>Lamprotornis</i>	<i>australis</i>
737	Starling	Cape	<i>Lamprotornis</i>	<i>nitens</i>
736	Starling	Violet-backed	<i>Cinnyricinclus</i>	<i>leucogaster</i>
735	Starling	Wattled	<i>Creatophora</i>	<i>cinerea</i>
270	Stilt	Black-winged	<i>Himantopus</i>	<i>himantopus</i>
576	Stonechat	African	<i>Saxicola</i>	<i>torquatus</i>
78	Stork	Abdim's	<i>Ciconia</i>	<i>abdimii</i>
73	Stork	Marabou	<i>Leptoptilos</i>	<i>crumenifer</i>
772	Sunbird	Amethyst	<i>Chalcomitra</i>	<i>amethystina</i>
755	Sunbird	Marico	<i>Cinnyris</i>	<i>mariquensis</i>
763	Sunbird	White-bellied	<i>Cinnyris</i>	<i>talatala</i>
493	Swallow	Barn	<i>Hirundo</i>	<i>rustica</i>
502	Swallow	Greater Striped	<i>Cecropis</i>	<i>cucullata</i>
503	Swallow	Lesser Striped	<i>Cecropis</i>	<i>abyssinica</i>
498	Swallow	Pearl-breasted	<i>Hirundo</i>	<i>dimidiata</i>
501	Swallow	Red-breasted	<i>Cecropis</i>	<i>semirufa</i>
495	Swallow	White-throated	<i>Hirundo</i>	<i>albigularis</i>
380	Swift	African Black	<i>Apus</i>	<i>barbatus</i>
387	Swift	African Palm	<i>Cypsiurus</i>	<i>parvus</i>
385	Swift	Little	<i>Apus</i>	<i>affinis</i>
383	Swift	White-rumped	<i>Apus</i>	<i>caffer</i>
715	Tchagra	Black-crowned	<i>Tchagra</i>	<i>senegalus</i>
714	Tchagra	Brown-crowned	<i>Tchagra</i>	<i>australis</i>
97	Teal	Red-billed	<i>Anas</i>	<i>erythrorhyncha</i>

275	Thick-knee	Spotted	<i>Burhinus</i>	<i>capensis</i>
557	Thrush	Groundscraper	<i>Turdus</i>	<i>litsitsirupa</i>
1104	Thrush	Karoo	<i>Turdus</i>	<i>smithi</i>
552	Thrush	Kurrichane	<i>Turdus</i>	<i>libonyana</i>
437	Tinkerbird	Yellow-fronted	<i>Pogoniulus</i>	<i>chrysoconus</i>
514	Tit	Ashy	<i>Melaniparus</i>	<i>cinerascens</i>
531	Tit	Cape Penduline	<i>Anthoscopus</i>	<i>minutus</i>
527	Tit	Southern Black	<i>Melaniparus</i>	<i>niger</i>
106	Vulture	Cape	<i>Gyps</i>	<i>coprotheres</i>
108	Vulture	Lappet-faced	<i>Torgos</i>	<i>tracheliotos</i>
107	Vulture	White-backed	<i>Gyps</i>	<i>africanus</i>
658	Warbler	Chestnut-vented	<i>Curruca</i>	<i>subcoerulea</i>
595	Warbler	Garden	<i>Curruca</i>	<i>borin</i>
596	Warbler	Icterine	<i>Hippolais</i>	<i>icterina</i>
604	Warbler	Lesser Swamp	<i>Acrocephalus</i>	<i>gracilirostris</i>
609	Warbler	Little Rush	<i>Bradypterus</i>	<i>baboecala</i>
607	Warbler	Marsh	<i>Acrocephalus</i>	<i>palustris</i>
597	Warbler	Olive-tree	<i>Hippolais</i>	<i>olivetorum</i>
599	Warbler	Willow	<i>Phylloscopus</i>	<i>trochilus</i>
841	Waxbill	Black-faced	<i>Brunhilda</i>	<i>erythronotos</i>
839	Waxbill	Blue	<i>Uraeginthus</i>	<i>angolensis</i>
843	Waxbill	Common	<i>Estrilda</i>	<i>astrild</i>
840	Waxbill	Violet-eared	<i>Uraeginthus</i>	<i>granatinus</i>
792	Weaver	Lesser Masked	<i>Ploceus</i>	<i>intermedius</i>
793	Weaver	Red-headed	<i>Anaplectes</i>	<i>rubriceps</i>
789	Weaver	Scaly-feathered	<i>Sporopipes</i>	<i>squamifrons</i>
803	Weaver	Southern Masked	<i>Ploceus</i>	<i>velatus</i>
797	Weaver	Village	<i>Ploceus</i>	<i>cucullatus</i>
568	Wheatear	Capped	<i>Oenanthe</i>	<i>pileata</i>
730	White-crowned Shrike	Southern	<i>Eurocephalus</i>	<i>anguitimens</i>

1172	White-eye	Cape	<i>Zosterops</i>	<i>virens</i>
594	Whitethroat	Common	<i>Curruca</i>	<i>communis</i>
852	Whydah	Long-tailed Paradise	<i>Vidua</i>	<i>paradisaea</i>
846	Whydah	Pin-tailed	<i>Vidua</i>	<i>macroura</i>
847	Whydah	Shaft-tailed	<i>Vidua</i>	<i>regia</i>
813	Widowbird	Red-collared	<i>Euplectes</i>	<i>ardens</i>
814	Widowbird	White-winged	<i>Euplectes</i>	<i>albonotatus</i>
419	Wood Hoopoe	Green	<i>Phoeniculus</i>	<i>purpureus</i>
321	Wood-Dove	Emerald-spotted	<i>Turtur</i>	<i>chalcospilos</i>
451	Woodpecker	Bearded	<i>Chloropicus</i>	<i>namaquus</i>
450	Woodpecker	Cardinal	<i>Dendropicus</i>	<i>fuscescens</i>
447	Woodpecker	Golden-tailed	<i>Campethera</i>	<i>abingoni</i>
614	Wren-Warbler	Barred	<i>Calamonastes</i>	<i>fasciolatus</i>

E. Trees

Family	Genus	Sp1	Author1
Oleaceae	<i>Jasminum</i>	<i>breviflorum</i>	Harv. ex C.H.Wright
Acanthaceae	<i>Blepharis</i>	<i>maderaspatensis</i>	(L.) B.Heyne ex Roth
Acanthaceae	<i>Dicliptera</i>	<i>transvaalensis</i>	C.B.Clarke
Rubiaceae	<i>Gardenia</i>	<i>volkensii</i>	K.Schum.
Asteraceae	<i>Crystallopollen</i>	<i>angustifolium</i>	Steetz
Acanthaceae	<i>Barleria</i>	<i>bremekampii</i>	Oberm.
Orchidaceae	<i>Eulophia</i>	<i>angolensis</i>	(Rchb.f.) Summerh.
Plumbaginaceae	<i>Plumbago</i>	<i>zeylanica</i>	L.
Orchidaceae	<i>Eulophia</i>	<i>clitellifera</i>	(Rchb.f.) Bolus
Hypericaceae	<i>Hypericum</i>	<i>lalandii</i>	Choisy
Asteraceae	<i>Senecio</i>	<i>apiifolius</i>	(DC.) Benth. & Hook.f. ex Mendonça
Asteraceae	<i>Felicia</i>	<i>muricata</i>	(Thunb.) Nees

Malvaceae	<i>Grewia</i>	<i>flavescens</i>	Juss.
Asteraceae	<i>Callilepis</i>	<i>leptophylla</i>	Harv.
Combretaceae	<i>Combretum</i>	<i>nelsonii</i>	Dummer
Santalaceae	<i>Viscum</i>	<i>combreticola</i>	Engl.
Acanthaceae	<i>Blepharis</i>	<i>subvolubilis</i>	C.B.Clarke
Fabaceae	<i>Tephrosia</i>	<i>purpurea</i>	(L.) Pers.

**WETLAND ASSESSMENT FOR THE PROPOSED PROSPECTING RIGHTS
FOR CLAY IN RESPECT OF THE REMAINING EXTENT, PORTIONS 1
AND 11 OF THE FARM DOORNPOT 458 KR IN LIMPOPO PROVINCE,
SOUTH AFRICA**

- A desktop Assessment -

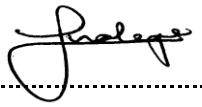
Report Prepared By
Mora Ecological Services



Date : 05 December 2024

Prepared and submitted to
VAHLENGWE MINING ADVISORY AND CONSULTING

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Report Name	MOLEPO, M. 2024. A DESKTOP ASSESSMENT - WETLAND STATUS FOR THE PROPOSED PROSPECTING RIGHTS FOR CLAY IN RESPECT OF THE REMAINING EXTENT, PORTIONS 1 AND 11 OF THE FARM DOORNPOT 458 KR IN LIMPOPO PROVINCE, SOUTH AFRICA
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Submitted to	VAHLENGWE MINING ADVISORY AND CONSULTING
AUTHOR	MOLEPO, M , (Pr. Sci. Nat 009509) 
Date Produced	05 December 2024

EXECUTIVE SUMMARY

MORA Ecological Services (Pty) Ltd was appointed by Vahlengwe Mining Advisory And Consulting to conduct a desktop assessment - wetland status for the proposed prospecting right application on the remaining extent, Portions 1 and 11 of the Farm Doornput 458 KR in the Magisterial District of Bela-Bela/Waterberg, Limpopo Province. The prospecting area is situated 13,51 km South-west of Bela -Bela and 26,41 km East south of Seabe and access road to the farm is via the R516 and N1 road, in the Bela- Bela District in Limpopo Province.

A rigorous desktop study was conducted as triggered by screening tool, and assessment, together with a field visit for ground truthing. Available desktop tools suggested and concluded that there is a wetland cutting-cross the middle of the planned route. Therefore, a field visit to ground truth and assess the wetland and delineate its borders is recommended by a wetland specialist.

DECLARATION OF INDEPENDENCE

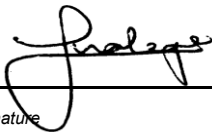
I, Mokgatla Molepo, in my capacity as a specialist consultant, hereby declare that I:

- Act/acted as an independent specialist to the client for this project and its content.
- Do not have any personal, business or financial interest in the project except for financial remuneration for specialist investigations completed in a professional capacity as specified by the Environmental Impact Assessment Regulations, 2014, as amended.
- Will not be affected by the outcome of the environmental process, of which this report forms part of.
- Do not have any influence over the decisions made by the governing authorities.
- Do not object to or endorse the proposed developments but aim to present facts and my best scientific and professional opinion with regard to the impacts of the development.
- Undertake to disclose to the relevant authorities any information that has or may have the potential to influence its decision or the objectivity of any report, plan or document required in terms of the Environmental Impact Assessment Regulations, 2014, as amended.

INDEMNITY

- This report is based on a desktop investigation and available information and data related to the site to be affected and the specialists best scientific and professional knowledge.
- It is limited by time and budgetary constraints relevant to the type and level of investigation undertaken.
- The Precautionary Principle has been applied throughout this investigation.

- The findings, results, observations, conclusions and recommendations given in this report are based on the specialist's best scientific and professional knowledge as well as information available at the time of study.
- Additional information may become known or available during a later stage of the process for which no allowance could have been made at the time of this report.
- The specialist reserves the right to modify this report, recommendations and conclusions at any stage should additional information become available.
- Information and recommendations in this report cannot be applied to any other area without proper investigation.
- This report, in its entirety or any portion thereof, may not be altered in any manner or form or for any purpose without the specific and written consent of the specialist as specified above.
- Acceptance of this report, in any physical or digital form, serves to confirm acknowledgement of these terms and liabilities.



Signature

Mokgatla Molepo *Pr. Nat. Sci.* (009509)

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1. Introduction

MORA Ecological Services (Pty) Ltd was appointed by Vahlengwe Mining Advisory And Consulting to conduct a desktop assessment - wetland status for the proposed prospecting right application on the remaining extent, Portions 1 and 11 of the Farm Doornput 458 KR in the Magisterial District of Bela-Bela/Waterberg, Limpopo Province. The prospecting area is situated 13,51 km South-west of Bela -Bela and 26,41 km East south of Seabe and access road to the farm is via the R516 and N1 road, in the Bela- Bela District in Limpopo Province.

This is the report to the status of wetlands which may be present within the 500 m radius of the proposed development site. The purpose of this assessment is to paint a picture of the desktop and literature assessment of the site in regard to the Environmental Impact Assessment Regulations, 2014, as amended. This report will herewith make recommendations hereafter.

2. What is a Wetland?

Wetlands are described as a unique place on earth that is transitional between aquatic and terrestrial ecosystems, has its water table close to or above the soil surface, is characterised by (unique) saturated soil and hydrophytic vegetation types, and accommodating distinctive organisms (Edwards, *et al.*, 2018). In terms of Section 1 of the National Water Act (NWA, Act 36 of 1998), 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.*"

Wetlands are biologically diverse and productive unique ecosystems (Cherry, 2011) and experience huge pressure. They also occur in areas where the groundwater discharges to the surface forming seeps and springs. These are ecosystems which provide several benefits to biodiversity and human life, directly and indirectly, (Kotze *et al.*, 2005). Amongst the others, are water purification, flood reduction, erosion control, socio-economic (e.g. birding), tourism and education. There is a need to

assess and compare wetlands in terms of ecosystem service delivery to prioritize protection and restoration efforts, (Walters, *et al.*, 2021)

Habitat loss is one of the biggest threats to the current biodiversity, and over 60% has been lost in the past 20 years (Wright, *et al.*, 2018) due to anthropogenic activities. As a result, over 50% of wetlands are lost in South Africa or under threat (Edwards, *et al.*, 2018), making it the most critically endangered ecosystem in the region. In the past 30 years, South Africa's grassland transformed or changed by more than 50%, (Schoeman, 2013).

Wetlands are the results of an anaerobic process (i.e. without air–oxygen) in the soil (hydric) which favours and support specific and unique vegetation (hydrophytes) and perhaps attracts unique fauna/animals (Edwards, *et al.*, 2018). The hydric soil of the wetland is distinctive and characterised by redoximorphic and/or gleying conditions.

3. TERMS OF REFERENCE (TOR)

This section helps to achieve an understanding of what is expected, as a prerequisite for efficient and effective specialist involvement. The TOR is set in line with the Environmental Impact Assessment Regulations 2012 to provide guidance to wetland specialist on assessment and minimum report content requirements for environmental impacts.

The TOR;

This wetland assessment report is intended to provide detailed information on the aquatic constraints, potential impacts and recommended mitigation measures for the proposed activities.

- Identify and assess the presence of any waterbodies/wetlands within the study area;
- Compile recommendations to that effect.

4. ASSUMPTION AND LIMITATIONS

The following assumptions and limitations are applicable to this report:

- The assessment is confined to 500 m buffer of the project boundary; and
- It is a desktop assessment and by use of all available dataset and tools

5. RELEVANT LEGISLATION

Here below are some of the legislation and tools available to guide any of the activities around/within the wetland or/and aquatic water systems.

- The Constitution of the Republic of South Africa Act, 1996 (Act No. 108 of 1996) – Section 24.
- National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), as amended.
- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA).
- National Water Act, 1998 (Act No. 36 of 1998) (NWA).
- GENERAL AUTHORISATION IN TERMS OF SECTION 39 OF THE NWA
- Conservation of Agricultural Resources Act (Act 43 of 1983)
- BIODIVERSITY SECTOR PLAN, 2014
- Convention on the Conservation of Migratory Species (CMS)
- The African-Eurasian Waterbird Agreement (AEWA)
- Other Relevant Legislation and Guidelines:
 - DWS Wetlands Delineation and Riparian area determination Guideline, 2005;
 - Biodiversity management plans (BMP); and
 - National biodiversity assessment (NBA).

6. Study Area

Vegetation

The study area falls within the Central sandy Bushveld bioregional vegetation unit within the Savanna biome, figure 2. It is a vegetation type found in Mpumalanga, Limpopo and North West amongst the South African landscapes. It is dominated by the herbaceous/grasses vegetation with a graminoid lower layer and an upper layer of woody plants that vary from sparse to 75% canopy cover.

This vegetation unit is characterised by the undulating valley bottoms and sandy plains. It is dominated by the well established deep, well-drained soils which support tall, deciduous woody plant species such as *Terminalia sericea*, *Burkea africana*, *Senegalia sp.*, *Vachellia sp.*, *Ziziphus sp.*, *Euclea sp.*, *Senegalia caffra* and *Combretum apiculatum*. Geology in the area vary, with topography giving rise to a number of woody species and diverse plant community, (Barrett and Brown, 2021).

The vegetation in the area is dominated by grasses species (e.g. *Themeda triandra*) and herbaceous components covering, is severely degraded. In places not disturbed, only scattered small wetlands, narrow stream alluvia, pans and occasional ridges or rocky outcrops interrupt the continuous grassland cover (Mucina & Rutherford 2006).

It is fragmented by full human settlement, and interrupted grass cover is the dominant land cover linking the public road on the west and south. No visible rocks or hills or or escapements

Species That May Occur

Graminoids (Grasses): *Andropogon appendiculatus*, *Brachiaria serrata*, *Cymbopogon pospischilii*, *Cynodon dactylon*, *Elionurus muticus*, *Eragrostis capensis*, *E. chloromelas*, *E. curvula*, *E. plana*, *E. planiculmis*, *E. racemosa*, *Heteropogon contortus*, *Hyparrhenia hirta*, *Setaria nigrirostris*, *S. sphacelata*, *Themeda triandra*, *Tristachya leucothrix*, *Andropogon schirensis*, *Aristida adscensionis*.

Herbs: *Hermannia depressa*, *Acalypha angustata*, *Berkheya setifera*, *Dicoma anomala*, *Euryops gilfillanii*, *Geigeria aspera* var. *aspera*, *Graderia subintera*

Haplocarpha scaposa, *Helichrysum miconiifolium*, *H. nudifolium* var. *nudifolium*, *H. rugulosum*, *Hibiscus pusillus*, *Justicia anagalloides*, *Lippia scaberrima*, *Rhynchosia effusa*, *Schistostephium crataegifolium*, *Selago densiflora*, *Senecio coronatus*, *Vernonia oligocephala*, *Wahlenbergia undulata*, *Rhynchosia totta* *Crinum* spp., *Haemanthus humilis* subsp. *hirsutus*, *H. montanus*.

Climate

It is located in a summer rainfall area with moderate to very hot summers and mild to cold winters. Summer rainfall (Nov - April) is at an average of 600 mm per annum, whilst the lowest rainfall is experienced in winter (Jun/Jul). The temperatures are ranging from minimum of -6°C in winter and up to 35°C in the summer period.

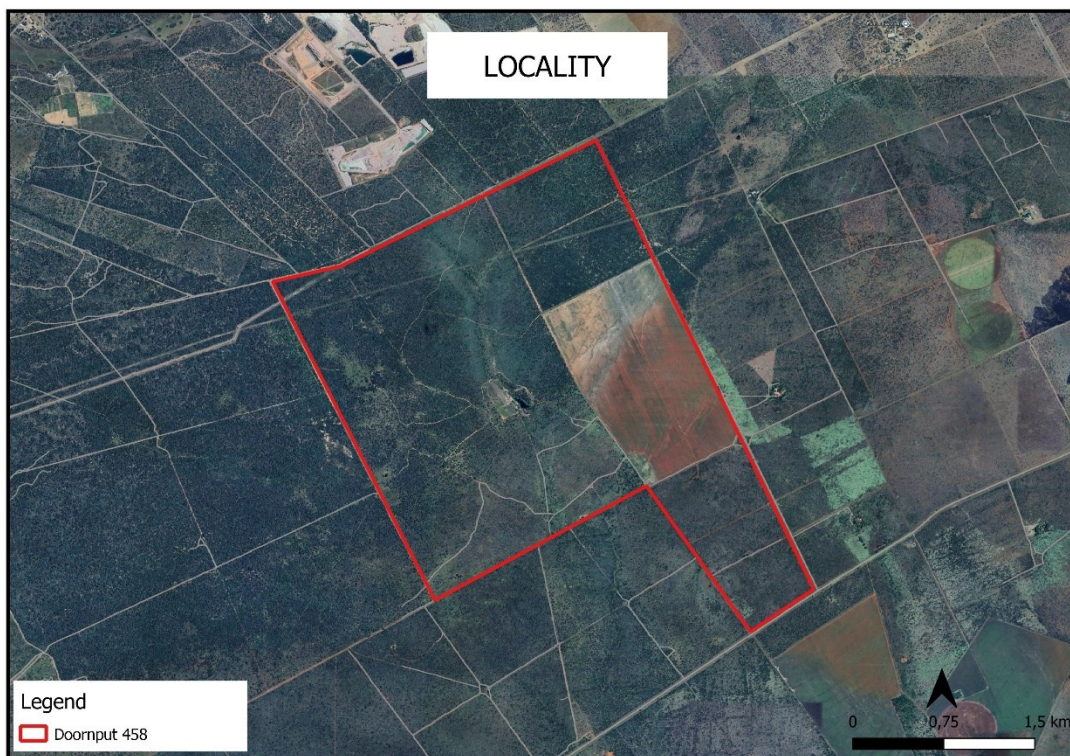


Figure 1: Locality of the study side.

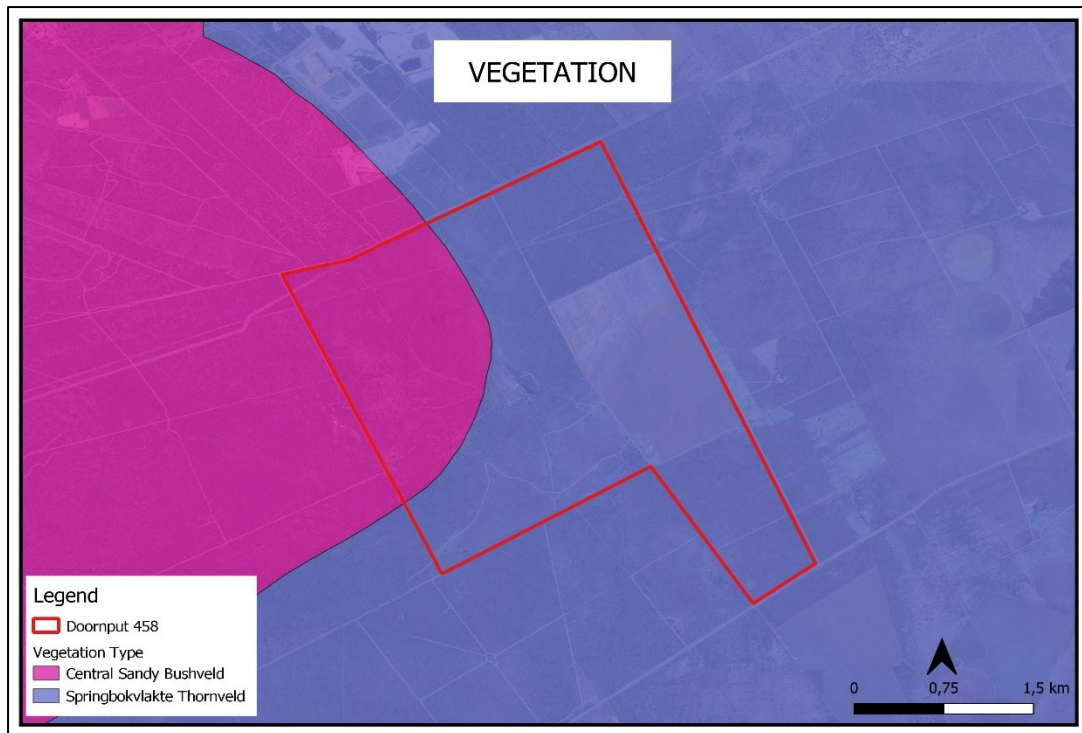


Figure 2: The Vegetation type the study area falls in Springbokvlakte Thornveld and Central Sandy Bushveld.

7. Methodology

Desktop Study

Various literature and publications (see list of references) related to the region, province and study area, were consulted mainly during the identification of species, assessment guidelines, processes and protocols on wetlands. Other resources visited and consulted include;

- SANBI Red List of South Africa Plants web: [Threatened Species Programme | SANBI Red List of South African Plants](#) to attain the list of any red lit plants in the area,
- Plants Of South Africa, of SANBI web: [Home Page - BRAHMS Online \(sanbi.org\)](#) to attain any of the protected and edemism species,
- SANBI Institute’s Biodiversity-GIS Map Viewer and database [Biodiversity Data \(sanbi.org\)](#) to access and view current aquatic systems from the study area,

- A cloud-based platform, Hub ArcGIS – Maps-wetlands, accessed at https://hub.arcgis.com/maps/edit?content=d1db45ea109b44828ba74a7bd941544b_20 to access and view the study area and analyse the current aquatic systems
- Intermediate Ecological Reserve PES method for [floodplain] wetlands (Duthie, 1999b)
- Guidelines for delineation of wetland boundaries and wetland zones (Marneweck and Kotze, 1999): Part of the DWAF (1999c)

Desktop tools, programs and applications such as;

- Google Earth Pro (version 3) and Quantum Geographic Information Systems (QGIS 3.28.0) to view and compare the 3D satellite imagery of the study area to establish present and past events/situations of the terrain. During this assessment, the tools were used to determine and mark the 500m radius (markers) from the borders of the study area/project site, to plan the field assessment accordingly.

Recent and latest various national datasets accessed mainly from the SANBI database were used to screen and assess the study area (and 500m radius) remotely. The data extracted and used was mainly in a shapefile format and plugged into QGIS for illustration. Such data include;

- Latest National Wetland Management Framework For South Africa Report, 2021
- National Terrestrial Threat Status and Protection level of 2018
- National Wetland Map 5 (NWM5) of National Biodiversity Assessment 2018
- National Freshwater Ecosystem Priority Areas (NFEPA)

8. Results and recommendation

Assessment results

The assessment suggests and conclude that there is a presence of a wetland in the area. According to the available resources (NFEPA) the type of wetland is a seep.

It is presumed that the activities will in one form or another have an impact on the wetland. Therefore, a field visit to ground truth and assess the wetland and delineate its boarders/zones is recommended. This groundtruthing assessment exercise will be able to recommend and provide appropriate measures and way forward to minimise impacts. This shall be conducted by a wetland or aquatic specialist.

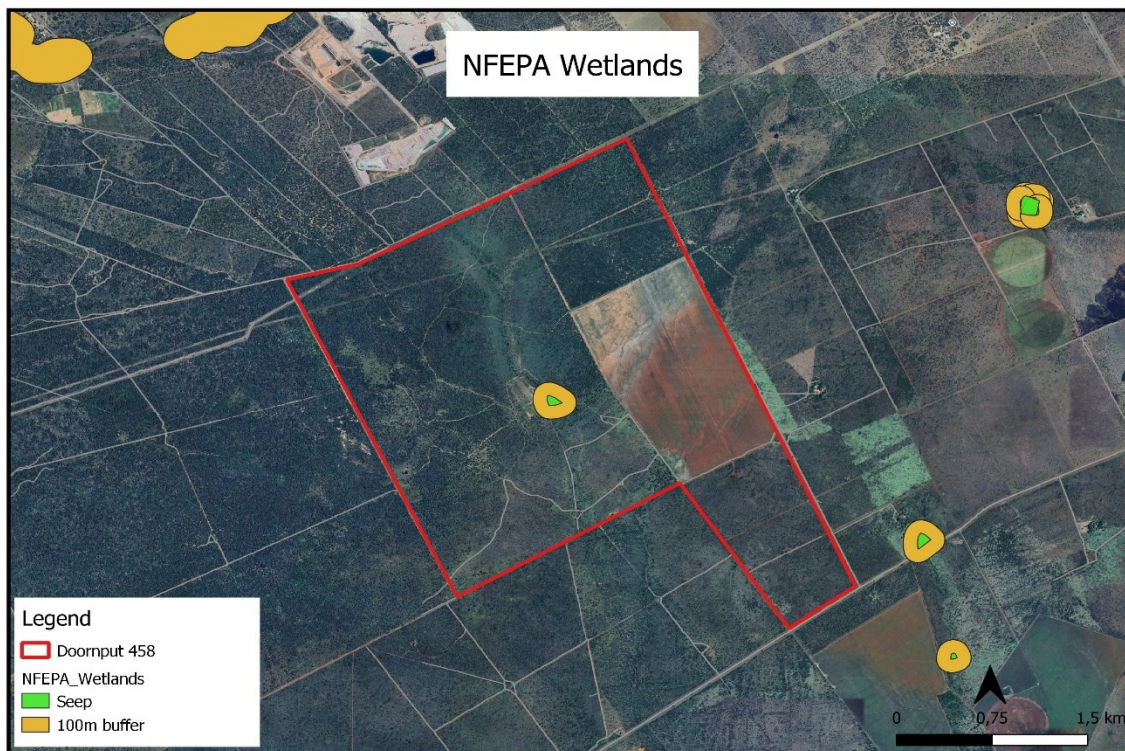


Figure 3: Identified Wetlands within and around study area.

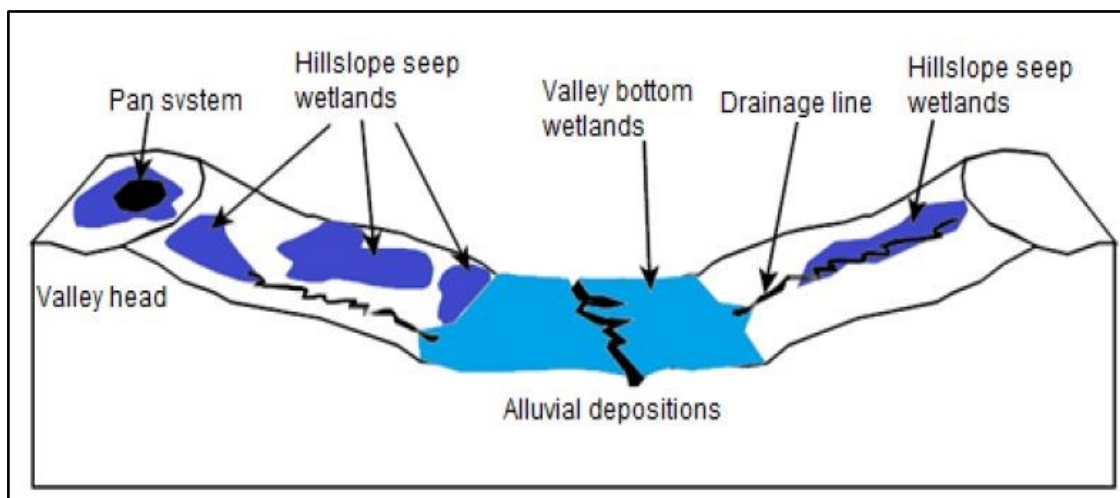


Figure 4: Illustration from Kotze, *et al.*, 2007 showing seep wetlands

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GEOHYDROLOGICAL INVESTIGATION REPORT- IN RESPECT OF THE REMAINING EXTENT, PORTIONS 1 AND 11 OF THE FARM DOORNPOT 458 KR SITUATED IN THE MAGISTERIAL DISTRICT OF BELA-BELA/WATERBERG, LIMPOPO PROVINCE

DATE:	NOVEMBER 2024
VERSION:	VERSION 1
BY:	B. VERMEULEN <i>Pri.Sci.Nat.</i>
REVIEWED BY:	J. DU PREEZ <i>Pri.Sci.Nat.</i>



Report Type:	Geohydrological Investigation Report
Report Name:	Geohydrological Investigation Report- In Respect Of The Remaining Extent, Portions 1 And 11 Of The Farm Doornput 458 Kr Situated In The Magisterial District Of Bela-Bela/Waterberg, Limpopo Province
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Version:	Version 1
Date:	27 November 2024
Client Logo:	 VAHLENGWE MINING ADVISORY AND CONSULTING

GEOHYDROLOGICAL INVESTIGATION REPORT - IN RESPECT OF THE REMAINING EXTENT, PORTIONS 1 AND 11 OF THE FARM DOORNPOT 458 KR SITUATED IN THE MAGISTERIAL DISTRICT OF BELA-BELA/WATERBERG, LIMPOPO PROVINCE

Dear Madam,

The geohydrological investigation at the abovementioned location refers. Comments and recommendations regarding the geohydrological investigation in the aforementioned area are discussed in this report.

Particular aspects reflected in this report are:

- Desktop - Data Search;
- Groundwater Flow Patterns,
- Risk assessment and Mitigations.

Disclaimer:

The results, conclusions and recommendations of this report are limited to the Scope of Work agreed between the Environmental Consultant (Beate Vermeulen) and the Client who requested this investigation. All assumptions made and all information contained within this report, its attachments and maps depend on accessibility to and reliability of relevant information. All work conducted by Beate is done in accordance with the Standard Operating Procedures. This geohydrological study is based entirely on a desktop analysis using secondary data sources and assumptions due to the absence of fieldwork or primary data collection. While every effort has been made to ensure accuracy, the limitations inherent in desktop studies mean that findings should be treated as preliminary.

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Declaration:

I hereby declare:

- I act as an independent consultant.
- I have the relevant training and qualifications in order to assess all the results.
- Every effort was made during the geohydrological study to ensure that generally accepted practices of our profession were used in the groundwater evaluation of the site. I trust that this meets with your requirements in this matter.

We trust that this meets with your requirements in this regard.



..... (Electronic Signature)

B. Vermeulen Hydrogeologist (Pr Sci Nat - BSc Hons)

Date: 27th of November 2024

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GEOHYDROLOGICAL INVESTIGATION REPORT - IN RESPECT OF THE REMAINING EXTENT, PORTIONS 1 AND 11 OF THE FARM DOORNPOT 458 KR SITUATED IN THE MAGISTERIAL DISTRICT OF BELA-BELA/WATERBERG, LIMPOPO PROVINCE

1. Introduction

Following an appointment by, Vahlengwe Mining Advisory and Consulting on behalf of Aquarella Investments 389 (Pty) Ltd, Beate Vermeulen was requested to conduct a hydrogeological audit at the abovementioned location. The aim is to determine the geohydrological characteristics and groundwater flow trends in respect of the remaining extent, portions 1 and 11 of the Farm Doornput 458 KR situated in the magisterial district of Bela Bela/Waterberg, Limpopo province.

2. Background Information

The proposed site, managed by Aquarella Investments 389 (Pty) Ltd, is situated in the Magisterial District of Bela-Bela/Waterberg, Limpopo Province, covering an area of approximately 1,413 hectares. The project focuses on clay prospecting activities, which include drilling ten (10) exploration boreholes to determine mineral deposition, economic viability, and potential development into a full-scale mining operation. The planned activities will be carried out over 48 months, subject to extension. Access to the site is via the R516 and N1 roads, situated upstream in a watershed area, with potential downstream impacts.

The prospecting area encompasses varied geological formations, including clay, shale, sandstone, quartzite, conglomerate, and andesite. The presence of a significant fault and proximity to a non-perennial stream that drains into the Rhenosterkop Dam highlights the need for rigorous geohydrological assessments. Activities involve site establishment, vegetation clearance, road construction, drilling, and subsequent rehabilitation.

3. Scope of Works

The main aim of the study was to assess the geohydrological characteristics to determine the potential risks to groundwater, surface water, and downstream users associated with the proposed mining activities and groundwater flow trends of the site.

The brief of the appointment was to: -

- Conduct a geohydrological study of the area by collecting and analysing existing geohydrological, geological, and hydrological data for the area to establish a comprehensive understanding of the groundwater system. Use available topographic maps, satellite imagery, and hydrological modelling tools to delineate catchment boundaries, identify drainage patterns, and characterize aquifers.
- Identify the groundwater flow trend of the study area; and
- Provide a factual report on the work carried out and the findings of the preliminary investigation.

Recommendations:

- Detailed Hydrocensus: It is strongly recommended that a hydrocensus be conducted to accurately map and assess groundwater resources, water levels, borehole locations, and usage patterns.
- Baseline Water Quality Sampling: Collect water samples from all identified water sources to establish a baseline for groundwater and surface water quality.
- Monitoring Boreholes: Drilling boreholes with installed water level loggers is essential to track seasonal fluctuations in groundwater levels and assess the impact of future mining activities.
- Comprehensive Field-Based Study: A more detailed, field-based geohydrological study should follow to validate the desktop findings, refine the risk assessment, and develop site-specific mitigation strategies.

4. Information Used

Geological, hydrogeological, topographical. Locality and aerial information were obtained from the following sources: -

- Geological Map 2528 Pretoria (1978) to a scale of 1:250 000;
- Hydrogeological Map Series, Sheet 2526 Johannesburg (1999) to a scale of 1:500 000.
- Google Earth image of the area ©2019.
- Topographical map sheets 2528CD to a scale of 1:50 000 in digital format.
- National Groundwater Archive (NGA) data set obtained from the Department of Water Affairs (DWA).
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5. Data Search

Site Location

The site is located some 13.84 km north-east of Bela-Bela, approximately 16.05 km south-east of Modimole, 4.67 km east of the N1 road, in the Waterbelg Municipality jurisdiction, Limpopo Province. Refer to Figure 1: Locality map below.



Figure 1: Locality Map

Topography

On a regional scale, the project area consists of relative soft sloping terrain comprising sedimentary and igneous formations with elevations ranging between 1033m and 1297m. The center of the investigation area is located at 1158 mamsl and slopes to the south-east. The topography flattening towards the boundaries of the study area, along the local rivers. Refer to Figure 2A below.

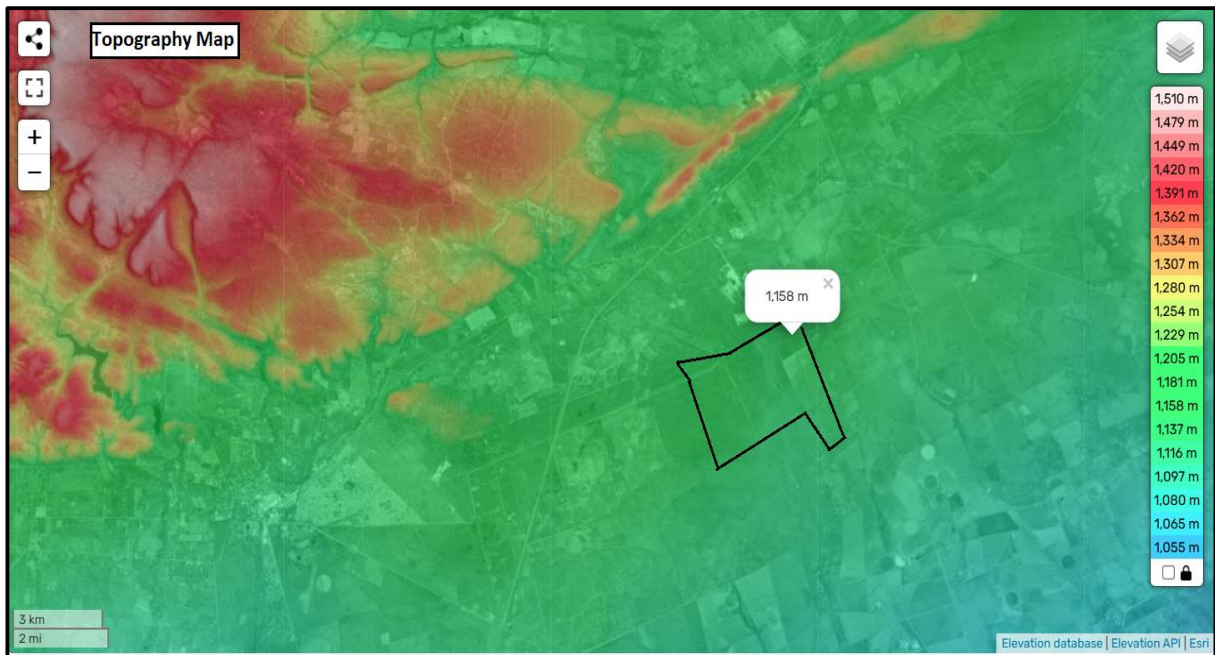


Figure 2A: Topography Map of the area

Drainage

The area lies at the start of the northern boundary of quaternary catchment B31E, which drains south-eastwards into an unnamed non-perennial stream traversing the site. This stream flows into the Gotwane non-perennial stream before ultimately discharging into the Rhenosterkop Dam, located in quaternary catchment B31F. The Gotwane non-perennial stream eventually joins the perennial Elands River. Refer to drainage Map - Figure 2B below.

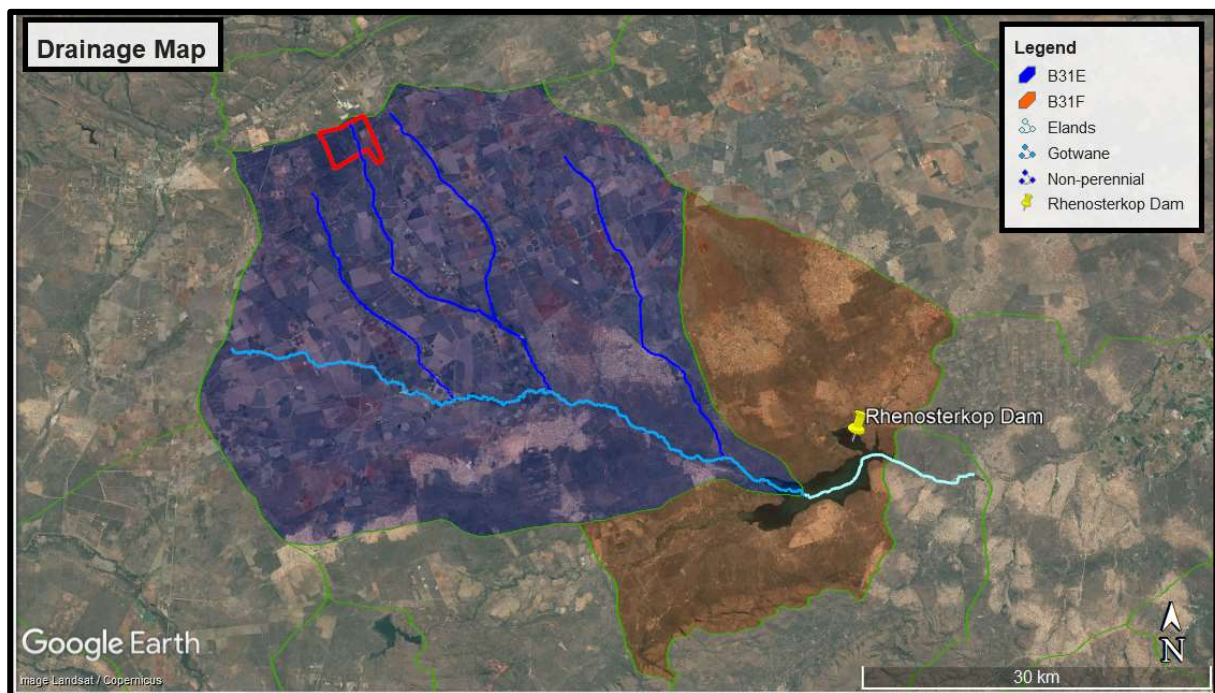


Figure 2B: Drainage Map of the area

6. Geology

Information gleaned from the 2528 Pretoria (1978) geological series confirmed that the site, as indicated within the red boundary on the geological map, is primarily located on the Swaershoek Formation (Vs), which consists of porphyritic and spherulitic rhyolite, subordinate andesite, volcanic breccia, and localized ignimbrite layers at the top. This formation is volcanic in origin, suggesting significant volcanic activity during its deposition. The weathering of these volcanic rocks often results in fine-grained, nutrient-poor soils that are moderately impermeable. The clay minerals formed through the alteration of volcanic material can contribute to the soil's low permeability.

Beneath the Swaershoek Formation lies the Clarens Formation (J), composed predominantly of fine-grained red to cream sandstones. This formation weathers into sandy soils. These soils are typically loose, well-drained, and highly permeable, which can contribute to higher infiltration rates. However, their permeability might allow for rapid movement of pollutants into underlying aquifers if disturbed.

Further below, the site is underlain by the Letaba Formation (Tr), characterized by volcanic rocks and sandstones, indicating earlier volcanic and sedimentary processes. This formation weathers into a mix of clay and sandy soils. The volcanic components may produce clay-rich soils, while the sandstones contribute to coarser, more permeable soils. This combination can lead to heterogeneity in the weathered material's permeability.

At the base lies the Moidraai Subgroup (Ms), composed of medium- to coarse-grained sandstone, pebble-sandstone, siltstone, shale, and conglomerates. Sandstones weather into sandy, permeable soils, while shales weather into fine, clayey soils. Conglomerates might produce a mix of gravels and sands.

The stratigraphic sequence, combined with the presence of multiple faults intersecting the area, indicates a complex hydrogeological system. Faults could facilitate vertical and horizontal movement of groundwater and potential contaminants, while the alternating permeable and impermeable formations could either trap or transmit pollutants. The contact zones between the unconsolidated material and older formations typically increase conductivity and as a result transport groundwater rapidly in relation to the more solid matrix areas.

The area is intersected by multiple faults (indicated by green lines), which are structural features that could influence groundwater movement and pollutant pathways. Faults can act as either barriers or conduits for groundwater flow depending on their nature (e.g., whether they are sealed or fractured). Refer to Figure 3 on the following page

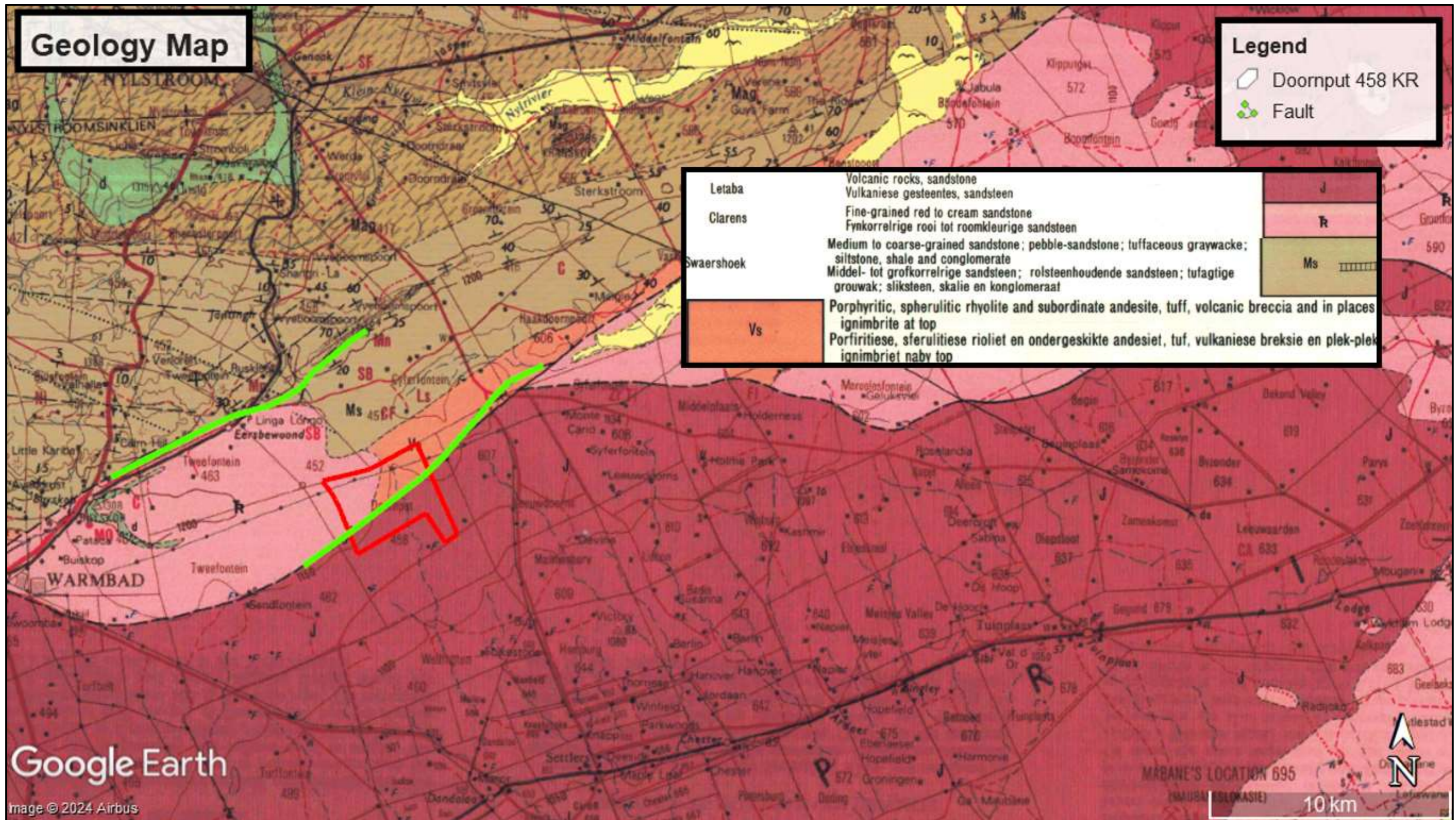


Figure 3: Regional Geology Map

7. Regional Geohydrological Setting and Groundwater Recharge

7.1 Aquifer Type

The aquifer system in this area is characterized as intergranular and fractured, typical of the regional geology, which includes volcanic formations such as porphyritic rhyolite, andesite, volcanic breccia, and sedimentary formations like sandstones and conglomerates. These formations generally have low primary porosity and hydraulic permeability. However, secondary porosity and permeability associated with fractures, faults, and weathering zones play a significant role in groundwater movement and storage. Groundwater flow predominantly occurs along fractures, joints, and fissures, as well as through localized openings within the rock matrix.

7.2 Aquifer Yield Potential & Classification

The regional hydrogeological data indicates a **low to moderate groundwater potential**, with average borehole yields ranging from **0.5 l/s to 2.0 l/s** in areas where fractures are well-developed. Although much of the study area exhibits limited groundwater potential, zones with extensive fracturing or faulting may display significantly higher yields, supporting localized aquifer productivity. Refer to the Geohydrological Map - Figure 4 on the following page.

7.3 Groundwater Recharge

Groundwater recharge represents the proportion of mean annual precipitation (MAP) that infiltrates the subsurface and reaches the groundwater table. In the project area, recharge is estimated at 3.4% of the MAP, corresponding to approximately 19.98 mm/year based on a MAP of 587.8 mm/year for the quaternary catchment B31E. Recharge in this area is entirely rainfall-dependent, with precipitation that does not infiltrate contributing to surface runoff or evaporating before infiltration.

Site-specific factors influencing recharge include:

- **Soil Characteristics:** The site features clayey yet permeable residuum, with sections of loamy soils in cultivated areas. These soils have a moderate water-holding capacity, which can slow infiltration during longer rainfall events.
- **Topography:** The sloping terrain promotes runoff in steeper areas, reducing infiltration potential, while the flatter zones near local rivers enhance infiltration and recharge.
- **Vegetation Cover:** The site is covered with natural grass, scattered trees, and sugarcane cultivation. Vegetation reduces direct evaporation and promotes infiltration by stabilizing soil and slowing runoff. The valley bottoms, lined with grasses and natural vegetation, act as preferential infiltration zones.
- **Geological Influence:** Exposed rock outcrops and fault zones along drainage systems can enhance localized infiltration, providing direct pathways for recharge into the fractured aquifer system.
- **Recharge rates at the site** are considered low to moderate, relatively impermeable volcanic rocks, and clayey soils. While the site generally falls under a “low to medium infiltration” category, features such as exposed rock and well-drained loamy soils in cultivated areas offer localized zones of enhanced recharge potential.

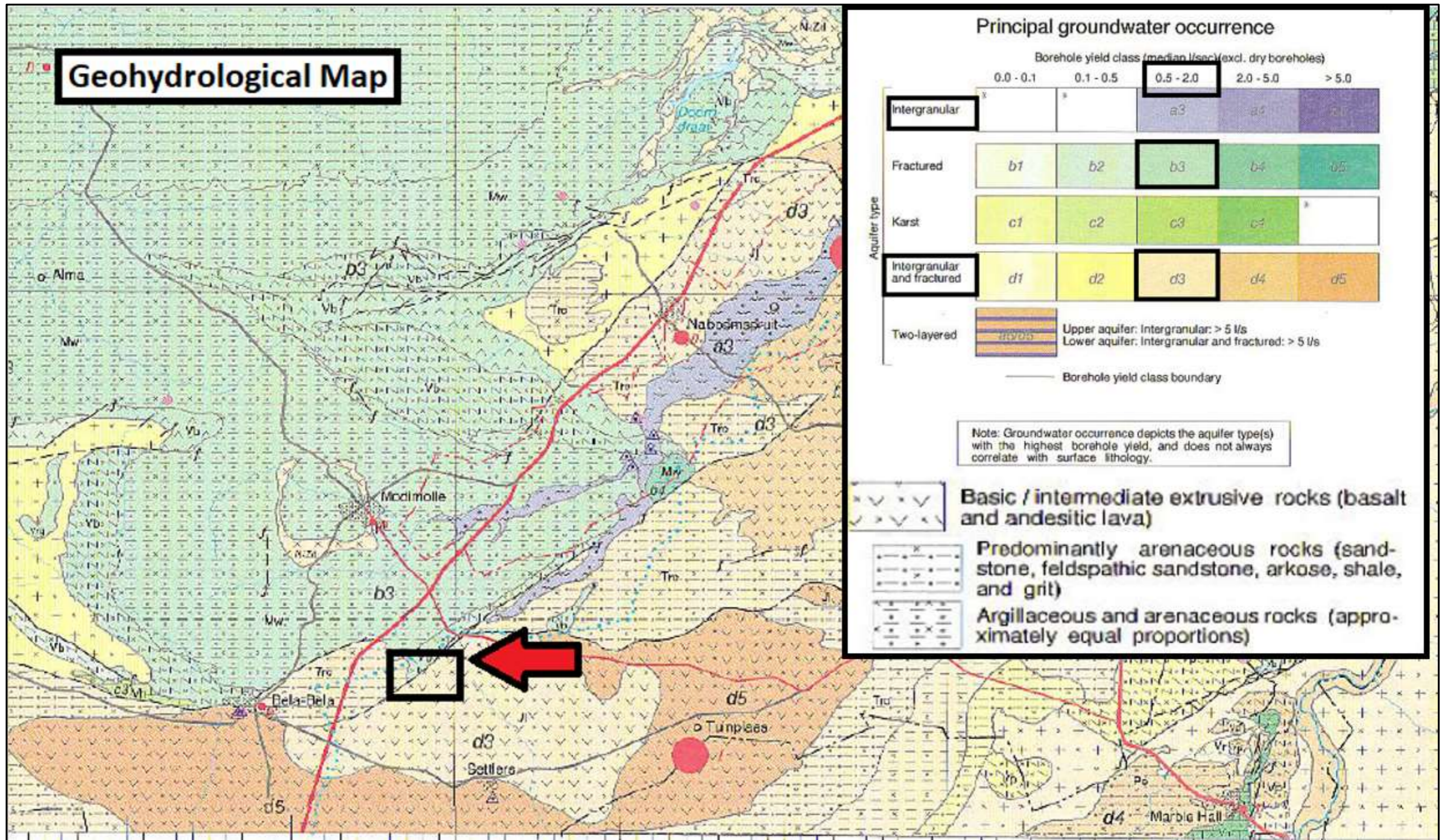


Figure 4: Regional Geohydrology Series - Excerpt from 2526 Johannesburg (1999)

7.4 Regional Hydrochemistry

Based on the map Under the South African National Standard (SANS 241) for drinking water quality, an electrical conductivity (EC) of 70-300 mS/m falls into the following classification for aesthetic and operational water quality:

Class 2: Water suitable for short-term use but may pose issues if used long term without treatment. This range indicates elevated salinity levels that could affect taste and potentially cause scaling in plumbing systems over time. EC values, SANS 241 defines the operational limit (Class 1) as 70 mS/m or below for ideal water quality suitable for long-term domestic use. Refer to Figure 5 below.

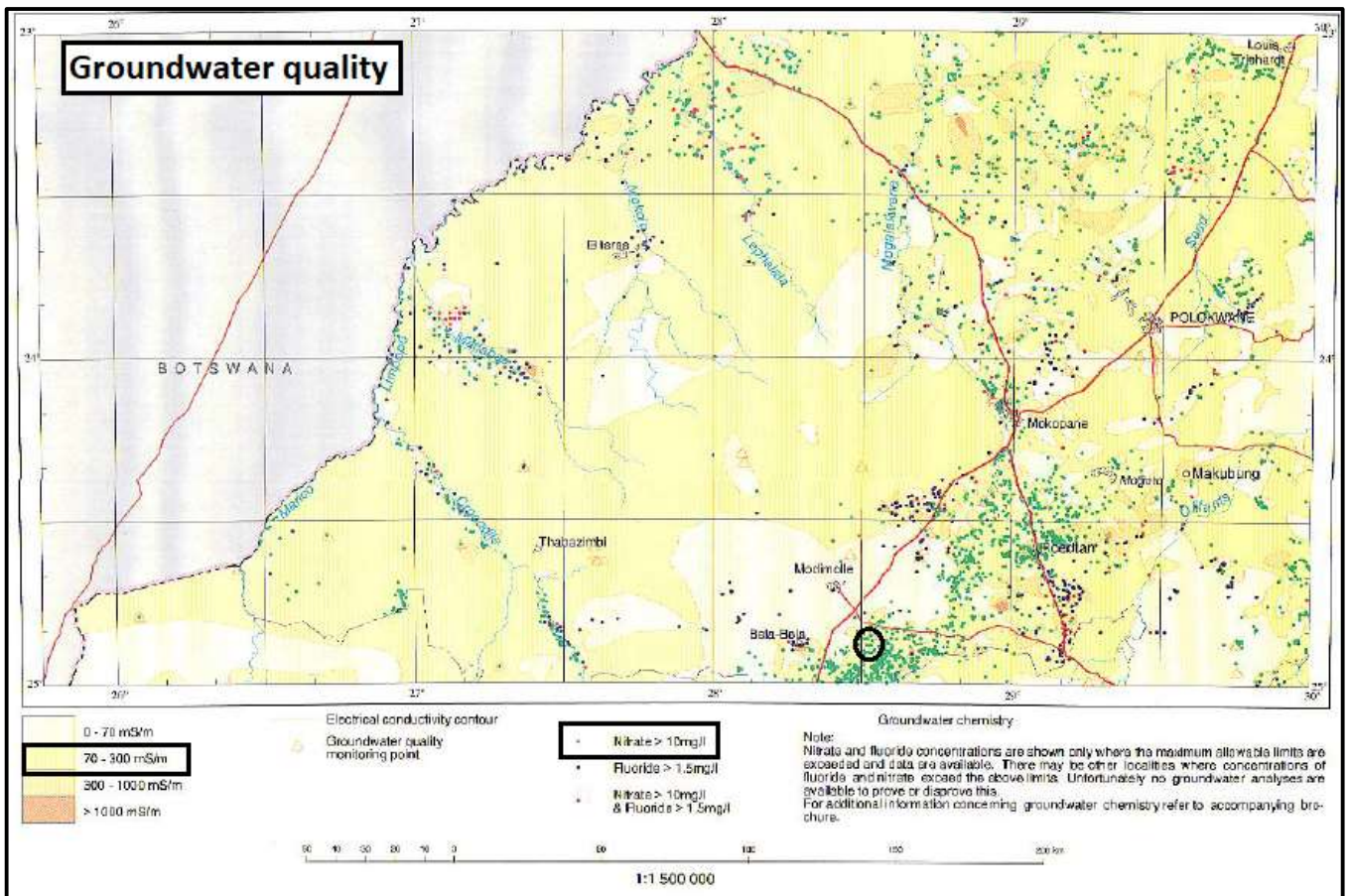


Figure 5: water Quality Map

7.5 Hydrocensus - Database Search Results: Existing Sources

To formulate a geohydrological model of the area, a desktop study (which entailed the scouring of all available sources of information including the Department of Water Affairs' NGA or National Groundwater Archive, to identify existing boreholes, was conducted. All existing groundwater resources identified in a 10km radius of the site are listed in Table 1 on the following page and visually indicated in Figure 6 on the following page.

Table 1: Desktop Data Search

Latitude	Longitude	Name	Farm Name	Elevation	Water Level	Electrical Conductivity	Lithology Name	Weathering Degree
-24.91485	28.46640	2428CD00268	WELLINGTON	1100	7.92	Unknown	Diabase and Limestone	Unknown
-24.87152	28.46639	2428CD00237	DOORNPOT	1120	24.38	Unknown	Limestone, Diabase, sandstone and slate	Unknown
-24.83405	28.38305	2428CD00198	TWEEFONTEIN	1200	27.00	Unknown	Sandstone, clay, shale and Diabase	Unknown
-24.83402	28.39972	2428CD00033	TWEEFONTEIN	1180		Unknown	Quartzite, sandstone and shale	Unknown
-24.83401	28.39972	2428CD00030	TWEEFONTEIN (GED 34)	1180	47.00	Unknown	Sandstone, shale, clay and basalt	Unknown
-24.80986	28.46639	2428CD00217	CYFERFOTNEIN	1160	45.72	Unknown	Dolomite, granite, clay, diabase, felsite and Quartzite	Highly
-24.80957	28.46361	2428CD00020	CYFERFONTEIN	1160	45.70	Unknown	Felsite, Shale, Dolerite, Limestone, Sandstone and Granite	Highly
-24.80689	28.51093	2428DC00027	HAAKDOORNPOORT	1140	Unknown	Unknown	Unknown	Unknown
-24.80561	28.52283	2428DC00028	HAAKDOORNPOORT	1140	Unknown	Unknown	Unknown	Unknown
-24.80207	28.46444	2428CD00007	CYFERFONTEIN REST VAN GED 34	1160	50.00	Unknown	Conglomerate and granite	Unknown
-24.79925	28.53350	2428DC00038	HAAKDOORNPOORT	1140	17.28	Unknown	Unknown	Unknown
-24.79750	28.52762	2428DC00037	HAAKDOORNPOORT	1160	Unknown	Unknown	Unknown	Unknown
-24.79635	28.53066	2428DC00036	HAAKDOORNPOORT	1160	Unknown	Unknown	Unknown	Unknown
-24.79568	28.53003	2428DC00035	HAAKDOORNPOORT	1160	Unknown	Unknown	Unknown	Unknown
-24.79298	28.51805	2428DC00029	HAAKDOORNPOORT	1160	Unknown	27.0	Unknown	Unknown
-24.79288	28.49652	2428CD00016	HAAKDOORNPOORT	1160	Unknown	Unknown	Unknown	Unknown
-24.79283	28.51522	2428DC00032	HAAKDOORNPOORT	1160	Unknown	Unknown	Unknown	Unknown
-24.78919	28.50316	2428DC00026	HAAKDOORNPOORT	1160	Unknown	Unknown	Unknown	Unknown
-24.78809	28.40208	2428CD00201	VYEBOOMSPOORT PTN. VYEBOOMSPOORT	1080	Unknown	Unknown	Unknown	Unknown
-24.78765	28.50606	2428DC00025	HAAKDOORNPOORT	1160	Unknown	37.0	Unknown	Unknown
-24.78635	28.50609	2428DC00024	HAAKDOORNPOORT	1150	19.80	Unknown	Unknown	Unknown
-24.78623	28.41999	2428CD00294	VYGEBOOMSPOORT GED 18 G/G1	1280	8.00	Unknown	Sandstone	Unknown
-24.78569	28.40208	H24-KP1	VYEBOOMSPOORT PTN. VYEBOOMSPOORT	1220	Unknown	Unknown	Unknown	Unknown
-24.78406	28.41639	2428CD00047	VYEBOOMSPOORT	1260	19.20	Unknown	Sandstone, clay and Diabase	Unknown
-24.78401	28.41640	2428CD00040	VEYBOOMSPOORT	1260	45.72	Unknown	Quartzite, sandstone and clay	Unknown
-24.78072	28.50708	2428DC00034	HAAKDOORNPOORT	1160	6.12	Unknown	Unknown	Unknown
-24.78067	28.54173	2428DC00021	HAAKDOORNPOORT	1160	Unknown	29.0	Unknown	Unknown
-24.78005	28.50952	2428DC00022	HAAKDOORNPOORT	1160	Unknown	32.0	Unknown	Unknown
-24.77889	28.51338	2428DC00031	HAAKDOORNPOORT	1160	Unknown	Unknown	Unknown	Unknown
-24.77532	28.51667	2428DC00033	HAAKDOORNPOORT	1180	Unknown	Unknown	Unknown	Unknown
-24.77463	28.51738	2428DC00023	HAAKDOORNPOORT	1180	Unknown	8.0	Unknown	Unknown
-24.77259	28.52119	2428DC00030	HAAKDOORNPOORT	1180	Unknown	Unknown	Unknown	Unknown
-24.77091	28.52634	2428DC00020	HAAKDOORNPOORT	1180	Unknown	Unknown	Unknown	Unknown
-24.76735	28.38308	26380	RHENOSTERPOORT	1200	45.72	Unknown	Sandstone and Clay	Unknown

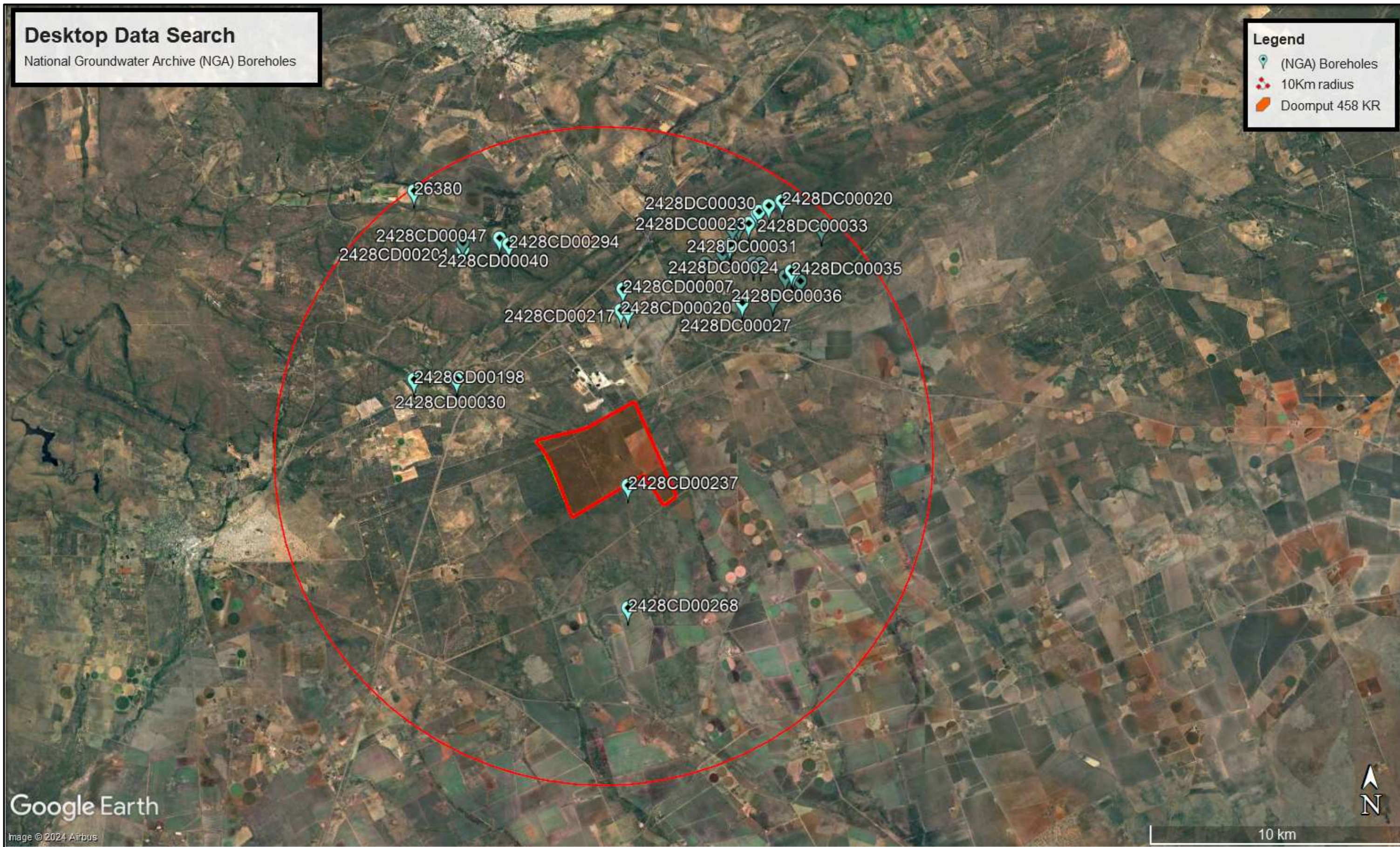


Figure 6: Desktop Data Search (NGA Boreholes) within a 10km radius of the area

The groundwater flow map was created by interpolating existing water level data obtained through a desktop study rather than a detailed hydrocensus, using Surfer software to provide an initial understanding of groundwater flow. This interpretation assumes that groundwater flow generally follows surface topography, although this may not always be accurate. To obtain precise groundwater flow patterns, the development of a numerical groundwater model is recommended. Based on the interpolated groundwater flow map the groundwater flows in a south-easterly direction. Refer to Figure 7 for the interpolated flow map.

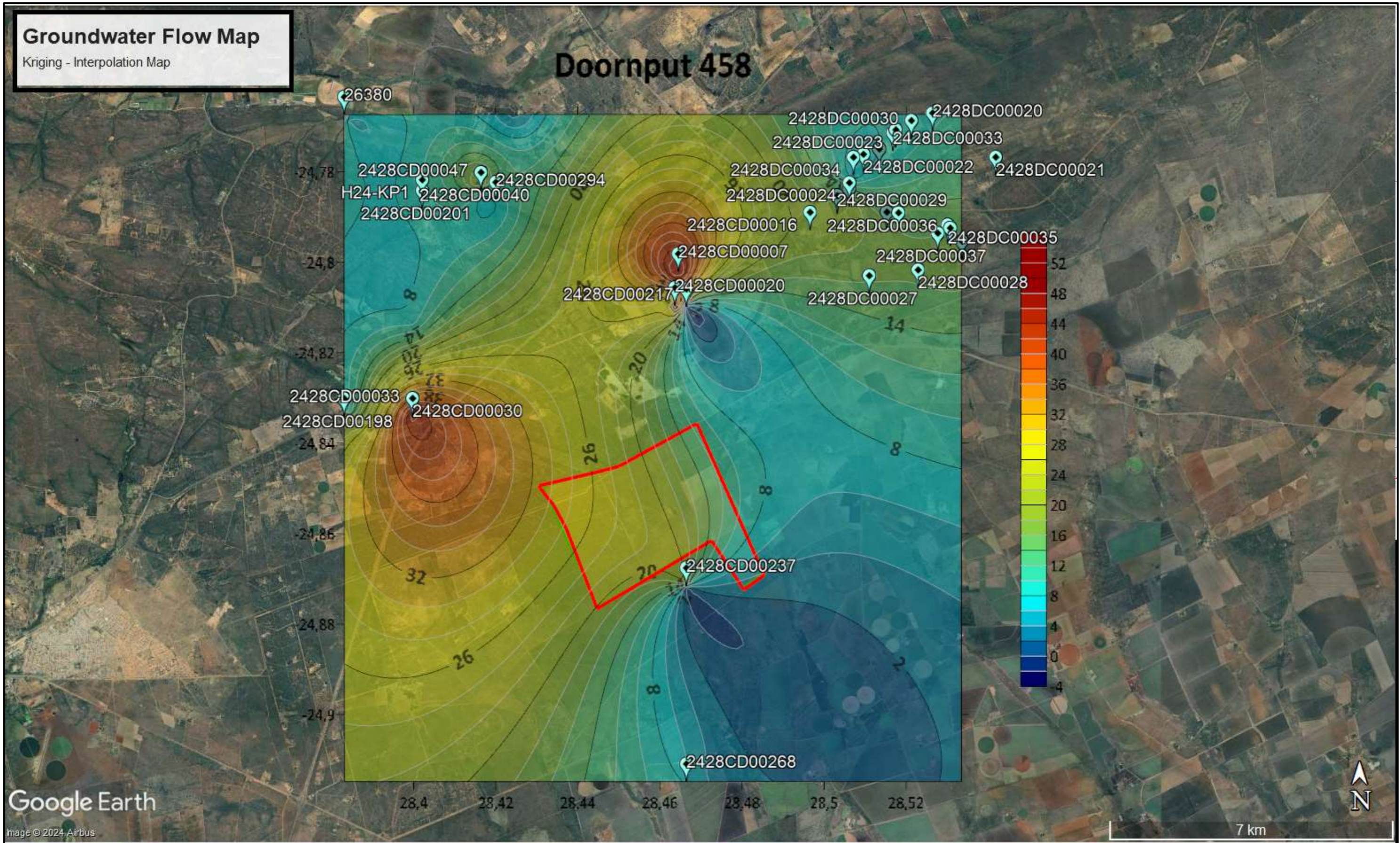


Figure 7: Interpolated Groundwater Flow Map

8. Conceptual model and risk assessment

- The site is underlain by a stratigraphic sequence dominated by volcanic and sedimentary formations. The uppermost layer consists of porphyritic and spherulitic rhyolite, subordinate andesite, volcanic breccia, and localized ignimbrite layers from the Swaershoek Formation (Vs). This unit reflects a volcanic origin, characterized by generally low primary porosity but enhanced secondary porosity and permeability along fault zones and fractures.
- Beneath the Swaershoek Formation lies the Clarens Formation (J), composed of fine-grained red to cream sandstones, which may act as a semi-permeable layer depending on the degree of consolidation.
- Below the Clarens Formation is the Letaba Formation (Tr), containing a mix of volcanic rocks and sandstones, further demonstrating a combination of earlier volcanic and sedimentary processes.
- At the base of the stratigraphy is the Moidraai Subgroup (Ms), consisting of medium- to coarse-grained sandstone, pebble-sandstone, siltstone, shale, and conglomerates. This unit exhibits alternating permeable (sandstone, conglomerate) and impermeable (shale, siltstone) characteristics, contributing to a stratified aquifer system. Fault zones identified in the vicinity further complicate the hydrogeological dynamics, potentially facilitating both vertical and horizontal movement of groundwater and any contaminants.
- Groundwater depth in the area is variable, ranging from 6.12 mbgl (shallowest) to 45.72 mbgl (deepest), with an average depth of 29.25 mbgl. These levels indicate fluctuation influenced by local topography, geological heterogeneity, and recharge conditions. Groundwater flow is generally expected to follow the regional topographic gradient, moving towards lower-lying areas and discharging into the Gotwane non-perennial stream, which flows into the Rhenosterkop Dam and ultimately joins the perennial Elands River.
- The mean annual precipitation (MAP) for the area is 587.8 mm/year, while recharge is estimated at 19.98 mm/year, indicating limited infiltration. This disparity reflects the influence of relatively low-permeability volcanic rocks, with recharge likely concentrated along fault zones and fractured formations.
- The aquifer system beneath the site is classified as d3 - intergranular and fractured, as per the geohydrological map (2526 Johannesburg, 1999). Borehole yields in the area range from 0.5 to 2.0 l/s, indicating a moderate groundwater potential. The fractured rock system primarily relies on secondary porosity associated with faulting and weathering. The semi-permeable nature of some sandstone layers and the presence of impermeable shale units create a compartmentalized groundwater system.
- The site is drained by an unnamed non-perennial stream that flows into the Gotwane non-perennial stream before discharging into the Rhenosterkop Dam in quaternary catchment B31F. This hydrological connectivity links the site to downstream water systems, including the perennial Elands River. Surface water and shallow groundwater are likely interconnected, particularly in areas where faults and fractures are present.
- Fault zones pose both a potential preferred pathway for groundwater flow and a risk for contaminant migration. Non-perennial streams draining the site are vulnerable to sediment and chemical runoff, particularly from clay mining activities. The downstream connection to the Gotwane stream, Rhenosterkop Dam, and Elands River highlights the need for careful management of surface water and groundwater resources to prevent impacts on regional water quality.

9. Vulnerability & Pollution Risk

Vulnerability

To assess the geohydrological impact of the proposed clay mining activities at the site, it is essential to evaluate the aquifer potential, characteristics, and significance. This assessment will help determine the vulnerability of the aquifer, identify potential risks and issues, evaluate their significance, and recommend appropriate mitigation measures for both normal operations and potential incidents such as spills or breakages.

The moderate recharge rates (19.98 mm/year) combined with the thin layer of moderately permeable clayey residuum increase the risk of pollution to the shallow subsurface environment. However, the deep water table (average 29.25 mbgl) and the low to moderate potential intergranular and fractured aquifer reduce the overall risk of pollution reaching the deeper groundwater system.

Hydrochemical data for the area indicate that groundwater quality is **generally neutral, slightly hard, and exhibits elevated salinity levels typical of shallow, fresh groundwater**. This quality is suitable for domestic and irrigation purposes. There is currently no evidence of pollution at the site, and the quaternary catchment (B31E) can be classified as largely unmodified with low levels of contamination.

Pollution Risk

The most significant pollution threats to groundwater resources associated with the proposed clay mining activities are:

Quality Threats:

- Potential contamination from mining operations, such as chemical runoff, spills, and improper waste handling.
- Increased sedimentation and changes to the natural filtration system due to disturbance of the clayey residuum.

Quantity Threats:

- Disruption of recharge patterns, particularly in areas with exposed rock or near fault zones.
- Localized lowering of groundwater levels due to dewatering activities, which could affect nearby users and ecological systems.

Key assumptions made:

- The risk/impact assessment conducted for the site is based on the topography, GW flow direction, likely soil permeability, GW levels, geology, geophysical data, and characteristics associated with the aquifer systems.
- The risk/impact assessment incorporates a worst-case scenario approach.
- GW levels mimic the topography.
- The risk assessments are based on the water reticulation plan made available for this study.
- Bayesian interpolation of available on-site water level was applied to conceptualise the GW flow and GW depth in the study area.

The anticipated geohydrological risks for the operational phase are indicated Table 2 on the following page.

Table 2: Source-Pathway-Receptor Risk Table

<u>Source</u>	<u>Source-Pathway-Receptor for Doornput 458</u>
Introduction of a potential pollutant into the groundwater / surface water environment	<p style="text-align: center;"><u>Operational</u></p> <ol style="list-style-type: none"> 1. Mining operations results in disturbance of clayey residuum and overburden materials, and causes erosion and sediment runoff into nearby surface water systems. 2. Poor quality seepage from: Improperly managed effluent or runoff from site operations. Leachate from clay stockpiles or waste material exposed to rainfall. 3. Hydrocarbon spills from machinery (fuel, oil, and lubricants) and improper handling or storage of chemical agents (if used). 4. Improper disposal of waste can contribute to groundwater contamination if not managed correctly.
<u>Pathway</u>	
The medium or path length through which polutant could move (unsaturated soil zone and aquifer material) before it reaches the receptor.	<p style="text-align: center;"><u>Operational</u></p> <ol style="list-style-type: none"> 1. Direct seeapge into soil and aquifer 2. Direct discharge into nearby surface water / river or streams 3. Temporary handling facilities 4. Excavation of parts of the vadose zone 5. Overland run-off
<u>Receptor</u>	
The end receiver of the pollutant which could show degradation in water Quality and Quantity	<p style="text-align: center;"><u>Construction & Operational</u></p> <ol style="list-style-type: none"> 1. Non-perennial streams 2. Rhenosterkop Dam 3. Vadose zone soils 4. Groundwater table

9.1 Potential groundwater pollution migration velocities

The migration velocity of potential pollutants in groundwater depends on the aquifer characteristics, hydraulic gradient, and recharge conditions. For the site:

- **Hydraulic Conductivity (K):** Given the clayey residuum and fractured aquifer system, hydraulic conductivity is expected to range from **0.01 m/day** (low-permeability clayey areas) to **10 m/day** (fractured zones).
- **Hydraulic Gradient:** The site's topography, with elevations sloping southeast from 1297 mamsl to 1033 mamsl, suggests a moderate hydraulic gradient of approximately **0.01-0.02 m/m** in the direction of the surface water systems.
- **Porosity and Retardation:** The clayey residuum likely acts as a retardation layer for pollutants, while fractures in the deeper aquifer may facilitate faster transport.

Using Darcy's law, pollutant migration velocities in the site's aquifer system are estimated to be:

- **Clayey Residuum:** ~0.01-0.1 m/day (slow).
- **Fractured Zones:** ~1-5 m/day (moderate to fast).

This indicates pollutants could take weeks to years to reach significant distances, depending on the source location and the subsurface pathway.

9.2 Impacts on the groundwater reserve

Quantity Impacts:

- **Recharge Disruption:** Disturbance of the clayey residuum could alter infiltration and recharge patterns, reducing the groundwater reserve.
- **Dewatering Effects:** Any localized lowering of the water table due to excavation could affect groundwater availability for surrounding users and ecosystems.

Quality Impacts:

- **Contamination:** Surface spills, leaks, or improperly stored materials could introduce pollutants (e.g., heavy metals, hydrocarbons) into the groundwater system.
- **Sedimentation:** Increased erosion from disturbed clay soils could lead to sediment transport, clogging natural aquifer recharge zones.

9.3 Geohydrological risks and mitigation measures

Quantity Impacts:

Recharge Disruption Risk:

- Removal of clay layers could decrease the residence time of recharge water, leading to faster surface runoff and reduced aquifer replenishment.

Dewatering Risk:

- Clay mining activities may expose or disturb shallow water-bearing layers, leading to localized drawdown effects.

Quality Impacts:

Contamination Risk:

- Sources: Chemical spills, waste storage, or runoff from disturbed clay mining areas.
- Pathways: Fault zones and fractures could provide direct pathways for pollutants to reach deeper aquifers.

Surface-Water Interaction Risk:

- Pollutants from mining could enter the non-perennial streams, indirectly affecting groundwater through recharge zones downstream.

Recommendations for Mitigation:

Proper management and mitigation measures will be critical to ensuring that the proposed mining operations do not negatively impact the groundwater quality or quantity in the region.

Quality Protection - Preventing Contamination:

- Implement robust containment measures to prevent spills and leaks during mining operations.
- Establish buffer zones around sensitive areas, including drainage systems and recharge zones.
- Design and enforce strict waste disposal protocols to prevent seepage into the subsurface.
- Regularly monitor groundwater quality for early detection of contaminants and immediately address deviations from baseline conditions.

Quantity Protection:

- Minimize surface disturbance to maintain natural recharge patterns.
- Avoid dewatering activities near critical recharge zones or fracture-connected aquifers.
- Conduct detailed monitoring of groundwater levels to identify any significant drawdown or adverse impacts.

Managing Recharge:

- Minimize surface disturbance to maintain natural recharge zones.
- Use erosion control measures, such as vegetative buffers and silt traps, to reduce sedimentation in drainage systems.
- Rehabilitate mined areas with permeable cover materials to restore natural recharge capacity.

Protecting Groundwater Quantity:

- Avoid significant excavation near major recharge zones or fracturing networks to limit water table disruption.
- Monitor groundwater levels during operations to detect potential drawdown and implement controlled pumping measures where necessary.

Managing Surface Water Risks:

- Implement stormwater management systems to prevent contaminated runoff from entering nearby streams.

- Maintain vegetative buffer zones along non-perennial streams to filter runoff and protect aquatic ecosystems.

By implementing these measures, the risks associated with clay mining on the site can be effectively managed, minimizing impacts on the groundwater reserve and protecting water quality for future use.

Table 3 and 4 on the following pages summarizes the risks and mitigation measures for both the construction phase and operational phase.

The flow direction as seen in figure 7-12 above the groundwater is assumed to follow topography in a south-easterly, south-westerly and north-easterly direction from site. Based on the Groundwater flow direction indicated in figure 7 - 12 the potential zone of impact and radius of influence was identified and is indicated in figure 13 below.

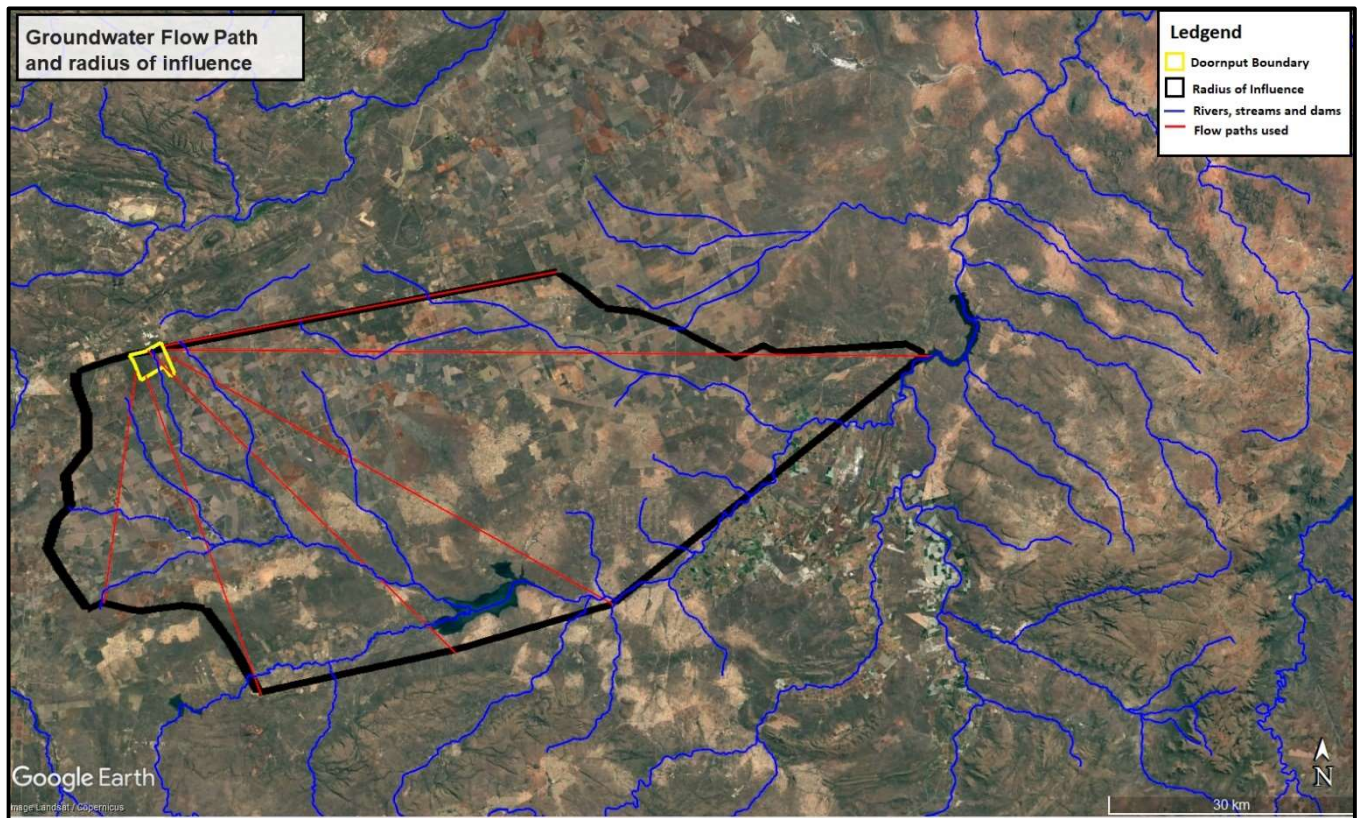


Figure 13: Zone of Impact/ Radius of Influence

As indicated in figure 13 the zone of impact from the site is anticipated to be large, and includes various dams, streams and rivers downstream.

Table 3: Potential Geohydrological impacts and mitigation measures (construction phase)

Hydrogeological Component Being Impacted On	Activity Which May Cause the Impact	Impact Type	Nature	Spatial Extent	Duration	Intensity	Frequency	Probability	Irreplaceability	Reversibility	Significance	Confidence	Recommended Mitigation Measures
Groundwater quality	Fuel, oil, and chemical spills from machinery	Contamination of shallow groundwater	Negative	Local	Short-term	Medium	Sporadic (when spills occur)	Medium	Moderate	Reversible	Medium	High	<ul style="list-style-type: none"> - Implement spill containment systems. - Use drip trays and proper waste disposal. - Conduct regular equipment maintenance to prevent leaks.
Groundwater recharge zones	Removal of vegetation and soil disturbance	Reduction in recharge efficiency	Negative	Local	Medium-term	Low	Continuous	Medium	Low	Reversible	Low	Medium	<ul style="list-style-type: none"> - Minimize disturbance to natural recharge zones. - Rehabilitate exposed areas immediately. - Use erosion control measures.
Surface water quality (linked to groundwater recharge)	Sediment runoff into non-perennial stream	Increased turbidity and pollution	Negative	Local to downstream	Medium-term	Medium	During rainfall events	Medium to High	Low	Reversible	Medium	High	<ul style="list-style-type: none"> - Establish silt traps and buffer zones near the stream. - Limit construction near watercourses. - Implement stormwater management systems.
Groundwater quantity	Excavation and temporary water pooling	Potential dewatering effect	Negative	Local	Short-term	Negligible	Continuous	Low	Low	Reversible	Low	High	<ul style="list-style-type: none"> - Monitor water levels regularly. - Avoid excessive excavation near water recharge zones. - Use temporary barriers to manage pooling.
Aquifer integrity	Heavy machinery operations	Disturbance of subsurface structure	Negative	Site-specific	Long-term	Medium	Continuous	Low	High	Irreversible	Medium	Medium	<ul style="list-style-type: none"> - Use light equipment where possible. - Limit operations in fracture-prone zones. - Train workers on sustainable practices.
Surface-groundwater interaction	Increased impervious surfaces (compacted areas)	Altered recharge and runoff patterns	Negative	Local	Long-term	Medium	Continuous	Medium	Moderate	Partially Reversible	Medium	High	<ul style="list-style-type: none"> - Design construction layout to maximize permeable surfaces. - Include artificial recharge systems where feasible.

Table 4: Potential Geohydrological impacts and mitigation measures (Operation)

Hydrogeological Component Being Impacted On	Activity Which May Cause the Impact	Impact Type	Nature	Spatial Extent	Duration	Intensity	Frequency	Probability	Irreplaceability	Reversibility	Significance	Confidence	Recommended Mitigation Measures
Groundwater quality	Leakage or seepage from clay stockpiles or storage areas	Contamination of shallow groundwater	Negative	Local	Long-term	Medium	Continuous	Medium	Moderate	Partially Reversible	Medium	High	<ul style="list-style-type: none"> - Monitor stockpiles for seepage and install liners if necessary. - Regularly inspect and maintain containment structures.
Groundwater recharge zones	Long-term alteration of vegetation and soil properties	Reduced recharge efficiency	Negative	Local	Long-term	Low	Continuous	Medium	Low	Partially Reversible	Medium	Medium	<ul style="list-style-type: none"> - Restore vegetation cover post-operation. - Manage and stabilize soil properties to enhance recharge.
Surface water quality (linked to groundwater recharge)	Discharge of contaminated runoff during operational activities	Degradation of water quality downstream	Negative	Local to downstream	Long-term	Medium	During operational discharges	Medium to High	Moderate	Reversible	Medium	High	<ul style="list-style-type: none"> - Implement water quality monitoring. - Establish long-term sediment and pollutant control measures.
Groundwater quantity	Continued water extraction for operational needs	Reduction in groundwater reserves	Negative	Regional	Long-term	High	Continuous	High	High	Irreversible	High	High	<ul style="list-style-type: none"> - Limit water extraction to sustainable levels. - Recycle water where possible. - Monitor groundwater levels regularly.
Aquifer integrity	Subsidence or collapse from improper clay excavation	Structural disturbance to aquifers	Negative	Local	Long-term	High	Sporadic	Low	High	Irreversible	High	Medium	<ul style="list-style-type: none"> - Design and adhere to excavation plans to avoid instability. - Conduct regular geotechnical assessments.
Surface-groundwater interaction	Permanent infrastructure altering surface water flow	Long-term changes in recharge patterns	Negative	Local	Long-term	Medium	Continuous	Medium	Moderate	Partially Reversible	Medium	High	<ul style="list-style-type: none"> - Incorporate permeable surfaces in infrastructure design. - Maintain stormwater management systems.

10. Groundwater Level and Flow Trends

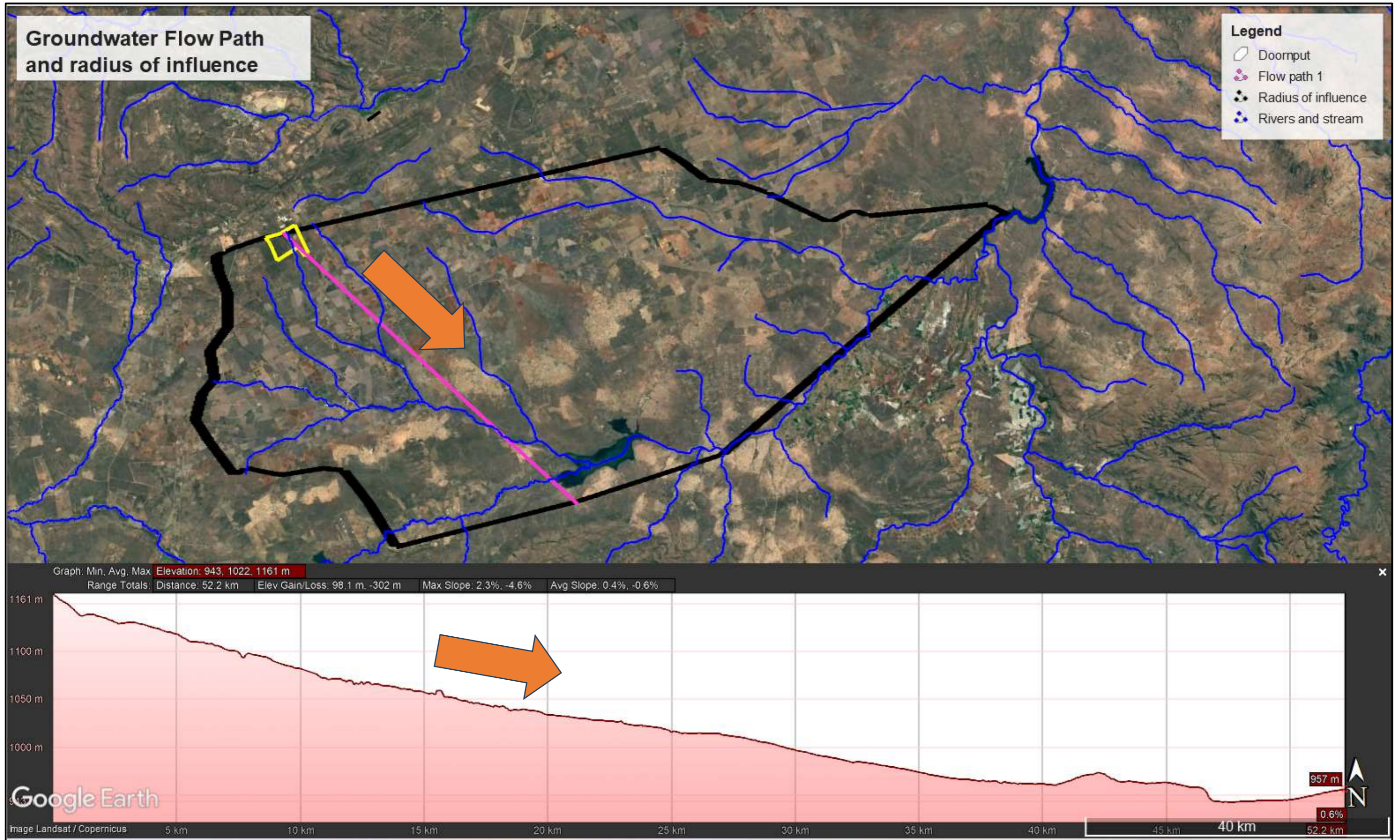


Figure 7: Groundwater Flow Direction

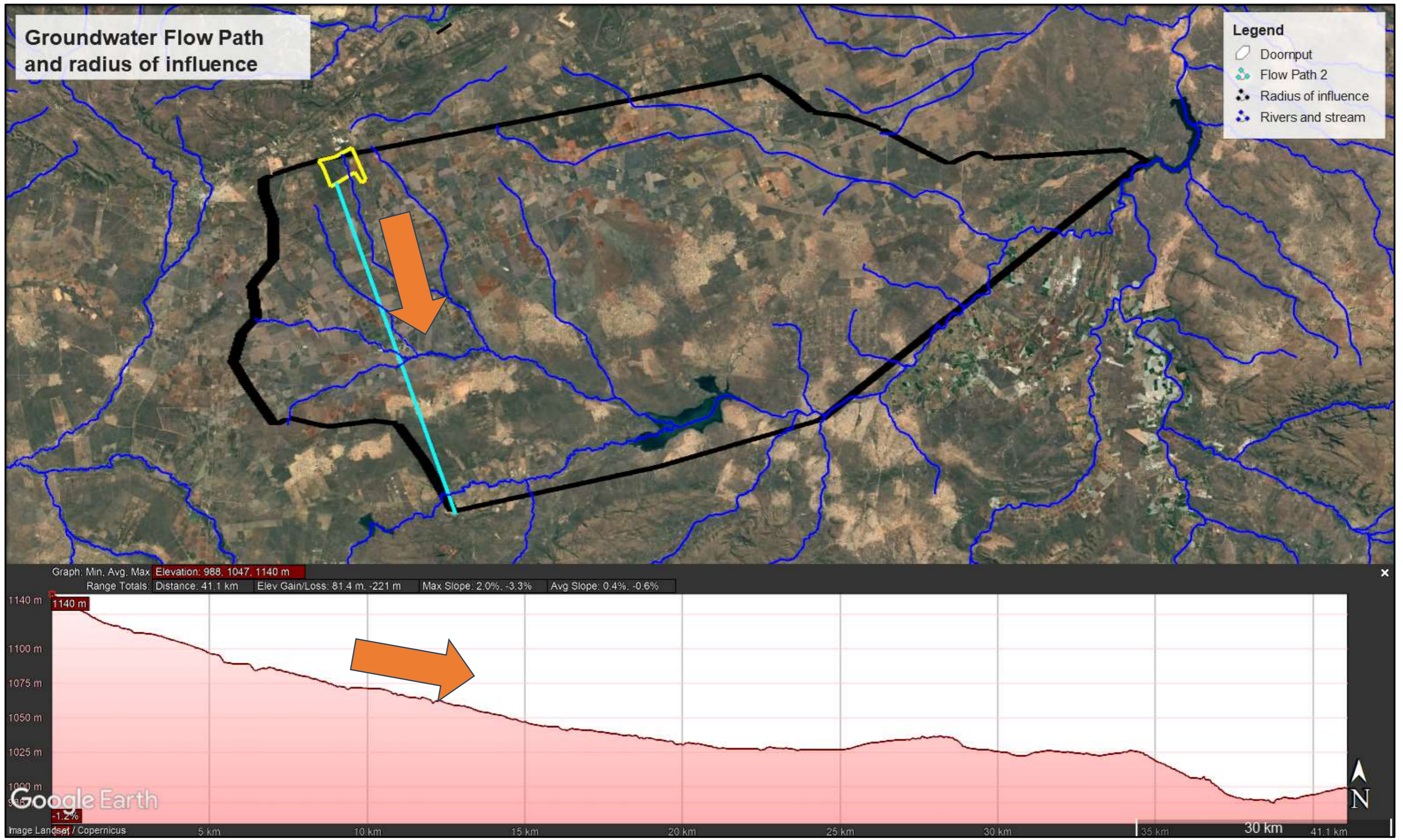


Figure 8: Groundwater Flow Direction

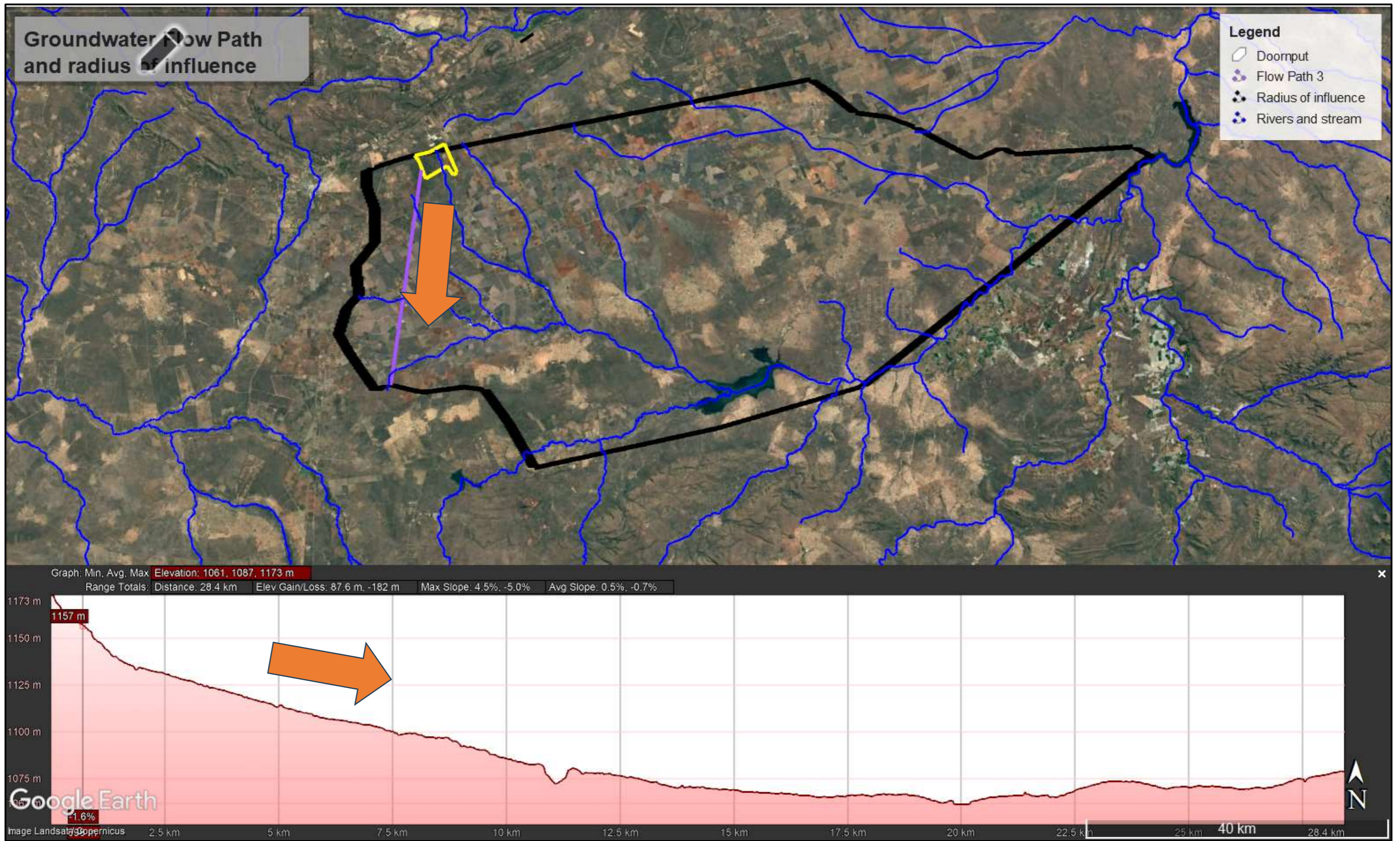


Figure 9: Groundwater Flow Direction

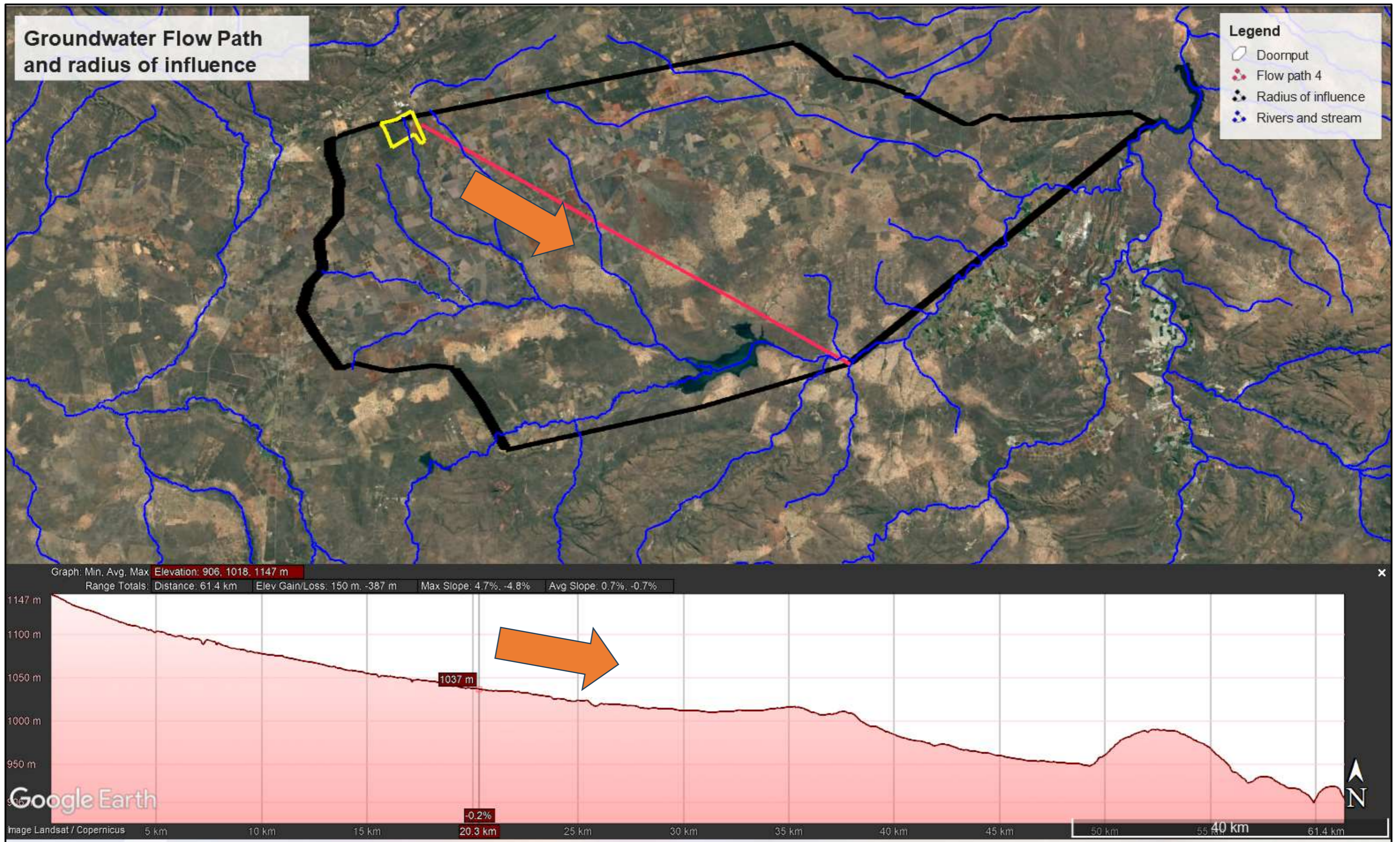


Figure 10: Groundwater Flow Direction

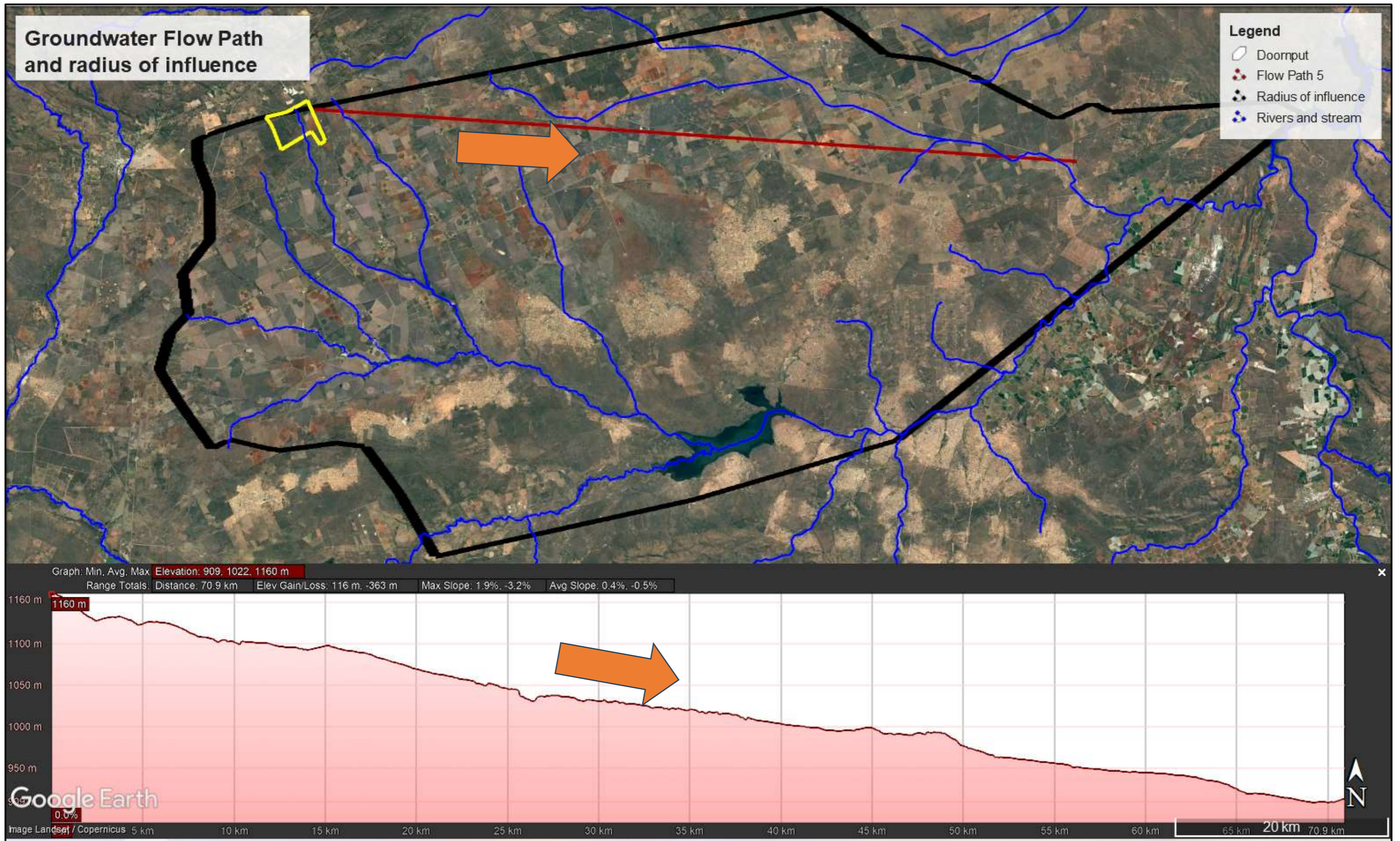


Figure 11: Groundwater Flow Direction

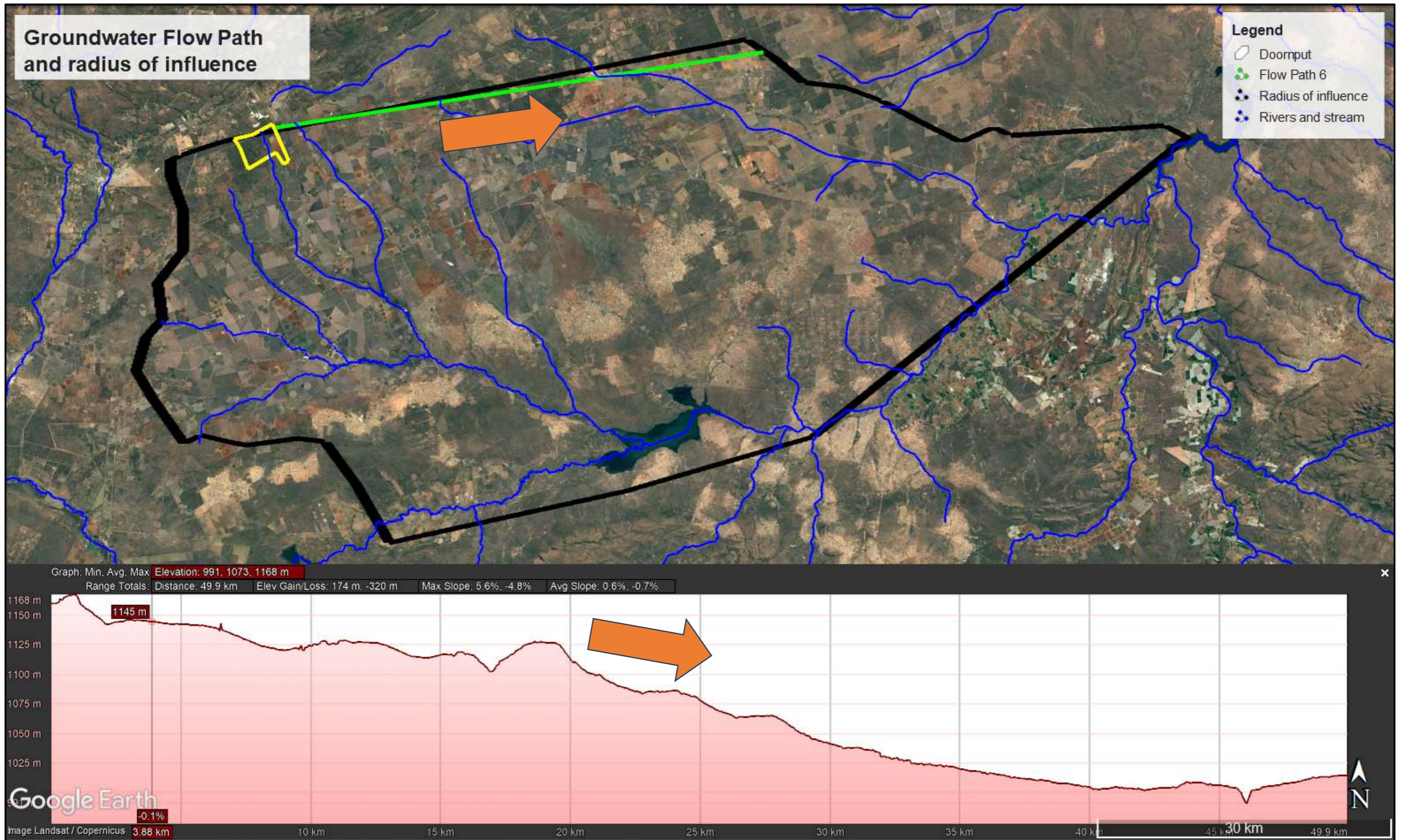


Figure 12: Groundwater Flow Direction

11. Conclusion

- The proposed clay prospecting site, with a radius of influence of approximately 319,347 ha, encompasses a hydrological network that includes streams, rivers, and dams. Based on desktop studies, inferred groundwater flow directions appear to be south-easterly, south-westerly, and north-easterly, aligning with topography. However, these assumptions remain unverified and require confirmation through field investigations or numerical groundwater modelling. The site lies in the upper portion of the catchment, with a non-perennial stream traversing it and eventually discharging into the Rhenosterkop Dam.
- The geological formations underlying the site consist of volcanic and sedimentary rocks with varying permeability, including the Swaershoek Formation (moderately impermeable rhyolites) and the Clarens Formation (permeable sandstones). These layers are interspersed with faults and fractures, which enhance secondary porosity and permeability, creating potential preferred pathways for pollutant migration.
- The deep water table, averaging 29.25 m below ground level, provides some natural attenuation capacity by increasing the travel time for contaminants to reach the aquifer. However, localized areas with shallower water levels (6.12 m) and faults may act as preferential conduits for rapid pollutant transport to groundwater and connected surface water systems.
- The geological complexity, combined with moderate recharge rates (3.4% of MAP, or approximately 19.98 mm/year), suggests that the site's ability to naturally dilute and filter contaminants is variable. The proximity of the non-perennial stream and the site's elevated position in the catchment heightens the risk of sediment and pollutants being transported downstream, affecting the quality of both groundwater and surface water.
- The combination of permeable zones and faulted geology increases the potential for pollutants to migrate vertically into the aquifer or laterally into surface water.
- Clay stockpiles, hydrocarbons from machinery, and improperly managed runoff could introduce contaminants that may persist in fractured rock aquifers and discharge into the non-perennial stream.
- Groundwater may become contaminated with elevated salinity and other pollutants, potentially rendering it unsuitable for downstream users. Streams and rivers could experience increased turbidity, sedimentation, and chemical pollution, particularly during rainfall events.

12. Gap Analysis

- A detailed Hydrocensus has not been conducted which limits the actual field verification of the data sourced from data base records.
- None of the data search borehole records identified are on the actual site, which limits our understanding on the groundwater quality, water levels and flow direction on site.
- The groundwater flow and water level trends as discussed in this report is based on assumptions and interpolation of water levels of existing boreholes located in the vicinity of the site and not based on factual results from boreholes on site (since no boreholes are located on site) and is therefore not necessarily accurate.

13. Recommendations

By addressing the site's geological and hydrogeological characteristics, alongside robust mitigation and monitoring programs, the potential risks to groundwater and surface water systems can be mitigated. The overall risk to groundwater and streams is classified as moderate, primarily due to the site's geological heterogeneity and proximity to sensitive hydrological features.

Based on the available information, it is feasible to mine for clay in this area, provided that stringent mitigation and monitoring measures are implemented to address the moderate risks posed to groundwater and surface water systems. The geological characteristics, including moderately impermeable layers and a deep average water table, provide some natural protection against pollution. However, the presence of faults and permeable zones increases the potential for pollutant migration, particularly if operations are not carefully managed. The site's location at the top of the catchment heightens the risk of downstream impacts on water quality and quantity if contaminants or sediments enter the non-perennial stream. Therefore, while mining for clay is possible, it requires robust environmental management practices to minimize risks and ensure that groundwater and surface water resources remain protected. The initial recommendations are as follows:

- Identify critical recharge areas and implement erosion and sediment controls, such as vegetative buffers, to protect water infiltration zones.
- Conduct a geotechnical assessment of the faulted zones to better understand potential pollutant pathways.
- Store and handle hazardous materials in banded areas with impermeable liners to prevent infiltration into fractures and faults.
- Design clay stockpiles with runoff controls to minimize leachate formation and sedimentation.
- Regularly monitor groundwater levels, particularly in shallow areas, and analyse for salinity and other potential pollutants.
- Place surface water monitoring stations at upstream and downstream points along the non-perennial stream to track any impacts.

Monitoring Requirements

A comprehensive groundwater monitoring program is critical for managing and mitigating potential impacts from clay mining activities. Regular monitoring of both groundwater quality and quantity is essential to detect any changes early and prevent long-term contamination. Monitoring should focus on parameters such as electrical conductivity (EC), pH, and key pollutants like hydrocarbons and heavy metals. It is recommended to install monitoring boreholes strategically around the site, including upgradient and downgradient locations, to capture the flow dynamics and pollutant migration pathways. Frequent sampling—monthly during active operations and quarterly thereafter—is advised. Implementing these measures will ensure ongoing compliance with environmental standards and support effective risk management.

Below is the table with the detailed monitoring requirements and recommendations.

Table 5: Groundwater Monitoring Requirements and Recommendations

Parameter	Frequency	Monitoring Locations	Purpose
Groundwater Level	Monthly during operation, quarterly post-operation	All boreholes (upgradient and downgradient)	Track water table fluctuations and assess recharge dynamics
Electrical Conductivity (EC)	Monthly during operation, quarterly post-operation	All boreholes (upgradient and downgradient)	Detect salinity changes indicating potential contamination
pH	Monthly during operation, quarterly post-operation	All boreholes (upgradient and downgradient)	Monitor for acid-base balance indicating chemical pollution
Nitrate Levels	Monthly during operation, quarterly post-operation	Downgradient boreholes, near stockpiles	Identify nutrient loading or contamination from runoff
Hydrocarbons	Monthly during operation, or more frequently if spills occur	Near machinery areas, downgradient boreholes	Detect fuel or oil contamination from operations
Heavy Metals (e.g., Fe, Mn, Pb)	Monthly during operation, or more frequently if spills occur	Downgradient boreholes, near potential contamination sources	Identify potential contamination from waste or materials handling

Compiled by



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CURRICULUM VITAE

PROPOSED POSITION:	PROJECT GEOHYDROLOGIST
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2016

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Currently enrolled – B.Sc Masters – Environmental & Biological Sciences

EMPLOYMENT EXPERIENCE

NAME OF ORGANISATION

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Mar 2021 to date
Consultant

Geohydrologist

(2016 – Feb 2021)
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Project Geohydrologist
Geohydrologist

- Desktop studies
- Borehole logging
- Geo-physical studies
- Report writing
- Hydrocensus Surveys

I, certify that to the best of my knowledge and belief, these data correctly describe me, my qualifications, and my experience.



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Date March 2021



**ENVIRO-SOLUM
CONSULTING**
DIGGING DEEPER FOR A BRIGHTER TOMORROW

Soil, Land Use, And Land Capability Desktop Assessment: For The Application Of A Prospecting Rights Right Application For Clay (General) In Respect Of The Remaining Extent, Portions 1 And 11 Of The Farm Doornput 458 Kr Situated In The Magisterial District Of Bela-Bela/Waterberg, Limpopo Province.

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DOCUMENT CONTROL

Report Name	Soil, Land Use, And Land Capability Desktop Assessment: For The Application Of A Prospecting Rights Right Application For Clay (General) In Respect Of The Remaining Extent, Portions 1 And 11 Of The Farm Doornput 458 Kr Situated In The Magisterial District Of Bela-Bela/Waterberg, Limpopo Province.
Reference	AGR_Doorput_24
Version	Draft_V01
Submitted to	Vahlengwe Mining Advisory and Consulting (Pty) Ltd
Author	Tshiamo Setsipane, (<i>Pr. Sci. Nat</i>) H. Setsipane
Draft Date Produced	11 December 2024

DECLARATION OF INDEPENDENCE

- I, Tshiamo Setsipane, in my capacity as a specialist consultant, hereby declare that I:
- Act/acted as an independent specialist to Vahlengwe Mining Advisory and Consulting (Pty) Ltd for this project.
- Do not have any personal, business, or financial interest in the project except for financial remuneration for specialist investigations completed in a professional capacity as specified by the Environmental Impact Assessment Regulations, 2014, as amended.
- Will not be affected by the outcome of the environmental process, of which this report forms part.
- Do not have any influence over the decisions made by the governing authorities.
- Do not object to or endorse the proposed developments but aim to present facts and my best scientific and professional opinion about the impacts of the development.
- Undertake to disclose to the relevant authorities any information that has or may have the potential to influence its decision or the objectivity of any report, plan, or document required in terms of the Environmental Impact Assessment Regulations, 2014, as amended.



11 December 2024

DOCUMENT GUIDE

This report was compiled according to the following information guidelines for a specialist report in terms of the Environmental Impact Assessment (EIA) Sections 24(5)(a) And (h) and 44 of The National Environmental Management (NEMA), Act 1998, as summarised on the Table below.

Table A: Document guide according to Regulation (No. R. 982) as amended.

Theme-Specific Requirements as per Government Notice No. 320 Agricultural Resources Theme – Very High and High Sensitivity Rating as per Screening Tool Output

No.	NEMA Regs (2014) - Appendix 6	The relevant section in the report
2	Agricultural Agro-Ecosystem Specialist Assessment	
2.1	The assessment must be undertaken by a soil scientist or agricultural specialist registered with the South African Council for Natural Scientific Professionals (SACNASP).	CV Attached
2.2	The assessment must be undertaken on the preferred site and within the proposed development footprint.	Section 1.1
2.3	The assessment must be undertaken based on a site inspection as well as an investigation of the current production figures, where the land is under cultivation or has been within the past 5 years, and must identify:	
2.3.1	the extent of the impact of the proposed development on the agricultural resources and	Section 5
2.3.2	whether or not the proposed development will have an unacceptable impact on the agricultural production capability of the site, and in the event it does, whether the positive impact of the proposed development on agricultural resources outweighs such a negative impact.	Section 5
2.4	The status quo of the site must be described, including the following aspects, which must be considered as a minimum in the baseline description of the agro-ecosystem:	
2.4.1	the soil form/s, soil depth (effective and total soil depth), top and sub-soil clay percentage, terrain unit, and slope;	Section 3.1 and 4.2
2.4.2	where applicable, the vegetation composition, available water sources, as agro-climatic information;	
2.4.3	the current productivity of the land-based on production figures for all agricultural activities undertaken on the land for the past 5 years, expressed as an annual figure and broken down into production units;	Not applicable at this phase
2.4.4	the current employment figures (both permanent and casual) for the land for the past 3 years, expressed as an annual figure and	Not applicable at this phase

2.4.5	existing impacts on the site, located on a map (e.g., erosion, alien vegetation, non-agricultural infrastructure, waste, etc.).	Section 4.1
2.5	Assessment of impacts, including the following aspects which must be considered as a minimum in the predicted impact of the proposed development on the agro-ecosystem:	
2.5.1	change in productivity for all agricultural activities based on the figures of the past 5 years, expressed as an annual figure and broken down into production units;	Not applicable at this phase
2.5.2	change in employment figures (both permanent and casual) for the past 5 years expressed as an annual figure and	Not applicable at this phase
2.5.3	any alternative development footprints within the preferred site would be of “medium” or “low” sensitivity for agricultural resources as identified by the screening tool and verified through the site sensitivity verification.	Section 7
2.6	The Agricultural Agro-Ecosystem Specialist Assessment findings must be written up in an Agricultural Agro-Ecosystem Specialist Report.	
2.7	This report must contain the findings of the agro-ecosystem specialist assessment and the following information, as a minimum:	
2.7.1	Details and relevant experience, as well as the SACNASP registration number of the soil scientist or agricultural specialist preparing the assessment, including a curriculum vitae;	Appendix C
2.7.2	A signed statement of independence by the specialist;	Appendix A
2.7.3	The duration, date, and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 2.2
2.7.4	A description of the methodology used to undertake the on-site assessment, inclusive of the equipment and models used, as relevant;	Section 2
2.7.5	A map showing the proposed development footprint (including supporting infrastructure) with a 50m buffered development envelope, overlaid on the agricultural sensitivity map generated by the screening tool;	Section 2.5
2.7.6	An indication of the potential losses in production and employment from the change of the agricultural use of the land as a result of the proposed development;	Not applicable at this phase
2.7.7	An indication of possible long-term benefits that the project will generate will generate in relation to the benefits of the agricultural activities on the affected land;	Section 5
2.7.8	Additional environmental impacts expected from the proposed development based on the current status quo of the land, including erosion, alien vegetation, waste, etc.;	Section 5
2.7.9	Information on the current agricultural activities being undertaken on adjacent land parcels;	Section 4.1
2.7.10	An identification of any areas to be avoided, including any buffers;	N/A

2.7.11	A motivation must be provided if there were development footprints identified as per paragraph 2.5.3 above that were identified as having a “medium” or “low” agriculture sensitivity and that were not considered appropriate;	Section 5
2.7.12	Confirmation from the soil scientist or agricultural specialist that all reasonable measures have been considered in the micro-siting of the proposed development to minimise fragmentation and disturbance of agricultural activities;	Section 5
2.7.13	A substantiated statement from the soil scientist or agricultural specialist with regards to agricultural resources on the acceptability or not of the proposed development and a recommendation on the approval or not of the proposed development;	Section 5
2.7.14	Any conditions to which this statement is subjected;	Section 5.2
2.7.15	Where identified, proposed impact management outcomes or any monitoring requirements for inclusion in the Environmental Management Programme (EMPr); and	Section 5.2
2.7.16	A description of the assumptions and any uncertainties or gaps in knowledge or data.	Section 1.6
2.8	The Agricultural Agro-Ecosystem Specialist Assessment findings must be incorporated into the Basic Assessment Report or Environmental Impact Assessment Report, including the mitigation and monitoring measures identified, which are to be contained in the EMPr.	
2.9	A signed copy of the assessment must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.	

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1. INTRODUCTION

Enviro-Solum Consulting (Pty) Ltd (part of the MORA group of companies) was appointed by Vahlengwe Mining Advisory and Consulting (Pty) Ltd to conduct a desktop soil, land use, and land capability study as part of the Environmental Authorisation (EA) process for the application for a prospecting right for clay (general) under the Minerals and Petroleum Resource Development Act (MPRDA), No 28 of 2002. The proposed area for the prospecting rights (hereafter referred to as the study area) is located 13,51 km southwest of Bela -Bela and 26,41 km East of Seabe within portions 1 and 11 of the Farm Doornput 458 KR. The access road to the farm is via the R516 and N1 road in the Bela- Bela District in Limpopo Province. Figure 1 below depicts the locality of the study area in relation to the surrounding areas.

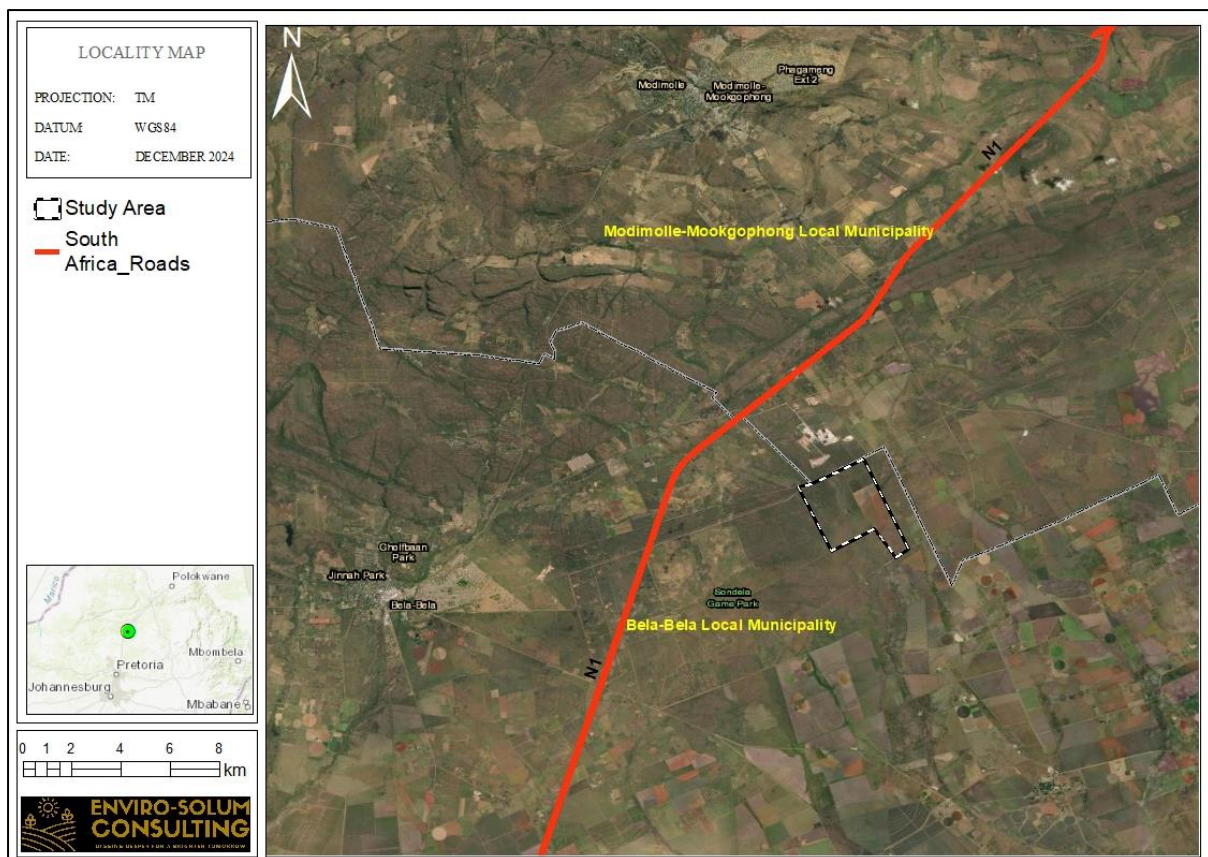


Figure 1: Locality of the study area in relation to the surrounding areas.

1.1 PROJECT DESCRIPTION

The proponent (Aquerella) proposes to undertake clay (general) prospecting activities for the remaining extent, portions 1 and 11 of the Farm Doornput 458 KR within the Magisterial District of Bela-Bela Limpopo Province. The planned invasive prospecting activities will cover an area of at least 1 413 ha. The project entails the drilling of about ten (10) boreholes to determine the mineral deposition, quantity, economic viability, and possibilities of the

project leading to a viable mine. Access to the prospecting area will be through existing roads. This right permits the company or persons to take samples of earth and rock for testing over a specified period of up to 5 years and may be renewed once for an additional 3 years.

1.2 AIMS AND OBJECTIVES OF THE DESKTOP STUDY

The objective of the Soil, Land Use, and Land Capability is to fulfil and align the proposed project with the requirements of the Conservation of Agricultural Resources Act (CARA), 1983 (Act No. 43 of 1983) of South Africa. This act aims to promote the conservation of soil, water sources, and vegetation, as well as the control of weeds and invader plants by managing natural agricultural resources. Thus, the proposed study aims to determine the possible impacts of the proposed development on the soil, land use, land capability, and agricultural potential and identify areas of high sensitivity within the study area. This will be achieved by considering parameters such as soil quality, drainage, topography, climate, and water availability and providing sound input to ensure that land is used sustainably and responsibly. As such, this desktop specialist report has assessed and considered the following:

- The soil forms occurring within the study area;
- The associated land capability and agricultural sensitivity of the soils occurring within the study area;
- Discussion of the land capability and sensitivity in terms of the soils, water availability, surrounding development, and current status of land;
- Discussion of potential and actual impacts as a result of the proposed development; and
- Provide mitigation for the impacts as part of the Environmental Management Programme (EMPr).

1.3 SUITABILITY OF SOILS FOR AGRICULTURAL CULTIVATION

Assessing soil suitability for agricultural cultivation rests primarily on identifying soils suited to crop production. For soils to be classified as being suitable for crop cultivation, they must have the following properties:

- Adequate depth (greater than 60 cm) to accommodate root development of cultivated crops;
- Good structure, as in water-stable aggregates, which allows for root penetration and water retention;
- Sufficient clay and organic matter to provide nutrients for growing crops;
- Sufficient distribution of high-quality and potential soils within the study area to constitute a viable economic management unit;
- Adequate clay content and deep enough water table to allow for water storage; and
- Good climatic conditions, such as sufficient rainfall and sunlight, increase crop choice variety.

1.4 APPLICABLE LEGISLATION

The most recent South African Environmental Legislation that needs to be considered for any new or expanding development with reference to assessment and management of soil and land use includes:

- The National Environmental Management Act. 1998 (Act 107 of 1998) requires that pollution and degradation of the environment be avoided, or, where it cannot be avoided, be minimised and remedied.
- The Conservation of Agricultural Resources (Act 43 of 1983) states that the degradation of the agricultural potential of soil is illegal.
- The Conservation of Agriculture Resources (Act 43 of 1983) requires the protection of land against soil erosion and the prevention of water logging and salinization of soils employing suitable soil conservation works to be constructed and maintained. The utilisation of marshes, water sponges, and watercourses is also addressed.

1.5 TERMS OF REFERENCE

The terms of reference applicable to the Soils, Land Capability, and Land Use Study include the following:

- A review of available desktop information about the study area site and compile various maps illustrating the desktop data;
- Discussion of the relevant desktop literature;
- Conduct a soil classification survey covering the study area according to the South African Soil Classification System: A Natural and Anthropogenic System for South Africa (Soil Classification Working Group, 2018);
- Identification and assessment of the potential impacts of the different project phases on the soil, land use, and land capability properties as a result of the proposed development;
- Development of mitigation and management measures to minimize the negative impacts anticipated from the proposed development; and
- Compile soil, land use, and land capability reports based on the desktop results.

1.6 ASSUMPTIONS, ASSUMPTIONS UNCERTAINTIES, LIMITATIONS, AND GAPS

The following assumptions, uncertainties, limitations, and gaps were applicable for the soil, land use, and land capability assessment:

- The soil and land capability desktop assessment are confined to the study area and does not include the neighbouring and adjacent properties; and
- This study was undertaken as a desktop assessment and preliminary field observations; the information gathered during the desktop assessment must be considered cautiously, as inaccuracies and data capturing errors are often present within these databases. Since this information forms part of the scoping phase, this desktop assessment is considered to provide adequate information for informed decision making and to inform the Plan of Study for the EIA.

2. METHODOLOGY

The assessment of the study area's agricultural potential was based on a combination of desktop studies to gather general information, site visits for status quo assessment, soil classification and characterisation, and validation of the information generated from the desktop studies.

2.1 DESKTOP STUDY AND LITERATURE REVIEW

A literature review and background study were carried out to gather the study area's predetermined soil, land use, and land capability data. The data was sourced from the Soil and Terrain (SOTER) database and the Natural Agricultural Atlas of South Africa Version 3:

<https://ndagis.nda.agric.za/portal/apps/webappviewer/index.html?id=8b72eb2a25c04660a1ab2b562f6ec0bf>

2.2 SITE SURVEY AND SITE SENSITIVITY VERIFICATION

A soil survey will be conducted following the completion of the desktop assessment phase. At that time, the identified soils within the study area will be classified into soil forms according to the Soil Classification System: A Natural and Anthropogenic System for South Africa Soil Classification System (2018). The soil survey will also serve to verify previous findings and cover the remaining portion of the study area. The soil survey will be restricted to the study area. Subsurface soil observations will be made using a manual hand auger to assess individual soil profiles, which will entail the evaluation of physical soil properties and prevailing limitations to various land uses.

The aim of the on-site Site Sensitivity Verification will be to:

- Ground truth if there are any cultivation activities and consequent agricultural sensitivity;
- Gain an understanding of the agricultural potential of the study through the identified soils on site as well as infrastructure; and
- Confirm or dispute the current land use and the environmental sensitivity as indicated by the National Environmental Screening Tool.

2.3 LAND CAPABILITY CLASSIFICATION

A land capability class is an interpretive grouping of land units with similar potential and containing limitations or hazards for long-term intensive use of land for rainfed farming determined by the interaction of climate, soil, and terrain. It is a more general term than land suitability and is more conservation-oriented (See Table 1 below). It involves consideration of:

- Varying limitations to land use pertaining to rainfed cultivation and soil properties; and
- The risks of land damage from erosion and other causes.

Eight land capability classes were employed, with potential decreases, limitations, and hazards increasing from class 1 to class 8. Classes 1 to 4 are considered arable, whereas Class 5 is considered wet-based soils or watercourses, and Classes 6 to 8 are classified as grazing, forestry, or wildlife. This system is based on the Land Capability Classification system of the United States Department of Agriculture (USDA) Soil Conservation Service by Klingebiel and Montgomery (1961) as well as by Smith (2006).

Table 1: Soil Capability Classification (after Smith (2006)).

Land Capability Group	Land Capability Class	Intensity of Land Use									Limitations
		wildlife	Forestry	Light grazing	Moderate grazing	Intensive grazing	Light cultivation	Moderate cultivation	Intensive cultivation	Very intensive cultivation	
Arable	I										There are no or few limitations. Very high arable potential. Very low erosion hazard
	II										Slight limitations. High arable potential. Low erosion hazard
	III										Moderate limitations. Some erosion hazards
	IV										Severe limitations. Low arable potential. High erosion hazard.
Grazing	V										Water course and land with wetness limitations
	VI										Limitations preclude cultivation. Suitable for perennial vegetation
	VII										Very severe limitations. Suitable only for natural vegetation
Wildlife	VIII										Extremely severe limitations. Not suitable for grazing or afforestation.

The updated and refined land capability ratings and database for the whole of South Africa were released by the Department of Fishery and Forestry (DAFF) in 2016. These land capability ratings were derived through a spatial evaluation modelling approach and a raster spatial data layer comprising fifteen (15) land capability evaluation values 9 (see Table 2 below). The new land capability describes the categories as 1 being the lowest and 15 being the highest. Values of below 8 are generally not suitable for the production of cultivated crops. (DAFF, 2016). Soil agricultural potential is impacted by several factors (see Table 3 below). The soil agricultural potential was evaluated based on the factors mentioned and described in Table 3 by assigning qualitative criteria ratings such as High, Moderate, or Marginal to low to the updated land capability ratings.

Table 2: National Land Capability Values (DAFF, 2016).

Land Capability evaluation value	Land Capability Description
1	Very Low
2	
3	Very Low to Low
4	
5	Low
6	Low to Moderate
7	
8	Moderate
9	Moderate to High
10	
11	High
12	High to Very High
13	
14	Very High
15	

Table 3: Soil Agricultural Potential Criteria

Criteria	Description
Rock Complex	If a soil type has prevalent rocks in the upper sections of the soil, it is a limiting factor to the soil's agricultural potential.
Flooding Risk	The risk of flooding is determined by the closeness of the soil to water sources.
Erosion Risk	The soil erosion risk is determined by combining the wind and water erosion potentials.
Slope	The slope of the site could limit its agricultural use.
Texture	The texture of the soil can limit its use by being too sandy or too clayey.
Depth	The effective depth of soil is critical for the rooting zone for crops.
Drainage	The capability of soil to drain water is important as most grain crops do not tolerate submergence in water.

Criteria	Description
Mechanical Limitations	Mechanical limitations are any factors that could prevent the soil from being tilled or ploughed.
pH	The pH of the soil is important when considering soil nutrients and fertility.
Soil Capability	This section highlights the soil type's capability to sustain agriculture.
Climate Class	The climate class highlights the prevalent climatic conditions that could influence the agricultural use of a site.
Land Capability / Agricultural Potential	The land capability or agricultural potential rating for a site combines the soil capability and the climate class to arrive at the potential of the site to support agriculture.

2.4 DFFE SCREENING TOOL

The Agricultural Agro-Ecosystem Assessment protocol provides the criteria for assessing and reporting impacts on agricultural resources for activities requiring Environmental Authorisation (EA). The assessment requirements of this protocol are associated with a level of environmental sensitivity determined by the national web-based environmental screening tool, which, for agricultural resources, is based on the most recent land capability evaluation values provided by the Department of Forestry, Fisheries, and the Environment (DFFE). The national web-based environmental screening tool can be accessed at: <https://screening.environment.gov.za/screeningtool>.

The primary purpose of the Agricultural Agro-Ecosystem Assessment is to determine the site's sensitivity considering the proposed land use change (from potential agricultural land to the proposed development is sufficiently considered). The information in this report aims to enable the Competent Authority (CA) to draw a sound conclusions and recommendations on the proposed project and its potential impacts with a specific focus on food security. The sensitivity will be verified during the on-site verification.

To meet this objective, the protocol requires that site sensitivity verification be conducted, and subsequent outcomes must meet the following objectives:

- It must confirm or dispute the current land use and the environmental sensitivity as indicated by the National Environmental Screening Tool;
- It must contain proof (e.g., photographs) of the current land use and environmental sensitivity of the study area;
- All data and conclusions are submitted together with the main report for the proposed development;
- It must indicate whether the proposed development will have an unacceptable impact on the agricultural production capability of the site, and if it does, whether such a negative impact is outweighed by the positive impact of the proposed development on agricultural resources and
- The report is prepared in accordance with the requirements of the Environmental Impact Assessment Regulations.

The report is thus compiled to meet the minimum report content requirements for impacts on agricultural resources by the proposed development.

2.5 DFFE SCREENING TOOL

The Screening tool for the study area is presented in Figure 2 below:

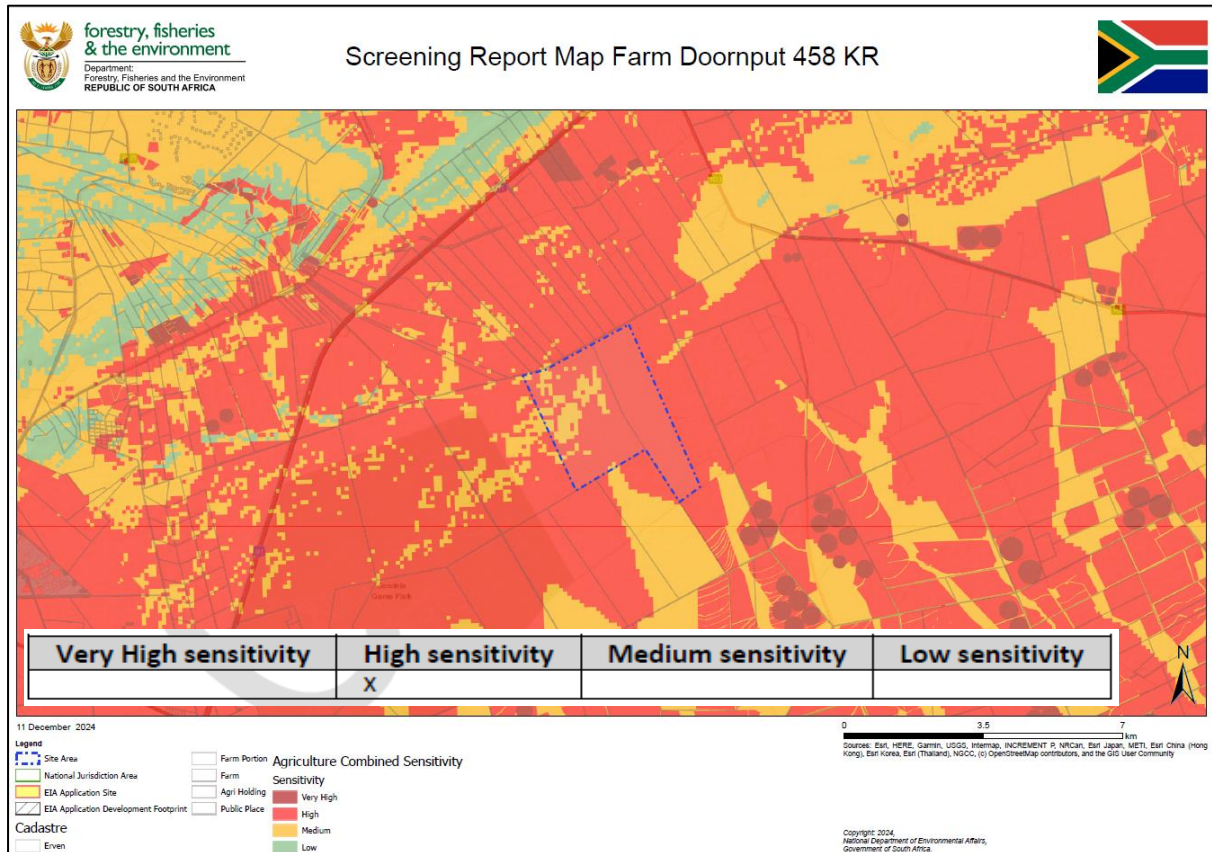


Figure 2: Screening tool sensitivity for the study area.

3. DESKTOP RESULTS AND DISCUSSIONS

As part of the desktop site assessment, background information related to the study area and literature reviews were gathered from various databases, including AGIS (Agricultural Geo-referenced Information System) and SOTER (Soil and Terrain). In addition, the Department of Agriculture, Forestry & Fisheries provided the Natural Agricultural Resources Atlas of South Africa (NAR Atlas Manual, 2018). Even though desktop results are not field verified, the data presented may contain inaccuracies. Nevertheless, the data provide valuable information regarding the soils within the study area.

3.1 CLIMATIC DATA

The study area falls within the humid subtropical climate zone, characterised by hot and humid summers and cool to mild winters. A deep current of tropical air dominates the humid subtropics at the time of high sun, and daily intense (but brief) convective thundershowers are common but lack any predictability. The entire study area is characterised by rainfall ranging between 401 and 600 mm. The study area can, therefore, be described as water-stressed. While the range of planting dates is limited for supporting rain-fed agriculture under these conditions, a limited range of adapted crops can receive good yields if planted on time. Figure 3 shows the mean annual rainfall associated with the study area.

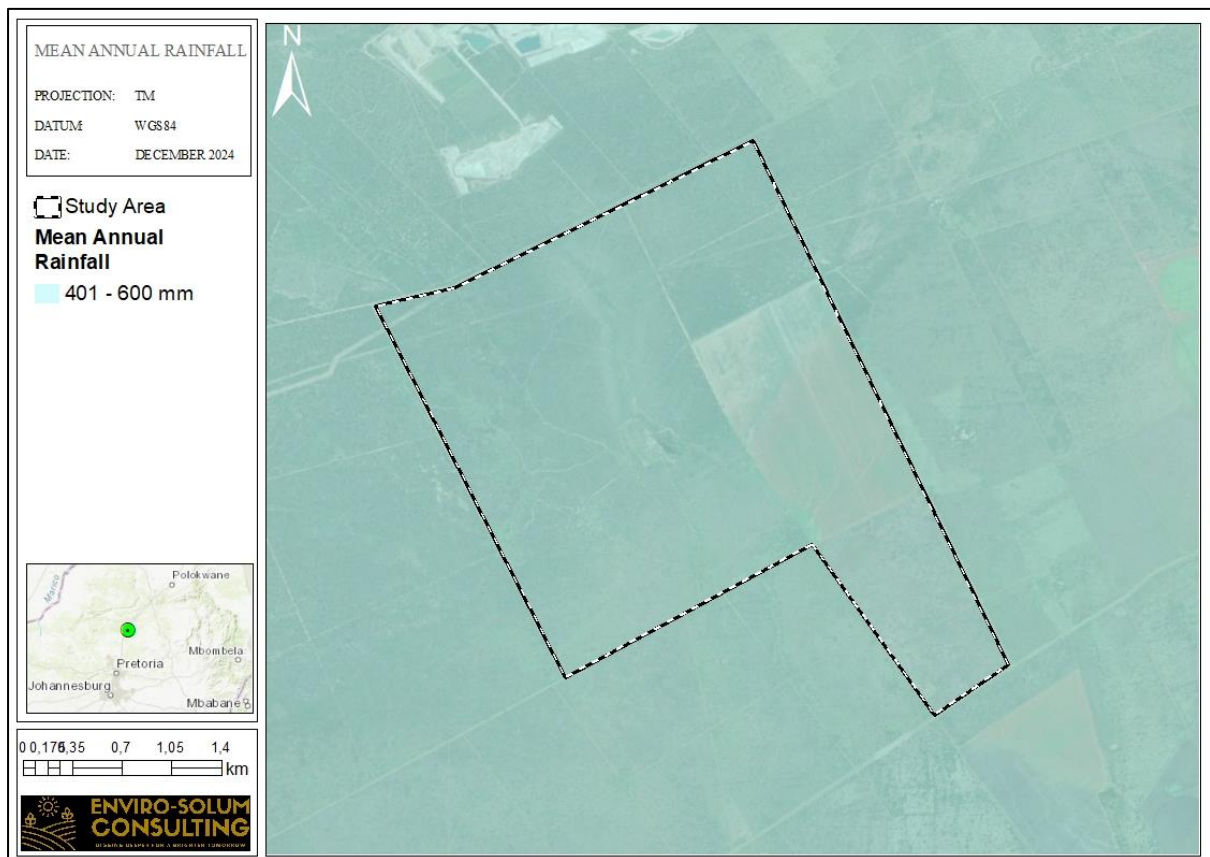


Figure 3: Mean Annual Rainfall associated with the study area.

3.2 GEOLOGY

The soils associated with the majority of the study area are underlain by the Suurberg, Drakensburg and Lebombo geological groups. Dramatic outpourings of lava spread across much of Gondwana about 180 million years ago heralding the start of Gondwana breakup. Remnants of these once extensive lavas now form the Lesotho highlands and Lebombo mountains. 1.5 km thick accumulation of Jurassic age basalt flows can be seen along the Drakensberg Escarpment. The magma (molten rock) made its way to the surface along a complex system of fractures. Crystallisation of magma within these fractures formed dolerite sills and dykes. The sills often form flat areas and weather to form a very dark red soil. The sill may also form resistant cliffs such as at Howick Falls. The

final volcanic event produced rhyolite lava which now forms the Lebombo mountains. Figure 4, below, depicts the geology associated with the study area.

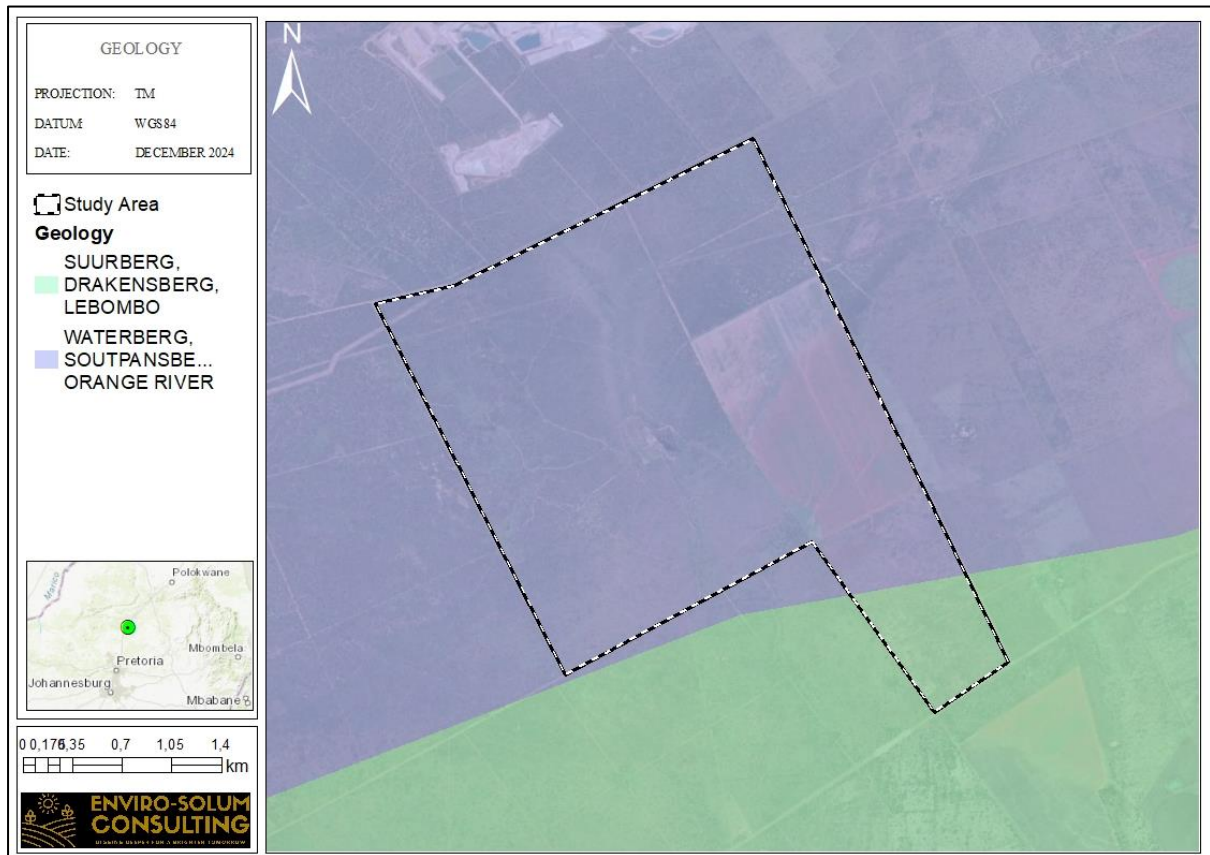


Figure 4: Geological formations associated with the study area.

3.3 SOIL DEPTH

The entire study area is characterised by soil depths between 450 mm and 750 mm. This soil depth is considered suitable for various crops, and deeper soils can hold more plant nutrients and water than shallow soils with similar textures. Figure 5 illustrates the soil depth associated with the study area.

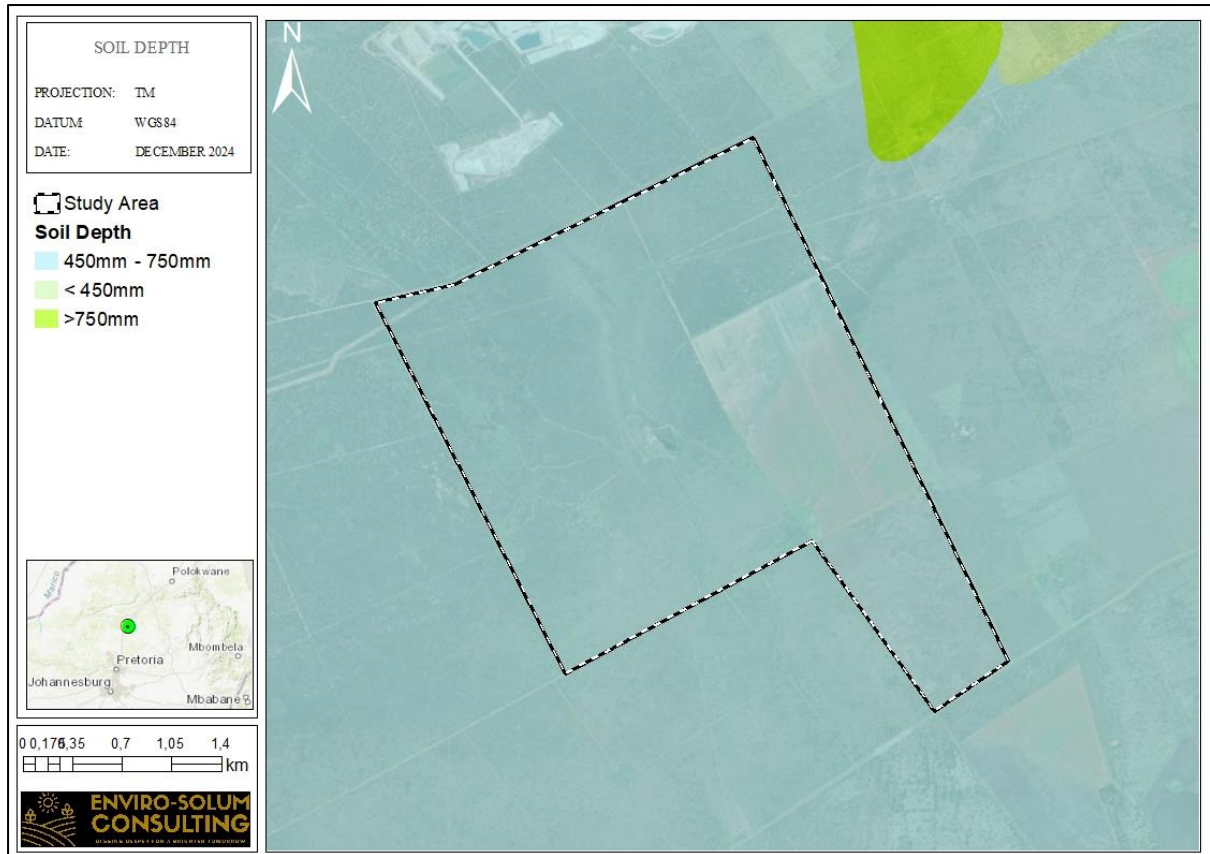


Figure 5: Soil depth percentage associated with the study area.

3.4 SOIL PH

The soil pH associated with the soils occurring within the study area ranges between 6.5 and 7.4, which is considered slightly acidic to neutral. At this soil pH range, a wide range of plant nutrients are available for plant uptake without the risk of deficiency and toxicity. Figure 6, below, depicts the soil pH associated with soils within the study area.

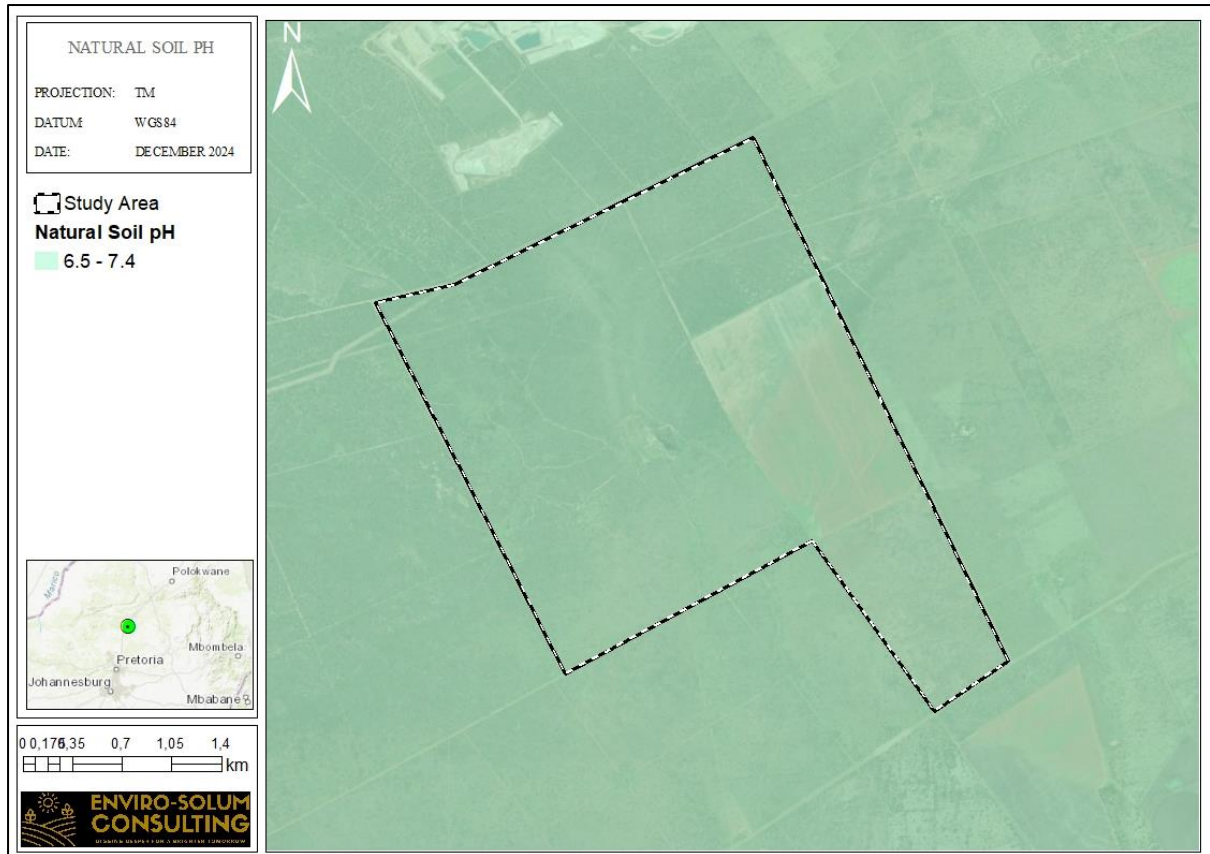


Figure 6: Soil pH associated with the project area.

3.5 SOIL AND TERRAIN (SOTER) DOMINANT SOILS

The plinthic acrisols dominate the western portion, and haplic luvisols dominate the remaining portion of the study area. Plinthic acrisols are characterised by a subsurface layer of accumulated kaolinitic clays. These soils form on old landscapes with undulating topography and a humid tropical climate. Their natural vegetation is woodland, which in some areas has given way to tree savanna maintained by seasonal burning. The age, mineralogy, and extensive leaching of these soils have led to low levels of plant nutrients, excess aluminium, and high erodibility, all of which make agriculture problematic. Nevertheless, traditional shifting cultivation of acid-tolerant crops has adapted well to the conditions found in Acrisols. The haplic luvisols are characterised by a marked textural differentiation within the soil profile, with the topsoil horizon being depleted of clay and other minerals. These soils typically have good internal drainage and thus can be utilised for a wide variety of agricultural purposes such as extensive grazing or planted tree crops. Figure 7 below illustrates the SOTER dominant soils associated with the study area.

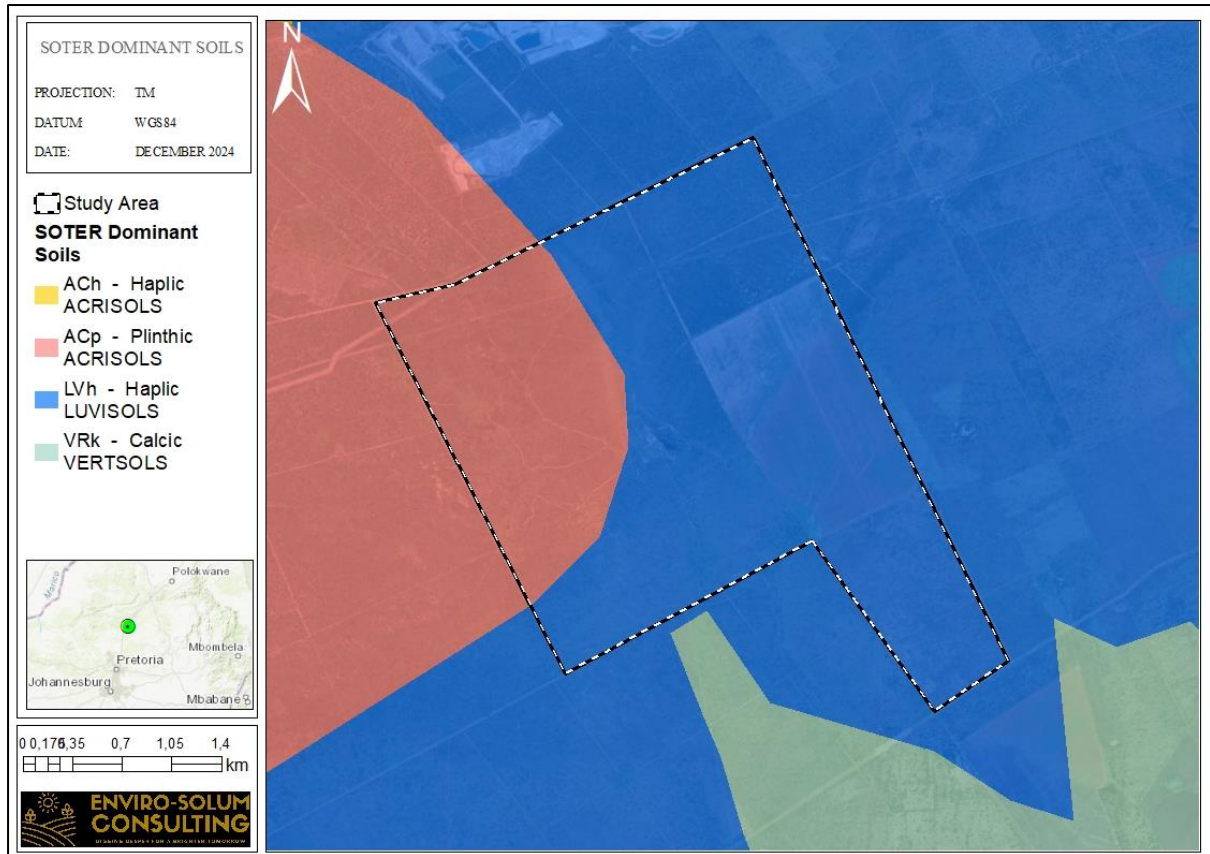


Figure 7: SOTER dominant soils associated with the study area.

3.6 LANDTYPE CLASSES

The majority of the study area is dominated by the Ae18 landtype, followed by the Bb90 and the Ea1 landtypes. The Ae landtype is characterised by red and yellow structureless soils without water tables within the observable profile and has a high base status. The Bb landtype is characterised by plinthic landscapes with almost no upland duplex and marginalitic soils and limited distribution of red soils. The Ea landtype is characterised by dark and red coloured structured and high base status. Figure 8 below depicts the landtypes classes associated with the study area.

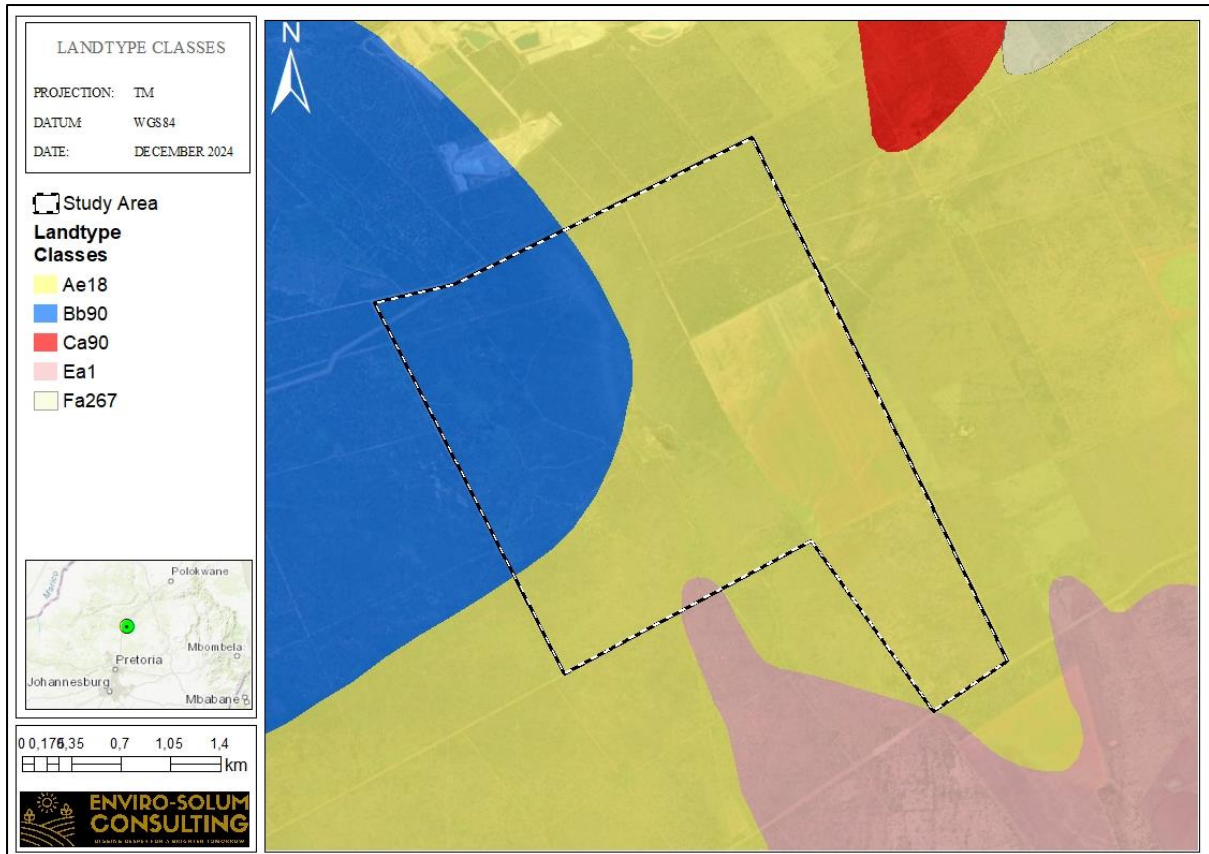


Figure 8: Landtype classes associated with the study area.

3.7 DESKTOP LAND CAPABILITY

The entire study area is characterised by moderate potential arable land of Class (III) capability. Figure 10 below shows the desktop land capability associated with the study area.

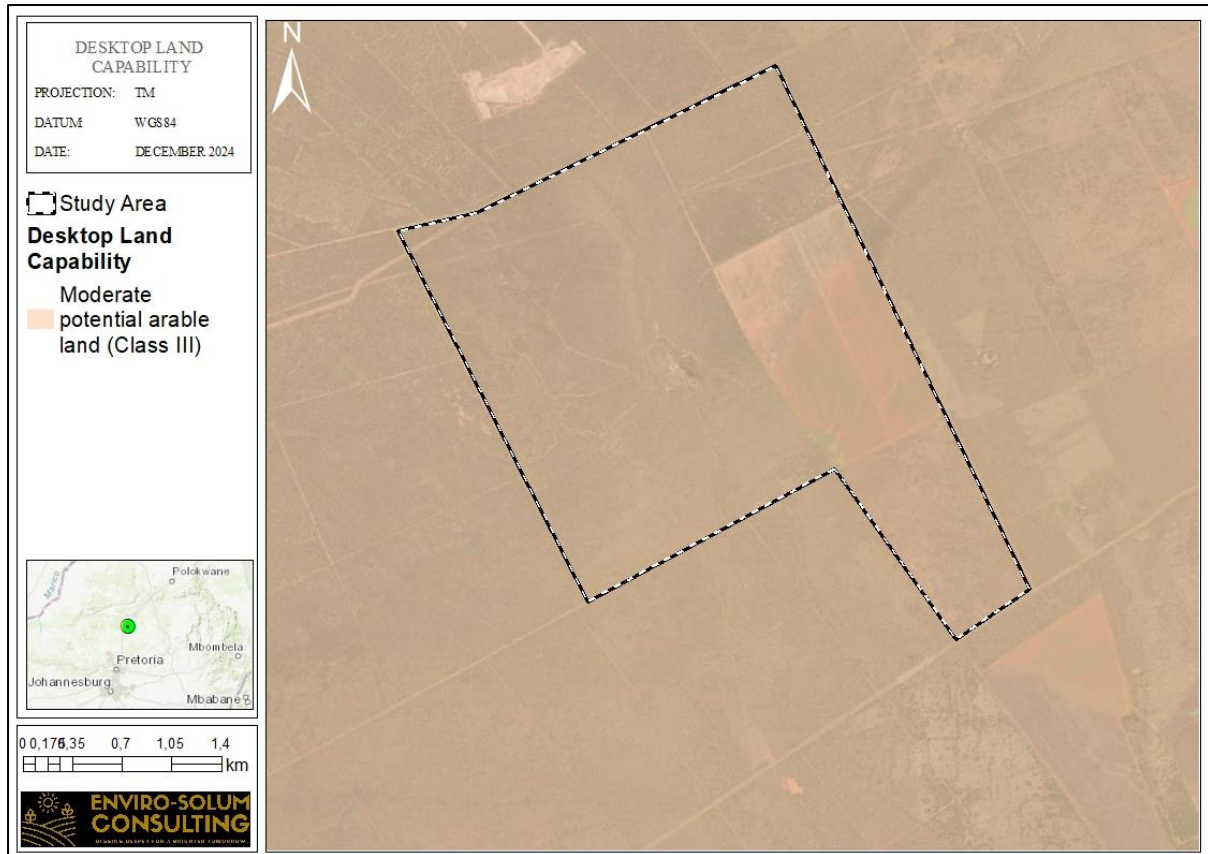


Figure 9: Desktop land capability associated with the study area.

4. PRELIMINARY POTENTIAL IMPACTS FROM PROPOSED PROSPECTING

4.1 POTENTIAL IMPACTS PER PROJECT PHASE

4.1.1 Construction Phase (Drilling and Bulk Sampling)

During the construction phase of the proposed development, the soils are anticipated to be exposed to erosion, dust emission, potential soil contamination, and impacts of loss of land capability. The main envisaged activities include the following:

- Earthworks (where necessary) in preparation for drilling and sampling will include vegetation clearing from the surface and stripping topsoil (soil excavation). These activities are the most disruptive to natural soil horizon distribution and will impact the current soil hydrological properties and functionality of soil if not mitigated properly;
- Frequent movement of heavy machinery increasing the likelihood of soil contamination from petroleum, oil, and grease substances;

- Other activities in this phase that will impact soil are handling and storing materials and different kinds of waste. When not managed properly, these activities could potentially result in soil pollution.

The disturbance of original soil profiles and horizon sequences during earthworks is considered to be a measurable erosion deterioration. Chemical-contaminated water from the mineral processing plant and storage facilities bears a risk to the environment. This impact should always be regarded as high, and proper mitigation and/or remediation measures should be put in place. Soil compaction will be a measurable deterioration that will occur due to the heavy vehicles commuting on the existing roads and any newly constructed access road to increase access to the prospecting area. If not, rehabilitated vegetation re-growth is unforeseen and poses a medium risk to the environment.

4.1.2 Decommissioning and Rehabilitation Phase

The decommissioning phase will entail sealing and capping the drill holes and removing all the prospecting infrastructure and equipment from the processing area. Decommissioning can be considered the reverse of the construction phase and reinstate the natural soil conditions.

The main envisaged decommissioning activities that will impact on soil, land use, and land capability include the following:

- Transporting materials away from the site will compact the soil of the existing roads, and fuel and oil spills from vehicles may result in soil chemical pollution.
- Earthworks will redistribute inert waste materials to fill the ponds and ditches and add topsoil to the soil surface. These activities will not further impact land use and capability but may increase soil compaction.
- Other activities in this phase that will impact soil are handling and storing materials, different kinds of waste generated, and accidental spills and leaks with decommissioning activities. When not managed properly, these activities can potentially result in soil pollution.

5. HIGH LEVEL IMPACT RATING

The study area is dominated by haplic luvisols and plinthic acrisols, which can be characterised as soils of intermediate suitability for arable agriculture where the climate permits. The haplic luvisols present challenges of increased leaching of clay minerals and valuable plant nutrients. However, these soils can be utilised for various agricultural purposes under careful water, erosion and fertility programmes. The plinthic acrisols are characterised by a subsurface layer of accumulated kaolinitic clays where less than half of the ions available to plants are calcium, magnesium, sodium, or potassium and also by the lack of an extensively leached layer below the surface horizon

(uppermost layer). Thus, frequent liming or acid-tolerant crops may be required to cultivate successfully in these soils.

Difficulties in the agricultural management of soils within the study area may have meant that the soils are utilised extensively for pasture cultivation, grazing, wildlife, and recreation. According to the Natural Agricultural Atlas of South Africa, only 151 ha (10.7%) out of 1 413 ha of the prospecting right application area is likely utilised for cultivation (See Figure 10 below). When drilling and prospecting around these areas, care must be taken not to disrupt any ongoing cultivation activities within the demarcated areas, as illustrated in Figure 10 below.

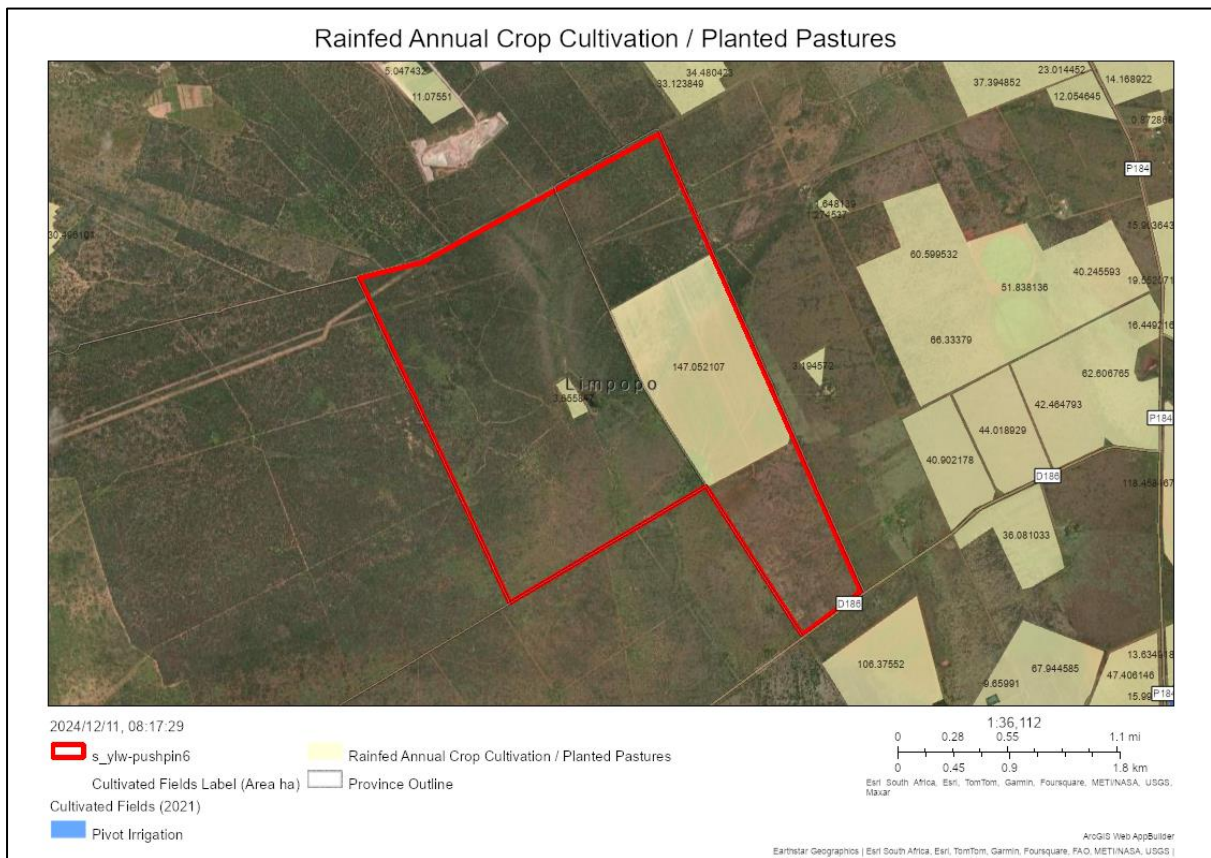


Figure 10: Cultivated areas within the study area based on the national database.

The impact of the proposed prospecting right is anticipated to have reversible impacts on soils, provided that the mitigation measures outlined in this document are adhered to. The cumulative loss from a soil and land capability point of view is anticipated to be of moderate significance and low with mitigation measures in place. The reason is that a noteworthy portion of soils under cultivation may be subject to different forms of soil degradation due to the different operations during the construction and operation of the proposed development. These proposed activities may likely have a negative impact on farm production during the drilling phase, albeit at a smaller scale.

It is the opinion of the specialist that this desktop study provides the relevant information required for the Environmental Impact Assessment phase of the project to ensure that appropriate consideration of the agricultural

resources in the study area is made in support of the principles of Integrated Environmental Management (IEM) and sustainable development.

6. PRELIMINARY MITIGATION MEASURES

6.1 SOIL EROSION AND DUST EMISSION MANAGEMENT

- The footprint of the proposed development and construction activities should be clearly demarcated to restrict vegetation clearing activities to within the infrastructure footprint as far as practically possible;
- Bare soils within the access roads should be regularly dampened with water to suppress dust during the construction phase, especially when strong wind conditions are predicted according to the local weather forecast;
- All disturbed areas adjacent to the proposed residential development areas should be re-vegetated with an indigenous grass mix, where necessary, to re-establish a protective cover to minimise soil erosion and dust emission; and
- Temporary erosion control measures such as berms should be used to protect the disturbed soils during the construction phase until adequate vegetation has been established.

6.2 SOIL CONTAMINATION MANAGEMENT

- Contamination prevention measures should be addressed in the Environmental Management Programme (EMPr) for the proposed development, and this should be implemented and made available and accessible at all times to the contractors and construction crew conducting the works on site for reference;
- An emergency response contingency plan should be put in place to address clean-up measures should a spill and/or a leak occur, as well as preventative measures to prevent contamination; and
- Burying of any waste including rubble, domestic waste, empty containers on the site etc. should be strictly prohibited and all construction waste must be removed to an approved disposal site.

6.3 SOIL COMPACTION MANAGEMENT

- Soil Compaction is usually greatest when soils are moist, so soils should be stripped when moisture content is as low as possible. If they have to be moved when wet, shovel and truck should be used as bowl scrapers create excessive compaction when moving wet soils;
- Minimize compaction during the stockpile phase by keeping stockpile soil loose and limit stockpile height to 2-3 meters height, to limit internal soil compaction (Coaltech: chamber of mines, 2007);
- Compaction should be minimised by use of appropriate equipment and replacing soils to the greatest possible thickness in single lifts;

- Heavy equipment movement over replaced soils should be minimised;
- Minimise compaction during smoothing of replaced soils by using dozers rather than graders;
- Following placement, compacted soils should be ripped to full rooting depth (at least 60 cm or 30 cm as the bare minimum seedbed) to allow penetration of plant root);
- All vehicular traffic should be restricted to the existing service roads and the selected road servitude as far as practically possible; to avoid unnecessary compaction of the surrounding soils;
- Direct surface disturbance of the identified high clay content(i.e., Calcic Vertisols and Ferric Luvisols.) soils should be limited within demarcated areas where possible to minimise the intensity of compaction due to the susceptibility of these soils to prolonged waterlogging conditions (inundation);
- Compacted soils adjacent to the proposed activities footprints and associated infrastructure footprint can be lightly ripped to at least 25 cm below ground surface to alleviate compaction prior to re-vegetation, and
- Compaction of soil can be mitigated by ripping the footprint and introducing both organic and inorganic fertilizers.

6.4 SOIL STOCKPILE MANAGEMENT

- Prior to the commencement of the proposed activities, topsoil should be removed, and stockpiled for future use;
- Surface and subsoil material should be stockpiled separately. This is to prevent the mixing of the fertile topsoil with the nutrient limited subsoils;
- The duration of stockpiling must be minimised where possible;
- Ensure all stockpiles (especially topsoil) are clearly and permanently demarcated and located in defined no-go areas;
- Stockpile height should be restricted to that which can deposited without additional traversing by machinery. A Maximum height of 2-3 m is therefore proposed, and the stockpile should be treated with temporary soil stabilisation methods, such as the application of organic matter to promote soil aggregate formation, leading to an increased infiltration rate, thereby reducing soil erosion. Also, the use of lime to stabilise soil pH levels;
- Temporary berms can be installed around stockpile areas whilst vegetation cover has not been established to avoid soil loss through erosion; and
- A short-term fertiliser program should be based on the soil chemical status after levelling. It should consist of a pre-seeding lime and fertiliser application, an application with the seeding process, and a maintenance application for 2 to 3 years after rehabilitation or until the area can be declared as self-sustaining by an appropriately qualified soil scientist.

7. CONCLUSION

Enviro-Solum Consulting (Pty) Ltd (part of the MORA group of companies) was appointed by Vahlangwe Mining Advisory and Consulting (Pty) Ltd to conduct a desktop soil, land use, and land capability study as part of the Environmental Authorisation (EA) process for the application for a prospecting right for clay (general) under the Minerals and Petroleum Resource Development Act (MPRDA), No 28 of 2002. The proposed area for the prospecting rights (hereafter referred to as the study area) is located 13,51 km southwest of Bela -Bela and 26,41 km East of Seabe within portions 1 and 11 of the Farm Doornput 458 KR. The access road to the farm is via the R516 and N1 road in the Bela- Bela District in Limpopo Province.

The study area is dominated by haplic luvisols and plinthic acrisols, which can be characterised as soils of intermediate suitability for arable agriculture where the climate permits. The haplic luvisols present challenges of increased leaching of clay minerals and valuable plant nutrients. However, these soils can be utilised for various agricultural purposes under careful water, erosion and fertility programmes. The plinthic acrisols are characterised by a subsurface layer of accumulated kaolinitic clays where less than half of the ions available to plants are calcium, magnesium, sodium, or potassium and also by the lack of an extensively leached layer below the surface horizon (uppermost layer). Thus, frequent liming or acid-tolerant crops may be required to cultivate successfully in these soils.

Difficulties in the agricultural management of soils within the study area may have meant that the soils are utilised extensively for pasture cultivation, grazing, wildlife, and recreation. According to the Natural Agricultural Atlas of South Africa, only 151 ha (10.7%) out of 1 413 ha of the prospecting right application area is likely utilised for cultivation. When drilling and prospecting around these areas, care must be taken not to disrupt any ongoing cultivation activities within the demarcated areas.

The impact of the proposed prospecting right is anticipated to have reversible impacts on soils, provided that the mitigation measures outlined in this document are adhered to. The cumulative loss from a soil and land capability point of view is anticipated to be of moderate significance and low with mitigation measures in place. The reason is that a noteworthy portion of soils under cultivation may be subject to different forms of soil degradation due to the different operations during the construction and operation of the proposed development. These proposed activities may likely have a negative impact on farm production during the drilling phase, albeit at a smaller scale.

The specialist believes that this study provides the relevant information required for the desktop assessment phase of the project, which ensures that appropriate consideration of the agricultural resources in the study area is made in support of the principles of Integrated Environmental Management (IEM) and sustainable development.

8. REFERENCES

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APPENDIX A: INDEMNITY

- This report is based on survey and assessment techniques, which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken.
- This report is based on a desktop investigation using available information and data on the site to be affected, in situ fieldwork, surveys, assessments, and the specialist's best scientific and professional knowledge.
- The Precautionary Principle has been applied throughout this investigation.
- The findings, results, observations, conclusions, and recommendations given in this report are based on the specialist's best scientific and professional knowledge and information available at the time of the study.
- Additional information may become known or available later in the process for which no allowance could have been made at the time of this report.
- The specialist reserves the right to modify this report, recommendations, and conclusions at any stage should additional information become available.
- Information and recommendations in this report cannot be applied to any other area without proper investigation.
- This report, in its entirety or any portion thereof, may not be altered in any manner or form or for any purpose without the specific and written consent of the specialist as specified above.
- Acceptance of this report, in any physical or digital form, confirms acknowledgment of these terms and liabilities.

Tshiamo Setsipane

11 December 2024



APPENDIX B: CURRICULUM VITAE OF SPECIALISTS

CURRICULUM VITAE OF TSHIAMO SETSIPANE

PROFESSIONAL EXPERIENCE

Soil Science Consultant

- Conducting Soil, Land Use and Land Capability Assessments:
 - Assess existing information for rainfall data and current land uses.
 - Conduct a desktop assessment within the study area using digital satellite imagery and other suitable digital aids.
 - A soil classification survey and agricultural potential will be conducted within the proposed development area.
 - A soil classification survey and agricultural potential will be conducted within the proposed development area.
 - Provide recommended mitigation measures to manage the anticipated impacts and comply with the applicable legislations.
 - Compile a report on the findings of the assessment and presented in an electronic format.
- Conducting Hydropedological Impact Surveys:
 - Identify dominant hillslopes (from crest to stream) of the project area using terrain analysis.
 - Conduct a transect soil survey on each of the identified hillslope.
 - Hydrological behaviour of the identified hillslope described according to the identified hydropedological groups;
 - Graphical representation of the dominant and sub-dominant flow paths at hillslope scale prior to development and post development.
 - The impact of the proposed development on the hydropedological behaviour described in a report format.
 - Quantification of hydropedological fluxes using the Soil and Water Analysis Tool (SWAT+) to determine the losses to the wetland systems through the proposed project
- Conducting Land Contamination Assessments and Soil Monitoring Assessments:
 - Assessments of historic and current storage of hazardous waste and materials on soils.
 - Topsoil stockpile quality assessment for future usage.
 - Monitoring programme to determine the dust suppression impact on soil chemical parameters.

EDUCATION

- M.Sc. (Agric): Soil Science 01/2016– 03/2019
 - Dissertation: Characterisation of hydropedological processes and properties of a sandstone and a tillite hillslope, Kwa-Zulu Natal, South Africa.
 - Graduated *Cum-Laude*.
- B.Sc. (Agric) Honours: Soil Science 01/2014 – 11/2014
 - Majored in soil fertility, soil physics, soil geography and soil chemistry.

-
- Research Project: Soil as an indicator of soil water regime.
 - B.Sc. (Agric): Soil Science and Agrometeorology 2010 – 11/2013
 - Majored in soil science and agrometeorology.
 - Minored in agronomy and plant pathology.

PROFESSIONAL MEMBERSHIP AND AFFILIATION

- Professional Natural Scientist with South African Council for Natural Scientific Professions (SACNASP)
Registered, 11/2015 – Current
- Member of the Soil Science Society of South Africa (SSSSA)
- Member, South African Soil Surveyors Organization (SASSO)
- Member of the South African Wetland Society (SAWS)

Proposed Prospecting Right Application for Clay (General) in Respect of the Remaining Extent, Portions 1 and 11 of the Farm Doornput 458-KR Situated in the Magisterial District of Bela-Bela/Waterberg, Limpopo Province

Bela-Bela Local Municipality, Waterberg District Municipality, Limpopo Province

Farm: Portion 1 and 11 Doornput 458-KR

Fourie, H. Dr

Palaeontological Impact Assessment: Desktop Study

Facilitated by: Nyamoki Consulting (Pty) Ltd

1850 Berg Avenue, Doreg AH,

Akasia, 0182

Tel: 076 327 1827

2024/11/25

Ref: LP30/5/1/1/2/15699 PR

Regisaurus(ESI)



B. Executive summary

Outline of the development project: Nyamoki Consulting appointed Dr H. Fourie, a palaeontologist, to undertake a Palaeontological Impact Assessment (PIA), Desktop Study of the Proposed Prospecting Right Application for Clay (General) in Respect of the Remaining Extent, Portions 1 and 11 of the Farm Doornput 458-KR Situated in the Magisterial District of Bela-Bela/Waterberg, in the Waterberg District Municipality, Limpopo Province on Farm: Portion 1 and 11 Doornput 458-KR.

The applicant, Aquarella Investments 389 (Pty) Ltd intends to prospect for clay (general) with bulk sampling.

The Project includes one locality Alternative (see Figure 2):

Alternative 1: A polygonal area outlined in red, 13,51 km southwest of Bela-Bela and 26.41 km east of the town of Seabe, off the R516 Road. The approximate size of the site is 1413 hectares.

Legal requirements:-

The **National Heritage Resources Act (Act No. 25 of 1999) (NHRA)** requires that all heritage resources, that is, all places or objects of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance are protected. The Republic of South Africa (RSA) has a remarkably rich fossil record that stretches back in time for some 3.5 billion years and must be protected for its scientific value. Fossil heritage of national and international significance is found within all provinces of the RSA. South Africa's unique and non-renewable palaeontological heritage is protected in terms of the National Heritage Resources Act. According to this act, palaeontological resources may not be excavated, damaged, destroyed or otherwise impacted by any development without prior assessment and without a permit from the relevant heritage resources authority.

The main aim of the assessment process is to document resources in the development area and identify both the negative and positive impacts that the development brings to the receiving environment. The PIA therefore identifies palaeontological resources in the area to be developed and makes recommendations for protection or mitigation of these resources.

“palaeontological” means any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or traces.

For this study, resources such as geological maps, scientific literature, institutional fossil collections, satellite images, aerial maps and topographical maps were used. It provides an assessment of the observed or inferred palaeontological heritage within the study area, with recommendations (if any) for further specialist palaeontological input where this is considered necessary.

A Palaeontological Impact Assessment is generally warranted where rock units of **LOW** to **VERY HIGH** palaeontological sensitivity are concerned, levels of bedrock exposure within the study area are adequate; large scale projects with high potential heritage impact are planned; and where the distribution and nature of fossil remains in the proposed area is unknown. The specialist will inform whether further monitoring and mitigation are necessary.

Types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (Act No.25 of 1999):

(i) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens.

This report adheres to the guidelines of Section 38 (1) of the National Heritage Resources Act (Act No. 25 of 1999).

Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as (a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length; (b) the construction of a bridge or similar structure exceeding 50 m in length; (c) any development or other activity which will change the character of a site (see Section 38); (d) the re-zoning of a site exceeding 10 000 m² (1 ha) in extent; (e) or any other category of development provided for in regulations by SAHRA or a PHRA authority.

This report aims (1c) to provide comment and recommendations on the potential impacts that the proposed development could have on the fossil heritage of the area and to state if any mitigation or conservation measures are necessary.

Outline of the geology and the palaeontology:

The geology was obtained from map 1:100 000, Geology of the Republic of South Africa (Visser 1984) and the 1:250 000 geological map of Nylstroom 2428 (Du Plessis 1978).

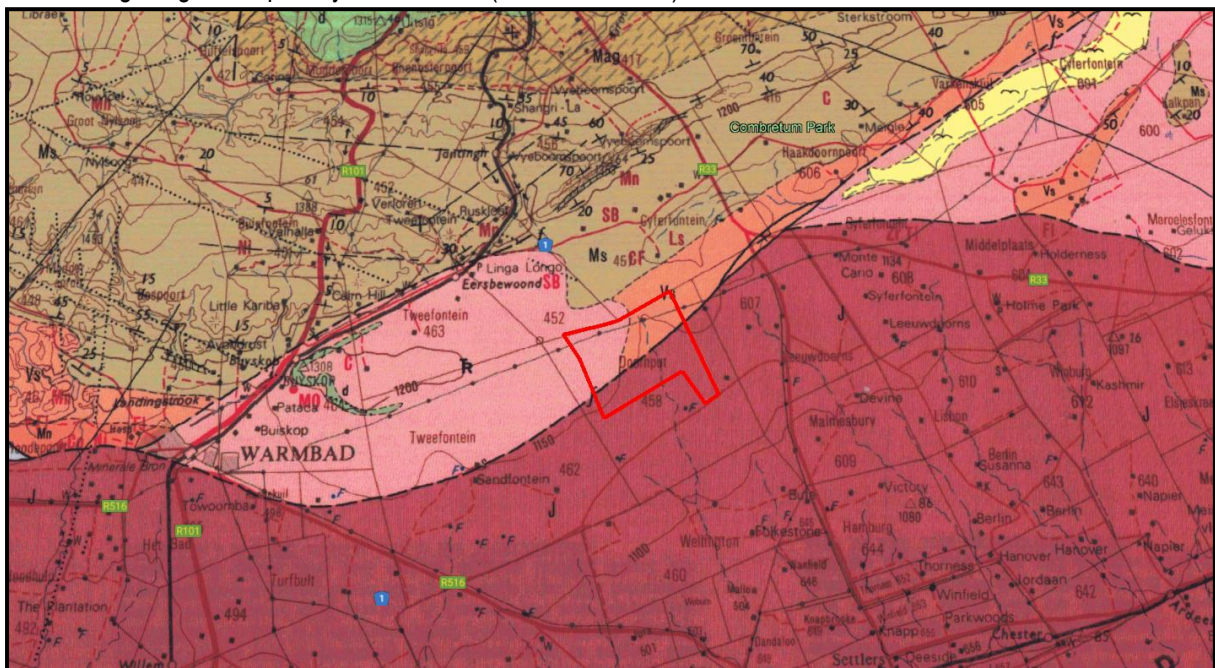


Figure: The geology of the development area.

Legend to Figure and short explanation.

J – Volcanic rocks, sandstone (purple). Letaba. Jurassic.

Tk – Fine-grained red to cream sandstone (pink). Clarens Formation, Karoo Supergroup. Triassic.

Vs – Volcanic rocks, sandstone and quartzite (amber). Schrikkloof Formation, Rooiberg Group, Transvaal Supergroup. Vaalian.

---f--- (black) Fault.

..... – Undifferentiated linear structure.

----- - Concealed geological boundary.

∟2° - Strike and dip.

□ – Approximate area of prospecting (in white on figure).

Summary of findings: The Palaeontological Impact Assessment Desktop Study was undertaken in November 2024 in summer in hot conditions (Appendix 6 of Act, 1(d)). As this is a desktop study, the season (vegetation) and time (shadow) have no influence on the outcome. The following is reported:

The Lebombo Group is divided into three formations with the Mashikiri Formation at the base, followed by the Letaba Formation, Sabie River Formation, Jozini Formation, Mbuluzi Formation and at the top the Movene Formation (Johnson 2006). The Letaba Formation formed a continuous lava field across much of southern Africa. Above these basalts lie the Jozini Formation which forms the Lebombo Mountains (Norman, N. and Whitfield, G. 2006). A maximum thickness of 3 600 m. is reached with an age of 177 ± 9 million years.

The Clarens Formation is rich in sandstone in interesting yellow, pink and white colours. Caves form through wind and water action. The cliffs that form can be as high as 300 m. It is present throughout the Karoo basin. Red Rocks is the bottom layer of sandstone followed by the Tshipise Member (Visser 1989).

The Rooiberg Group is a 2500-6000m thick succession of feldspathic quartzites, arkoses and shales, with interbedded volcanics and felsites. It consists of two formations, the lower Damwal (Vdr) and the upper Selons River (Vs), restricted in its distribution to the central part of the basin (Kent 1980, Snyman 1996). The Selons River Formation has either a sandstone or a quartzite at its base and mainly consists of red rhyolite. It (Selons River) was further subdivided into the lower Doornkloof Felsite Member and an upper Klipnek Felsite Member (Kent 1980, Visser 1989) and west of Warmbath (Bela Bela) it is again subdivided into two units, the Kwaggasnek Formation and the Schrikkloof Formation. A layer of amygdaloidal rhyolite is present close to the top of the Kwaggasnek Formation. It rests on the Smelterskop sediments at Rooiberg and is intruded by Nebo granite. The Schrikkloof Formation in the Nylstroom area is conformably overlain by sediments from the Waterberg Group in an ash-flow sheet. Together with the Kwaggasnek Formation it reaches thicknesses of 6000 m as is equivalent to the Selonsrivier Formation. This group has an estimated age of 2,150 Ma (Visser 1989).

Palaeontology - Fossils in South Africa mainly occur in rocks of sedimentary nature and not in rocks from igneous or metamorphic nature. Therefore, the palaeontological sensitivity can range from **VERY LOW** to **VERY HIGH**, and here in the development **HIGH** for the Clarens Formation (SG 2.2 SAHRA APMHOB, 2012) (Almond and Pether 2009).

Aeolianites, belonging to the Jurassic aged Clarens and Tshipise Formations contain petrified logs, trace fossils of insects (including controversial fossil termitaria) and dinosaur trackways (possibly *Massospondylus*, *Syntarsus*, / *Coelophysis*). Freshwater crustaceans, primitive bony fish (*Semionotus*), crocodylomorphs, early mammals, coprolites, eggshell fragments are also present (Groenewald and Groenewald 2014).

Recommendation:

Concerns/threats to be added to the EMPr (**1k,l,m**):

1. The overburden and inter-burden must always be surveyed for fossils. Special care must be taken during the clearing, digging, drilling, and excavating of foundations, trenches, channels and footings and removal of overburden if applicable not to intrude fossiliferous layers.
2. Threats are earth moving equipment/machinery (front end loaders, excavators, graders, dozers) during construction, the sealing-in, disturbance, damage or destruction of the fossils by development, vehicle traffic, mining, prospecting, and human disturbance.

The recommendations are (**1g**):

1. The impact of the prospecting on the fossil heritage is **HIGH**. A Phase 1 Palaeontological Impact Assessment: Field Study is recommended if fossils are found during excavating, trenching, drilling, or clearing (according to SAHRA protocol).

2. Mitigation (Protocol for a Chance Fossil Find) is needed if fossils are found, permission needed from SAHRA.
3. No consultation with parties was necessary.
4. The development may go ahead with caution, but the ECO must survey the prospecting area for fossils after drilling or trenching, material must be scrutinised as well, in line with the legally binding Environmental Management Programme (EMPr) this must be updated to include the involvement of a palaeontologist/ archaeozoologist when necessary.
5. The EMPr will cover the conservation of heritage and palaeontological material that may be exposed during prospecting activities. The protocol is to immediately cease all prospecting activities if a fossil is unearthed, construct a 30 m no-go barrier, and contact SAHRA for further investigation.

Stakeholders: Developer – Aquarella Investments 389 (Pty) Ltd. P.O. Box 2247, Vereeniging, 1930. Tel: 074 634 4454.

Environmental – Nyamoki Consulting (Pty) Ltd. 1850 Berg Avenue, Doreg AH, Akasia, 0182. Tel: 076 327 1827.

Landowners – Not available.

C. Table of Contents

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D. Background information on the project

Report

This report is part of the environmental impact assessment process under the National Environmental Management Act, as amended (Act No. 107 of 1998) (NEMA) and includes Appendix 6 (GN R38282 of 4 December 2014) of the Environmental Impact Assessment Regulations (see Appendix 1 bold in text). It is also in compliance with SG 2.2 SAHRA APMHOB Guidelines, 2012. Minimum standards for palaeontological components of Heritage Impact Assessment Reports, Pp 1-15 (2).

Outline of development

This report discusses and aims to provide the developer with information regarding the location of palaeontological material that will be impacted by the development. Depending on the presence or absence of fossils in the pre-construction phase it may be necessary for the developer to apply for the relevant permit from the South African Heritage Resources Agency (SAHRA / PHRA).

The applicant, Aquarella Investments 389 (Pty) Ltd intends to prospect for clay (general) with bulk sampling.

Local benefits of the proposed development include benefits to the local economy, create local employment and ease poverty.

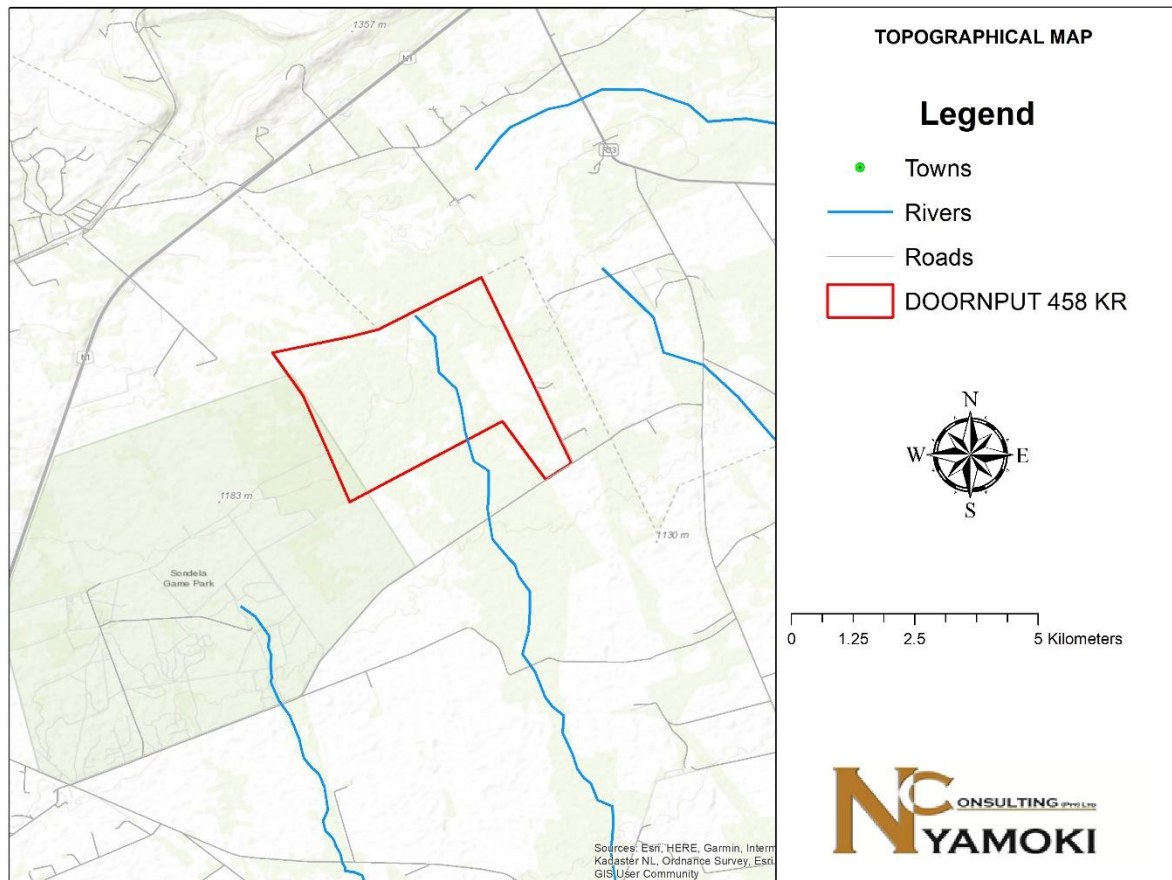


Figure 1: Topographic figure showing location in red outline (Nyamoki).

The following infrastructure is anticipated:

- Bulk sampling
- Access roads
- Power
- Ablution facilities (portable)
- Water supply
- Fencing
- Core (10 boreholes) and chip sample storage and cutting facility
- Plant site, mobile offices
- Slimes dam, and
- Vehicle parking area.

The Project includes one locality Alternatives (see Figure 2):

Alternative 1: A polygonal area outlined in red, 13,51 km southwest of Bela-Bela and 26.41 km east of the town of Seabe, off the R516 Road. The approximate size of the site is 1413 hectares.

Rezoning/ and or subdivision of land: Not needed.

Name of Developer and Consultant: Aquarella Investments 389 (Pty) Ltd. and Nyamoki Consulting (Pty) Ltd.

Terms of reference: Dr H. Fourie is a palaeontologist commissioned to do a palaeontological impact assessment to ascertain if any palaeontological sensitive material is present in the development area. This study will advise on the impact on fossil heritage mitigation or conservation necessary, if any.

Short Curriculum vitae (1ai,ii): Dr Fourie obtained a Ph.D from the Bernard Price Institute for Palaeontological Research (now ESI), University of the Witwatersrand. Her undergraduate degree is in Geology and Zoology. She specialises in vertebrate morphology and function concentrating on the Therapsid Therocephalia. At present she is curator of a large fossil invertebrate, Therapsid, dinosaur, amphibia, fish, reptile, and plant collections at Ditsong: National Museum of Natural History. She has published seven papers in mostly scientifically accredited journals and has been conducting impact assessments since 2012. For the past 18 years she carried out field work in the North West, Western Cape, Northern Cape, Eastern Cape, Limpopo, Mpumalanga, Gauteng and Free State Provinces and has done more than 300 Palaeontological Impacts Assessments including powerlines, dams, solar plants, wind turbine plants, rehabilitations, mine projects, roads, townships, bridges refuse dumps, water and sanitation works; and farming expansions. Dr Fourie has been employed at the Ditsong: National Museum of Natural History in Pretoria (formerly Transvaal Museum) for 30 years.

Legislative requirements: South African Heritage Resources Agency (SAHRA) for issue of permits if necessary. National Heritage Resources Act (Act No. 25 of 1999). An electronic copy of this report must be supplied to SAHRA.

E. Description of property or affected environment

Location and depth:

The Proposed Prospecting Right Application for Clay (General) in Respect of the Remaining Extent, Portions 1 and 11 of the Farm Doornput 458-KR will be situated in the Magisterial District of Bela-Bela/Waterberg, Limpopo Province in the Waterberg District Municipality, Limpopo Province on Farm: Portion 1 and 11 Doornput 458-KR.

Depth is determined by the related infrastructure, such as the foundations to be developed and the thickness of the formation. Details of the location and distribution of all significant fossil sites or key fossiliferous rock units are often difficult to determine due to thick topsoil, subsoil, overburden and alluvium. Depth of the overburden may vary a lot. Geological maps do not provide depth or superficial cover, it only provides mappable surface outcrops.



Figure 2: Google Earth location map (Nyamoki).

F. Description of the Geological Setting

Description of the rock units:

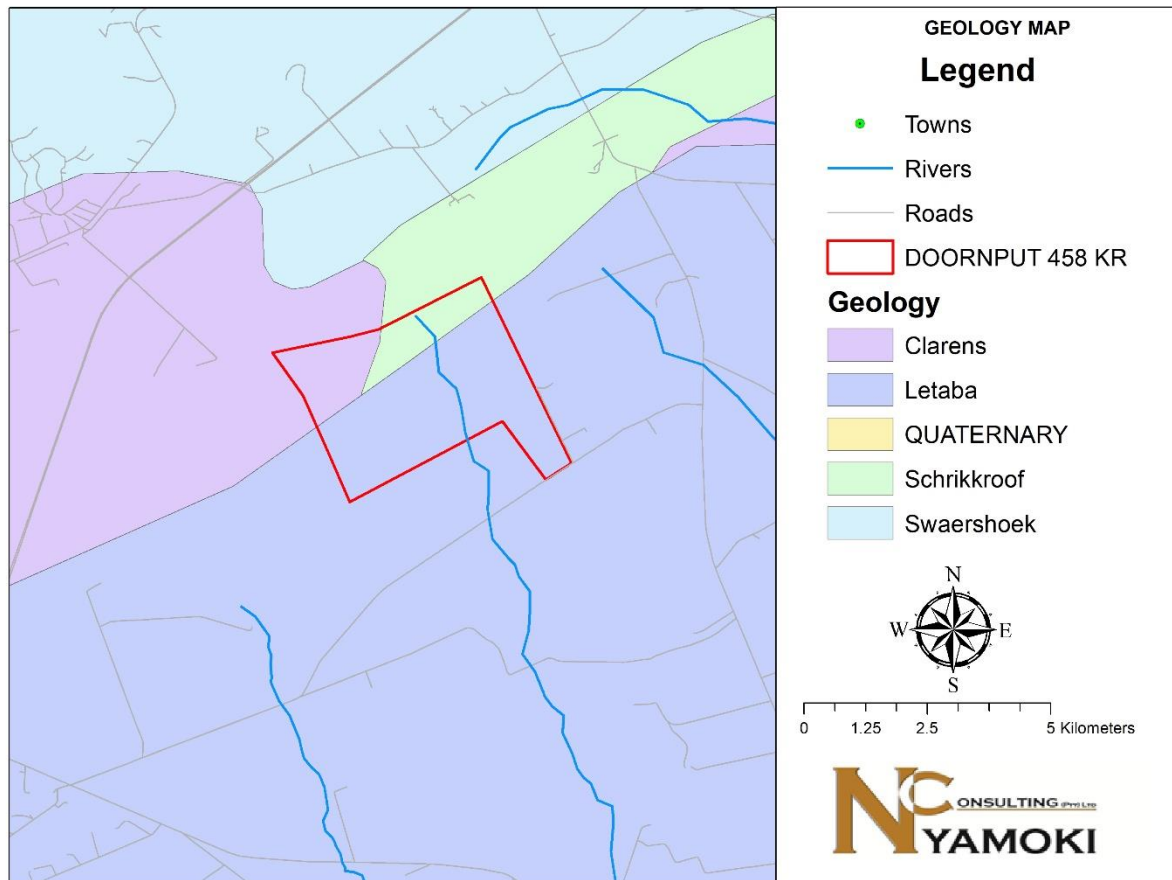


Figure 3: Geology of the area (1h). Legend on Map (Nyamoki).

Legend to Figure and short explanation.

---f--- – (black) Fault.

..... – Undifferentiated linear structure.

----- - Concealed geological boundary.

⊥²° - Strike and dip.

□ – Approximate position of prospecting (in red on figure).

Mining Activities in study area on Figure above

CF – Plastic Fire-clay

Ls - Limestone and dolomite

Mn - Managnese

SB – Building sand

Therefore, the mining past and present will have an influence on this development.

The Lebombo Group is divided into three formations with the Mashikiri Formation at the base, followed by the Letaba Formation, Sabie River Formation, Jozini Formation, Mbuluzi Formation and at the top the Movene Formation (Johnson 2006). The Letaba Formation formed a continues lava field across much of southern Africa. Above these basalts lie the Jozini Formation which forms the Lebombo Mountains (Norman, N. and Whitfield, G. 2006). A maximum thickness of 3 600 m. is reached with an age of 177 ± 9 million years.

The Clarens Formation is rich in sandstone in interesting yellow, pink and white colours. Caves form through wind and water action. The cliffs that form can be as high as 300 m. It is present throughout the Karoo basin. Red Rocks is the bottom layer of sandstone followed by the Tshipise Member (Visser 1989).

The Transvaal Supergroup fills an east-west elongated basin in the south-central part of the old Transvaal (now North – West, Gauteng and Mpumalanga Provinces) as far south as Potchefstroom. It is Vaalian in age, approximately 2600 Ma to 2100 Ma. A maximum thickness of the Transvaal Supergroup reaches 2000 m in the north-eastern section. The east-west elongated basin is filled with clastic, volcanic and chemical sedimentary rocks. Three groups based on lithological differences have been established: they are the Rooiberg, Pretoria and Chuniespoort Groups as well as other smaller groups such as the Groblersdal Group, Buffelsfontein Group, Wolkberg Group and the Black Reef Formation (Kent 1980, Snyman 1996). It is the Bushveld Complex that is responsible for the tilting of the Transvaal sediments and the heat of its intrusion having created andalusite crystals (Norman and Whitfield 2006). This Supergroup is underlain by the Ventersdorp, Witwatersrand and Pongola Supergroups, and the Dominion Group. Three prominent ridges are present from the oldest to the youngest, the Time Ball Hill, Daspoort and Magaliesberg Formations (Norman and Whitfield 2006).

The Rooiberg Group is a 2500-6000m thick succession of feldspathic quartzites, arkoses and shales, with interbedded volcanics and felsites. It consists of two formations, the lower Damwal (Vdr) and the upper Selons River (Vs), restricted in its distribution to the central part of the basin (Kent 1980, Snyman 1996). The Selons River Formation has either a sandstone or a quartzite at its base and mainly consists of red rhyolite. It (Selons River) was further subdivided into the lower Doornkloof Felsite Member and an upper Klipnek Felsite Member (Kent 1980, Visser 1989) and west of Warmbath (Bela Bela) it is again subdivided into two units, the Kwaggasnek Formation and the Schrikkloof Formation. A layer of amygdaloidal rhyolite is present close to the top of the Kwaggasnek Formation. It rests on the Smelterskop sediments at Rooiberg and is intruded by Nebo granite. The Schrikkloof Formation in the Nylstroom area is conformably overlain by sediments from the Waterberg Group in an ash-flow sheet. Together with the Kwaggasnek Formation it reaches thicknesses of 6000 m as is equivalent to the Selonsrivier Formation. This group has an estimated age of 2,150 Ma (Visser 1989).

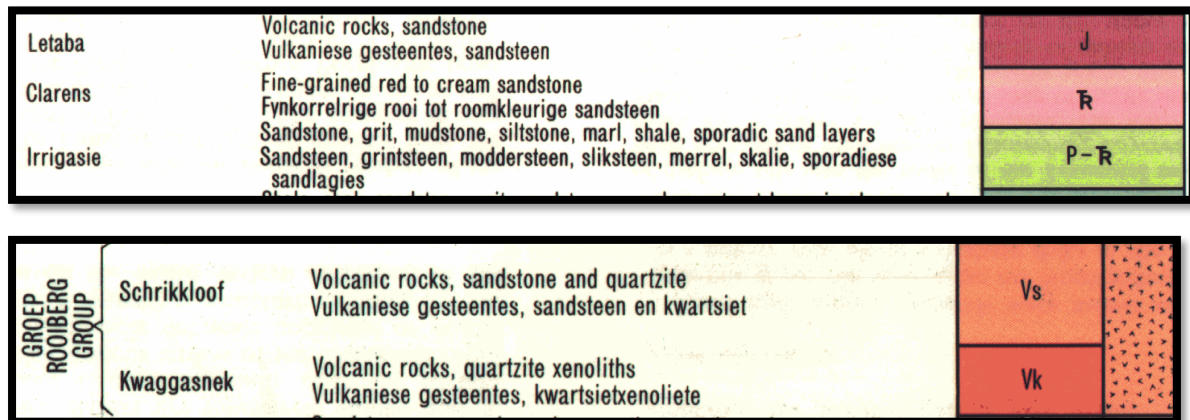


Figure 4: Lithology (Grobler 1996).

G. Background to Palaeontology of the area

Summary: When rock units of moderate to very high palaeontological sensitivity are present within the development footprint, a desktop and or field scoping (survey) study by a professional palaeontologist is usually warranted. The main purpose of a field scoping (survey) study would be to identify any areas within the development footprint where specialist palaeontological mitigation during the construction phase may be required (SG 2.2 SAHRA AMPHOB, 2012).

aeolianites, belonging to the Jurassic aged Clarens and Tshipise Formations contain petrified logs, trace fossils of insects (including controversial fossil termitaria) and dinosaur trackways (possibly *Massospondylus*, *Syntarsus*, /

Coelophysis). Freshwater crustaceans, primitive bony fish (*Semionotus*), crocodylomorphs, early mammals, coprolites, eggshell fragments are also present (Groenewald and Groenewald 2014).

Table 1: Taken from Palaeotechnical Report (Almond and Pether 2009) (1cA, 1cB).

Aeolian sandstones, minor ephemeral stream deposits		Dinosaur remains and trackways can be expected	Very poor levels of surface exposure (most data obtained from borehole cores)	
Selons River (Vs; Vse) (now renamed subdivided into Kwaggasnek (Vkw; Vkn), Schrikklouf (Vsf) and Rinkhalskop (Vrh)) Smelterskop (Vsm1; Vsm2; Vsm3; Vsm4; Vsm5; Vsm6)		Volcanics plus minor, thin but extensive horizons of metamorphosed sediments (quartzites, sandstones, mudrocks, cherts), mainly of fluvial origin. Volcanics are related to intrusives of the underlying Bushveld Magmatic Province 2.06 Ga	Fossils within minor sedimentary units unlikely because of fluvial depositional setting and subsequent metamorphism.	Possible evidence for a catastrophic event at the base of Rooiberg Group (basin floor collapse, slumping, volcanism) Selons River and Kwaggasnek units previously included within upper Pretoria Group by some geologists

Fossils in South Africa mainly occur in rocks of sedimentary nature and not in rocks from igneous or metamorphic nature. Therefore, if there is the presence of Karoo Supergroup strata the palaeontological sensitivity is generally **VERY LOW** to **VERY HIGH**.

Table 2: Criteria used (Fossil Heritage Layer Browser/SAHRA):

Rock Unit	Significance/vulnerability	Recommended Action
Letaba Formation	Low	Protocol for a Chance Fossil Find required
Clarens Formation	High	Desktop study required, field assessment likely
Schrikklouf Formation	Low	Protocol for a Chance Fossil Find required

Databases and collections: Ditsong: National Museum of Natural History.

Impact: **HIGH** for the Clarens Formation. There are significant fossil resources that may be impacted by the development and if destroyed are no longer available for scientific research or other public good.

The Project includes one locality Alternative (Figure 2) (1f,j) with the above palaeontological sensitivity. Alternative 1: A polygonal area outlined in red, 13,51 km southwest of Bela-Bela and 26.41 km east of the town of Seabe, off the R516 Road. The approximate size of the site is 1413 hectares.

All the land involved in the development was assessed (ni,nii) and none of the property is unsuitable for development (see Recommendation B).

H. Description of the Methodology (1e)

The palaeontological impact assessment study was undertaken in November 2024. A Phase 1: Field Study will entail a walkthrough of the affected portion with photographs (in 20 mega pixels) taken of the site with a digital camera (Canon PowerShot SX620HS). A Global Positioning System (GPS (Garmin eTrex 10) can be used to record the outcrops. A literature survey is included, and the study relied on literature, geological maps, Google Maps and Google Earth images.

SAHRA document 7/6/9/2/1 (SAHRA 2012) requires track records/logs from archaeologists not palaeontologists as palaeontologists concentrate on outcrops which may be recorded with a GPS. Isolated occurrences of rocks usually do not constitute an outcrop. Fossils can occur in dongas, as nodules, in fresh rock exposures, and in riverbeds. Finding fossils require the experience and technical knowledge of the professional palaeontologist, but

that does not mean that an amateur can't find fossils. The geology of the region is used to predict what type of fossil and zone will be found in any particular region. Archaeozoologists concentrate on more recent fossils in the quaternary and tertiary deposits.

Assumptions and Limitations 1(i): -

The accuracy and reliability of the report **may be** limited by the following constraints:

1. Most development areas have never been surveyed by a palaeontologist or geophysicist.
2. Variable accuracy of geological maps and associated information.
3. Poor locality information on sheet explanations for geological maps.
4. Lack of published data.
5. Lack of rocky outcrops.
6. Inaccessibility of site – not done.
7. Insufficient data from developer and exact lay-out plan for all structures - sufficient.

A Phase 1 Palaeontological Impact Assessment: Field Study will include:

1. Recommendations for the future of the site.
2. Background information on the project.
3. Description of the property of affected environment with details of the study area.
4. Description of the geological setting and field observations.
5. Background to palaeontology of the area.
6. Field Rating.
7. Stating of Significance (Heritage Value).

A Phase 2 Palaeontological Impact Assessment: Mitigation will include:

1. Recommendations for the future of the site.
2. Description of work done (including number of people and their responsibilities).
3. A written assessment of the work done, fossils excavated, not removed or collected and observed.
4. Conclusion reached regarding the fossil material.
5. A detailed site plan.
6. Possible declaration as a heritage site or Site Management Plan.

The National Heritage Resources Act No. 25 of 1999 further prescribes:

Act No. 25 of 1999. National Heritage Resources Act, 1999.

National Estate: 3 (2) (f) archaeological and palaeontological sites,

(i)(1) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens,

Heritage assessment criteria and grading: (a) Grade 1: Heritage resources with qualities so exceptional that they are of special national significance;

(b) Grade 11: Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region; and (c) Grade 111: Other heritage resources worthy of conservation.

SAHRA is responsible for the identification and management of Grade 1 heritage resources.

Provincial Heritage Resources Authority (PHRA) identifies and manages Grade 11 heritage resources.

Local authorities identify and manage Grade 111 heritage resources.

No person may damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of a provincially protected place or object without a permit issued by a heritage resources authority or local authority responsible for the provincial protection.

Archaeology, palaeontology and meteorites: Section 35.

(2) Subject to the provisions of subsection (8) (a), all archaeological objects, palaeontological material and meteorites are the property of the State.

(3) Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority.

Mitigation involves planning the protection of significant fossil sites, rock units or other palaeontological resources and/or excavation, recording and sampling of fossil heritage that might be lost during development, together with pertinent geological data. The mitigation may take place before and / or during the construction phase of development. The specialist will require a Phase 2 mitigation permit from the relevant Heritage Resources Authority before a Phase 2 may be implemented.

The Mitigation is done in order to rescue representative fossil material from the study area to allow and record the nature of each locality and establish its age before it is destroyed and to make samples accessible for future research. It also interprets the evidence recovered to allow for education of the public and promotion of palaeontological heritage.

Should further fossil material be discovered during the course of the development (e. g. during bedrock excavations), this must be safeguarded, where feasible *in situ*, and reported to a palaeontologist or to the Heritage Resources authority. In situations where the area is considered palaeontologically sensitive (e. g. Karoo Supergroup Formations, ancient marine deposits in the interior or along the coast) the palaeontologist might need to monitor all newly excavated bedrock. The developer needs to give the palaeontologist sufficient time to assess and document the finds and, if necessary, to rescue a representative sample.

When a Phase 2 palaeontological impact study is recommended, permission for the development to proceed can be given only once the heritage resources authority has received and approved a Phase 2 report and is satisfied that (a) the palaeontological resources under threat have been adequately recorded and sampled, and (b) adequate development on fossil heritage, including, where necessary, *in situ* conservation of heritage of high significance. Careful planning, including early consultation with a palaeontologist and heritage management authorities, can minimise the impact of palaeontological surveys on development projects by selecting options that cause the least amount of inconvenience and delay.

Three types of permits are available: Mitigation, Destruction and Interpretation. The specialist will apply for the permit at the beginning of the process (SAHRA 2012).

I. Description of significant fossil occurrences

Details of the location and distribution of all significant fossil sites or key fossiliferous rock units are often difficult to determine due to thick topsoil, subsoil, overburden and alluvium. Depth of the overburden may vary a lot.

Aeolianites, belonging to the Jurassic aged Clarens and Tshipise Formations contain petrified logs, trace fossils of insects (including controversial fossil termitaria) and dinosaur trackways (possibly *Massospondylus*, *Syntarsus*, / *Coelophys*). Freshwater crustaceans, primitive bony fish (*Semionotus*), crocodylomorphs, early mammals, coprolites, eggshell fragments are also present (Groenewald and Groenewald 2014).

The threats are:

- Earth moving equipment/machinery (front end loaders, excavators, graders, dozers) during construction and operational.
- The sealing-in or destruction of fossils by development, vehicle traffic, clearing, prospecting, mining, and human disturbance. See Description of the Geological Setting (F) above.

J. Recommendation (1o,p,q)

- a. There is no objection (see Recommendation B) to the development, it may be necessary to request a Phase 2: Palaeontological Impact Assessment: Mitigation if fossils are found during excavating, clearing, trenching, or drilling. The palaeontological sensitivity is **HIGH**, and fossils (stromatolites) may be present. The walk through did not locate fossils.
- b. Preferred choice: Only one locality Alternative is presented and possible.
- c. Care must be taken during the grading of roads, digging of foundations and removing topsoil, subsoil and overburden (see Executive Summary) or blasting of bedrock if applicable. The following should be conserved: if any palaeontological material is exposed during digging, excavating, drilling or clearing SAHRA must be notified. All drilling activities must be stopped, a 30 m no-go barrier constructed, and a palaeontologist should be called in to determine proper mitigation measures.
- d. This report must be submitted to SAHRA together with the HIA.

Sampling and collecting:

Wherefore, a permit is needed from the South African Heritage Resources Agency (SAHRA / PHRA).

- a. Objections: Cautious. See heritage value and recommendation.
- b. Conditions of development: See Recommendation.
- c. Areas that may need a permit: Yes.
- d. Permits for mitigation: Needed from SAHRA/PHRA if fossils are found.

K. Conclusions

- a. All the land involved in the development was assessed and none of the property is unsuitable for development (see Recommendation B).
- b. All information needed for the Palaeontological Impact Assessment Study was provided by the Consultant. All technical information was provided by Nyamoki Consulting.
- c. Areas that would involve mitigation and may need a permit from the South African Heritage Resources Agency are discussed.
- d. The following should be conserved: if any palaeontological material is exposed during clearing, digging, excavating, or drilling, SAHRA must be notified. All prospecting activities must be stopped, a 30 m no-go barrier constructed, and a palaeontologist should be called in to determine proper mitigation measures, for example, shallow caves.
- e. No consultation with parties was necessary (**1o,p,q**).
- f. This project may benefit the economy, the growth of the community and social development in general.
- g. Condition in which development may proceed: It is further suggested that a Section 37(2) agreement of the Occupational, Health and Safety Act 85 of 1993 is signed with the relevant contractors to protect the environment (fossils) and adjacent areas as well as for safety and security reasons.

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Declaration (Disclaimer) (1b)

I, Heidi Fourie, declare that I am an independent consultant and have no business, financial, personal or other interest in the proposed development project for which I was appointed to do a palaeontological assessment. There are no circumstances that compromise the objectivity of me performing such work.

I accept no liability, and the client, by receiving this document, indemnifies me against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by the use of the information contained in this document.

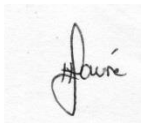
It may be possible that the Desktop Study may have missed palaeontological resources in the project area as the presence of outcrops are not known or visible due to vegetation while others may lie below the overburden of earth and may only be found once development commences.

This report may not be altered in any way and any parts drawn from this report must make reference to this report.

POPI Act 2013 Statement

It provides that everyone has the right to privacy and includes a right to protection against the unlawful collection, retention dissemination and use of personal information contained in this document and pertains to the phone and contact details, signature and contents.

As per the Declaration Section none of the information may be shared without the permission of the author.



Heidi Fourie
2024/11/25

Appendix 1: Table 3: Listing points in Appendix 6 of the Act and position in Report (in bold).

Section in Report	Point in Act	Requirement
B	1(c)	Scope and purpose of report
B	1(d)	Duration, date and season
B	1(g)	Areas to be avoided
D	1(ai)	Specialist who prepared report
D	1(aii)	Expertise of the specialist
F Figure 3	1(h)	Map
F	1(ni)	Authorisation
F	1(nii)	Avoidance, management, mitigation and closure plan
G Table 1	1(cA)	Quality and age of base data
G Table 2	1(cB)	Existing and cumulative impacts
G	1(f)	Details or activities of assessment
G	1(j)	Description of findings
H	1(e)	Description of methodology
H	1(i)	Assumptions
J	1(o)	Consultation
J	1(p)	Copies of comments during consultation
J	1(q)	Information requested by authority
Declaration	1(b)	Independent declaration
Appendix 3	1(k)	Mitigation included in EMPr
Appendix 3	1(l)	Conditions included in EMPr
Appendix 3	1(m)	Monitoring included in EMPr
D	2	Protocol or minimum standard

Appendix 2: Management Plan and Protocol for Chance Finds (**1k,l,m**).

This section covers the recommended protocol for a Phase 2 Mitigation process as well as for reports where the Palaeontological Sensitivity is **LOW**; this process guides the palaeontologist / palaeobotanist on site and should not be attempted by the layman / developer. As part of the Environmental Authorisation conditions, an Environmental Control Officer (ECO) will be appointed to oversee the construction activities in line with the legally binding Environmental Management Programme (EMPr) so that when a fossil is unearthed, they can notify the relevant department and specialist to further investigate. Therefore, the EMPr must be updated to include the involvement of a palaeontologist during the digging and excavation (groundbreaking) phase of the development.

The EMPr already covers the conservation of heritage and palaeontological material that may be exposed during construction activities.

- As part of the Environmental Authorisation conditions, an Environmental Control Officer (ECO) will be appointed to oversee the construction/prospecting/mining activities in line with the legally binding Environmental Management Programme (EMPr) so that when a fossil is unearthed, they can notify the relevant department and specialist to further investigate.
- The ECO should familiarise him- or herself with the applicable formations and its fossils.
- The EMPr already covers the conservation of heritage and palaeontological material that may be exposed during construction activities.

- It is recommended that the EMP be updated to include the involvement of a palaeontologist for pre-construction training of the ECO or during the digging and excavation phase of the development.
- The ECO must visit the site after clearing, drilling, excavations and blasting and keep a photographic record.
- The developer may be required to survey the areas affected by the development and indicate on plan where the construction / development / mining will take place. Trenches may have to be dug to ascertain how deep the sediments are above the bedrock (can be a few hundred metres). This will give an indication of the depth of the topsoil, subsoil, and overburden, if need be, trenches should be dug deeper to expose the interburden.
- For a chance find, the protocol is to immediately cease all construction activities, construct a 30 m no-go barrier, and contact SAHRA for further investigation. Construction workers must be informed that this is a no-go area.
- A representative sample must be put aside for inspection. This sample can be sent to a recognised palaeontological repository for curation and safe keeping after the permit was obtained.
- The palaeontological impact assessment process presents an opportunity for identification, access and possibly salvage of fossils and add to the few good localities. Mitigation can provide valuable onsite research that can benefit both the community and the palaeontological fraternity. A Phase 2 study is very often the last opportunity we will ever have to record the fossil heritage within the development area. Fossils excavated will be stored at a National Repository.

Mitigation will involve recording, rescue and judicious sampling of the fossil material present in the layers sandwiched between the geological / coal layers. It must include information on number of taxa, fossil abundance, preservational style, and taphonomy. This can only be done during mining or excavations. In order for this to happen, in case of coal mining operations, the process will have to be closely scrutinised by a professional palaeontologist / palaeobotanist to ensure that only the coal layers are mined, and the interlayers (siltstone and mudstone) are surveyed for fossils or representative sampling of fossils are taking place.

The palaeontological impact assessment process presents an opportunity for identification, access and possibly salvage of fossils and add to the few good plant localities. Mitigation can provide valuable onsite research that can benefit both the community and the palaeontological fraternity.

A Phase 2 study is very often the last opportunity we will ever have to record the fossil heritage within the development area. Fossils excavated will be stored at a National Repository.

A Phase 2 Palaeontological Impact Assessment: Mitigation will include (SAHRA) -

1. Recommendations for the future of the site.
2. Description and purpose of work done (including number of people and their responsibilities).
3. A written assessment of the work done, fossils excavated, not removed or collected and observed.
4. Conclusion reached regarding the fossil material.
5. A detailed site plan and map.
6. Possible declaration as a heritage site or Site Management Plan.
7. Stakeholders.
8. Detailed report including the Desktop and Phase 1 study information.
9. Annual interim or progress Phase 2 permit reports as well as the final report.
10. Methodology used.

Three types of permits are available: Mitigation, Destruction and Interpretation. The specialist will apply for the permit at the beginning of the process (SAHRA 2012).

The Palaeontological Society of South Africa (PSSA) does not have guidelines on excavating or collecting, but the following is suggested:

1. The developer needs to clearly stake or peg-out (survey) the areas affected by the mining/ construction/ development operations and dig representative trenches and if possible, supply geological borehole data.
2. When clearing topsoil, subsoil or overburden and hard rock (outcrop) is found, the contractor needs to stop all work.
3. A Palaeobotanist / palaeontologist (contact SAHRIS for list) must then inspect the affected areas and trenches for fossiliferous outcrops / layers. The contractor / developer may be asked to move structures and put the development on hold.
4. If the palaeontologist / palaeobotanist is satisfied that no fossils will be destroyed or have removed the fossils, development and removing of the topsoil can continue.
5. After this process the same palaeontologist / palaeobotanist will have to inspect and offer advice through the Phase 2 Mitigation Process. Bedrock excavations for footings may expose, damage or destroy previously buried fossil material and must be inspected.
6. When permission for the development is granted, the next layer can be removed, if this is part of a fossiliferous layer, then with the removal of each layer of sediment, the palaeontologist / palaeobotanist must do an investigation (a minimum of once a week).
7. At this stage the palaeontologist / palaeobotanist in consultation with the developer / mining company must ensure that a further working protocol and schedule is in place. Onsite training should take place, followed by an annual visit by the palaeontologist / palaeobotanist.

SAHRA Documents:

Guidelines to Palaeontological Permitting Policy.

Minimum Standards: Palaeontological Component of Heritage Impact Assessment reports.

Guidelines for Field Reports.

Palaeotechnical Reports for all the Provinces.

Appendix 3: Impact Statement

The development footprint is situated on a geological layer a **HIGH** palaeontological sensitivity. The nature of the impact is the destruction of Fossil Heritage. Loss of fossil heritage will have a negative impact. In the absence of mitigation procedures (should fossil material be present within the affected area) the damage or destruction of any palaeontological materials will be permanent. The loss of resources occurs but natural cultural and social processes continue, albeit in a modified manner. The cumulative impact is low. Impacts on palaeontological heritage during the construction and preconstruction phase could potentially occur but are regarded as having a moderate possibility. The significance of the impact occurring will be:

Impact	Pre-Mitigation	Post-Mitigation
The extent of the impact only extends in the region of the development activity footprint and may include transport routes.	2	2
The intensity/magnitude of the impact is moderate as it may continue in a modified way.	5	5
The expected duration of the impact is assessed as potentially permanent.	8	8

The probability of the impact occurring will be high.	4	4
$S = (2+5+8)4$; $S = 60$ Medium (30-60).	Medium	
Impact on geology as whole is Medium and cannot be mitigated. Comparing managed versus unmanaged scenarios is meaningless.		Medium

Mitigation measures:

1. For a chance find, the protocol is to immediately cease all construction activities, construct a 30 m no-go barrier, and contact SAHRA for further investigation. Construction workers must be informed that this is a no-go area.
2. A representative sample must be put aside for inspection. This sample can be sent to a recognised palaeontological repository for curation and safe keeping after the permit was obtained.
3. Existing access roads should be used.

All phases of the prospecting will have the same impact.