



ENVIRONMENTAL & ENGINEERING

# REPORT

## NATIONAL TREASURE MINERALS (PTY) LTD





DRAFT BASIC ASSESSMENT REPORT  
PROSPECTING RIGHT APPLICATION  
FS 30/5/1/1/2 (10599) PR

**DRAFT REPORT FOR REVIEW**



REPORT REF: 21-1440-AUTH (NTM BOWIE 10599 PR)  
PROSPECTING RIGHT APPLICATION FOR HEAVY MINERALS, SAND, MONAZITE, RARE EARTHS, RUTILE, ZIRCONIUM ORE, ZIRCON (GEMSTONE), TITANIUM, LEUCOXENE AND GARNET IN RESPECT OF REMAINING EXTENT OF THE FARM NEDERLANDEN 32, REMAINING EXTENT OF THE FARM BOWIE 621, REMAINING EXTENT OF THE FARM STILLRUSTIG 548, REMAINING EXTENT OF THE FARM JACOBA 878, REMAINING EXTENT OF THE FARM ZANDFONTEINPAN 472, REMAINING EXTENT OF THE FARM SCHIEDAM 124, REMAINING EXTENT OF THE FARM ONZERUST 557 AND THE REMAINING EXTENT OF THE FARM REBELFORT 288, SITUATED IN THE LEJWELEPUTSWA DISTRICT MUNICIPALITY WITHIN THE NALA LOCAL MUNICIPALITY, FREE STATE PROVINCE.

**Document and Quality Control:**

Document No:	21-1440-AUTH DRAFT BAR			
AA – draft	07/07/2021	Lian Roos		First draft for review / comments
BB– draft	07/07/2021	Leoni le Roux		Quality review
CC – draft	07/07/2021	Jane Mahaba		Technical Review
DD– draft		Kelebone Sekonyela		Technical Review
<b>Approved for Distribution:</b>				
0.0		Vernon Siemelink		Final report

**Quality Control By:**

Nature of Signoff:	Responsible Person:	Role / Responsibility	Qualification
Author	Lian Roos	Environmental Assessment Practitioner	BSc Environmental Science
Technical Reviewer	Jane Mahaba	Senior Environmental Assessment Practitioner	BSc Animal Plant and Environmental Science
Technical Reviewer	Kelebone Sekonyela	Environmental Assessment Practitioner	MSc Environmental Management
Technical Reviewer	Vernon Siemelink	Environmental Assessment Practitioner	M(EnvMan) UP – Senior Environmental Consultant
Quality Reviewer	Leoni le Roux	Project Administration	Professional Secretary and Personal Assistant

**DISCLAIMER:**

This is a legally binding document and many of the actions and recommendations remain the responsibility of the client (as the owner/lessee of the property).

EAP - was independent and performed the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the application; have expertise in conducting environmental impact assessments or undertaking specialist work as required, including knowledge of the Act, these Regulations and any guidelines that have relevance to the proposed activity; ensure compliance with these Regulations.

Take into account, to the extent possible, the matters referred to in regulation 18 when preparing the application and any report, plan or document relating to the application; disclose to the proponent or applicant, registered interested and affected parties and the competent authority all material information in the possession of the EAP and, where applicable, the specialist, that reasonably has or may have the potential of influencing.

The findings, results, observations, conclusions and recommendations provided in this report are based solely on the information provided to Eco Elementum (Pty) Ltd by the Client and other external sources (including previous site investigation data and external scientific studies). The opinions expressed herein apply to the site conditions and features which existed at the time of commencement of the investigations and production of this report.

The author has utilised his/her best scientific and professional knowledge in preparing this report and the content herein contained is and remains confidential in nature, save where otherwise ordered by a Court of law.

Whilst Eco Elementum (Pty) Ltd exercises due care and diligence in rendering the services and preparing this report, the accuracy of the content herein contained is reliant on the accuracy, correctness and completeness of information and/or data supplied to it by the Client. In this regard, Eco Elementum (Pty) Ltd accepts no liability for any loss and/or damages arising out of the inaccuracy of this report in instances where the information and/or data provided to it by the Client is found to be inaccurate, incorrect and/or incomplete.

## EXECUTIVE SUMMARY

**National Treasure Minerals (Pty) Ltd** (the applicant) applied for a prospecting right for heavy minerals, sand, monazite, rare earths, rutile, zirconium ore, zircon (gemstone), titanium, leucoxene and garnet to the Regional Department of Mineral Resources and Energy (“DMRE” Free State Region) in respect of the remaining extent of the farm Nederlanden 32, remaining extent of the farm Bowie 621, remaining extent of the farm Stillrustig 548, remaining extent of the farm Jacoba 878, remaining extent of the farm Zandfonteinpan 472, remaining extent of the farm Schiedam 124, remaining extent of the farm Onzerust 557 and the remaining extent of the farm Rebelfort 288, situated in the Lejweleputswa District Municipality within the Nala Local Municipality, Free State Province, South Africa. This prospecting right application covers about 1900 hectares (ha) (Figure 3-1, Figure 3-2, Figure 3-3). The full extent of the drill site will also be demarcated, and no drilling will be done outside of the boundary. The study area is located roughly 30 km north of Bothaville, 25 km west of Vierfontein and 25 km south-west of Orkney.

The proposed project aims at determining if economically viable mineral deposits exist within the application area. In order to undertake prospecting activities, National Treasure Minerals, requires a Prospecting Right in terms of the Mineral and Petroleum Resources Development Act (MPRDA, Act No.28 of 2002). The Applicant is also required to obtain an Environmental Authorisation (EA) in terms of the National Environmental Management Act (NEMA, Act No. 107 of 1998) which involves the submission of a Basic Assessment Report (BAR).

Eco Elementum (Pty) Ltd (Eco Elementum) has been appointed by National Treasure Minerals to compile the Basic Assessment Report (BAR) (this report) in support of the Prospecting Right application.

**Table 1-1: Basic Assessment Timeline followed**

Date	Basic Assessment timeline
N/A	Prospecting Right Application on SAMRAD.
21/05/2021	Acceptance received from DMR.

The obtaining of a prospecting right from the Department of Mineral Resources and Energy is governed by the Mineral and Petroleum Resources Development Act (MPRDA, no 28 of 2002). The MPRDA requires compliance with related legislation, specifically the National Environmental Management Act of 1998. This Basic Assessment Report includes, amongst others, the following information as required in terms of the MPRDA:

- A description of the environment likely to be affected by the proposed prospecting activities;
- An assessment of potential impacts on the environment, socio-economic conditions, and cultural and heritage aspects;
- A summary of the potential significance of identified impacts;
- Proposed mitigation and management measures to minimise adverse impacts and to optimise benefits; and
- Planned monitoring and performance assessment of the EMP and Rehabilitation measures of areas disturbed during prospecting.

PROJECT SCHEDULE

A BA process should be undertaken for project activities that are included under Listing Notices 1 and 3. Impacts of these activities are more generally known and can often be mitigated or easily managed. The BA process is generally shorter and less onerous than the S&EIR process. The BA process must follow the procedure as prescribed in Regulations 19 to 20. The following diagram outlines the steps that should be followed in undertaking a BA process. Once approved as based on the basic assessment process timeline, the prospecting can take one to five years. Then, after prospecting the mining right application process is another 300 days before the mining right application is approved or not approved.

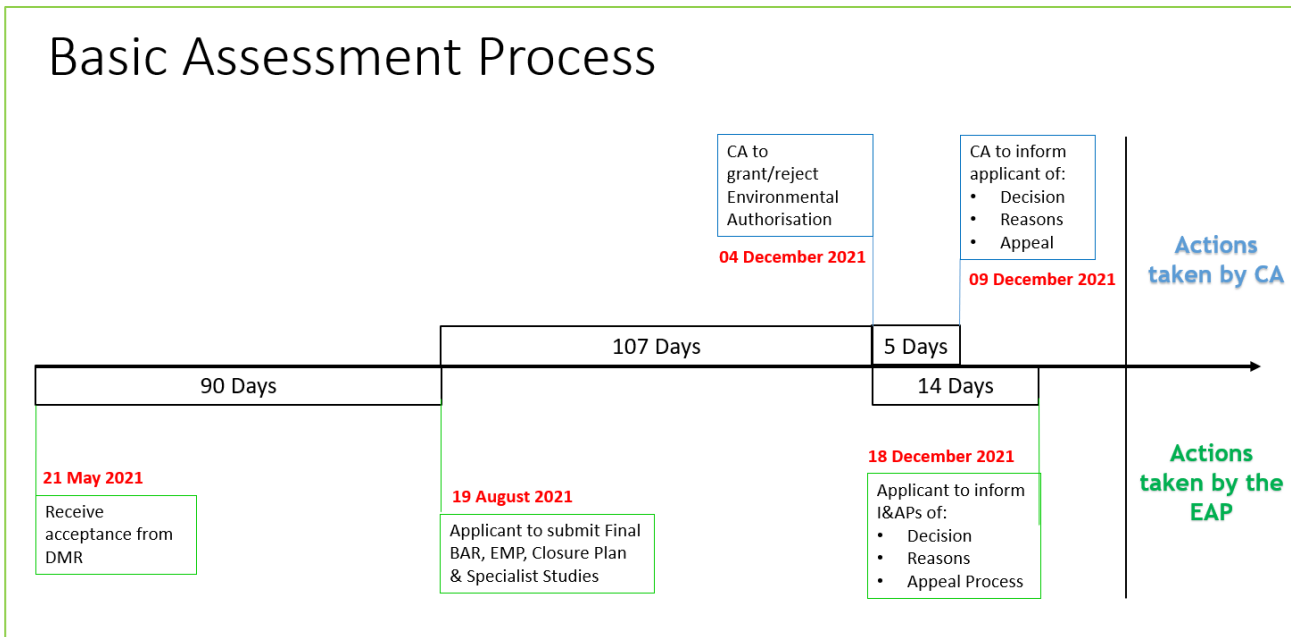


Figure 1-1: Basic Assessment Process

The following specialist studies were undertaken, and findings and recommendations included:

Table 1-2: List of Studies, Findings and Recommendations

List of Studies Undertaken	Findings and Recommendations of Specialist Reports
<p><b>Archaeological Desktop study</b></p>	<p>The following recommendations are made in order to avoid the destruction of heritage remains within the area demarcated for prospecting:</p> <ul style="list-style-type: none"> <li>- Although the demolished sites (Table 2 – Heritage Report) appear not to be associated with surface remains, subsurface. culturally significant material might be present. Therefore, it is recommended that these sites be avoided by the proposed prospecting activities. Should this not be possible, a qualified archaeologist should be present on-site during prospecting in order to limit potential impact on heritage resources.</li> <li>- The intact sites (Table 2 – Heritage Report) might be of cultural significance as the possibility exists that the associated buildings and structures exceed 60 years of age. It is therefore recommended that these areas be avoided by the proposed prospecting activities. Should this not be possible, a qualified archaeologist should be present on-site during prospecting in order to limit potential impact on heritage resources.</li> <li>- The areas associated with graves (B08 &amp; B09) should be avoided by the proposed prospecting activities.</li> </ul>

	<ul style="list-style-type: none"> <li>- It is advised that a qualified archaeologist be contacted whenever uncertainty regarding potential heritage remains are encountered.</li> <li>- Prospecting should not take place in the vicinity of stone cairns, potential burial sites, stone-walling, building ruins or any other heritage material or structures.</li> <li>- Should the prospecting outcome result in further development or construction, a full Phase 1.</li> <li>- Archaeological Impact Assessment must be conducted on the affected area if triggered. Also, a full Phase 1 AIA must be done should the cumulative impact of the proposed prospecting exceed 0.5 ha.</li> <li>- Because archaeological artefacts generally occur below surface, the possibility exists that culturally significant material may be exposed during the prospecting phase, in which case all activities must be suspended pending further archaeological investigations by a qualified archaeologist. Also, should skeletal remains be exposed, all activities must be suspended, and the relevant heritage resources authority contacted (See National Heritage Resources Act, 25 of 1999 section 36 (6)).</li> </ul>
<p><b>Ecological Desktop Study</b></p>	<p>The following findings and recommendations can be made:</p> <ul style="list-style-type: none"> <li>- Although more than half of the study area has been modified by cultivation, all remaining primary vegetation should be considered of at least medium sensitivity due to the original vegetation type being listed as Endangered, and the potential for at least protected plants being present. This should be verified and investigated further with on-site studies.</li> <li>- At the very least, a protected species walkthrough survey should be conducted of all prospecting footprints prior to disturbance, to ensure all protected plants or sensitive animals are relocated prior to groundworks taking place.</li> <li>- A wetland delineation and aquatic habitat study is highly recommended to be undertaken.</li> <li>- It is anticipated that due to historical disturbance levels, alien invasive plant species will be present on all sites. The client should familiarise themselves with alien invasives (or have the provisional list provided verified/complemented by a field survey) and ensure control and no further spread.</li> </ul> <p>From an ecological perspective, prospecting could proceed on cultivated/modified areas, but not on remaining primary or even other natural areas until the above specialist studies have been carried out or at least a pre-prospecting walk-through survey of protected plants has been conducted</p>

**REGISTERED LANDOWNER**

The registered owners of the farms were listed as follows:

**Table 1-3: Directly affected landowners**

	Landowner	Farm Portion
1.	<b>P J STOLS TRUST</b>	Remaining extent the farm Nederlanden 32.
2.	<b>WESBO EIENDOMME CC</b>	Remaining extent of the farm Bowie 621.
3.	<b>VOORUITSIG LANDGOED PTY LTD</b>	Remaining extent of the farm Stillerustig, 548.
4.	<b>HOFFMAN MARIE-LOUISE</b>	Remaining extent of the farm Jacoba 878.
5.	<b>GERT WESSELS TRUST</b>	Remaining extent of the farm Zandfonteinpan 472.

6.	<b>BOETA DIPPENAAR TRUST</b>	Remaining extent of the farm Rebelfort 288.
7.	<b>BOTHA LOUIS JOHANNES HENDRIK</b>	Portion 1 of the farm Rebelfort 288.
8.	<b>BOTHA LOUIS JOHANNES HENDRIK</b>	Remaining extent of the farm Schiedam 124.
9.	<b>JURIE WESSELS TRUST</b>	Remaining extent of the farm Onzerust 557.

**PUBLIC PARTICIPATION PROCESS FOLLOWED & OUTCOME OF CONSULTATION**

**Table 4: Public participation process followed**

Date	Public Participation Process
N/A	Lodging of Prospecting Right Application.
21/05/2021	Acceptance received from DMR.
09/07/2021-09/08/2021	30 day Public Participation started for the Basic Assessment Process.
09/07/2021	Announcement phase - notification e-mails was sent, telephone calls to the I&AP.
09/07/2021	Draft Basic Assessment Report will be made available: <ol style="list-style-type: none"> <li>i. Eco Elementum Website;</li> <li>ii. Electronic copies sent via email on request.</li> </ol>
19/07/2021	<ol style="list-style-type: none"> <li>iii. Site notices was placed at various access points along the secondary road which transverses the site.</li> <li>iv. On the main access road towards the site.</li> </ol>
22/07/2021	English advert will be placed at the Vista on Thursday 22 July 2021. The advert included a brief project description, location of the project, date of public meeting, methods to register as an IAP and review period of the BA report.
19/08/2021	Submission of the Final Basic Assessment Report.

**PROSPECTING PROCESS**

The mineral distribution in the prospecting area will be determined following the mineral exploration methods as outlined in the following text. At the end of each phase, a decision will be taken to proceed or to abandon the project.

**Non-invasive prospecting**

- The first phase will be information gathering which includes detailed desktop studies and geological mapping. This will result in a geological map showing outcrops and any geological information that will be useful during the subsequent phases of exploration. Feasibility studies will also be conducted at the end of the exploration phases.
- No geochemical survey is planned.
- Geophysical survey might be conducted, or geophysical data will be procured from commercial sources and organizations that collect them. The information that will be acquired will be magnetic information of the area which will be aimed at delineating structures of higher or lower magnetic susceptibility than the surrounding country rocks. If the company conducts the observations, it will be airborne surveys conducted with the use of a contractor.

### Invasive Prospecting

- v. Drilling will be conducted using a diamond drill rig. The holes will be drilled to two different sizes (NQ, and BQ) determined by the formations. The core will be handled and logged in a designated area. Sampling will also take place in the same area. Samples will be sent to a laboratory for chemical analyses. Resource modelling will be undertaken using the geological data determined from the data collected.
  - Trenching will not be necessary.
  - No other excavations, bulk sampling or pitting is planned.

---

### ALTERNATIVES AND PROJECT MOTIVATION

The option of not approving the activities will result in a significant loss to valuable information regarding the various mineral reserve status on the property.

In addition to this, should economical reserves be present and the applicant does not have the opportunity to prospect, the opportunity to utilize these reserves for future phases will be lost.

**CONTENTS**

**EXECUTIVE SUMMARY ..... 3**

PROJECT SCHEDULE ..... 4

REGISTERED LANDOWNER..... 5

**1. IMPORTANT NOTICE..... 16**

**2. OBJECTIVE OF THE BASIC ASSESSMENT PROCESS..... 17**

**3. CONTACT PERSON AND CORRESPONDENCE ADDRESS ..... 19**

3.1 DETAILS OF ..... 19

    3.1.1 *Details of the EAP* ..... 19

    3.1.2 *Expertise of the EAP.* ..... 19

3.2 LOCATION OF THE OVERALL ACTIVITY..... 21

3.3 LOCALITY MAP ..... 22

3.4 DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY. .... 24

    3.4.1 *Listed and specified activities* ..... 24

    3.4.2 *Description Of How the Mineral Resource And Mineral Distribution Of The Prospecting Area Will Be Determined*..... 26

3.5 DESCRIPTION OF PLANNED NON-INVASIVE ACTIVITIES:..... 27

3.6 DESCRIPTION OF PLANNED INVASIVE ACTIVITIES: ..... 28

3.7 POLICY AND LEGISLATIVE CONTEXT ..... 31

3.8 NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES..... 33

3.9 MOTIVATION FOR THE OVERALL PREFERRED SITE, ACTIVITIES AND TECHNOLOGY ALTERNATIVE..... 33

3.10 FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED ALTERNATIVES WITHIN THE SITE. .... 35

    3.10.1 *Details of the development footprint alternatives considered.* ..... 35

    3.10.2 *Details of the Public Participation Process Followed*..... 37

    3.10.3 *Summary of issues raised by I&APs* ..... 37

    3.10.4 *The Environmental attributes associated with the alternatives. (The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)*..... 38

    3.10.5 *Surface Drainage Features* ..... 42

    3.10.6 *Flora* ..... 42

    3.10.7 *Heritage Impact Assessment*..... 43

    3.10.8 *Noise Assessment*..... 44

    3.10.9 *Social*..... 45

    3.10.10 *Population and Demographics* ..... 45

    3.10.11 *Educational Status* ..... 45

    3.10.12 *Employment and Labour* ..... 46



3.10.13	Description of the current land uses.....	47
3.10.14	Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impact.....	49
3.10.15	Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks.....	57
3.10.16	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.....	59
3.10.17	Possible Mitigation Measure that could be applied and the level of risk.....	60
3.10.18	Motivation where no alternative sites were considered.....	60
3.10.19	Statement motivating the alternative development location within the overall site.....	60
3.11	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.....	60
3.12	ASSESSMENT OF EACH IDENTIFIED POTENTIALLY SIGNIFICANT IMPACT AND RISK.....	61
3.13	SUMMARY OF SPECIALIST REPORTS.....	62
3.14	ENVIRONMENTAL IMPACT STATEMENT.....	64
3.14.1	Summary of the key findings of the environmental impact assessment;.....	64
3.14.2	Final Site Map.....	65
3.14.3	Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.....	66
3.15	PROPOSED IMPACT MANAGEMENT OBJECTIVES AND THE IMPACT MANAGEMENT OUTCOMES FOR INCLUSION IN THE EMPR;.....	67
3.16	ASPECTS FOR INCLUSION AS CONDITIONS OF AUTHORISATION.....	67
3.17	DESCRIPTION OF ANY ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE.....	68
3.18	REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORISED.....	68
3.18.1	Reasons why the activity should be authorized or not.....	68
3.18.2	Conditions that must be included in the authorisation.....	68
3.19	PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED.....	68
3.20	UNDERTAKING.....	68
3.21	FINANCIAL PROVISION.....	69
3.21.1	Explain how the aforesaid amount was derived.....	70
3.21.2	Confirm that this amount can be provided for from operating expenditure.....	70
3.22	SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY.....	70
3.22.1	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:-.....	70
3.23	OTHER MATTERS REQUIRED IN TERMS OF SECTIONS 24(4)(A) AND (B) OF THE ACT.....	71
<b>4.</b>	<b>DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME.....</b>	<b>73</b>
4.1	DETAILS OF THE EAP.....	73

4.2	DESCRIPTION OF THE ASPECTS OF THE ACTIVITY .....	73
<b>4.3</b>	<b>DESCRIPTION OF PLANNED NON-INVASIVE ACTIVITIES:.....</b>	<b>73</b>
4.4	DESCRIPTION OF PLANNED INVASIVE ACTIVITIES: .....	74
4.5	COMPOSITE MAP.....	75
4.6	DESCRIPTION OF IMPACT MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS .....	75
4.6.1	<i>Determination of closure objectives.....</i>	75
4.6.2	<i>Volumes and rate of water use required for the operation.....</i>	75
4.6.3	<i>Has a water use licence has been applied for?.....</i>	76
4.6.4	<i>Impacts to be mitigated in their respective phases.....</i>	76
4.6.5	<i>Financial Provision .....</i>	81
4.7	MECHANISMS FOR MONITORING COMPLIANCE WITH AND PERFORMANCE ASSESSMENT AGAINST THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND REPORTING THEREON, INCLUDING – .....	83
4.7.1	<i>Indicate the frequency of the submission of the performance assessment/ environmental audit report.....</i>	83
4.8	ENVIRONMENTAL AWARENESS PLAN.....	84
4.8.1	<i>Manner in which applicant intends to inform his / her employees of any environmental risk which may result from their work.....</i>	84
4.8.2	<i>Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment. ..</i>	85
4.8.3	<i>Specific information required by the Competent Authority.....</i>	86
<b>APPENDIX A:</b>	<b>EAP CV.....</b>	<b>88</b>
<b>APPENDIX B:</b>	<b>PUBLIC PARTICIPATION REPORT .....</b>	<b>89</b>
<b>APPENDIX C:</b>	<b>CONCEPTUAL LAYOUT MAPS .....</b>	<b>90</b>
<b>APPENDIX D:</b>	<b>SPECIALIST STUDIES.....</b>	<b>91</b>
<b>APPENDIX E:</b>	<b>SCREENING TOOL REPORT .....</b>	<b>92</b>

**List of Figures**

---

Figure 1-1: Basic Assessment Process.....	4
Figure 3-1: Locality Map.....	22
Figure 3-2: Farm boundaries for the study area.....	23
Figure 3-3: Regulation 2 (2) showing the proposed area for prospecting .....	24
Figure 3-4: Conceptual drilling site layout .....	27
Figure 3-5: Bothaville Climate Graph/Weather.....	38
Figure 3-6: Bothaville M Temperature.....	39
Figure 3-7: Topographical map for the prospecting right .....	39
Figure 3-8: Geology of the study area.....	41
Figure 3-9: Heritage Potential Sites & Sensitive Areas. ....	44
Figure 3-10: Lejweleputswa District municipalities.....	45
Figure 3-11: Landcover .....	48
Figure 3-12: Site sensitivities. ....	66
Figure 4-1: Site Proposed Layout.....	75

**List of Tables**

Table 1-1: Basic Assessment Timeline followed .....	3
Table 1-2: List of Studies, Findings and Recommendations .....	4
Table 1-3: Directly affected landowners .....	5
Table 3-1: Location of the activity .....	21
Table 3-2: Listed and specific activities .....	25
Table 3-3: Prospecting Phases .....	28
Table 3-4: Policy and legislative table .....	31
Table 3-5: Impact Assessment Table with Mitigation measures .....	49
Table 3-6: Rating Criteria .....	58
Table 3-7: Summary of Specialist Reports .....	62
Table 3-8: Summary of key findings .....	64
Table 3-9: Positive and Negative Impacts / Risks of Proposed Activity .....	66
Table 3-10: Financial Provision .....	69
Table 4-1: Impacts to be mitigated in their respective phases, Impact Management outcomes, Impact Management Action .....	78
Table 4-2: Closure Quantum .....	82
Table 4-3: Monitoring compliance .....	83

## Definition of Terms

<b>Audit</b>	a systematic, independent and documented review of operations and practises to ensure that relevant requirements are met. Qualified professionals with relevant auditing experience should conduct audits and, where possible, independent external auditors should also be used.
<b>Borehole</b>	is a narrow <u>shaft bored</u> in the ground, either vertically or horizontally. A borehole may be constructed for many different purposes, including the extraction of water or other liquid (such as <u>petroleum</u> ) or gases (such as <u>natural gas</u> ), as part of a <u>geotechnical investigation</u> , <u>environmental site assessment</u> , <u>mineral exploration</u> , temperature measurement, as a pilot hole for installing piers or underground utilities, for geothermal installations, or for underground storage of unwanted substances, e.g. in <u>Carbon capture and storage</u> .
<b>Clean Water</b>	clean water is any water that has maintained the chemical, physical, and biological integrity of the waters by preventing point and nonpoint pollution sources.
<b>Compliant Conservation</b>	a full achievement of the performance requirement of a particular condition of the license or programme in relation to a water resource means the efficient use and saving of water, achieved through measures such as water saving devices, water-efficient processes, water demand management and water rationing;
<b>Construction</b>	the time period that corresponds to any event, process, or activity that occurs during the Construction phase (e.g., building of site, buildings, and processing units) of the proposed project. This phase terminates when the project goes into full operation or use.
<b>Corrective Action Plan</b>	an action plan developed by the proponent, contractor, or facility owner and approved by the external auditor that describes how the contractor or facility owner intends to resolve the non-conforming item. The Corrective Action Plan should be specific, measurable, achievable, realistic, and timely.
<b>Director-General Effluent</b>	means the Director-General of the Department; is defined by the <u>United States Environmental Protection Agency</u> as “wastewater - treated or untreated - that flows out of a treatment plant, sewer, or industrial outfall. Generally refers to wastes discharged into surface waters”. The Compact Oxford English Dictionary defines effluent as “liquid waste or sewage discharged into a river or the sea”. Effluent in the artificial sense is in general considered to be <u>water pollution</u> .
<b>Environmental Audit Report</b>	a summary report prepared after an environmental audit that describes the attributes of the audit and the audit findings and conclusions.
<b>Environmental Authorisation Environmental Component</b>	is an environmental authorisation issued by a state department. an attribute or constituent of the environment (i.e., air quality; marine water; waste management; geology, seismicity, soil, and groundwater; marine ecology; terrestrial ecology, noise, traffic, socio-economic) that may be impacted by the proposed project.
<b>Environmental Impact</b>	a positive or negative condition that occurs to an environmental component as a result of the activity of a project or facility. This impact can be directly or indirectly caused by the project’s different phases (i.e., Construction, Operation, and Decommissioning).
<b>Groundwater</b>	is the <u>water</u> located beneath the earth’s surface in <u>soil pore spaces</u> and in the <u>fractures of rock formations</u> . A unit of rock or an unconsolidated deposit is called an <u>aquifer</u> when it can yield a usable quantity of water. The depth at which soil pore spaces or fractures and voids in rock become completely saturated with water is called the <u>water table</u> . <u>Groundwater is recharged</u> from, and eventually flows to, the surface naturally; natural discharge often occurs at <u>springs</u> and <u>seeps</u> , and can form <u>oases</u> or <u>wetlands</u>
<b>Non-conformance</b>	constitutes a non-compliance or an action plan or initial actions taken without tangible deliverables. Non-conformance may also be associated with activities breaching legislation. Non-Conformance findings therefore have a high priority and mitigation measures are mandatory.
<b>Operation</b>	the time period that corresponds to any event, process, or activity that occurs during the Operation (i.e., fully functioning) phase of the proposed project or development. (The Operation phase follows the Construction phase, and then terminates when the project or development goes into the Decommissioning phase.)
<b>Partially Compliant</b>	achievement with shortcomings (such as documented proof and or work in progress) and achievement where there is an obvious shortcoming in the delivery of the performance requirement.
<b>Pollution</b>	is the introduction of <u>contaminants</u> into the natural environment that cause adverse change. Pollution can take the form of <u>chemical substances</u> or <u>energy</u> , such as noise, heat or light. <u>Pollutants</u> , the components of pollution, can be either foreign substances/energies or naturally occurring contaminants. Pollution is often classed as <u>point source</u> or <u>nonpoint source pollution</u> .
<b>Protection</b>	in relation to a water resource, means - (a) Maintenance of the quality of the water resource to the extent that the water resource may be used in an ecologically sustainable way; (b) Prevention of the degradation of the water resource; and (c) the rehabilitation of the water resource;
<b>Proponent</b>	the person, company, or agency that is the primary responsible party for a development project and that is the permit applicant/holder for the project.
<b>Rehabilitation Responsible Authority</b>	is the act of restoring something to its original state; in relation to a specific power or duty in respect of water uses, means - (a) if that power or duty has been assigned by the Minister to a catchment management agency, that catchment management agency; or (b) if that power or duty has not been so assigned, the Minister;
<b>Water Resource</b>	includes a watercourse, surface water, estuary, or aquifer;

**Wetland** means 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.

## Abbreviations

<b>CARA:</b>	Conservation of Agricultural Resources Act, 43 of 1983
<b>DEA:</b>	Department of Environmental Affairs (The former Department of Environmental Affairs and Tourism)
<b>DMR:</b>	The Department of Mineral Resources (The former Department of Minerals and Energy)
<b>DWA:</b>	Department of Water Affairs (Is now referred to the Department of Water and Sanitation – DWS)
<b>EA:</b>	Environmental Authorisation
<b>ECO:</b>	Environmental Control Officer
<b>EIA:</b>	Environmental Impact Assessment
<b>ELCA:</b>	Environmental Legal Compliance Assessment
<b>EMP:</b>	Environmental Management Plan
<b>EMPPA:</b>	Environmental Management Programme Performance Assessment
<b>EMPR:</b>	Environmental Management Programme
<b>EMS:</b>	Environmental Management System
<b>GM:</b>	General Manager
<b>GN:</b>	Government Notice
<b>I&amp;AP:</b>	Interested & Affected Parties
<b>IEM:</b>	Integrated Environmental Management Series
<b>ISO:</b>	International Standards Organisation
<b>IWULA:</b>	Integrated Water Use Licence Application
<b>IWUL:</b>	Integrated Water Use License
<b>IWWMP:</b>	Integrated Water and Waste Management Plan
<b>KG:</b>	Knowledge Gap
<b>MOC:</b>	Management of Change
<b>MPRDA:</b>	Mineral and Petroleum Resources Development Act, 28 of 2002
<b>MR:</b>	Mining Right
<b>N/R:</b>	Applicable, but not required at the time of the audit
<b>NEMA:</b>	National Environmental Management Act, 107 of 1998
<b>NEMAQA:</b>	National Environmental Management: Air Quality Act, 39 of 2004
<b>NEMBA:</b>	National Environmental Management: Biodiversity Act, 10 of 2004
<b>NEMWA:</b>	National Environmental Management: Waste Act, 59 of 2008
<b>NC:</b>	Non-conformance
<b>NHRA:</b>	National Heritage Resources Act, 25 of 1999
<b>NWA:</b>	National Water Act, 36 of 1998
<b>RWD:</b>	Return Water Dam
<b>ROM:</b>	Run of Mine
<b>SAHRA:</b>	South African Heritage Resources Authority
<b>SHEQ:</b>	Safety, Health, Environment and Quality
<b>SLP:</b>	Social and Labour Plan
<b>SOP:</b>	Standard Operating Procedure
<b>SWMP:</b>	Strategic Water Management Plan
<b>WSA:</b>	Water Services Act, 108 of 1997
<b>WUL:</b>	Water Use Licence



**mineral resources**

Department:  
Mineral Resources  
**REPUBLIC OF SOUTH AFRICA**

**DRAFT BASIC ASSESSMENT REPORT  
AND  
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT**

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED).

**NAME OF APPLICANT: National Treasure Minerals (Pty) Ltd**

**PHYSICAL ADDRESS: 213 Waterkloof, Pretoria, 0181**

**FILE REFERENCE NUMBER SAMRAD: FS 30/5/1/1/2/10599PR**

## 1. IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting or mining right if among others the mining “will not result in unacceptable pollution, ecological degradation or damage to the environment”.

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme report in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of section 16(3)(b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17 (1) (c) the competent Authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the competent authority to the submission of applications.

**It is therefore an instruction that** the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or 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.



## 2. 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:
  - vi. the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
  - vii. 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—
  - viii. identify and motivate a preferred site, activity and technology alternative;
  - ix. identify suitable measures to manage, avoid or mitigate identified impacts; and
  - x. identify residual risks that need to be managed and monitored.

# PART A

## SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

### 3. CONTACT PERSON AND CORRESPONDENCE ADDRESS

#### 3.1 DETAILS OF

##### 3.1.1 Details of the EAP

Name of The Practitioner: Mr. Vernon Siemelink / Mr Lian Roos  
 Tel No.: 012 807 0383  
 Fax No. : 086 714 5397  
 e-mail address: [vernon@ecoe.co.za](mailto:vernon@ecoe.co.za) ; [lian@ecoe.co.za](mailto:lian@ecoe.co.za)

##### 3.1.2 Expertise of the EAP.

###### 3.1.2.1 The qualifications of the EAP

Name	Vernon
Surname	Siemelink
Company	Eco Elementum (Pty) Ltd
Position	Director – Senior Environmental Consultant
Location	361 Oberon Ave, Glenfield Office Park, Nikka Building, 1st Floor, Faerie Glen, Pretoria, 0081.
Email	<a href="mailto:vernon@ecoe.co.za">vernon@ecoe.co.za</a>
Telephone Number	072 196 9928/ 012 348 5214
Education	<p><b>M (EnvMan) - Masters in Environmental Management</b>                      Master's Degree at University of Pretoria in Pretoria, South Africa (Gauteng)</p> <p><b>BSSc. GeoScience - Honours in Geographical Science</b>                      Honours Degree at University of Pretoria in Pretoria, South Africa (Gauteng)</p>

Please refer to the CV attached in Appendix 1.

<b>Name</b>	<b>Lian</b>
Surname	Roos
Company	Eco Elementum (Pty) Ltd
Position	Junior Environmental Practitioner (EAP)
Location	361 Oberon Ave, Glenfield Office Park, Nikka Building, 1st Floor, Faerie Glen, Pretoria, 0081.
Email	<a href="mailto:lian@ecoe.co.za">lian@ecoe.co.za</a>
Telephone Number	0832254589/ 012 348 5214
Education	<p><b>BSc (App Sci) Honours in Water Utilisation</b> Honours Degree at University of Pretoria in Pretoria, South Africa (Gauteng)</p> <p><b>BSc Environmental Science</b> Bachelor Degree at University of Pretoria in Pretoria, South Africa (Gauteng)</p>
Professional skills	<ul style="list-style-type: none"> <li>- Lian Roos is an EAP at Eco Elementum (Pty) Ltd and has been involved in the field of environmental science and environmental management for about 1 year.</li> <li>- Lian Roos has been an environmental consultant since 2020, focusing in the fields of: <ul style="list-style-type: none"> <li>• Environmental Impact Assessments and Authorisations.</li> <li>• Waste use license application.</li> <li>• Environmental Monitoring and Control.</li> <li>• Environmental Compliance and Audits.</li> </ul> </li> </ul>

3.1.2.2 Summary of the EAP's past experience.

<b>Skills</b>	<ul style="list-style-type: none"> <li>- <b>Environmental Impact Assessments.</b></li> <li>- <b>Basic assessments, WULA reports.</b></li> <li>- <b>Water use license application.</b></li> <li>- <b>Prospecting and Mining Right Authorizations.</b></li> <li>- <b>Environmental Management Plans.</b></li> <li>- <b>Public Participation.</b></li> <li>- <b>Environmental Authorizations.</b></li> <li>- <b>ISO 14001:2004 Environmental Management System Auditor.</b></li> <li>- <b>FSC Forest Management Auditing.</b></li> <li>- <b>Geographic Information System Support (ArcGISv9.2).</b></li> <li>- <b>SETA Accredited Assessor.</b></li> <li>- <b>EMSware software Administrator.</b></li> <li>- <b>Integrated Management System Auditor.</b></li> </ul>
<b>Experience</b>	<p>Mr. Vernon Siemelink has been an Environmental Assessment Consultant for 10 years, during this time he has conducted S/EIA's, Basic Assessments, rehabilitation planning, developed EMPr (This includes conducting screening and scoping exercises, baseline studies, impact assessments, monitoring, and management planning and implementation) environmental legal assessments, ISO 14001:2004 management systems, due diligence, EMPr Performance Assessments and Integrated Water Use License Audits for clients in nearly every industry sector.</p>

3.2 LOCATION OF THE OVERALL ACTIVITY.

Table 3-1: Location of the activity

<b>Farm Name:</b>	<ul style="list-style-type: none"> <li>- The remaining extent of the farm Nederlanden 32.</li> <li>- The remaining extent of the farm Bowie 621.</li> <li>- The remaining extent of the farm Stillrustig 548.</li> <li>- The remaining extent of the farm Jacoba 878.</li> <li>- The remaining extent of the farm Zandfonteinpan 472.</li> <li>- The remaining extent of the farm Schiedam 124.</li> <li>- The remaining extent of the farm Onzerust 557.</li> <li>- Portion 1 and the remaining extent of the farm Rebelfort 288.</li> </ul>
<b>Application area (Ha)</b>	Approx. 1900 Hectares (ha).
<b>Magisterial districts:</b>	<p>The application area covers two local municipal and district municipal areas.</p> <p>Lejweleputswa District Municipality</p> <p>Nala Local Municipality (<i>Stillrustig 548, Zandfonteinpan 472, Schiedam 124, Onzerust 557, Rebelfort 288</i>).</p> <p>Fezile Dabi District Municipality.</p> <p>Moqhaka Local Municipality (<i>Nederlanden 32, Bowie 621, Jacoba 878</i>).</p>
<b>Distance and direction from nearest town</b>	25 km west of Vierfontein.
<b>21-digit Surveyor General Code for each farm portion</b>	<ul style="list-style-type: none"> <li>- F00500000000003200000.</li> <li>- F005000000000062100000.</li> <li>- F005000000000054800000.</li> <li>- F005000000000087800000.</li> <li>- F005000000000047200000.</li> <li>- F005000000000028800000.</li> <li>- F005000000000012400000.</li> <li>- F005000000000055700000.</li> </ul>
<b>Locality map</b>	Attach a locality map at a scale not smaller than 1:250 000 and attach as Appendix D.
<b>Description of the overall activity. (Indicate Mining Right, Mining Permit, Prospecting right, Bulk Sampling, Production Right, Exploration Right, Reconnaissance permit, Technical co-operation permit, Additional listed activity)</b>	<p>Prospecting right application for heavy minerals, sand, monazite, rare earths, rutile, zirconium ore, zircon (gemstone), titanium, leucosene and garnet to the Regional Department of Mineral Resources and Energy (“DMRE” Free State Region) in respect of the remaining extent of the farm Nederlanden 32, remaining extent of the farm Bowie 621, remaining extent of the farm Stillrustig 548, remaining extent of the farm Jacoba 878, remaining extent of the farm Zandfonteinpan 472, remaining extent of the farm Schiedam 124, remaining extent of the farm Onzerust 557 and the remaining extent of the farm Rebelfort 288, situated in the Lejweleputswa District Municipality within the Nala Local Municipality, Free State Province, South Africa.</p> <p>The Prospecting Right activity triggers a Basic Assessment (BA) in terms of the NEMA regulations, which will be undertaken as part of the Environmental Authorisation Application Process.</p>

### 3.3 LOCALITY MAP

(Show nearest town, scale not smaller than 1:250000)

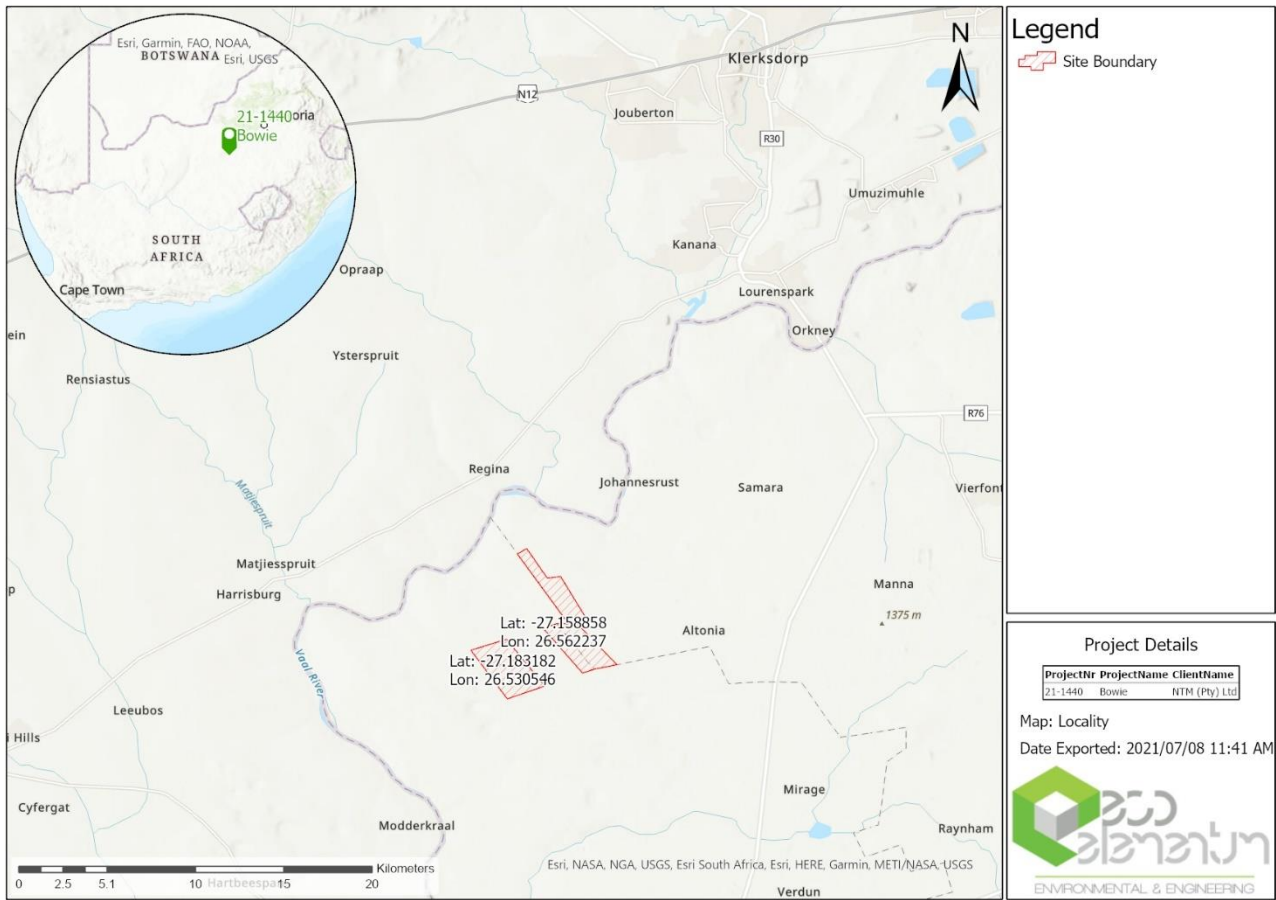


Figure 3-1: Locality Map

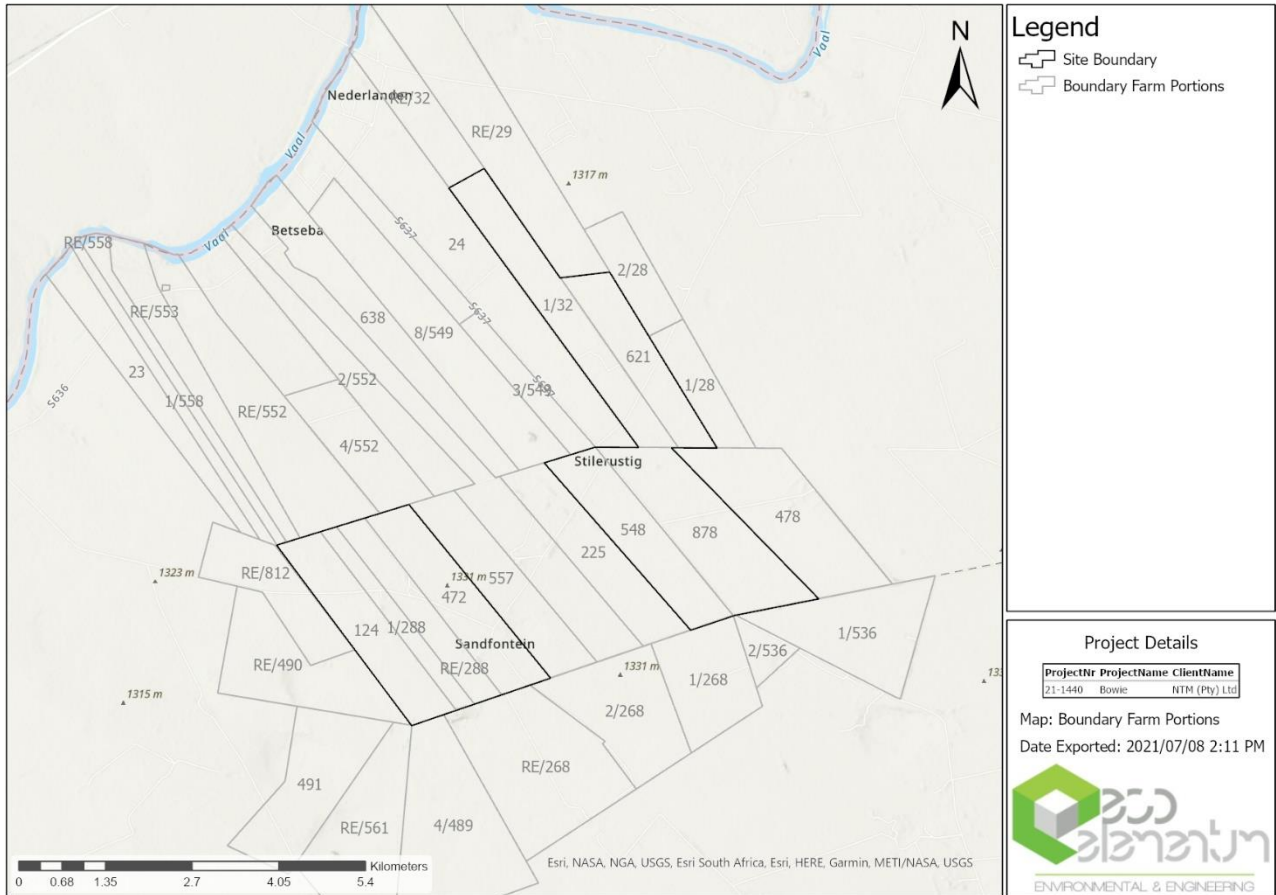


Figure 3-2: Farm boundaries for the study area

### 3.4 DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY.

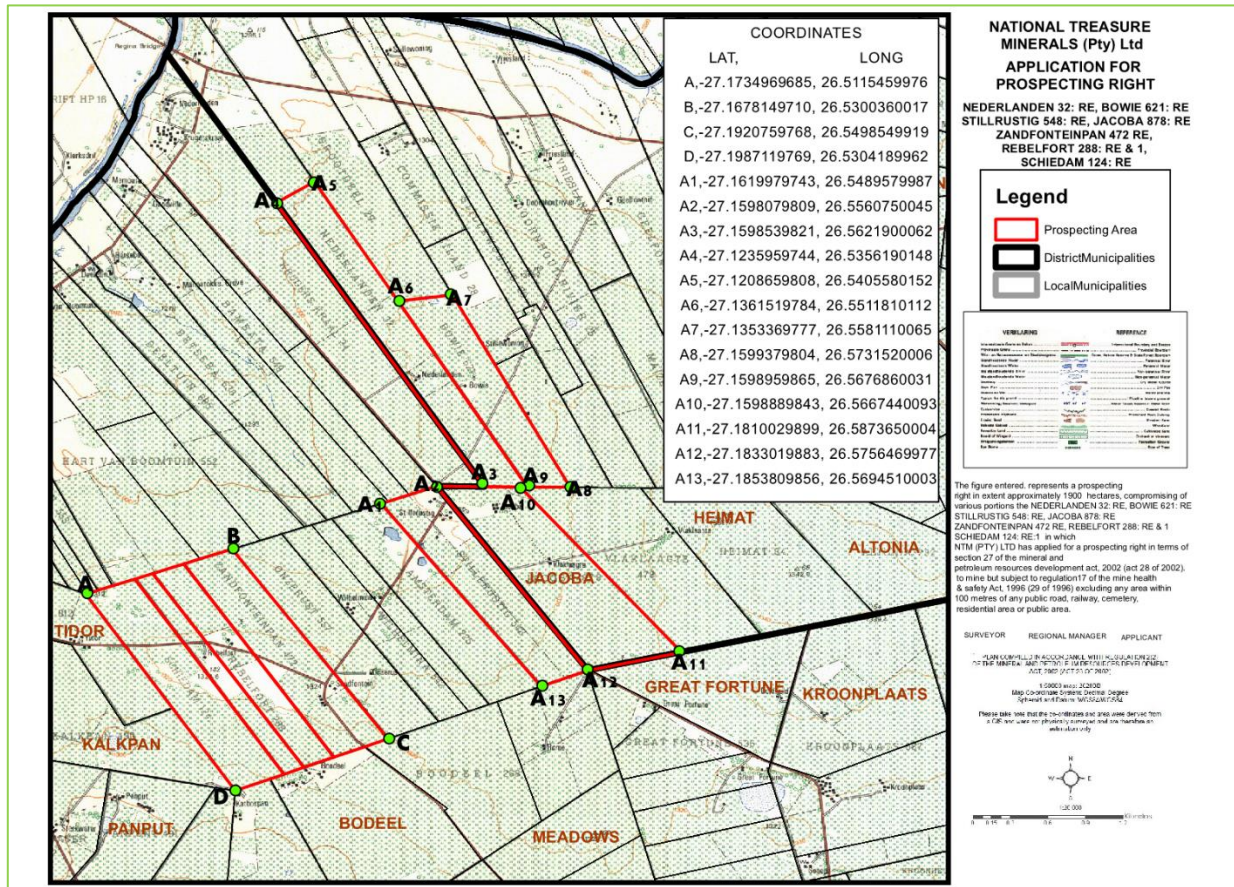


Figure 3-3: Regulation 2 (2) showing the proposed area for prospecting

#### 3.4.1 Listed and specified activities

Section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) requires, upon request by the Minister that an Environmental Management Plan be submitted and that the applicant must notify and consult with Interested and Affected Parties (I&APs). Section 24 of the NEMA requires that activities, which may impact on the environment must obtain an environmental authorisation from a relevant authority before commencing with the activities. Such activities are listed under Regulations Listing Notice 10 the proposed prospecting activity triggers:

Please refer to the following table for the details in terms of the listed activities.



Table 3-2: Listed and specific activities

<p><b>NAME OF ACTIVITY</b>                      (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc... Etc... etc.                      E.g. for mining, - excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc... Etc... Etc.)</p>	<p>Aerial extent of the Activity                      Ha or m<sup>2</sup></p>	<p>LISTED ACTIVITY                      (Mark with an X where applicable or affected).</p>	<p>APPLICABLE LISTING NOTICE                      (GNR 983, GNR 984 or GNR 985)</p>	<p>WASTE MANAGEMENT AUTHORISATION                      (Indicate whether an authorisation is required in terms of the Waste Management Act).                      (Mark with an X)</p>
<p>Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource, including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing; but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing Notice 2 applies.</p>	<p>Approx. 1900 m<sup>2</sup></p>	<p>X</p>	<p>GNR 983 – Listing 1, Activity 20</p>	<p>n/a</p>
<p>Drill site clearing and establishment, mobile chemical ablution facility, drill rig equipment, return water lined sump, and sample storage trays.</p>	<p>640 m<sup>2</sup></p>	<p>X</p>	<p>GNR 983 – Listing 1, Activity 20</p>	<p>n/a</p>
<p>Soil Sampling Activities (A typical sampling site will be approximately 25 m<sup>2</sup>). It is unlikely that more than 10 samples will be taken, however, this will be confirmed on site as part of the prospecting activities.</p>	<p>64 m<sup>2</sup> per prospecting drill site</p>	<p>X</p>	<p>GNR 985 – Listing 3, Activity 12</p>	
<p>Roads (roads will be temporary gravel roads, not exceeding 3,5 m in width).</p>	<p>Approx. 20 000 m<sup>2</sup></p>	<p>-</p>	<p>-</p>	<p>-</p>
<p>Temporary Camp Site.</p>	<p>Approx. 100 m<sup>2</sup></p>	<p>-</p>	<p>-</p>	<p>-</p>

Site Clearance.	Less than 20 ha	X	GNR 983 – Listing Activity 27, 1,	n/a
Hydrocarbon Storage.	Less than 30 m <sup>3</sup>	-	-	-

### 3.4.2 Description Of How the Mineral Resource And Mineral Distribution Of The Prospecting Area Will Be Determined

The mineral distribution in the portions of the area will be determined following the mineral exploration methods which are outlined in the following text. These mineral exploration methods are planned to follow the mineral exploration value chain where a systematic, phased and cost-effective approach of determining the minerals distribution is followed. At the end of each phase, a decision will be taken to proceed or to abandon the project.

The first phase will be information gathering which includes detailed desktop studies and geological mapping. This will result in a plan showing outcrops and any geological information that will be useful during the subsequent phases of exploration. Feasibility studies will also be conducted at the end of the exploration phases.

No geochemical survey is planned.

Geophysical Survey – a decision will be taken to conduct geophysical observations or procure geophysical data from commercial sources and organizations that collect them. The information that will be acquired will be chiefly magnetic which will be aimed at delineating structures of higher or lower magnetic susceptibility than the surrounding country rocks. If the company conducts the observations, it will be airborne surveys conducted with the auspices of a contractor.

Drilling will be conducted using a diamond drill rig. The holes will be drilled to two different sizes (NQ, and BQ) determined by the formations. The core will be handled and logged in a designated area, sampling will also take place in the same area. Samples will be sent to a laboratory for chemical analyses. Resource modelling will be undertaken using the geological data determined from the data collected.

No other excavations, bulk sampling or pitting is planned.

At the end of each phase there will be a brief period of compiling and evaluating results. The results will not only determine whether prospecting proceeds, but also the manner in which it will go forward. The applicant will only action the next phase of prospecting, once satisfied with the results obtained in the previous phases, refer to planned invasive prospecting methods entail conducting drilling to ascertain the existence of the expected minerals, its thickness and distribution. Samples will be taken and analysed. The number of boreholes planned is 20:

- Reconnaissance drilling: 5.
- Resource drilling 6.
- Feasibility drilling 9.

The depths will vary from very shallow (approx. 30 m) to nearly 150 m. The exact depths of the boreholes will be determined while the drilling program is underway as influenced by the depths and dips measured in the previous boreholes.

Table 3-3 an addition, smaller, non-core parts of the prospecting work program will be undertaken, if warranted.

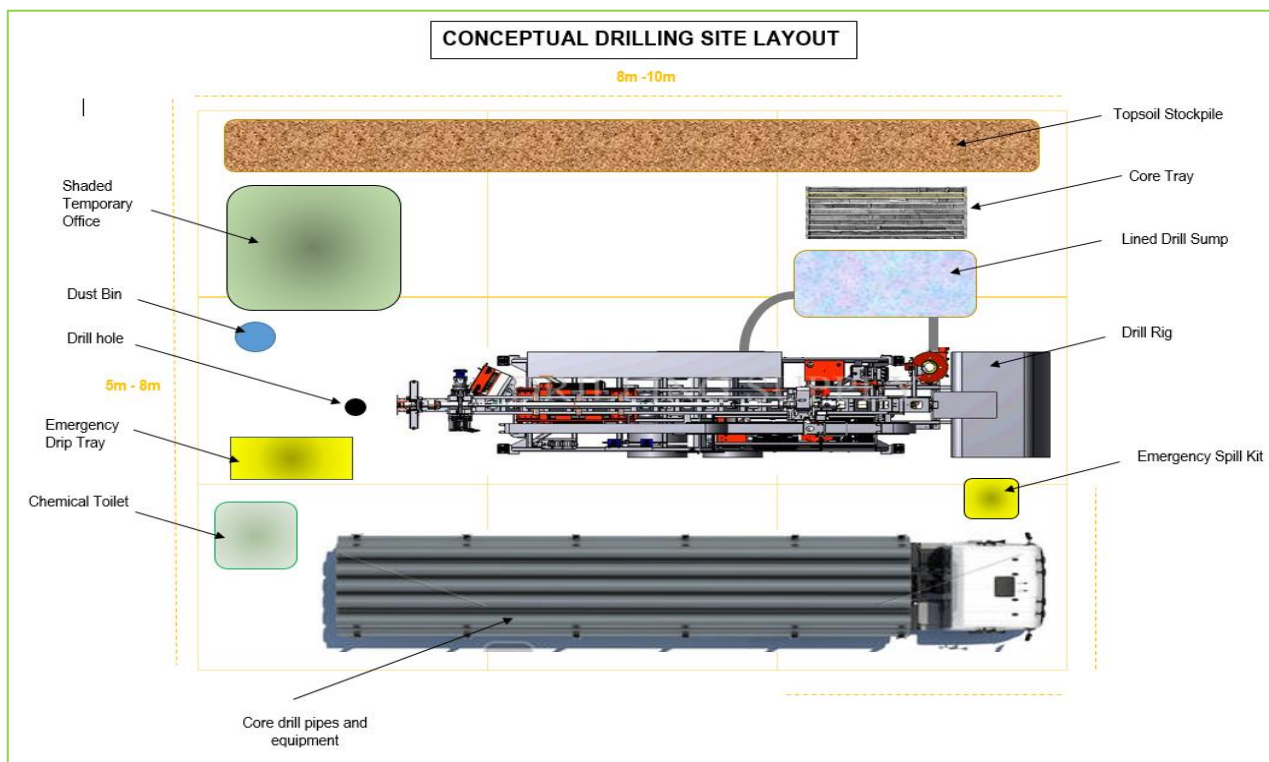


Figure 3-4: Conceptual drilling site layout

### 3.5 DESCRIPTION OF PLANNED NON-INVASIVE ACTIVITIES:

**(These activities do not disturb the land where prospecting will take place e.g. aerial photography, desktop studies, aeromagnetic surveys, etc.)**

The Non-Invasive methods which will be used during the exploration program span all the four phases in different time frames. They are outlined in the following text.

**Literature Study** – During this stage information pertaining to the geological, geographical, environmental and geomorphological including the topographical and infrastructural systems of the area will be studied with the aim of designing the prospecting program and also the impact that the programs will have in the environmental and the ecosystem of the area. Information will be gathered from relevant areas including the Council of the Geoscience and other commercial areas where it may be available. Sources of information will include geological reports, general geological text books and geological maps, topographical maps, agricultural and land use maps. Visits to the area will also be conducted to acquire information that might not be available in literature. Detailed geological information will then be gathered which will be used in planning further prospecting and exploration strategy.

**Geological Mapping** – This stage will include the field traverse in the farm collecting geological information. Lithological contacts, outcrops, faults, dykes, folds will be mapped including their attitude and characteristics like dip and strikes, thickness etc. This information will be correlated with the literature study information in order to correlate with the correct stratigraphy and lithological units.

**Geophysical Survey** – a decision will be taken to conduct geophysical observation or procure geophysical data from commercial sources and organizations that collect them. The information that will be acquired will be chiefly magnetic which will be aimed at delineating structures of higher or lower magnetic susceptibility than the surrounding country rocks. If the company conducts the observations, it will be airborne surveys conducted with the auspices of a contractor.

**Interpretation of Information and decision making** – This item appears in all the phases towards the end of the data gathering sub-programs. In Phase 1, this will mean that maps will be drawn depicting the data which is of the geological nature of the area. Using all other information, a decision will then be taken as to whether it is feasible to carry on or if the project should be abandoned.

**Sampling and resource modelling** - This stage entails sampling the core from drilling as well as data manipulation to produce drilling results information. Resource modelling is conducted which will result in tonnages and grade distribution. However, this is still in low geological confidence. From the results, a decision will be taken if prospecting will be continued.

During the non-invasive methods, additional information is gathered in the form of prefeasibility studies. This includes the determination of the suitable mining method and its costs. Other information that is gathered includes the macro and the microeconomics that will determine the feasibility of the project.

**3.6 DESCRIPTION OF PLANNED INVASIVE ACTIVITIES:**

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

Planned invasive prospecting methods entail conducting drilling to ascertain the existence of the expected minerals, its thickness and distribution. Samples will be taken and analysed. The number of boreholes planned is 20:

- Reconnaissance drilling: 5.
- Resource drilling 6.
- Feasibility drilling 9.

The depths will vary from very shallow (approx. 30 m) to nearly 150 m. The exact depths of the boreholes will be determined while the drilling program is underway as influenced by the depths and dips measured in the previous boreholes.

Table 3-3 an addition, smaller, non-core parts of the prospecting work program will be undertaken, if warranted.

**Table 3-3: Prospecting Phases**

Phase	Activity (what are the activities that are planned to achieve optimal prospecting)	Skill(s) required (refers to the competent personnel that will be employed to achieve the required results)	Timeframe (in months) for the activity)	Outcome (What is the expected deliverable, e.g. Geological report, analytical results, feasibility study, etc.)	Timeframe for outcome (deadline for the expected outcome to be delivered)	What technical expert will sign off on the outcome? (E.g. geologist, mining engineer, surveyor, economist, etc.)
1	<b>Non-Invasive Prospecting.</b> – Literature Study.	Geologist.	Month 1	Detailed geological information and the current land use of the area.	Month 1	Geologist
1	<b>Non-Invasive Prospecting.</b> – Geological Mapping.	Geologist.	Month 2 - 4	Detailed geological map of the area including proposed stratigraphy.	Month 4	Geologist

1	<b>Non-Invasive Prospecting</b> – Geophysical Survey.	Geologist, Geophysicist	Month 3	Geophysical map delineating the structures (faults, dykes and other lineaments).	Month 4	Geologist/Geophysicist.
1	<b>Non-Invasive Prospecting</b> – Interpretation of information and Decision making.	Geologist / Mineral Economist	Month 5	Interpreted results of first phase and the decision to carry on with the exploration and the exploration strategy.	Month 5	Geologist/Mineral Economist
2	<b>Invasive Prospecting Methods</b> – Reconnaissance Drilling.	Geologist	Month 6 - 18	Detailed borehole logs and sampling information.	Month 18	Geologist
2	<b>Non-Invasive Prospecting</b> – Interpretation of results and decision making.	Geologist	Month 19	Reconnaissance resource model and decision to carry on.	Month 19	Mineral Resource Manager (MRM)
3	<b>Invasive Prospecting Methods</b> – Ore body Drilling.	Geologist	Month 20 - 44	Detailed borehole logs and sampling with the ore body resource model.	Month 44	Geologist
3	<b>Non-Invasive Prospecting Methods</b> – Resource Modelling and Interpretation of the results.	Geologist	Month 45	Ore body resource model.	Month 45	Geologist
3	<b>Non-Invasive Prospecting Methods</b> - Pre-Feasibility Studies.	Geologist, Mineral Rights Lawyer, Finance, Mining Engineer, Metallurgist	Month 46	Pre-feasibility studies report and reserves model and the decision to carry on.	Month 46	MRM, MRLM
4	<b>Invasive Prospecting methods</b> –	Geologist	Month 46 - 55	Detailed borehole logs and sampling with the ore body resource model.	Month 55	

	Feasibility drilling.					
4	<b>Non- Invasive Prospecting methods</b> – Resource Modelling.	Geologist	Month 56	Resource Model.	Month 56	
4	<b>Non- Invasive Prospecting methods</b> – Feasibility Studies.	Geologist, Mineral Rights Lawyer, Finance, Mining Engineer, Metallurgist.	Month 57-60	Feasibility Studies report and reserves model.	Month 60	

3.7 POLICY AND LEGISLATIVE CONTEXT

Table 3-4: Policy and legislative table

<p><b>APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT</b></p> <p>(a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)</p>	<p><b>REFERENCE WHERE APPLIED</b></p>	<p><b>HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.</b></p> <p>(E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)</p>
<p><b>Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).</b></p>	<p>The project requires a prospecting right authorisation from the Department of Mineral Resources.</p>	<p>A prospecting right was lodged with the DMRE. The application was accepted by DMR on 3<sup>rd</sup> March 2021.</p>
<p><b>NEMA Environmental Impact Assessment (EIA) Regulations, as Amended 2017.</b></p>	<p>This Basic Assessment and Environmental Management Plan to be conducted. Baseline environmental information of the project area will be assessed. Mitigation measures and recommendations where provided according to best practice standards.</p>	<p>An Application for Environmental Authorisation will be submitted to the Free State DMRE with the prospecting right application lodgement on SAMRAD. The DMRE also requested the submission of the updated NEMA application forms and PWP with 60 days of the approved application.</p>
<p><b>The South African Constitution.</b></p> <p>The South African Constitution (Act 108 of 1996) constitutes the supreme law of the country and guarantee the rights of all people in South Africa.</p>	<p>Applied at potential impacts identification as well as mitigation measures and public participation.</p>	<p>A public participation process will be followed and consultations will be done regarding the proposed project. An EMP and awareness plan will be designed according to the issues raised during this process.</p>
<p><b>National Environmental Management: Biodiversity Act , 2004.</b></p>	<p>Presence of critically endangered species, if permit is required. To be determined by ecologist prior to prospecting activities.</p>	<p>The EMP will regulate the applicant to apply for Tree Removal Permit from the Relevant authority prior to the potential removal of any sensitive and/or protected species.</p>



<p><b>National Environmental Management: Waste Act.</b></p>	<p>Provisions of the waste act were consulted to determine whether a waste license was required for any aspect of the proposed development.</p>	<p>The project activities do not trigger a waste management license but proper waste management measures will be addressed in the EMPr.</p>
<p><b>Section 38 of the National Heritage Resources Act (Act No. 25 of 1999).</b></p>	<p>Legislation consulted during the impact assessment process, to determine what legal requirements with regards to the management of national heritage resources were relevant to this application.</p>	<p>An upload of the BAR will be done on the SAHRIS online system for comment.</p>
<p><b>National Water Act.</b> The NWA (Act No. 36 of 1998).</p>	<p>Triggered activities will be identified according to the Section 21 of the NWA.</p>	<p>The department has been notified of the proposed project and comments will be addressed.</p>
<p><b>National Environmental Management: Air Quality Act, 2004 (Act no.39 of 2004).</b></p>	<p>Dust monitoring on site during the operation.</p>	<p>As part of the EMPr dust suppression methods will be used.</p>
<p><b>Mine Health and Safety Act, 1996 (Act No. 29 of 1996).</b></p>	<p>Health and Safety Policy.</p>	<p>Risk Impact Assessment to be conducted.</p>





### 3.8 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 industry is identified as one of the key components toward Rapid Economic Growth in order to reduce poverty and minimise unemployment Growth (State of the Nation Address, 2019). The key issues include:

- The need for a strong capable state;
- Cost reduction for businesses and consumers;
- The need for reindustrialisation and a revitalised mining sector;
- Faster growth in tourism;
- Improved infrastructure;
- Better support for small businesses; and
- Marked reduction in unemployment

Mining's contribution to provincial GDP (2020) is 25.9% and the sector employs 53 000 people.

The activity of mining has numerous social and economic benefits in local, regional and national context. These include:

1. Job creation.
2. Skills development.
3. SMME development.
4. Local economic development.
5. Contribution to local and national tax income (royalties, companies' tax etc.).
6. Contribution to the national gross domestic product, and
7. Future business opportunities.

The production of goods, supply of services or construction of infrastructure results in expenditure within a regional economy which has knock-on effects and results in additional expenditure which contributes to the regional economy.

At the South Africa Investment Conference in 2020, over 50 global companies made investment commitments of R109 billion in industries as diverse as advanced manufacturing, agro-processing, infrastructure, mining, services, tourism and hospitality. Global investment in mining being the 7<sup>th</sup> largest out of 19 economic subsectors with a total investment of >R2 billion. This shows that mining remains a significant source of investment into the country.

### 3.9 MOTIVATION FOR THE OVERALL PREFERRED SITE, ACTIVITIES AND TECHNOLOGY ALTERNATIVE.

The application area has been selected as the preferred site based on the the geological formations in the area.

Some of the techniques employed in the non-invasive prospecting activities will include a literature survey, field reconnaissance/mapping, and geophysical survey of the geology, outcrops. Some of the invasive prospective activities include prospecting boreholes, boreholes to confirm continuity of mineralization & potential deposit size and resource definition drilling.

In terms of the technologies proposed, these have been chosen based on the long term success of the company in terms of their prospecting history. 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.

Consultation with affected landowners and adjacent landowners will be conducted in order to keep them informed about the proposed prospecting activities as well as to capture any comments and concerns they may have regarding the prospecting activity.

It should be noted that the exact location of the boreholes have not been identified at this stage. The location of these boreholes will be dependent on the findings of the non-invasive prospecting activities. Once the proposed target areas for the boreholes have been identified during the phases as set out in Table 3-3, these areas will be investigated and will be subject to the conditions of this document.



### 3.10 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.

GIS and spatial analysis will be used to determine the location of the boreholes and temporary infrastructure by considering environmental sensitivities. Furthermore, the resource location will be determined through drilling exercises in order to locate the areas that will be most economical to mine, and the extent of the resource that will be mined.

#### 3.10.1 Details of the development footprint alternatives considered.

With reference to the site plan provided as Appendix 3 and the location of the individual activities on site, provide details of the alternatives considered with respect to:

a) the property on which or location where it is proposed to undertake the activity;

The Remaining extent of the farm Nederlanden 32, remaining extent of the farm Bowie 621, remaining extent of the farm Stillrustig 548, remaining extent of the farm Jacoba 878, remaining extent of the farm Zandfonteinpan 472, remaining extent of the farm Schiedam 124, remaining extent of the farm Onzerust 557 and the remaining extent of the farm Rebelfort, situated in the Nala Local Municipality. According to the Critical Biodiversity Areas datasets provided by SANBI (2021), although the majority of the mining area falls within a Critical Biodiversity Area 1 and Ecological Support Area 2, the site is preferred due to its rich geological potential. Sensitive areas will be handed with care and mitigation measures implemented as far as possible to ensure that minimal impact is caused to the environment.

Therefore, no alternative sites were considered in context of the application area.

b) the type of activity to be undertaken;

The mineral distribution in the portions of the area will be determined following the mineral exploration methods which are outlined in the following text. These mineral exploration methods are planned to follow the mineral exploration value chain where a systematic, phased and cost effective approach of determining the minerals distribution is followed. At the end of each phase, a decision will be taken to proceed or to abandon the project.

- (i) The first phase will be information gathering which includes detailed desktop studies and geological mapping. This will result in a plan showing outcrops and any geological information that will be useful during the subsequent phases of exploration. Feasibility studies will also be conducted at the end of the exploration phases.
- (ii) No geochemical survey is planned.

c) **Geophysical Survey** – a decision will be taken to conduct geophysical observations or procure geophysical data from commercial sources and organizations that collect them. The information that will be acquired will be the design or layout of the activity;

As this is a prospecting application the site location is limited to the approved prospecting area. The location of activities will be determined based on the location of the resource, which will only be determined during Phase 1 of the Prospecting Works Programme.

Final borehole sites to be determined after phase one of the prospecting taking into account sensitive areas that need to be avoided.



d) The technology to be used in the activity

In terms of the technologies proposed, these have been chosen based on the long term success of the company in terms of their prospecting history. 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.

e) the operational aspects of the activity; and

No feasible alternative technologies are available to conduct the prospecting due to the basic nature of the processes. Alternative technologies to the management of water, dust, and noise will be considered as mitigation measures in this report.

### Water Supply

Currently it is not known whether there are any water boreholes located on the site and whether access and supply will be granted by the landowner.

Continuous water supply will be required during drilling, and on-site water storage tanks with a capacity of 15,000 ℓ for water supply to the drill, will be used.

When core drilling will be undertaken, a number of settling sumps will be excavated and lined with impervious plastic sheets. The purpose of these sumps are to recycle water and drilling fluids by means of gravity which leads to heavier materials (e.g. drill cuttings) to settle and clean water being produced for re-use. The drill cuttings form a sludge which will be collected in the sumps. These sumps will be fenced, where required, to prevent livestock and public access. The plastic sheets will be removed and sumps will be backfilled on completion of drilling. If required, the remaining sludge in sumps is to be treated with a suitable bio-remediation product prior to backfilling or disposal.

Additional water requirements relate to the potable water supply for employees and workers. A temporary 260 ℓ on-site vertical water storage tank for drinking water and generalise by persons will be provided at the drill site.

f) the option of not implementing the activity.

The option of not approving the activities will result in a significant loss to valuable information regarding the mineral reserve status on this property.

In addition to this, should economical reserves be present and the applicant does not have the opportunity to prospect, the opportunity to utilize these reserves for future phases will be lost.



### 3.10.2 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 or not they attended public meetings. (Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.)

Section 41 of NEMA Regulation 982 set out the Legal and Regulatory Requirement for Public Participation. The Public Participation Process (PPP) aims to involve the authorities and I&APs in the project process, and determines their needs, expectations and perceptions which in turn ensures a complete and comprehensive environmental study. An open and transparent process has and been followed at all times and is based on reciprocal dissemination of information. The following will be undertaken during the PPP:

1. Identification of Interested and Affected Parties (IAPs);
2. Notification of IAPs regarding the proposed project;
3. A public information meeting with IAPs;
4. Gathering comments, issues and concerns from IAPs;
5. Responding to IAP comments, issues and concerns;
6. Compilation and submission of results of consultation report to the DMR; and
7. Providing IAPs with the opportunity to review and comment on the basic assessment report.

### 3.10.3 Summary of issues raised by I&APs

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

To be updated after PPP.



3.10.4 The Environmental attributes associated with the alternatives. (The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)

3.10.4.1 Baseline Environment

3.10.4.1.1 Type of environment affected by the proposed activity.

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

3.10.4.2 Climate

The study area falls within the summer rainfall region and the average annual rainfall is roughly 565 mm per year. The average maximum temperature for the study area is recorded during January when an average of 23.4 °C is reached. On average July is the coldest month (Climate-data.org 08/07/2021).

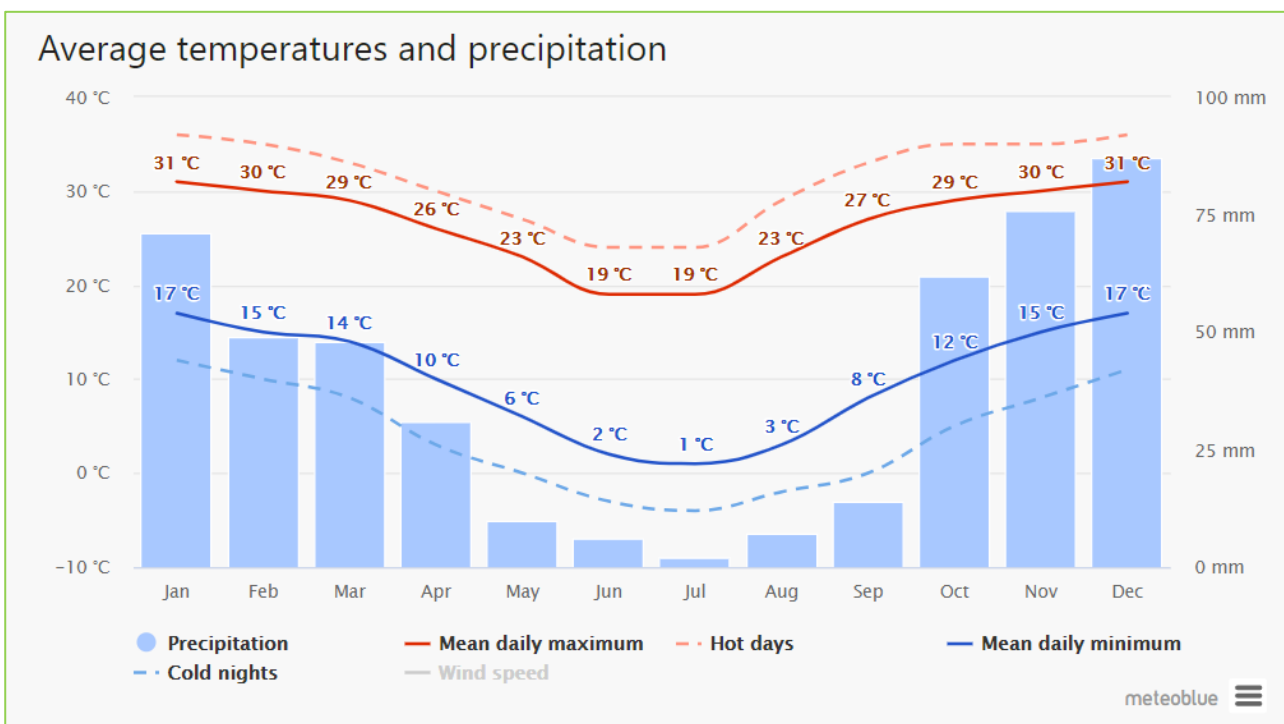


Figure 3-5: Bothaville Climate Graph/Weather



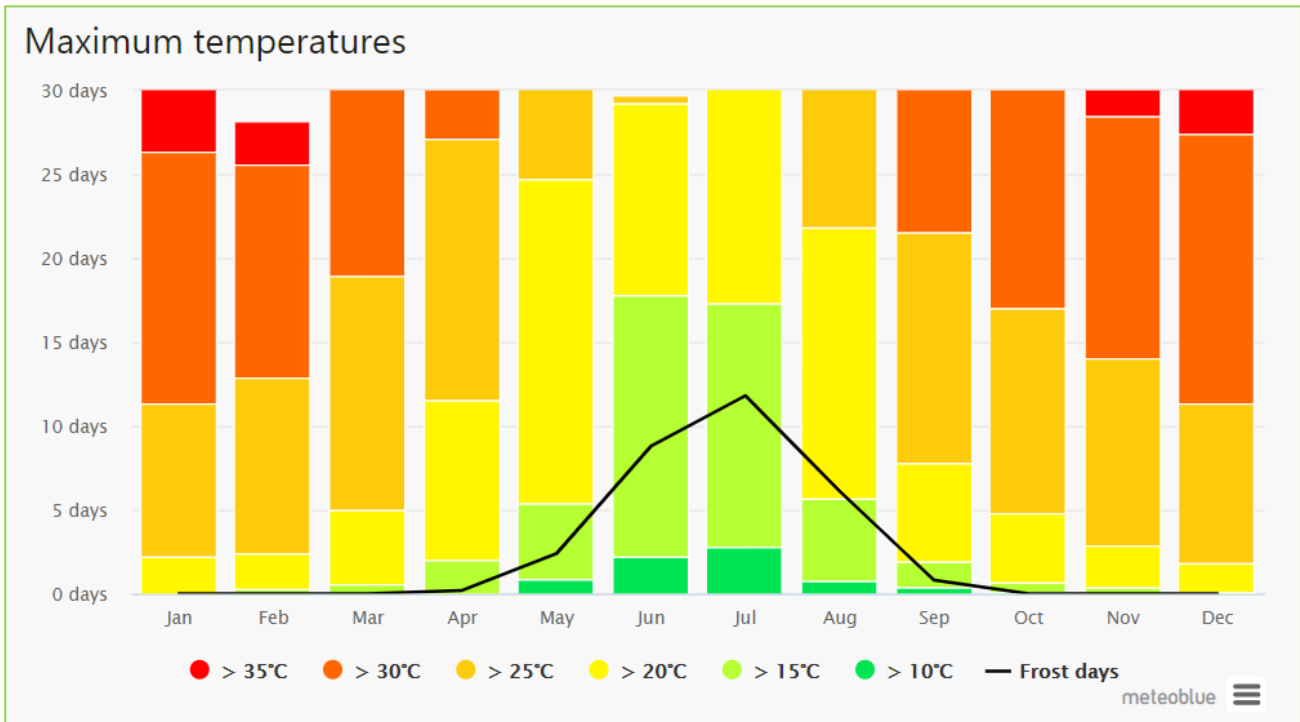


Figure 3-6: Bothaville M Temperature

3.10.4.3 Topography

The average elevation for the study area is roughly 1320 MASL and slopes from the higher southern sections to the slightly lower northern section. Refer to Figure 3-7 for the topography for the prospecting area.

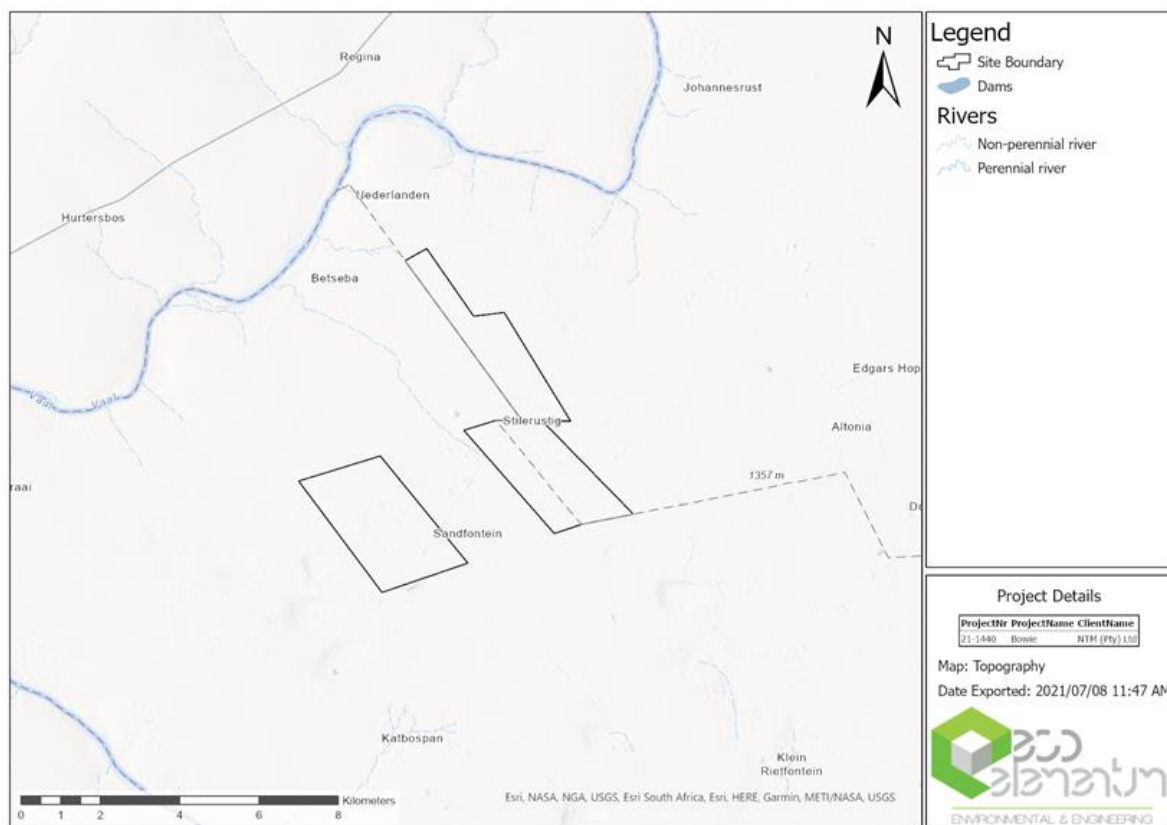


Figure 3-7: Topographical map for the prospecting right



#### 3.10.4.4 Geology

Heavy minerals provide a source of both titanium, which is hosted in the minerals ilmenite and rutile, and zirconium, in the mineral zircon. Other heavy minerals such as magnetite, monazite, garnet, tourmaline and hematite are commonly present but are not processed.

The chromite resources in South Africa are situated within the Bushveld Complex ("BC"), which is an enormous saucer-like ultramafic/mafic intrusion extending for about 400km east to west and roughly the same distance north and south. The ultramafic/mafic rocks of the BC are collectively known as the Rustenburg Layered Suite ("RLS") and have been subdivided, from base to top, into five zones, known as the Marginal, Lower, Critical, Main and Upper Zones. The general sequence and composition of the different zones is shown in Figure 3 and Figure 5. The continuity of the Critical Zone is intermediate between that of the Lower Zone and Main Upper Zones. The Critical Zone is the host to the chromium and Platinum Group Metals ("PGM") mineralisation within the BC in our area of interest. The igneous layering within the Critical Zone is remarkably uniform over much of the BC, with individual layers traceable for tens to hundreds of kilometres. It may be subdivided into lower and upper sections and is made up of cyclic units consisting of chromite, pyroxenite, norite and anorthosite. Cycles in the Lower Critical Zone are entirely ultramafic in character. Cycles in the Upper Critical Zone comprise ultramafic lithologies and also norite-anorthosite.

Chromitite layers occur throughout the Critical Zone, usually, but not always, at the base of crystallisation cycles. The chromitite seams have been classified into lower, middle and upper groups, with the Lower Group occurring in the Lower Critical Zone and the Upper Group in the Upper Critical Zone. The Middle Group chromitite seams straddle the boundary between lower and upper divisions of the Critical Zone. The chromitite seams are named according to their location within the layered succession, with numbers commencing from the bottom up, with the lowermost group being named LG1, followed by LG2, LG3, etc. in the Lower Group (consisting of 7 layers), progressing to MG0, MG1, MG2, etc. in the Middle Group (consisting 4 layers), and then two layers in the Upper Group, UG1 and UG2. The thickness of these chromitite layers ranges from several millimetres to several metres and named chromitite layers may comprise multiple, composite layers of chromitite separated by interlaminated silicate rocks. The thickest chromitite layers, specifically the LG6 and MG1, are mined for their chromite content. The target area of this application is underlain by rocks of the Critical Zone of the BC, consisting of chromitite interlayered with pyroxenite, norite, anorthositic norite, and mottled anorthosite.





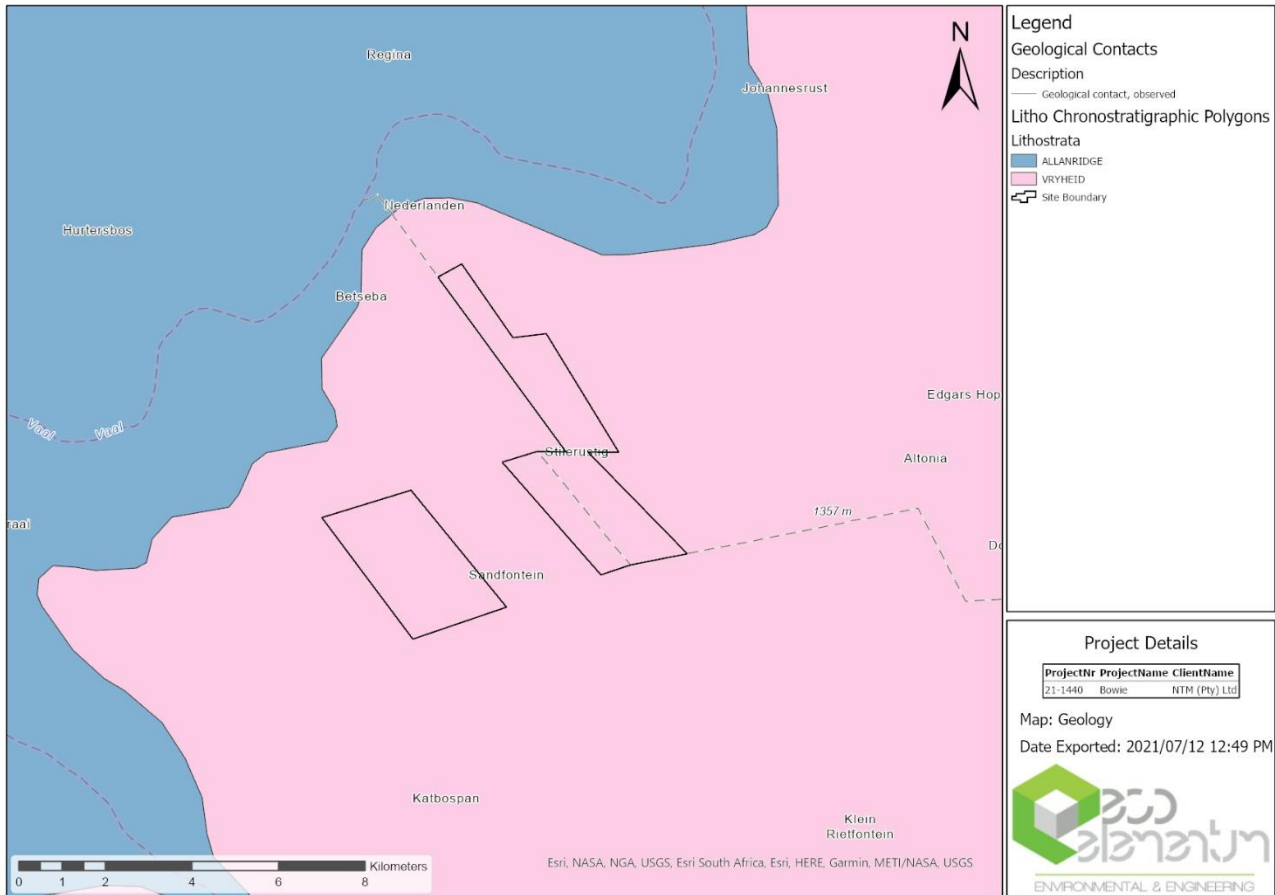


Figure 3-8: Geology of the study area



### 3.10.5 Surface Drainage Features

The study area falls within the C24J Quaternary Catchment in the Middle Vaal Water Management Area. The closest perennial river to the study area is the Vaal River that flows approximately 2.6 km to the northwest and 9 km to the southwest. A non-perennial river, the Sooifonteinleegte, flows 9.2 km to the south while the Bloemhof Dam is located 66 km to the southwest.

### 3.10.6 Flora

In terms of vegetation, the study area falls within the Grassland Biome which is typically associated with summer rainfall regions. This Biome covers approximately 28% of South Africa. According to the vegetation classification by Mucina & Rutherford (2006), the study area falls within the Vaal-Vet Sandy Grassland vegetation unit. This vegetation unit is found in the North West and Free State Provinces. Associated regions include the area south of Lichtenburg and Ventersdorp, stretching further southwards to Klerksdorp, Leeudoringstad, Bothaville and to the Brandford area north of Bloemfontein. Vaal-Vet Sandy Grassland is considered endangered with a conservation target of 24%. About 0.3% is statutorily conserved in the Bloemhof Dam, Schoonspruit, Sandveld, Faan Meintjies, Wolwespruit and Soetdoring Nature Reserves. Cultivation transformed more than 63%, while the rest is under severe pressure from cattle and sheep grazing. Erosion characteristics vary between very low and low. According to Mucina & Rutherford (2006) the average elevation for Vaal-Vet Sandy Grassland varies between 1220 and 1560 MASL (metres above sea level).



### 3.10.7 Heritage Impact Assessment

Twenty-six potential sites were identified on the historical aerial images: Four on the Farm Jacoba 878, one on Portion 1 of the Farm Nederlanden 32, one intersecting Portion 1 of the Farm Nederlanden 32 and Bowie 621, one on the Farm Bowie 621, one on the Remaining Extent of the Farm Rebelfort 288, three on Portion 1 of the Farm Rebelfort 288, four on the Farm Schiedam 124, four on the Farm Stillerustig 548, one intersecting the Farm Stillerustig 548 and Jacoba 878, and six on the Farm Zandfonteinpan 472. A total of 14 sites associated with buildings were noted, as well as two graves, nine as huts and one ruin. The status of the two cemeteries/graves are unknown, while only six sites are associated with intact buildings as observed on contemporary satellite imagery. The remaining 18 sites appear to have been demolished as no surface features were noted on contemporary satellite imagery but might be associated with subsurface culturally significant remains. It is also unknown whether the sites associated with intact buildings have been demolished and replaced by modern buildings. Should any parts of the sites observed on the 1947 topographical map still exist, it would be at least 74 years old and would therefore be protected by the NHRA (National Heritage Resources Act) 25 of 1999. Since the sites identified on the 1997 topographical map might have been constructed between 1947 and 1961, these sites might exceed 60 years of age as well. These sites would therefore also be protected by the NHRA 25 of 1999. The possibility also exists that several other buildings were constructed between 1947 and 1961 but were demolished before 1997 and are therefore not indicated on the topographical maps. Since subsurface culturally significant material might still exist at such sites, they should be considered significant from heritage perspective as well.

Site No	Type	Parent Farm	Farm Portion	Current Status	Estimated Extent (ha)	Lat (y)	Lon (x)
B01	Hut	Nederlanden 32 & Bowie 621	1 & 0	Intact	1.8	-27.144623	26.557006
B02	Building	Jacoba 878	0	Demolished	2.2	-27.162325	26.564781
B03	Hut	Jacoba 878	0	Demolished	1.4	-27.162466	26.563108
B04	Hut	Jacoba 878	0	Demolished	1.3	-27.162867	26.561323
B05	Hut	Stillerustig 548	0	Demolished	2.8	-27.163185	26.557776
B06	Building	Stillerustig 548	0	Intact	1.5	-27.161425	26.556049
B07	Building	Stillerustig 548 & Jacoba 878	0	Demolished	0.9	-27.160503	26.557058
B08	Graves	Stillerustig 548	0	Unknown	0.7	-27.160179	26.554924
B09	Graves	Zandfonteinpan 472	0	Unknown	1.5	-27.187168	26.543780
B10	Ruin	Zandfonteinpan 472	0	Intact	2.9	-27.185596	26.542982
B11	Hut	Zandfonteinpan 472	0	Demolished	2.2	-27.174722	26.533362
B12	Hut	Zandfonteinpan 472	0	Demolished	2.1	-27.176916	26.532710
B13	Building	Rebelfort 288	RE	Intact	1.6	-27.179725	26.529476
B14	Hut	Rebelfort 288	1	Demolished	1.8	-27.184140	26.529226
B15	Building	Rebelfort 288	1	Demolished	0.8	-27.181846	26.526734
B16	Building	Schiedam 124	0	Demolished	4.1	-27.175546	26.518148
B17	Hut	Schiedam 124	0	Demolished	1.2	-27.180583	26.520923
B18	Hut	Schiedam 124	0	Demolished	1.2	-27.182479	26.522112
B19	Building	Schiedam 124	0	Demolished	0.6	-27.181818	26.522039
B20	Building	Nederlanden 32	1	Demolished	1.7	-27.145961	26.553950
B21	Building	Bowie 621	0	Intact	1.6	-27.146254	26.560117
B22	Building	Jacoba 878	0	Demolished	1.7	-27.169356	26.570633
B23	Building	Stillerustig 548	0	Intact	1.4	-27.164964	26.559468
B24	Building	Zandfonteinpan 472	0	Demolished	2.1	-27.187603	26.541539
B25	Building	Zandfonteinpan 472	0	Demolished	0.8	-27.182461	26.534623
B26	Building	Rebelfort 288	1	Demolished	0.7	-27.180880	26.526218



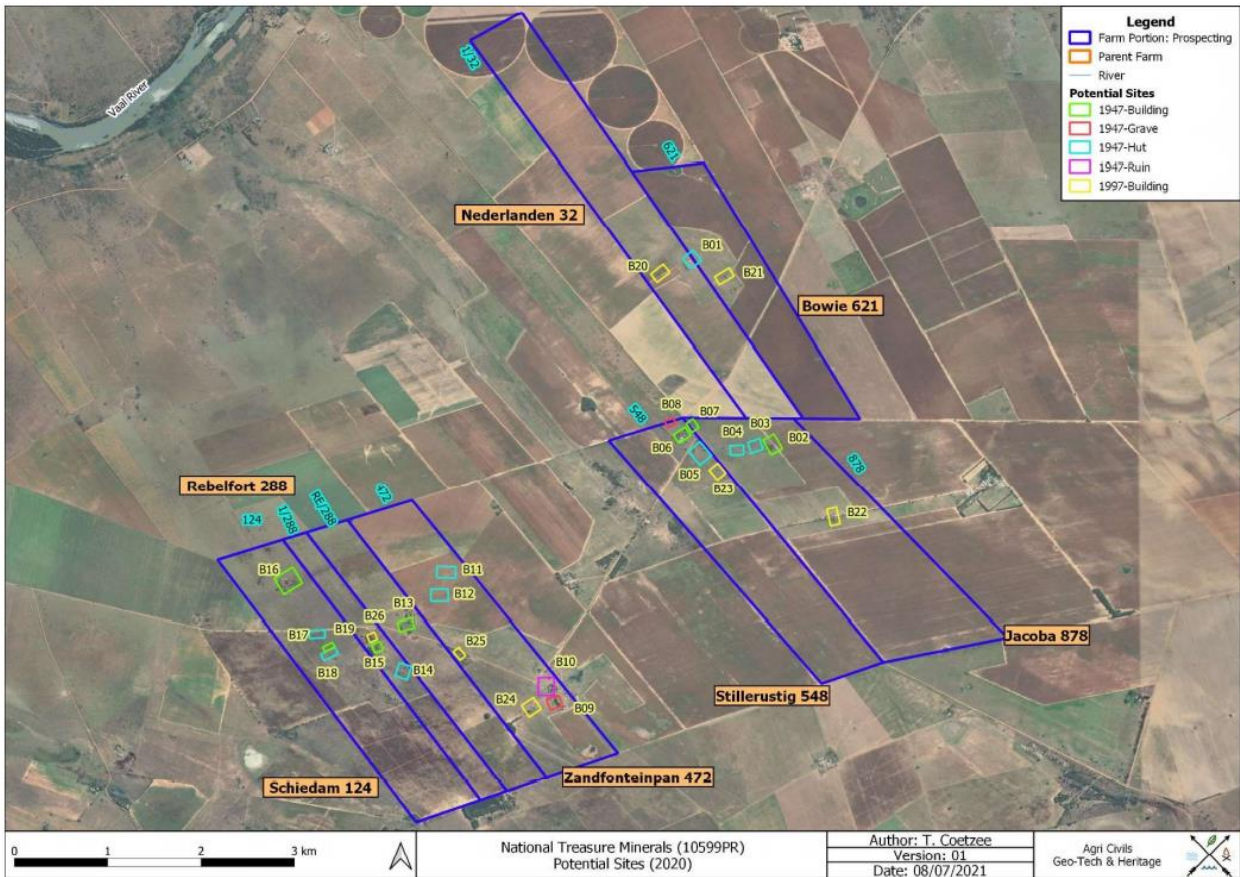


Figure 3-9: Heritage Potential Sites & Sensitive Areas.

### 3.10.8 Noise Assessment

The congestion of different types of vehicles and associated increased noise levels takes place along these roads during the day and to a lesser degree during the night. There are noise sensitive areas such as guest houses, houses, schools, entertainment areas along the road network.

#### The Noise Receiving Environment

The prevailing ambient noise levels along this proposed road vary between built-up areas with high prevailing ambient noise levels to areas where there are low prevailing ambient noise levels because of the rural type district of the area. Certain areas with high levels of ambient noise are located in close proximity to existing roads. The prevailing ambient noise levels are made up out of traffic noise, domestic noise, built-up area noise, industrial type noises and residential type noises. The proposed prospecting right is not a linear type noise source with only high noise levels during work hours and low noise levels night.



### 3.10.9 Social

The proposed Project is located in Nala Local Municipality and the Lejweleputswa District Municipality in the Free State Province of South Africa. The socio-economic characteristics of the population within each of the aforementioned areas are listed below.



Figure 3-10: Lejweleputswa District municipalities

### 3.10.10 Population and Demographics

The population of Lejweleputswa has an annual population growth rate of 1.5% per annum, the district has a population of 634 462 in 2019. This is 22 % of the total population of the Free State Province. In 2019, the district had a total number of 229 267 households with a population density of 20.1 people per square kilometres. According to the Community Survey, there are 862 child headed households and 85 898 (39.4%) women headed households. Based on the present age-gender structure and the present fertility, mortality and migration rates, Lejweleputswa's population is projected to grow at an average annual rate of 0.3% from 634 462 in 2019 to 644 000 in 2024 (Lejweleputswa District Municipality (LDM) Profile and Analysis District Development Model, 2020).

### 3.10.11 Educational Status



According to Community Survey (2016), 68% of young people completed Grade 9 or higher and 37,4% completed matric or higher. However, in 2019, 18 900, people of the population of Lejweleputswa district (aged 15 years and older) had no education, while 83.9% (aged 15 years and older) of the population had completed primary schooling. The number of people without any schooling in Lejweleputswa district municipality accounts for 19.67% of the number of people without schooling in the province and a total share of 0.85% of the national. In 2019, the number of people in Lejweleputswa district municipality with a matric only was 114,000 which is a share of 21.61% of the province's total number of people that has obtained a matric. The number of people with a matric and a post graduate degree constitutes 16.25% of the province and 0.75% of the national proportion. Those aged 15 and above who completed secondary education were 114,000 making up 21.6% of the provincial population with matric. In 2019 the matric pass rate in the district was 87.8%, which is comparable to the rest of the districts in the province. In 2018, the district had a total number of 241 schools in ten circuits (19.8% of the province) and 157 321 learners (22% of the province), an indication of high population density and possible overcrowding in schools (Department of Basic Education, 2017/18 Annual Report). (LDM Profile and Analysis District Development Model, 2020)

### 3.10.12 Employment and Labour

In 2019, Lejweleputswa employed 142 000 people which is 18.26% of the total employment in Free State Province (779 000), 0.87% of total employment in South Africa (16.4 million). Employment within Lejweleputswa decreased annually at an average rate of -1.63% from 2009 to 2019. In Lejweleputswa district municipality the economic sectors that recorded the largest number of employment in 2019 was the trade sector with a total of 28 400 employed people or 20.0% of total employment in the district municipality. The community services sector with a total of 26 400 (18.6%) employs the second highest number of people relative to the rest of the sectors. The electricity sector with 1 320 (0.9%) is the sector that employs the least number of people in Lejweleputswa District Municipality, followed by the transport sector with 5 560 (3.9%) people employed. Employment in Lejweleputswa for both formal and informal sector dropped by 17 720 individuals between 2008 and 2018. This decline was primarily driven by the reduction of employment in the mining and agricultural sectors. In 2019, there were a total number of 137 000 people unemployed in Lejweleputswa, which is an increase of 61 800 from 75 100 in 2009. The total number of unemployed people within Lejweleputswa constitutes 33.17% of the total number of unemployed people in Free State Province. (LDM Profile and Analysis District Development Model, 2020).

#### 3.10.12.1 Social Infrastructure and Services

In the Community Survey (2016), a high number of the households at 76% stay in formal houses which are fully owned and fully paid up, whilst 5% stays in flats in backyard and 1% in apartment. In 2016 (Community Survey, 2016), 95.3% of households were reported to have access to safe drinking water. By 2018, Lejweleputswa District Municipality had a total number of 92 900 (48.66%) households with piped water inside the dwelling, a total of 84 500 (44.25%) households had piped water inside the yard and a total number of 1 870 (0.98%) households had no formal piped water. The municipality within Lejweleputswa district municipality with the highest number of households with piped water inside the dwelling is Matjhabeng local municipality with 74 600 (80.24%). The municipality with the lowest number of households with piped water inside the dwelling is Tokologo local municipality with a total of 1 690 (1.82%) households.

According to the Community Survey, in 2016, 84, 2% of households had access to toilet facilities either flush or chemical toilets. 1,5% had no access to any toilet facilities, 09% had access to pit latrines facilities, 03% were still using bucket toilets whilst 02% were using other unspecified toilet facilities. By 2018, Lejweleputswa district municipality had a total number of 160 000 flush toilets (84.07% of total households), 5 310 Ventilation Improved Pit (VIP) (2.78% of total households) and 13 000 (6.83%) of total households' pit toilets. The municipality within Lejweleputswa with the highest number of flush toilets is Matjhabeng local municipality with 113 000 (70.41%) of the flush toilets. The municipality with the lowest number of flush



toilets is Tokologo local municipality with a total of 2 910 (1.81%) of the total flush toilets within Lejweleputswa district municipality.

In 2018, the IHS Markit indicated that Lejweleputswa district municipality had a total number of 151 000 (79.31%) households which had their refuse removed weekly by the authority, a total of 9 040 (4.74%) households had their refuse removed less often than weekly by the authority and a total number of 18 600 (9.73%) households which had to remove their refuse personally (own dump). The decline can be attributed to the decline in households. The municipality within Lejweleputswa with the highest number of households where the refuse is removed weekly by the authority is Matjhabeng local municipality with 108 000 (71.36%) of the households in Lejweleputswa. The municipality with the lowest number of households where the refuse is removed weekly by the authority is Tokologo Local Municipality with a total of 3 890 or a share of 2.57% of the total households where the refuse is removed weekly by the authority within the district municipality. When looking at the number of households with no formal refuse removal, it can be seen that in 2008 the households with no formal refuse removal in Lejweleputswa District Municipality was 30 300, this increased annually at 0.05% per annum to 30 500 in 2018. The total number of households within Lejweleputswa District Municipality increased at an average annual rate of 0.38% from 2008 to 2018, which is higher than the annual increase of 2.13% in the number of households in South Africa. In 2016 all the municipalities in the district achieved access to electricity of above 85.6%. 79% had in-house prepaid meter, 15% has in-house conventional meter, 4% had no access to electricity, 2% had electricity from other sources not paid for and 1% had electricity from other sources.

By 2018, Lejweleputswa district municipality had a total number of 3 720 (1.95%) households with electricity for lighting only, a total of 175 000 (91.56%) households had electricity for lighting and other purposes and a total number of 12 400 (6.50%) households did not use electricity. (LDM Profile and Analysis District Development Model, 2020).

### 3.10.12.2 Health Services

HIV/AIDS is the leading cause of death for the 25-64 age categories, followed by tuberculosis (15.2%) and lower respiratory infections (14.9%). However, AIDS deaths were falling due to the roll-out of antiretroviral therapy, prevention of mother-to-child transmission, the distribution of condoms and medical male circumcision. In terms of maternal conditions, hypertension in pregnancy (28.0%) and indirect maternal (27.0%) were the leading causes of death for females aged between 15-49. Immunization rate stands at 65% and Maternal Mortality Ratio (per 100 000 live births) is 95.2. Nala local municipality and Matjhabeng local municipality had the highest mortality ratio at 139.1 and 102.8, respectively.

There are 98 310 HIV positive people in the district while teenage pregnancy stands at 10.5% which show an increase from 80 077 individuals in 2008. Between 2010 and 2012, there was a slight decrease in HIV estimates in the district from 80 517 to 79 384 persons. Worryingly, according to Statistics South Africa's 2017 midyear population estimates, the HIV prevalence was severe between women aged 30 to 34 and men aged 35 to 39 years. Matjhabeng local municipality led in HIV prevalence and AIDS deaths, accounting for 60% in the district. In terms of health facilities, there is total of 43 primary healthcare (PHC) facilities. (LDM Profile and Analysis District Development Model, 2020).

### 3.10.13 Description of the current land uses.

Access to the site appears to be through local roads turning from the R502 secondary road. The majority of the study area appears to be cultivated with smaller sections associated with open veldt. These sections are likely to be used for grazing. Residences and outbuildings are evident on several of the farm portions. The study area is predominantly covered by commercial annual crops rain-fed/dryland with scattered natural grassland patches.



3.10.13.1 Environmental and current land use map.

(Show all environmental and current land use features)

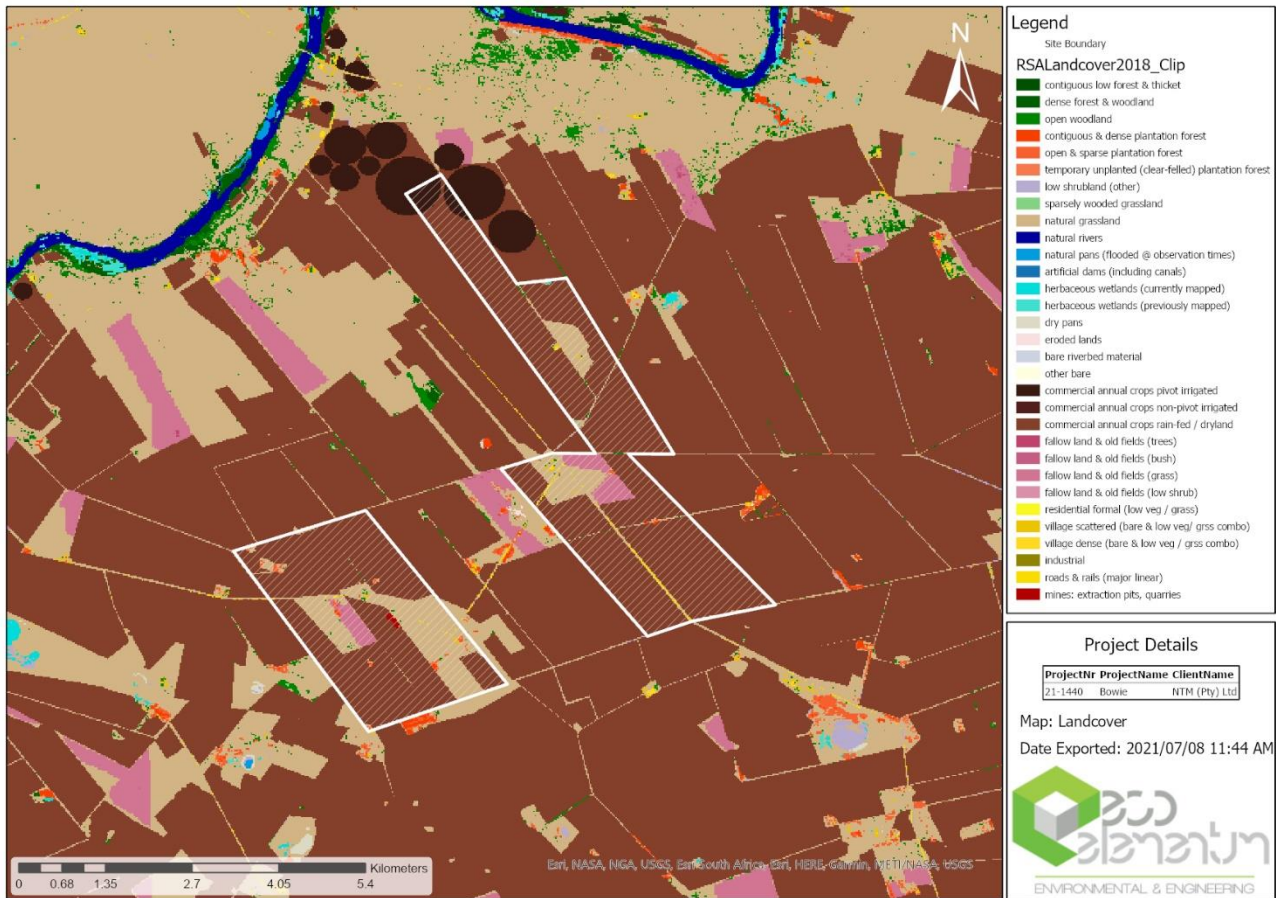


Figure 3-11: Landcover





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

Table 3-5: Impact Assessment Table with Mitigation measures

ASSESSMENT OF IMPACTS AND MITIGATION MEASURES					POTENTIAL IMPACTS (without mitigation)	RESIDUAL IMPACTS (with mitigation)
Activity	Potential impact	Affected Aspects	Phase	Mitigation Measures / Enhancement Measures	Significance (Consequence + Probability)	Significance (Consequence + Probability)
<b>Topography</b>						
Levelling of drilling sites.	Change in natural topography of the site.	Topography	Construction	Stockpile soils removed for rehabilitation. Rehabilitate to original landform.	Neg Low	Neg Low
<b>Geology</b>						
Removal of geological core.	Creation of conduits between geological strata.	Geology	Operations	Boreholes to be sealed with concrete.	Neg Low	Neg Low
<b>Soils</b>						
Erosion from soil disturbance at drilling sites.	Potential loss of topsoil.	Soils	Operations	Keep the footprint of disturbance as small as practicably possible. Vegetation to be left in place to protect soils where possible. Where vegetation clearance cannot be avoided, storm water management measures to be put in place if there is a risk of soil erosion. Erosion protection where cut and fill and levelling of the drill site occurred.	Neg Low	Neg Low
Erosion from soil disturbance on access roads.	Potential loss of soil resource.	Soils	Construction & Operation	Utilise existing access roads as far as possible. Keep the footprint of disturbance as small as practicably possible. Access	Neg Low	Neg Low



ASSESSMENT OF IMPACTS AND MITIGATION MEASURES					POTENTIAL IMPACTS (without mitigation)	RESIDUAL IMPACTS (with mitigation)
Activity	Potential impact	Affected Aspects	Phase	Mitigation Measures / Enhancement Measures	Significance (Consequence + Probability)	Significance (Consequence + Probability)
				roads to follow slope contours where possible. Vegetation to be left in place at sides of the road to protect the soils.		
Oil and diesel spills due to inappropriate storage, vehicle maintenance and washing operations.	Risk of soil contamination.	Soils	Construction, Operation and Closure	Impermeable liners or surfaces to be provided in areas where hydrocarbons are managed. Diesel storage areas to be bunded and regularly checked. Drip trays to be used when any vehicle maintenance is undertaken. Spill kits to be available at drill sites.	Neg Low	Neg Low
<b>Hydrology (Surface Water)</b>						
Spillage from fuels, oils and lubricants.	Contamination of surface water.	Surface Water	Construction, Operation and Closure	Implement measures to protect soils from pollution. Boreholes to be outside of the 1 in 50-year flood line or 100 m from the edge of a watercourse, whichever is greater.	Neg Low	Neg Low
Increase in sediment loads as a result of erosion and heavy rainfall.		Surface Water	Construction, Operation and Closure	Implement measures for soil erosion control in accordance with risk assessment. Boreholes to be outside of the 1 in 50-year flood line or 100 m from the edge of a watercourse, whichever is greater.	Neg Low	Neg Low



ASSESSMENT OF IMPACTS AND MITIGATION MEASURES					POTENTIAL IMPACTS (without mitigation)	RESIDUAL IMPACTS (with mitigation)
Activity	Potential impact	Affected Aspects	Phase	Mitigation Measures / Enhancement Measures	Significance (Consequence + Probability)	Significance (Consequence + Probability)
General and Human Waste.		Surface Water	Construction, Operation and Closure	Contractors may only use designated toilets and waste disposal facilities.	Neg Low	Neg Low
<b>Hydrogeology (Groundwater)</b>						
Seepage of fuels, oils and lubricants.	Contamination of groundwater.	Groundwater	Construction, Operation and Closure.	Implement measures to protect soils from pollution. Boreholes to be outside of the 1 in 50 year flood line or 100 m from the edge of a watercourse, whichever is greater.	Neg Low	Neg Low
Cross contamination of aquifers due to borehole construction.		Groundwater	Operation and Closure.	Boreholes that will not be used again will be backfilled with cement and sealed.	Neg Low	Neg Low
<b>Noise</b>						
Machinery and drilling operations. Movement of vehicles.	Increase in ambient noise levels. Disturbance to people and animals.	Noise	Construction, Operation and Closure.	Avoid travelling past residences. Speed limit of 40 km/h will be enforced. Liaise with landowner on areas sensitive to noise. Provide a buffer of 100 m from households. Drilling to take place during daylight hours. Borehole site and access route selection to give cognisance to the location of noise	Neg Moderate	Neg Low



ASSESSMENT OF IMPACTS AND MITIGATION MEASURES					POTENTIAL IMPACTS (without mitigation)	RESIDUAL IMPACTS (with mitigation)
Activity	Potential impact	Affected Aspects	Phase	Mitigation Measures / Enhancement Measures	Significance (Consequence + Probability)	Significance (Consequence + Probability)
				receptors and efforts must be taken to minimise such disturbance.		



Air Quality						
Exhaust fumes from vehicles and machinery related to prospecting activities.	Release of gaseous emissions.	Air Quality	Construction, Operation and Closure	No unnecessary revving of vehicles should take place. No vehicles must stand idling when not in use.	Neg Low	Neg Low
Vehicles travelling on gravel roads.	Dust fallout and fine particulate matter emissions.	Air Quality	Construction, Operation and Closure	Restrict traveling speed of vehicles to reduce vehicle entrainment of dust. Wet gravel roads if dust is found to be excessive.	Neg Low	Neg Low
Land use and Land Capability						
Intrusion due to drilling and prospecting activities in an area where agricultural land uses are prominent.	Land use conflict	Land use	Construction & Operation	Drilling sites must be selected to minimise disturbance of current land use. Relevant agreements must be in place with land owners to define location and extent of drilling sites and rehabilitation measures that will be undertaken at the end of drilling.	Neg Moderate	Neg Low
Land clearing and transformation.	Reduction in land capability	Land use	Construction		Neg Low	Neg Low
Fauna, Flora and Ecology						
Establishment of drilling sites and access routes.		Fauna, Flora and avifaunal.	Construction	Site selection aimed at minimising disturbance to natural vegetation.	Neg Moderate	Neg Moderate
Accidental fires.	Removal / damage of natural vegetation	Fauna, Flora and avifaunal	Construction, Operation and Closure	<ul style="list-style-type: none"> <li>- No smoking at drilling sites.</li> <li>- Code of conduct to include measures for the prevention of fires.</li> <li>- Emergency equipment and procedures for firefighting to be in place.</li> <li>- Adhere to emergency procedures.</li> </ul>	Neg Moderate	Neg Moderate



Establishment of drilling sites and access routes.		Fauna, Flora and avifaunal	Construction	Site selection aimed at minimising disturbance to sensitive animal habitats and breeding areas.	Neg Moderate	Neg Moderate
Movement of drilling contractors.	Disturbance/ poaching of animals.	Fauna, Flora and avifaunal	Construction, Operation and Closure	Drilling contractors are only allowed to move within the designated drilling area. Environmental awareness training should include poaching and disturbance of animals.	Neg Moderate	Neg Moderate
<b>Sensitive and Protected Areas</b>						
Establishment of drilling sites and access routes.	Degradation and destruction of sensitive biodiversity- Suitable habitat for the globally threatened red data avifaunal species.	Biodiversity	Construction, Operation and Closure	Site selection by environmental scientists, detailed avifaunal surveys as well as detailed sensitive habitat mapping will have to be conducted for any potential development in the region.	Neg Moderate	Neg Moderate
<b>Heritage Resources</b>						
Drilling of boreholes will damage / destroy heritage resources in the area.	Cultural heritage resources may be found within the study area.	Heritage Resources	Construction and Operation	Site selection by environmental scientists are aimed at minimising disturbance to natural vegetation once positions have been finalised.	Neg Moderate	Neg Low
<b>Economic Development</b>						
Employment and use of contractors and purchasing goods.	Contribution to the economy.	Economic Development	Construction and Operation	Preference to be given to the use of local employment, contractors and local suppliers.	Pos Low	Pos Moderate



Dust and noise from prospecting activities.	Creation of nuisance and disturbance to surrounding activities.	Economic Development	Construction, Operation and Closure	Implement measures to minimise air quality and noise impacts. Surrounding neighbours and land owners must be allowed to raise issues and complaints associated with prospecting activities. Their issues must be addressed promptly.	Neg Low	Neg Low
<b>Visual and Sense of Place</b>						
Visual intrusion due to drilling and prospecting activities.	Loss of sense of place due to prospecting activities.	Visual and Sense of Place	Construction and Operation	Implement measures to reduce the visual impacts of prospecting activities, i.e. rehabilitation of drill sites and access roads.	Neg Moderate	Neg Low
<b>Safety and Security</b>						
Movement of drilling contractors and influx of workers.	Increase in crime.	Safety and Security.	Construction and Operation.	<ul style="list-style-type: none"> <li>- Drilling contractors not allowed moving outside of designated areas.</li> <li>- Access of personnel related to the prospecting operations will only be allowed on approval by the project manager.</li> <li>- All personnel that have access to the property will be provided with access cards.</li> <li>- All personnel that have access to the property needs to be made visible.</li> </ul>	Neg Moderate	Neg Low
Overnight accommodation of drilling contractors.		Safety and Security.	Construction, Operation and Closure.	Drilling contractors to be housed off the drilling property.	Neg Moderate	Neg Low
<b>Stakeholder Acceptability</b>						
Prospecting activities is a predecessor to mining.	Prospecting on private property.	Stakeholder Acceptability.	Construction, Operation and Closure.	Comply with the MPRDA & NEMA Implement and Comply with the EMP.	Neg Moderate	Neg Low



<p>Prospecting activities is a predecessor to mining.</p>	<p>Prospecting seen as a predecessor to mining and this raises a risk to various environmental impacts.</p>	<p>Stakeholder Acceptability.</p>	<p>Construction, Operation and Closure</p>	<p>An application for a mining right will require a separate public participation process and IAP's will be provided with the opportunity to raise their concerns.</p>	<p>Neg Moderate</p>	<p>Neg Moderate</p>
---	---	-----------------------------------	--	--	---------------------	---------------------





### 3.10.15 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 in order to decide the extent to which the initial site layout needs revision).

#### **Criteria of assigning significance to potential impacts**

The identification and assessment of environmental impacts is a multi-faceted process, using a combination of quantitative and qualitative descriptions and evaluations. It involves applying scientific measurements and professional judgement to determine the significance of environmental impacts associated with the proposed project. The process involves consideration of, inter alia: the purpose and need for the project; views and concerns of interested and affected parties; social and political norms, and general public interest.

The methodology used for assessing impacts associated with the proposed project follows the philosophy of environmental impact assessments, as described in the booklet Impact Significance, Integrated Environmental Management Information Series 5 (DEAT, 2002b). The philosophy is summarised by the following extracts:

- a. The impact magnitude [or intensity] and significance should as far as possible be determined by reference to legal requirements, accepted scientific standards or social acceptability. If no legislation or scientific standards are available, the EIA practitioner can evaluate impact magnitude based on clearly described criteria. Except for the exceeding of standards set by law or scientific knowledge, the description of significance is largely judgemental, subjective and variable. However, generic criteria can be used systematically to identify, predict, evaluate and determine the significance of impacts (DEAT, 2002b).
- b. Determining significance [of impacts] is ultimately a judgement call. Judgemental factors can be applied rigorously and consistently by displaying information related to an issue in a standard worksheet format (Haug et al., 1984 taken from DEAT, 2002b).

The criteria and systematic approach to identify, describe and assess impacts are outlined below.

#### **Impact Ranking Criteria**

The criteria used for assessing the significance of the impacts are given in Table 3-6. Cognisance was given to both positive and negative impacts that could result from prospecting.

Although the criteria used for the assessment of impacts attempts to quantify the significance, it is important to note that the assessment is generally a qualitative process and therefore the application of these criteria is open to interpretation. The assessment thus largely relies on the experience of the EAP and the information provided by specialists appointed to undertake studies for the EIA.

Where the consequence of an event is not known or cannot be determined, the precautionary principle is adhered to and the worst-case scenario assumed. Where possible, mitigation measures to reduce the significance of negative impacts and to enhance positive impacts are recommended. The detailed actions, which are required to ensure that mitigation is successful, will be given in the EMPr which will form part of the BA report.

Consideration will be given to the phase of the project during which the impact occurs. This identification of the phase is provided to assist with the schedule for the implementation of the management measure.





Rating Criteria and Symbol / Short Description		Qualitative Description / Explanation of Rating Criteria			
Environmental Impact Description		Description of the direct and indirect effect of human actions and project activities on the environment			
Mitigation Enhancement Measures	Measures	Measures designed to avoid, reduce or remedy adverse potential negative impacts. Includes measures to compensate for residual impacts. Measures designed to expand and augment the effect of potential positive impacts.			
Project Phase	Planning	Activities, impacts and mitigation measures applicable to the planning (or pre-implementation) phase.			
	Construction	Activities, impacts and mitigation measures applicable to the construction phase.			
	Operational	Activities, impacts and mitigation measures applicable to the operational (invasive prospecting) phase.			
	Rehabilitation and Closure	Activities, impacts and mitigation measures applicable to rehabilitation and closure (includes progressive rehabilitation over time leading up to and including rehabilitation at the end of the life of the project). For this project it also covers activities, impacts and mitigation measures applicable to post-closure.			
Impact Status	Post Closure	Activities, impacts and mitigation measures that would be present after closure. For this project, due to the long life of the project, these are addressed under the Rehabilitation and Closure phase.			
	Negative	Impacts with a potential negative / adverse effect.			
	Neutral	Neutral, no impact.			
Consequence (Severity + Scale)	Severity (Intensity + Duration + Frequency)	Intensity (Negative Impacts)	1	low	Slight change, disturbance or nuisance. Targets, limits and thresholds of concern never exceeded. Impacts are rapidly and easily reversible. Require no or only minor interventions or clean-up actions. No complaints expected when the impact takes place.
			2	moderate	Moderate change, disturbance or discomfort. Real but not substantial. Targets, limits and thresholds of concern may occasionally be exceeded. Impacts are reversible but may require some effort, cost and time. Sporadic complaints can be expected when the impact takes place.
			3	high	Prominent change, disturbance or degradation. Real and substantial. May result in illness or injury. Targets, limits and thresholds of concern regularly exceeded. Regular complaints can be expected when the impact takes place.
			4	very high	Severe change, disturbance or degradation. May result in illness, injury or death. Targets, limits and thresholds of concern continually exceeded. Interest group / community mobilisation against project can be expected when the impact takes place. May result in legal action if impact occurs.
	Intensity (Positive Impacts)	1	low	Slight change or improvement. Minor benefits.	
		2	moderate	Moderate change or improvement. Real but not substantial benefits.	
		3	high	Prominent change or improvement. Real and substantial benefits. General community support.	
		4	very high	Considerable and large-scale change or improvement. Real and considerable benefit. Widespread support.	
Rating Criteria and Symbol / Short Description		Qualitative Description / Explanation of Rating Criteria			
Assessment Confidence	Pos Very High	Widespread support. May be associated with extremely high community expectations.			
	Diverse Low	Minor interest. Some support. Some concerns.			
	Diverse Moderate	Limited interest. Some support. Some concerns.			
	Diverse High	General interest. Some support. Some concerns.			
	Diverse Very High	Widespread interest. Some support. Some concerns.			
Impact Rating Methodology	Complete	No information gaps exist. Decision-making can go ahead.			
	Adequate	Minor information deficiencies exist but this does not affect decision-making. Decision-making can still go ahead.			
	Incomplete	Not enough information for decision-making. Current data to be supplemented with further monitoring or research.			
Impact Rating Methodology	Weighting	Formula	Example	Rating Criteria	
	1.0	I	1.0	Intensity (I)	
	1.0	D	1.0	Duration (D)	
	1.0	F	1.0	Frequency (F)	
	1.0	S=(I+D+F)/3	1.0	Severity (S)(Intensity + Duration + Frequency)	
	1.0	E	4.0	Scale (Extent) (E)	
	1.0	C=(S+E)/2	2.5	Consequence (Severity + Extent) (C)	
	0.5	P	3.0	Probability (P) WEIGHING OF 0.5 USED TO INCREASE THE CONSERVANCY OF THE ASSESSMENT	
		S1=(C+P)/2	2.7	Significance (S1) (Consequence + Probability)	
		W	0.0	Precautionary Weighting (W)	
Impact Rating		S2=(S+W)	2.7	Significance with Precautionary Weighting (S2)	
	Formula	Level	Level		
	<=	-3.6	Neg Very High		
	<=	-3.0	Neg High		
	<=	-2.0	Neg Moderate		
	<	0.0	Neg Low		
	>	0.0	Pos Low		
	>=	2.0	Pos Moderate		
>=	3.0	Pos High			
>=	3.6	Pos Very High			

3.10.16 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.

**The following key concerns have been identified:**

- It is expected that primary vegetation will be present in the study area, with habitat assumed suitable for several red-data species.
- Further, the overall ecological state of all areas currently delineated as CBA or ESA, in addition to that of primary vegetation, will need to be verified. Even modified areas, currently seen as ESAs, may be very important as habitat itself or to maintain downstream CBA habitat and species therein.



### 3.10.17 Possible Mitigation Measure that could be applied and the level of risk

Refer to Section 3.10.14 and Table 3-5.

**The following mitigation can be implemented for sections of the proposed properties falling within the important areas. The following environmental management / mitigation plans can be followed if requested:**

- Drill site selection must be aimed at minimising disturbance to natural vegetation.
- The site selection should be overseen by environmental scientists. Due to the sensitivity of the area detailed avifaunal surveys as well as detailed sensitive habitat mapping should be conducted before any potential development in the region occurs.
- No-go areas are to be identified where habits are considered to be sensitive.
- Environmental awareness training is to be given to all employees responsible for drilling.
- In order to minimise the impact of drilling activities on surface water a 100-meter buffer was allocated for each stream, river and wetlands.
- The drill sites are still located within the community land but agreement or compensation will need to be sought should the specific site be developed.
- The drilling sites themselves will be provided with safety netting, fencing and signage to ensure no person or animal can access these site.
- Workers and operators will not be housed on site. In addition, rehabilitation objectives will include ensuring that the site is safe.

### 3.10.18 Motivation where no alternative sites were considered.

No Alternative drill site locations were considered during the study. The project location was however bound to the current location due to the underlying geology. The prospecting right is dependent on the area chosen being susceptible to possible mineral deposits and therefore no alternative site could be considered.

### 3.10.19 Statement motivating the alternative development location within the overall site.

The final layout for the drilling can only be completed once the non-invasive aerial geological surveys have been completed. Invasive prospecting (drilling) will avoid servitudes, suitable habitat for the Globally threatened Red Data avifaunal species, wetlands and 100 m buffer zones, rivers and 100 m buffer zones / 1:100-year flood lines (whichever is greatest), and 50 m buffer zones from potential historical sites, graves and identified protected plants. A detailed terrestrial ecological assessment will be required when the drilling locations are identified and before any construction or operations may occur. Drill site locations are not fixed and need approval by an environmental control officer before drilling. The ECO will, as a minimum, consider:

- The Protected Environment.
- Plant and animal (avi faunal) sensitivity.
- Current land use.
- Servitudes.
- Sensitive features such as households.
- Heritage sites (including graveyards).

### 3.11 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.

Eco Elementum (Pty) Ltd | Office number: 012 807 0383 | Website: www.ecoe.co.za | Email: info@ecoe.co.za



(Including (i) a description of all environmental issues and risks that are 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.)

The same impact ranking criteria and methodology was employed as discussed in Section 3.10.15 of this report.

---

### 3.12 ASSESSMENT OF EACH IDENTIFIED POTENTIALLY SIGNIFICANT IMPACT AND RISK

Refer to Section 3.10.14 and Table 3-5.



3.13 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):-

Table 3-7: Summary of Specialist Reports

List of Studies Undertaken	Recommendations of Specialist Reports	Recommendations that Have Been Included in the EIA Report	Reference to Section of Report
<p><b>Archaeological Desktop study</b></p>	<p>The following recommendations are made in order to avoid the destruction of heritage remains within the area demarcated for prospecting:</p> <ul style="list-style-type: none"> <li>- Although the demolished sites (Table 2 – Heritage Report) appear not to be associated with surface remains, subsurface. culturally significant material might be present. Therefore, it is recommended that these sites be avoided by the proposed prospecting activities. Should this not be possible, a qualified archaeologist should be present on-site during prospecting in order to limit potential impact on heritage resources.</li> <li>- The intact sites (Table 2 – Heritage Report) might be of cultural significance as the possibility exists that the associated buildings and structures exceed 60 years of age. It is therefore recommended that these areas be avoided by the proposed prospecting activities. Should this not be possible, a qualified archaeologist should be present on-site during prospecting in order to limit potential impact on heritage resources.</li> <li>- The areas associated with graves (B08 &amp; B09) should be avoided by the proposed prospecting activities.</li> <li>- It is advised that a qualified archaeologist be contacted whenever uncertainty regarding potential heritage remains are encountered.</li> <li>- Prospecting should not take place in the vicinity of stone cairns, potential burial sites, stone-walling, building ruins or any other heritage material or structures.</li> <li>- Should the prospecting outcome result in further development or construction, a full Phase 1.</li> <li>- Archaeological Impact Assessment must be conducted on the affected area if triggered. Also, a full Phase 1 AIA must be done should the cumulative impact of the proposed prospecting exceed 0.5 ha.</li> </ul>	<p>X</p>	<p>This table, Section 3.10.4 and Section 3.10.14</p>



List of Studies Undertaken	Recommendations of Specialist Reports	Recommendations that Have Been Included in the EIA Report	Reference to Section of Report
	<ul style="list-style-type: none"> <li>- Because archaeological artefacts generally occur below surface, the possibility exists that culturally significant material may be exposed during the prospecting phase, in which case all activities must be suspended pending further archaeological investigations by a qualified archaeologist. Also, should skeletal remains be exposed, all activities must be suspended and the relevant heritage resources authority contacted (See National Heritage Resources Act, 25 of 1999 section 36 (6)).</li> </ul>		
<p><b>Ecological Desktop Study</b></p>	<p>The following findings and recommendations can be made:</p> <ul style="list-style-type: none"> <li>- Although more than half of the study area has been modified by cultivation, all remaining primary vegetation should be considered of at least medium sensitivity due to the original vegetation type being listed as Endangered, and the potential for at least protected plants being present. This should be verified and investigated further with on-site studies.</li> <li>- At the very least, a protected species walkthrough survey should be conducted of all prospecting footprints prior to disturbance, to ensure all protected plants or sensitive animals are relocated prior to groundworks taking place.</li> <li>- A wetland delineation and aquatic habitat study is highly recommended to be undertaken.</li> <li>- It is anticipated that due to historical disturbance levels, alien invasive plant species will be present on all sites. The client should familiarize themselves with alien invasives (or have the provisional list provided verified/complemented by a field survey) and ensure control and no further spread.</li> </ul> <p>From an ecological perspective, prospecting could proceed on cultivated/modified areas, but not on remaining primary or even other natural areas until the above specialist studies have been carried out or at least a pre-prospecting walk-through survey of protected plants has been conducted</p>	<p>X</p>	<p>This table, Section 3.10.4 and Section 3.10.14</p>



3.14 ENVIRONMENTAL IMPACT STATEMENT

3.14.1 Summary of the key findings of the environmental impact assessment;

The most significant impacts after mitigation and with a cumulative medium to high significance are:

Table 3-8: Summary of key findings

IMPACT	SIGNIFICANCE WITHOUT MITIGATION	SIGNIFICANCE WITH MITIGATION	COMMENT	MITIGATION
Negatively affecting the Ecological Support Areas (ESAs)	High	Moderate	According to the Critical Biodiversity Areas datasets provided by SANBI (2021), the majority of the prospecting area falls within a critical biodiversity area 1 as well as an ecological support area 2.	A thorough faunal survey should thus be undertaken, including downstream habitats, prior to prospecting and potential mining being initiated in the area and before drilling can commence – identification of boreholes.
Negatively affecting sensitive bird species and the biodiversity in the area.	Moderate	Negative Low	The Animal Demographic Unit (ADU, 2021) listed several indigenous species of fauna that had been recorded within the Half Degree Grid 2726B since 2000. Threatened species (with threat status updated according to IUCN 2021-1) listed by ADU as having been observed within the above halfdegree grid, or for which possible suitable habitat exists within a 5 km radius of the study areas, are listed below. Apart from those listed, a greater diversity of fauna is expected to be resident on or frequent the study areas, especially due to the presence of rivers.	At this stage it is recommended that prior to prospecting activities taking place, and possibly on a daily basis, the prospecting footprint be investigated for burrows of fauna that could be still occupied, to allow the relocation of such fauna. Most of the indigenous fauna is expected to be resident or sheltering in closer proximity to the large rivers in the area (thus outside the prospecting footprint), wetlands, stands of trees or shrubs, or remnant primary or secondary vegetation
Negatively affecting the Heritage sites.	Moderate	Negative Low	As can be seen from previous research done in the area, the general region is significant from a heritage perspective. Heritage sites are likely to include MSA/LSA material, cemeteries/burial sites and historical structures. Since heritage sites, such as burial sites, are not always clearly	Prior to any development, a Notice of Intent to Develop (NID) process must be followed, after which the Provincial Heritage Resources Authority (PHRA) will request the required heritage studies.





IMPACT	SIGNIFICANCE WITHOUT MITIGATION	SIGNIFICANCE WITH MITIGATION	COMMENT	MITIGATION
			identifiable due to disturbed/removed surface features, care must be exercised when prospecting.	
<b>Negatively affecting the surface water quality.</b>	Moderate	Negative Low	The closest perennial river to the study area is the Vaal River that flows approximately 2.6 km to the northwest and 9 km to the southwest. A non-perennial river, the Sooifonteinleegte, flows 9.2 km to the south while the Bloemhof Dam is located 66 km to the southwest.	<ul style="list-style-type: none"> <li>Avoidance of any channel and sensitive areas is highly recommended for the prospection activities.</li> <li>Water will be recycled as far as possible using a closed loop sump system.</li> </ul>
<b>Conflicting land uses (agriculture and prospecting).</b>	High	Negative Low	Annual crop cultivation with planted pastures rotation.	<ul style="list-style-type: none"> <li>Prospecting will be planned to take place outside of farming activities where possible.</li> <li>where not possible compensation will be discussed and agreed with the affected party.</li> <li>rehabilitation will consider further use of the land.</li> </ul>

The nature of prospecting involves invasive drilling of sites not exceeding 64 m<sup>2</sup>. The drill sites are not fixed and can be relocated by 1-50 meters. Due to the flexibility of the drill sites and small size the key mitigation is to approve each site on environmental factors by a competent environmental officer. Each active site will be rehabilitated to its natural status before sampling. The success of the proposed mitigation is high.

### 3.14.2 Final Site Map

Provide a map at an appropriate scale which superimposes the proposed overall activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers. Attach as Appendix 3.



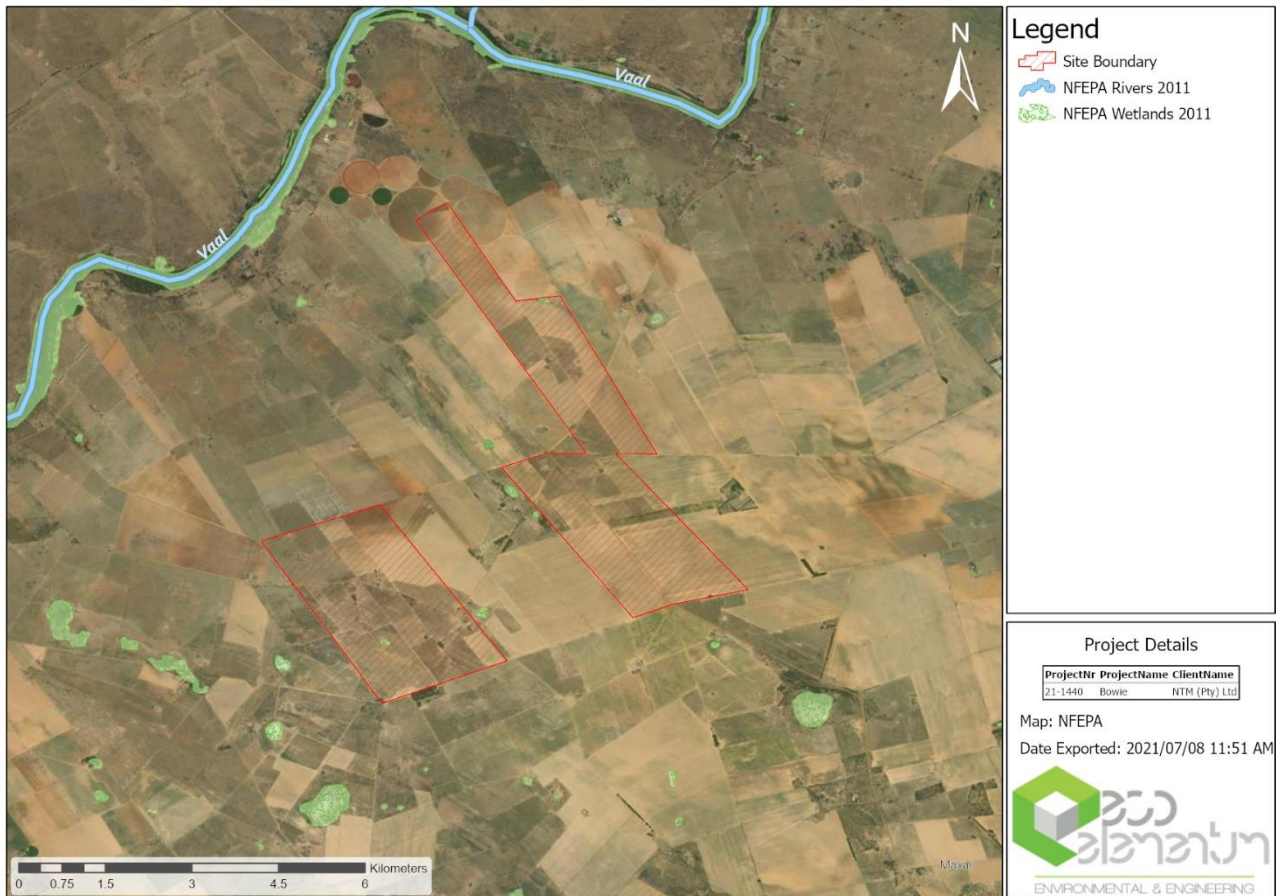


Figure 3-12: Site sensitivities.

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

Table 3-9: Positive and Negative Impacts / Risks of Proposed Activity

Description	Advantages	Disadvantages
<b>Prospecting drilling</b>	<ul style="list-style-type: none"> <li>- Drilling sites must be selected to minimise disturbance of current land use.</li> </ul>	<ul style="list-style-type: none"> <li>- Vegetation and topsoil excavated during the drilling</li> <li>- Intrusion due to drilling and prospecting activities in an area where agricultural land uses are prominent.</li> </ul>
<b>No-go alternative</b>	<ul style="list-style-type: none"> <li>- No activity is to occur within 100 m of any road servitude, wetlands and their 100 m buffer zones, within rivers and their 100 m buffer zone / 1:100-year flood line without the necessary authorisation under NEMA and NWA.</li> <li>- Heritage sites and 50 m buffer zones will be preserved at all times unless the necessary permits are obtained under SAHRA.</li> </ul>	<ul style="list-style-type: none"> <li>- These boreholes and its associated activities will impact on a surface area of between 250 and 625 m<sup>2</sup>.</li> </ul>



The risks of the project have potentially negative impacts on the ecological support area and increased urban sprawl into rural areas.

Positive impact is associated with the brief creation of jobs and is considered of moderate to low significance. This has been assessed in terms of the prospecting operation on its own; however, should this prospecting right be converted into a MR then the social benefits will be of moderate to high significance.

### 3.15 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 impact mitigation and management are to:

- Primarily pre-empt impacts and prevent the realisation of these impacts - PREVENTION.
- To ensure activities that are expected to impact on the environment are undertaken and controlled in such a way so as to minimise their impacts – MODIFY and/or CONTROL.
- To ensure a system is in place for treating and/or rectifying any significant impacts that will occur due to the proposed activity – REMEDY.
- Implement an adequate monitoring programme to:
  - Ensure that mitigation and management measure are effective.
  - Allow quick detection of potential impacts, which in turn will allow for quick response to issue/impacts.
  - Reduce duration of any potential negative impacts.

#### Environmental impact management outcomes are:

- Conduct prospecting activities responsibly and ensure operation is compliant with legislative requirements.
- Protect the biophysical environment as far as possible, specifically wetlands and riverine areas and any protected species observed on site.
- Protect the water resources in the area as far as possible.
- Ensure atmospheric pollution is kept to a minimum.
- Ensure adequate rehabilitation to allow continued grazing land use.
- Ensure socially responsible activities.
- Protect historical and cultural sites if they are observed on site.

### 3.16 ASPECTS FOR INCLUSION AS CONDITIONS OF AUTHORISATION.

- The Heritage Free State NID process must be followed prior to any development. Following the NID process, the Provincial Heritage Authority will request the required heritage studies.
- Heritage sites and 50 m buffer zones will be preserved at all times unless the necessary permits are obtained under SAHRA.
- No activity is to occur within 100 m of any road servitude, wetlands and their 100 m buffer zones, within rivers and their 100 m buffer zone / 1:100-year flood line without the necessary authorisation under NEMA and NWA.
- Planning before carrying out prospecting activities in a particular area, and surveying the area before conducting invasive prospecting, is critical to ensure the sensitive areas are preserved and to ensure prospecting proceeds in a manner compliant with national legislation.



- Rehabilitation must be applied on an on-going basis and no sites must be left exposed for more time than necessary to obtain the necessary data. All areas disturbed during the drilling process must be rehabilitated to previous land use capability.

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

At this stage the exact locations of the invasive prospecting are unknown due to the fact that the locations will be dependent on the findings of the non-invasive techniques. This is not seen as a major gap as the lack of this knowledge has been worked into the EMP as well as the proposed conditions stipulated above. In general, the approach will be as follows for invasive prospecting:

- Activities must remain outside all wetland areas until authorisation has been obtained under NEMA and NWA.

### 3.18 REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORISED

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

- The Heritage Free State NID process must be followed prior to any development. Following the NID process, the Provincial Heritage Authority will request the required heritage studies.
- The EAP believes that the authorisation for the portions if any not affected by any sensitive ecological features of the activity should be granted.
- The risks of the remaining proposed prospecting activity are minimal and can be easily mitigated by following the mitigation measures stipulated in the EMP, which will reduce impacts significantly to acceptable levels which will easily recover.

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

- The Heritage Free State NID process must be followed prior to any development. Following the NID process, the Provincial Heritage Authority will request the required heritage studies.
- No activities to occur within 100 m of any wetlands and their 100 m buffer zones, within rivers and their 100 m buffer zone / 1:100 year flood line without the necessary authorisation under NEMA and NWA.
- Heritage sites and 50 m buffer zones will be preserved at all times unless the necessary permits are obtained under SAHRA.
- Planning before carrying out prospecting activities in a particular area, and surveying the area before conducting invasive prospecting, is critical to ensure the sensitive areas are preserved and to ensure prospecting proceeds in a manner compliant with national legislation.
- Rehabilitation must be applied on an on-going basis and no sites must be left exposed for more time than necessary to obtain the necessary data. All areas disturbed during the drilling process must be rehabilitated to previous land use capability.

### 3.19 PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED.

5 Years.

### 3.20 UNDERTAKING


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

The applicant representative, Mr. Douglas Mongwe hereby confirms the undertaking to ensure implementation and compliance with the basic assessment report and environmental management programme.



3.21 FINANCIAL PROVISION

Table 3-10: Financial Provision

CALCULATION OF CLOSURE QUANTUM								Version 1.0: Closure Quantum for FY2020
FS 30/5/1/1/2 (10599) PR					Province: Free State			
Evaluators: Eco Elementum (Pty) Ltd					Date: July 2021			
General Information		Risk Class	High (A)	National Treasure Minerals - Prospecting Right				
		Environmental Sensitivity	Medium					
		WF 1: Nature of Terrain Weighting Factor	Flat 1.00					
		WF 2: Proximity to Urban Area Weighting Factor	Peri-Urban 1.05					
Component No	Main Activities Itemized Descriptions	[B] CPI Adjusted Master Rate	[A] Quantity	Units	[C] Multiplication Factor	[D] Weighting Factor 1: Nature of Terrain	Sub Totals [E = A*B*C*D]	NOTES & SUPPORTING EXPLANATIONS
		STEP 4.3	STEP 4.5		STEP 4.3	STEP 4.4		
1	Dismantling of processing plant and structures	R 16,59	0,00	m3	1,00	1,00	R 0,00	
2(A)	Demolition of steel buildings and structures	R 231,09	0,00	m2	1,00	1,00	R 0,00	
2(B)	Demolition of reinforced concrete buildings and structures	R 340,55	0,00	m2	1,00	1,00	R 0,00	
3	Rehabilitation of access roads	R 41,35	850,00	m2	1,00	1,00	R 35 147,50	Existing gravel roads to be used mainly - contingency provided for offroad areas
4(A)	Demolition and rehabilitation of electrified railway lines	R 401,36	0,00	m	1,00	1,00	R 0,00	
4(B)	Demolition and rehabilitation of non-electrified railway lines	R 218,92	0,00	m	1,00	1,00	R 0,00	
5	Demolition of housing and facilities	R 462,17	0,00	m2	1,00	1,00	R 0,00	
6	Opencast rehabilitation including final voids and ramps	R 235 221,83	0,00	ha	1,00	1,00	R 0,00	
7	Sealing of shafts, adits and inclines	R 124,06	0,00	m3	1,00	1,00	R 0,00	
8(A)	Rehabilitation of overburden and spoils	R 161 517,37	0,00	ha	1,00	1,00	R 0,00	
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	R 201 116,96	0,00	ha	1,00	1,00	R 0,00	
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	R 584 284,21	0,00	ha	1,00	1,00	R 0,00	
9	Rehabilitation of subsided areas	R 135 246,47	0,00	ha	1,00	1,00	R 0,00	
10	General surface rehabilitation, including grassing of denuded areas	R 127 949,00	0,60	ha	1,00	1,00	R 76 769,40	Entire disturbed footprint 20x boreholes 300m2 each (20x300=6000m2)
11	River diversions	R 127 949,00	0,00	ha	1,00	1,00	R 0,00	
12	Fencing	R 145,95	0,00	m	1,00	1,00	R 0,00	
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater, including treatment, when required)	R 48 649,81	0,00	ha	1,00	1,00	R 0,00	
14	2 to 3 years of maintenance and after care	R 17 027,43	0,60	ha	1,00	1,00	R 10 216,46	Entire disturbed footprint (6000m2)
15	Specialist study	R 45 000,00	1,00	report	1,00	1,00	R 45 000,00	Final closure study: GNR1147 Format
Subtotal (1 to 15 above)							R 167 133,36	
Subtotal 1		Weighting Factor 2			1		R 167 133,36	
1	Preliminary and General	12% of Subtotal 1 if less than R100mil					R 20 056,00	
		6% of Sub Total 1 if more than R100mil						
2	Contingency	10% of Sub Total 1					R 16 713,34	
Subtotal 2 (Subtotal 1 plus sum of management and contingency)							R 36 769,34	
Subtotal 3							R 203 902,70	
GRAND TOTAL (Subtotal 3 plus 15% VAT)							R 234 488,10	



### 3.21.1 Explain how the aforesaid amount was derived.

The Quantum was calculated using the guideline document developed by the Department of Mineral Resources in 2005. In addition, consideration has been given to Section 41 of the Mineral & Petroleum Resource Development Act, NO 28 of 2002.

The quantum has been aligned with the rehabilitation and allows for the site to be rehabilitated back to the original status of the site. This will include:

- Ensuring all pollution generating activities are eliminated.
- Ensuring all infrastructure is removed from site.
- Ensuring that the existing land use can continue.
- Ensuring that the site is safe for humans and animals.

The rehabilitation sites will have a footprint of 64 m<sup>2</sup> for 20 sites as this is the area determined that needs to be cleared for drilling from previous experience. The maps and illustrations attached therefore indicate the site layout and sizes associated in order to do prospecting drilling.

Application for Prospecting right in respect of the remaining extent of the farm Nederlanden 32, remaining extent of the farm Bowie 621, remaining extent of the farm Stillrustig 548, remaining extent of the farm Jacoba 878, remaining extent of the farm Zandfonteinpan 472, remaining extent of the farm Schiedam 124, remaining extent of the farm Onzerust 557 and the remaining extent of the farm Rebelfort 288, situated in the Lejweleputswa District Municipality within the Nala Local Municipality, Free State Province, South Africa with maximum of 20 drill boreholes are required to determine the available resource. Only one prospecting site will be active at a time as there is only one drill rig that will be used. This therefore allows minimum exposure and impact as concurrent rehabilitation can be carried out. Once drilling is complete at one site (usually within one day) the rehabilitation can be done immediately and soils and vegetation replaced.

Existing roads will be used as far as possible and it is not possible to identify any new access roads at this stage as its route will be determined in conjunction with the landowner and activities on the property at that time. No other infrastructure, offices or housing, will be present within the prospecting area and all employees will be housed in nearby towns. Vegetation establishment is monitored after the first rain to ensure sustainability in the rehabilitation efforts.

### 3.21.2 Confirm that this amount can be provided for from operating expenditure.

The provision forms part of the capital expense of the project and is not included in the operational budget allocated in the prospecting works programme. Allowance has been made for environmental reporting in the operational budget.

## 3.22 SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

3.22.1 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:-

### 3.22.1.1 *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 alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim.



The proposed prospecting activities are expected to be limited and thus opportunities for employment will be low. However, consideration will be given to local procurement of goods and services where practicable.

There may be concern that the introduction of the prospecting workforce into the farm communities can result in disputes. The prospecting workforce is not to interfere with any farm labourers or communities. No persons are to reside on the properties during prospecting activities.

*3.22.1.2 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 4 and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6 and 2.12. herein).*

Section 3(2) of the National Heritage Resources Act, No. 25 of 1999 provides a description of all items that is classified as national estate. The EAP has evaluated the list in comparison with the project site. The results of the assessment are provided below with recommendations to the environmental officer where there was uncertainty. A heritage assessment must be initiated prior to invasive drilling.

---

### 3.23 OTHER MATTERS REQUIRED IN TERMS OF SECTIONS 24(4)(A) AND (B) OF THE ACT.

Section 24(4) (b) (i) of the Act specifies “investigation of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity”.

The alternatives assessed and the impacts associated with the alternatives assessed have been fully presented in Section 3.10 and Section 3.14.3.



# PART B

## ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT





## 4. DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

### 4.1 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 1(a) herein as required).

Name of the Practitioner: Mr. Vernon Siemelink / Mr. Lian Roos  
Tel No.: 012 807 0383  
Fax No.: 086 714 5397  
e-mail address: vernon@ecoe.co.za; lian@ecoe.co.za

### 4.2 DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

Both non-invasive and invasive prospecting activities will be undertaken as part of the proposed Prospecting Work Programme (PWP). The application will follow a phased approach, where the prospecting work program is divided into several sequential phases.

Regarding the length of the boreholes an average of 150 m was used for budget purposes although the lengths will differ depending on where you are drilling in the project area.

Vegetation will be cleared at the borehole locations within the application area. Minor access tracks will be created to access the proposed borehole sites where there are no existing roads. The total length of the access routes is anticipated to be 5 000 m and the approximate width is 3 m.

At the end of each phase there will be a brief period of compiling and evaluating results. The results will not only determine whether prospecting proceeds, but also the manner in which it will go forward. The applicant will only action the next phase of prospecting, once satisfied with the results obtained in the previous phases. In addition, smaller, non-core parts of the prospecting work program will be undertaken, if warranted. A description of the planned invasive and non-invasive activities is detailed below.

### 4.3 DESCRIPTION OF PLANNED NON-INVASIVE ACTIVITIES:

(These activities do not disturb the land where prospecting will take place e.g. aerial photography, desktop studies, aeromagnetic surveys, etc.).

The Non-Invasive methods which will be used during the exploration program span all the four phases in different time frames. They are outlined in the following text.

**Literature Study** – During this stage information pertaining to the geological, geographical, environmental and geomorphological including the topographical and infrastructural systems of the area will be studied with the aim of designing the prospecting program and also the impact that the programs will have in the environmental and the ecosystem of the area. Information will be gathered from relevant areas including the Council of the Geoscience and other commercial areas where it may be available. Sources of information will include geological reports, general geological text books and geological maps, topographical maps, agricultural and land use maps. Visits to the area will also be conducted in order to acquire information that might not be available in literature. Detailed geological information will then be gathered which will be used in planning further prospecting and exploration strategy.



**Geological Mapping** – This stage will include the field traverse in the farm collecting geological information. Lithological contacts, outcrops, faults, dykes, folds will be mapped including their attitude and characteristics like dip and strikes, thickness etc. This information will be correlated with the literature study information in order to correlate with the correct stratigraphy and lithological units.

**Interpretation of Information and decision making** – This item appears in all the phases towards the end of the data gathering sub-programs. In Phase 1, this will mean that maps will be drawn depicting the data which is of the geological nature of the area. Using all other information, a decision will then be taken as to whether it is feasible to carry on or if the project should be abandoned.

**Sampling and resource modelling.** - This stage entails sampling the core from drilling as well as data manipulation to produce drilling results information. Resource modelling is conducted which will result in tonnages and grade distribution. However, this is still in low geological confidence. From the results, a decision will be taken if prospecting will be continued. During the non-invasive methods, additional information is gathered in the form of prefeasibility studies. This includes the determination of the suitable mining method and its costs. Other information that is gathered includes the macro and the micro economics that will determine the feasibility of the project.

---

#### 4.4 DESCRIPTION OF PLANNED INVASIVE ACTIVITIES:

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

Planned invasive prospecting methods entail conducting drilling to ascertain the existence of the expected minerals, its thickness and distribution. Samples will be taken and analysed. The number of boreholes planned is 20:

- Reconnaissance drilling: 5.
- Resource drilling 6.
- Feasibility drilling 9.

The depths will vary from very shallow (approx. 30 m) to nearly 150 m. The exact depths of the boreholes will be determined while the drilling program is underway as influenced by the depths and dips measured in the previous boreholes.



4.5 COMPOSITE MAP

(Provide a map (Attached as an Appendix3) 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).

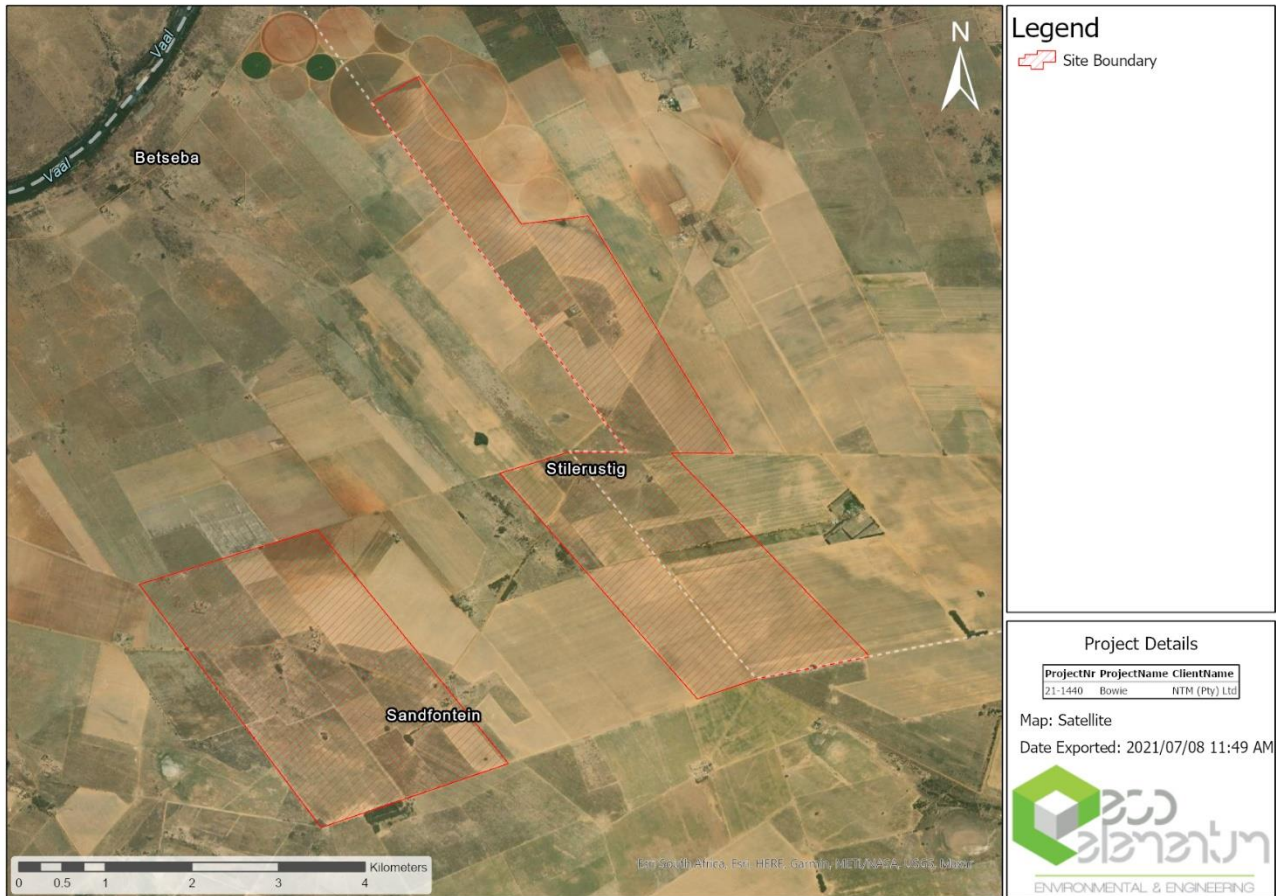


Figure 4-1: Site Proposed Layout

4.6 DESCRIPTION OF IMPACT MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS

4.6.1 Determination of closure objectives.

The closure objective allows for the site to be rehabilitated back to the original status of the site. This will include:

1. Ensuring all pollution generating activities are eliminated.
2. Ensuring all infrastructure is removed from site.
3. Ensuring that the existing land use can continue.
4. Ensuring that the site is safe for humans and animals.

Vegetation establishment is monitored after the first rain to ensure sustainability in the rehabilitation efforts.

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

Only a small volume of water will be required during drilling. Approximately 15 m<sup>3</sup> of water will be used per day for a maximum of 20 days. This amounts to a total maximum of 300 m<sup>3</sup>.



Water will also be brought onto site for potable use, this is estimated at 5 litres per person / day.

---

#### 4.6.3 Has a water use licence has been applied for?

No water use licence or water use registration has been applied for. The project aims to utilise water from existing lawful users, an irrigation board or water services provider. Should water be required from a water resource if the above is unsuccessful a water use registration will be applied for.

No watercourses will also be impacted by the activity and a 100 m buffer has been created around all watercourses to limit the need for 21(c) or 21(i) water use licences or registration.

---

#### 4.6.4 Impacts to be mitigated in their respective phases.

##### 4.6.4.1 Objectives

This section provides for the environmental management of all prospecting activities to be undertaken in the prospecting area. The objective of this section is to detail actions required to address the potential impacts resulting from the identified activities to be undertaken during the establishment, operation and rehabilitation of drilling sites within the prospecting right area. This section elaborates on the implementation of the mitigation measures documented in the detailed impact assessment.

##### 4.6.4.2 Environmental Impacts

The aim of this section is to reduce the significance of negative impacts and enhance positive impacts as far as practicably possible. The overall objectives are thus to:

- Minimize disturbance on the physical environment including the protection of soils, surface water and groundwater during drilling operations;
- Minimize disturbance to the ecological environment and prevent disturbance to sensitive sites;
- prevent disturbance of sites of cultural and historical importance;
- Minimize disturbance to current land uses and neighbouring activities;
- Provide for a forum for consultation with land owners and affected parties; and
- Facilitate socio-economic development where practicable.

##### 4.6.4.3 Rehabilitation

Prospecting activities are to be undertaken in a manner which facilitates site rehabilitation and the restoration of pre-disturbance land capabilities. The primary objectives for rehabilitation include the:

- Removal of all infrastructure and material introduced to site;
- Removal of all wastes and their appropriate disposal;
- Promotion of the rapid re-establishment of natural vegetation and the restoration of site ecology; and
- Facilitation of the re-establishment of the land use and land capability to as close as reasonably possible to the original conditions.

##### 4.6.4.4 Action Plan

The various actions that need to be implemented, to ensure that the environmental objectives are met, are detailed in this section. The actions are aimed at preventing or mitigating environmental impacts and implementing the rehabilitation plan.



The management actions are stated in a manner that ensures that they can be audited during the performance assessment programme.

#### *4.6.4.5 Time Schedule*

---

Time-frames detail the implementation schedule of management actions. The successful implementation and commencement within the timeframes is to be monitored as part of the performance assessment programme.

#### *4.6.4.6 Requirements for Implementation*

---

Additional measures that will need to be put in place to allow for the successful implementation of the action plan are listed where relevant. The table below presents the actions that need to be implemented to address the potential impacts resulting from the identified activities to be undertaken during the establishment, operation and rehabilitation of drilling sites within the prospecting right area. The management actions are stated in a manner that ensures that they can be audited during the performance assessment programme. Once approved by the relevant authorities, the provisions of the EMP are legally binding on the project applicant and all its contractors and suppliers.



Table 4-1: Impacts to be mitigated in their respective phases, Impact Management outcomes, Impact Management Action

<p><b>ACTIVITIES</b></p> <p>(E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc.</p> <p>E.g. For mining, - excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)</p>	<p><b>PHASE</b></p> <p>(Of operation in which activity will take place.</p> <p>State;</p> <p>Planning and design,</p> <p>Pre-Construction'</p> <p>Construction,</p> <p>Operational,</p> <p>Rehabilitation</p> <p>, Closure, Post closure).</p>	<p><b>SIZE AND SCALE of disturbance</b></p> <p>(volumes, tonnages and hectares or m<sup>2</sup>)</p>	<p><b>MITIGATION MEASURES</b></p> <p>(describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)</p>	<p><b>COMPLIANCE WITH STANDARDS</b></p> <p>(A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)</p>	<p><b>TIME PERIOD FOR IMPLEMENTATION</b></p> <p>Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: -</p> <p>Upon cessation of the individual activity</p> <p>or.</p> <p>Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.</p>
<p><b>Prospecting (drill) site clearance</b></p>	<p>Construction</p>	<p>640 m<sup>2</sup></p>	<p>The prospecting is aimed at minimising disturbance to natural vegetation once the positions have been finalised. No-go areas to be identified. Environmental awareness training of all employees responsible for drilling.</p> <p>A heritage assessment and paleontological impact assessment need to be undertaken prior to any invasive site activities.</p> <p>ECO to approve drill site location considering biodiversity, water resources, heritage and land use,</p>	<p>NEM: BA</p> <p>SANBI</p> <p>Resources Act</p> <p>Implementation of the Impact management hierarchy to avoid, minimise, mitigate and rehabilitate.</p>	<p>Prior to construction.</p>



			Consult with landowner on drill site location , demarcates drill site for safety, Create an upstream berm to divert, clean stormwater around the site, Create a downstream berm to contain any dirty water.	Compliance to GN704 of the National Water Act	
<b>Establish water recycling sumps</b>	Construction	2 m <sup>2</sup>	Remove topsoil where sumps will be placed for rehabilitation. Line drill sumps with plastic to limit groundwater seepage.	<ul style="list-style-type: none"> <li>- to meet rehabilitation Standards.</li> <li>- to limit groundwater contamination.</li> </ul>	During construction.
<b>Clearance of access roads</b>	Construction	800 m <sup>2</sup>	ECO to approve access road Route. Limit clearance to two lane tracks.	Implementation of the Impact management hierarchy to avoid, minimise, mitigate and rehabilitate.	During construction.
<b>Establish prospecting site</b>	Construction	25 – 64 m <sup>2</sup>	<ul style="list-style-type: none"> <li>- Chemical toilets need to be placed in close proximity to the drill site.</li> <li>- All chemicals and fuels need to be stored in a bunded area.</li> <li>- bins for general waste need to be provided.</li> <li>- signage indicating hazards need to be placed at the entrance of the site.</li> <li>- drill rig operators and labourers need to be provided with identification cards.</li> <li>- no labourers are to be housed on site.</li> </ul>	Occupation Health requirement. Management of hazardous substances.	During construction.
<b>Operation of the drill site</b>	Operation	25 – 64 m <sup>2</sup>	<p>General waste need to be collected and disposed at a licensed facility.</p> <ul style="list-style-type: none"> <li>- during rainfall events the drilling sumps need to be covered with plastic.</li> <li>- no employee are allowed outside of the drill site barricading without permission from the site manager.</li> </ul>	- impact mitigation.	During operations.



			<ul style="list-style-type: none"> <li>- water is to be sourced from existing users.</li> <li>- working hours is only permitted during daytime hours.</li> <li>- vehicles are not permitted to exceed 30 km/h within the drill properties.</li> </ul>		
<b>Decommissioning and rehabilitation of the drill site Access roads.</b>	Rehabilitation	25 – 64 m <sup>2</sup>	<ul style="list-style-type: none"> <li>- All infrastructure need to be removed from the site.</li> <li>- All waste and spillage need to be cleaned and disposed of appropriately.</li> <li>- drill sump water should be reused or allowed to evaporate.</li> <li>- plastic from drill sumps need to be removed.</li> <li>- Chemical toilets need to be cleaned before I can be moved to the following drill site.</li> <li>- The drill hole must be capped or sealed to limit water ingress and ensure safety for humans and animals.</li> <li>- vehicles are not permitted to exceed 30 km/h within the drill properties.</li> </ul>	Rehabilitation standards and objectives.	Rehabilitation.





#### 4.6.5 Financial Provision

##### 4.6.5.1 Determination of the amount of Financial Provision.

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

The Quantum was calculated using the guideline document developed by the Department of Mineral Resources in 2005. In addition, consideration has been given to Section 41 of the Mineral & Petroleum Resource Development Act, NO 28 of 2002.

The quantum has been aligned with the rehabilitation and allows for the site to be rehabilitated back to the original status of the site. This will include:

- Ensuring all pollution generating activities are eliminated.
- Ensuring all infrastructure is removed from site.
- Ensuring that the existing land use can continue.
- Ensuring that the site is safe for humans and animals.

The rehabilitation sites will have a footprint of 64 m<sup>2</sup> for 20 sites as this is the area determined that needs to be cleared for drilling from previous experience. The maps and illustrations attached therefore indicate the site layout and sizes associated in order to do prospecting drilling.

Application for Prospecting right in respect of the remaining extent of the farm Nederlanden 32, remaining extent of the farm Bowie 621, remaining extent of the farm Stillrustig 548, remaining extent of the farm Jacoba 878, remaining extent of the farm Zandfonteinpan 472, remaining extent of the farm Schiedam 124, remaining extent of the farm Onzerust 557 and the remaining extent of the farm Rebelfort 288, situated in the Lejweleputswa District Municipality within the Nala Local Municipality, Free State Province, South Africa with maximum of 20 drill boreholes are required to determine the available resource. Only one prospecting site will be active at a time as there is only one drill rig that will be used. This therefore allows minimum exposure and impact as concurrent rehabilitation can be carried out. Once drilling is complete at one site (usually within one day) the rehabilitation can be done immediately and soils and vegetation replaced.

Existing roads will be used as far as possible and it is not possible to identify any new access roads at this stage as its route will be determined in conjunction with the landowner and activities on the property at that time. No other infrastructure, offices or housing, will be present within the prospecting area and all employees will be housed in nearby towns. Vegetation establishment is monitored after the first rain to ensure sustainability in the rehabilitation efforts.

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

The basic assessment report and environmental management programme will be provided to IAPs for review and comment for 30 days. The objective is to communicate to IAP's during the public consultation process.

*4.6.5.1.3 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.*

Vegetation and topsoil excavated during the drilling process will be stockpiled next to sumps where it will serve as a storm water diversion berm. On completion of the drilling process, the rehabilitated sumps will be backfilled with the stockpiled material.




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

The rehabilitation of drilling boreholes will provide a project site backfilled, capping of boreholes, and vegetating of disturbed areas (where not within cultivated lands).

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

The total provision amounts to the number of holes requiring rehabilitation at any given moment. This ensures that should the project application become insolvent prematurely the costs of rehabilitation can be recovered. Existing roads will be used as far as possible and it is not possible to identify any new access roads at this stage as its route will be determined in conjunction with the landowner and activities on the property at that time. No other infrastructure, offices or housing, will be present within the prospecting area and all employees will be housed in nearby towns. The quantum as calculated using the Department's guideline is provided in the Table below.

Table 4-2: Closure Quantum

CALCULATION OF CLOSURE QUANTUM							Version 1.0: Closure Quantum for FY2020	
FS 30/5/1/12 (10599) PR					Province: Free State			
Evaluators: Eco Elementum (Pty) Ltd					Date: July 2021			
General Information	Risk Class	High (A)		National Treasure Minerals - Prospecting Right				
	Environmental Sensitivity	Medium						
	WF 1: Nature of Terrain Weighting Factor	Flat 1.00						
	WF 2: Proximity to Urban Area Weighting Factor	Peri-Urban 1.05						
Component No	Main Activities Itemized Descriptions	[B] CPI Adjusted Master Rate	[A] Quantity	Units	[C] Multiplication Factor	[D] Weighting Factor 1: Nature of Terrain	Sub Totals [E = A*B*C*D]	NOTES & SUPPORTING EXPLANATIONS
		STEP 4.3	STEP 4.5		STEP 4.3	STEP 4.4		
1	Disassembly of processing plant and structures	R 16.59	0,00	m3	1,00	1,00	R 0,00	
2(A)	Demolition of steel buildings and structures	R 231,09	0,00	m2	1,00	1,00	R 0,00	
2(B)	Demolition of reinforced concrete buildings and structures	R 340,55	0,00	m2	1,00	1,00	R 0,00	
3	Rehabilitation of access roads	R 41,35	850,00	m2	1,00	1,00	R 35 147,50	Existing gravel roads to be used mainly - contingency provided for offroad areas
4(A)	Demolition and rehabilitation of electrified railway lines	R 401,36	0,00	m	1,00	1,00	R 0,00	
4(B)	Demolition and rehabilitation of non-electrified railway lines	R 218,92	0,00	m	1,00	1,00	R 0,00	
5	Demolition of housing and facilities	R 462,17	0,00	m2	1,00	1,00	R 0,00	
6	Opencast rehabilitation including final voids and ramps	R 235 221,83	0,00	ha	1,00	1,00	R 0,00	
7	Sealing of shafts, adits and inclines	R 124,06	0,00	m3	1,00	1,00	R 0,00	
8(A)	Rehabilitation of overburden and spoils	R 161 517,37	0,00	ha	1,00	1,00	R 0,00	
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	R 201 116,96	0,00	ha	1,00	1,00	R 0,00	
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	R 584 284,21	0,00	ha	1,00	1,00	R 0,00	
9	Rehabilitation of subsided areas	R 135 246,47	0,00	ha	1,00	1,00	R 0,00	
10	General surface rehabilitation, including grassing of denuded areas	R 127 949,00	0,60	ha	1,00	1,00	R 76 769,40	Entire disturbed footprint 20x boreholes 300m2 each (20x300=6000m2)
11	River diversions	R 127 949,00	0,00	ha	1,00	1,00	R 0,00	
12	Fencing	R 145,95	0,00	m	1,00	1,00	R 0,00	
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater, including treatment, when required)	R 48 649,81	0,00	ha	1,00	1,00	R 0,00	
14	2 to 3 years of maintenance and after care	R 17 027,43	0,60	ha	1,00	1,00	R 10 216,46	Entire disturbed footprint (6000m2)
15	Specialist study	R 45 000,00	1,00	report	1,00	1,00	R 45 000,00	Final closure study - GNR1147 Format
Subtotal (1 to 15 above)							R 167 133,36	
Subtotal 1		Weighting Factor 2		1		R 167 133,36		
1	Preliminary and General	12% of Subtotal 1 if less than R100mil				R 20 056,00		
2	Contingency	6% of Sub Total 1 if more than R100mil				R 16 713,34		
Subtotal 2 (Subtotal 1 plus sum of management and contingency)							R 36 769,34	
Subtotal 3							R 203 902,70	
GRAND TOTAL (Subtotal 3 plus 15% VAT)							R 234 488,10	

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

The applicant hereby commits to undertaking to provide the calculated amount in the form of either method provided in section 53 of the MPRD Regulations and the financial provisioning regulations, 2015 Published under Government Notice R1147 (GN R. 39425 of 2015). It should however be noted that no new guideline for determining the quantum for closure and rehabilitation has been published and therefore the guideline published under the MPRDA regulation was used to assess the quantum for closure liability.



4.7 MECHANISMS FOR MONITORING COMPLIANCE WITH AND PERFORMANCE ASSESSMENT AGAINST THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND REPORTING THEREON, INCLUDING –

- Monitoring of Impact Management Actions
- Monitoring and reporting frequency (Table 4-3).
- Responsible persons (Table 4-3).
- Time period for implementing impact management actions (Table 4-3).
- Mechanism for monitoring compliance (Table 4-3).

Table 4-3: Monitoring compliance

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
<b>Drill site establishment, moving and rehabilitation</b>	Disturbance of vegetation, Degradation and destruction of sensitive biodiversity Suitable habitat for the globally threatened red data avifaunal species. Contamination of ground and surface water. Disturbance of heritage Resources. Land use conflicts Noise and dust generation. Rehabilitation sustainability.	Pre-site establishment, with no go areas and approval by EO and avifaunal specialist. Pre-site establishment risk Assessment. Pre-site establishment risk assessment. Complaint register. Rehabilitation closure report.	Project environmental officer. Site manager. Project environmental officer. Project environmental officer.	Prior to site establishment. (once off). During operations and closure. (bi-monthly). Prior to site establishment. Prior to site establishment (once off). During operations and closure. (continuous) Post closure.
<b>Entire operational site</b>	All activities and impacts identified.	Auditing all site activities in compliance with the management commitments.	Project environmental officer.	During life of project. (monthly)

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

A performance assessment / Environmental audit will be undertaken as stipulated in the Environmental Authorisation OR once in Phase 2 and in rehabilitation, which should include the assessment of the financial provision. The performance assessment will be conducted by an external consultant throughout the life of prospecting as required under NEMA. This is conducted to assess the adequacy and compliance to the EMP, EA and the relevant legislation. The reports should be submitted to the DMR.



## 4.8 ENVIRONMENTAL AWARENESS PLAN

### 4.8.1 Manner in which applicant intends to inform his / her employees of any environmental risk which may result from their work.

An environmental awareness training manual will be developed for the prospecting project.

All employees must be provided with environmental awareness training to inform them of any environmental risks that may result from their work and of the manner in which the risks must be dealt with to avoid pollution or the degradation of the environment.

Employees should be provided with environmental awareness training before operations start. All new employees should be provided with environmental awareness training. Environmental awareness and training is an important aspect of the implementation of the EMP. The onus is on the different parties involved in the various stages of the life cycle of the project to be environmentally conscious. Hence, it is suggested that all members of the project team are familiar with the findings of the site-specific EA report and the EMP. For instance, the contractor is responsible for the lack of environmental knowledge of his/her crew members. The contractor could forward internal environmental awareness and training procedures to the project manager and environmental officer for comment prior to the commencement of the project. Likewise, the above is applicable to the programming, design, operations and maintenance, and decommissioning teams. Environmental awareness ensures that environmental accidents are minimized and environmental compliance maximized.

All staff and contractors will be submitted to an annual training / awareness course as to inform the staff of any environmental risks which may result from their work and the manner in which the risks must be dealt with in order to avoid pollution or the degradation of the environment.

Section 39 (3) (c) requires that an applicant who prepares an Environmental Management Programme or Environmental Management Plan must “develop an environmental awareness plan describing the manner in which the applicant intends to inform his or her employees of any environmental risks which may result from the work and the manner in which the risks must be dealt with in order to avoid pollution and degradation of the environment”. Environmental Awareness is required not only for management and employees (as described in Section 39 (3) (c) but also for visitors to the site. the following strategies and plans will be put into place for each of the parties.

#### **Visitor Environmental Awareness**

Visitor / sub-contractor environmental awareness will be generated through the provision of a signboard describing very briefly the environmental considerations applicable to them. The signboard should contain the following information:

- Statement of the applicant’s commitment to environmental principles;
- List of the “rules” to which the visitor must abide. This will include:
  - No littering. Dispose of all waste in the bins provided;
  - No fires;
  - Stay on demarcated roadways and paths only;
  - Kindly report any environmental infringements they may notice; and
  - Check your vehicle/equipment for diesel/oil leaks.

#### **Senior and Middle Management Environmental Awareness:**

Achieving environmental awareness at upper levels of management is slightly different from the process at the operational level. There is often a fair level of the general value of environmental awareness but site-specific issues will most often need to be communicated. This will be achieved by:



- Management must make themselves fully familiar with the EMPr;
- Ensuring that there is a spare copy of the approved EMPr at his/her disposal; management is encouraged to make notes in the document regarding the difficulty / ease of implementing the environmental management measures. These notes should be sent to the consultants to assist in future revisions of the EMPr;
- The manager must ensure that the operators perform regular monitoring of their workstations / areas.

During the management's execution of their activities/being at the site, the management must constantly be aware of and observant of especially the following:

- Dust levels - movement outside of demarcated areas;
- Litter management - general housekeeping;
- Erosion during rainy season.

Topsoil management – fuel / oil management/leaks/changes;

- Success of operational re-vegetation; and
- Alien vegetation.

#### **Operator / Workforce Environmental Awareness:**

Achieving environmental awareness amongst the operators and labour is probably the most important because they are usually present at the place where most environmental transgressions take place or in fact cause them. It is the aim of increased environmental awareness to reduce any such environmental transgressions.

#### **Increasing environmental awareness at these levels can be achieved through the following strategies:**

- Induction environmental training must take place prior to any contract period.
- Training: Each and every employee (contractor or not) must go through an environmental training process where at least the following items area covered:
  - The oil/fuel management policy must be explained to the employees. The reason for the policy must also be explained (i.e. to not impact on groundwater, surface water, soil quality etc.);
  - The domestic and industrial waste management policy & method must also form part of the training;
  - The topsoil handling method and the reasons for preserving topsoil (i.e. post prospecting re vegetation, erosion prevention etc.);
  - Alien vegetation management: How to recognize and remove such species;
  - Protection of the natural veld by not driving/manoeuvring or walking through the demarcated protection areas. Reporting that demarcation posts/tape is broken or removed;

#### **Emergency management procedures such as dealing with oil spills or fires must also be drilled; and**

- Such training will, in this case, be carried out by the site manager/resident engineer.

#### **4.8.2 Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment.**

Training, as detailed above, will address the specific measures and actions as listed in the EMPr and also conditions of the EA. In this way the team will be provided the knowledge required to conduct the mining activities without resulting in environmental non-compliance, the liability of which would lie with the applicant. Secondly, informing the team of the EMPr will also assist the team in identifying if an impact is likely to occur / has occurred and communicate this appropriately to the Environmental Manager.

In order for appropriate action to be taken, proper communications network and reporting protocol must be established, with the team and the site manager reporting all environmental issues to the Environmental Manager and then all social issues to the General Manager.



#### 4.8.3 Specific information required by the Competent Authority

The following specific information will be required by the competent authority:

- The financial provision will be reviewed annually.



## UNDERTAKING

The EAP herewith confirms

- c. the correctness of the information provided in the reports
- d. the inclusion of comments and inputs from stakeholders and I&APs ;
- e. the inclusion of inputs and recommendations from the specialist reports where relevant; and
- f. 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.



---

**Signature of the Environmental Assessment Practitioner:**

Eco Elementum Pty Ltd

---

**Name of Company:**

July 2021

---

**Date:**

**-END-**



**APPENDIX A: EAP CV**





## APPENDIX B: PUBLIC PARTICIPATION REPORT



## APPENDIX C: CONCEPTUAL LAYOUT MAPS



## APPENDIX D: SPECIALIST STUDIES



## APPENDIX E: SCREENING TOOL REPORT

