



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT & ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

The proposed Prospecting Right without bulk sampling for the prospecting of Limestone (Ls) & Manganese Ore (Mn) near Mahikeng on various portions of the farm Mooimeisjesfontein 118, Registration Division: JO, North-West Province.

NAME OF APPLICANT	TSB 74 (Pty) Ltd
PREPARED BY	Milnex CC
TEL NO	(018) 011 1925
FAX NO	087 231 7021
POSTAL ADDRESS:	P.O. Box 1086, Schweizer-Reneke, 2780
PHYSICAL ADDRESS:	4 Botha Street, Schweizer-Reneke, 2780
SAMRAD REF NUMBER:	NW30/5/1/1/2/13417PR

PROJECT INFORMATION

Basic Assessment for the proposed Prospecting Right without bulk sampling for the prospecting of Limestone (Ls) & Manganese Ore (Mn) near Mahikeng on various portions of the farm Mooimeisjesfontein 118, Registration Division: JO, North-West Province.

Project Name:

APPLICATION AREA	
Please see the list of portions of the farm Mooimeisjesfontein 118	
1) Remaining extent of Portion 1	17) Remaining extent of Portion 41
2) Remaining extent of Portion 17	18) Portion 44
3) Portion 18	19) Portion 45
4) Remaining extent of Portion 19	20) Portion 46
5) Portion 20	21) Portion 47
6) Portion 21	22) Remaining extent of Portion 50
7) Portion 22	23) Portion 51
8) Remaining extent	24) Remaining extent of Portion 52
9) Portion 25	25) Portion 53
10) Portion 26	26) Portion 54
11) Portion 27	27) Portion 55
12) Portion 28	28) Portion 62
13) Remaining extent of Portion 31	29) Portion 63
14) Remaining extent of Portion 37	30) Portion 65
15) Portion 38	31) Portion 66
16) Portion 39	

Report Title: BAR & EMPr

Prepared By: Milnex CC

Date: 02/06/2023

QUALITY CONTROL:

Name: **Report Author:** Lizanne Esterhuizen **Report Reviewer:** N/A
 Honours Degree in Environmental Science

Signature:



DISCLAIMER:

Copyright Milnex CC: All Rights Reserved.

This document contains information proprietary to Milnex CC and as such should be treated as confidential unless specifically identified as a public document by law. Milnex CC owns all copyright and all other intellectual property rights in this report. The document may not be copied, reproduced in whole or in part, or used for any manner without prior written consent from Milnex CC. Copyright is specifically reserved in terms of the Copyright Act 98 of 1987 including amendments thereto. By viewing this disclaimer and by accepting this document, you acknowledge that you have read and accepted these Terms of Use and undertake to keep the information contained herein confidential and not to do any act or allow any act which is in breach of these Terms of Use.

The DFFE screening tool was used in compiling this document

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

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

CONTENTS

SCOPING OF ASSESSMENT AND CONTENT OF BASIC ASSESSMENT REPORT.....	7
A) DETAILS OF:.....	7
i) THE EAP WHO PREPARED THE REPORT	7
ii) EXPERTISE OF THE EAP	7
B) DESCRIPTION OF THE PROPERTY	7
C. LOCALITY MAP	12
D. DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY	13
i) LISTED AND SPECIFIED ACTIVITIES.....	13
ii) DESCRIPTION OF THE ASSOCIATED STRUCTURES AND INFRASTRUCTURE RELATED TO THE DEVELOPMENT	15
iii) DESCRIPTION OF PLANNED NON-INVASIVE ACTIVITIES:.....	16
iv) DESCRIPTION OF PLANNED INVASIVE ACTIVITIES:.....	17
E. POLICY AND LEGISLATIVE CONTEXT	18
F. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES.	25
G. MOTIVATION FOR THE PREFERRED DEVELOPMENT FOOTPRINT WITHIN THE APPROVED SITE INCLUDING A FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED DEVELOPMENT FOOTPRINT WITHIN THE APPROVED SITE.....	25
H. A FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED DEVELOPMENT FOOTPRINT WITHIN THE APPROVED SITE, INCLUDING:	26
i) DETAILS OF THE DEVELOPMENT FOOTPRINT ALTERNATIVES CONSIDERED;	26
ii) DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED	28
iii) SUMMARY OF ISSUES RAISED BY I&APS	34
iv) THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE SITES	39
v) IMPACTS AND RISKS IDENTIFIED INCLUDING THE NATURE, SIGNIFICANCE, CONSEQUENCE, EXTENT, DURATION AND PROBABILITY OF THE IMPACTS, INCLUDING THE DEGREE TO WHICH THESE IMPACTS - 93	
vi) METHODOLOGY USED IN DETERMINING AND RANKING THE NATURE, SIGNIFICANCE, CONSEQUENCES, EXTENT, DURATION AND PROBABILITY OF POTENTIAL ENVIRONMENTAL IMPACTS AND RISKS	117
vii) 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.....	120
viii) THE POSSIBLE MITIGATION MEASURES THAT COULD BE APPLIED AND THE LEVEL OF RISK.	121
ix) MOTIVATION WHERE NO ALTERNATIVE SITES WERE CONSIDERED.....	122
x) STATEMENT MOTIVATING THE ALTERNATIVE DEVELOPMENT LOCATION WITHIN THE OVERALL SITE. ...	122
I. 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.....	122
J. AN ASSESSMENT OF EACH IDENTIFIED POTENTIALLY SIGNIFICANT IMPACT AND RISK	126
K. WHERE APPLICABLE, A SUMMARY OF THE FINDINGS AND IMPACTS MANAGEMENT MEASURES IDENTIFIED IN AN SPECIALIST REPORT COMPLYING WITH APPENDIX 6 OF THESE REGULATIONS AND AN INDICATION AS TO HOW THESE FINDINGS AND RECOMMENDATIONS HAVE BEEN INCLUDED IN THE FINAL REPORT;.....	129

L.	ENVIRONMENTAL IMPACT STATEMENT	138
M.	PROPOSED IMPACT MANAGEMENT OBJECTIVES AND THE IMPACT MANAGEMENT OUTCOMES FOR INCLUSION IN THE EMPR.....	149
N.	ASPECTS FOR INCLUSION AS CONDITIONS OF AUTHORISATION.....	149
O.	DESCRIPTION OF ANY ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE.....	150
P.	REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORISED	150
Q.	CONDITIONS THAT MUST BE INCLUDED IN THE AUTHORISATION.....	150
R.	UNDERTAKING	151
S.	FINANCIAL PROVISION.....	152
T.	OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY	152
U.	OTHER MATTERS REQUIRED IN TERMS OF SECTIONS 24(4)(A) AND (B) OF THE ACT.	166
	ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT	167
A)	DETAILS OF THE EAP	167
B)	DESCRIPTION OF THE ASPECTS OF THE ACTIVITY (.....	167
C)	COMPOSITE MAP	167
D)	DESCRIPTION OF IMPACT MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS	170
E)	IMPACTS TO BE MITIGATED IN THEIR RESPECTIVE PHASES	173
F)	IMPACT MANAGEMENT ACTIONS	197
G)	MONITORING OF IMPACT MANAGEMENT ACTIONS.....	215
H)	MONITORING AND REPORTING FREQUENCY.....	215
I)	RESPONSIBLE PERSONS.....	215
J)	TIME PERIOD FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS	215
K)	MECHANISM FOR MONITORING COMPLIANCE.....	215
L)	CATE THE FREQUENCY OF THE SUBMISSION OF THE PERFORMANCE ASSESSMENT REPORT.....	218
M)	ENVIRONMENTAL AWARENESS PLAN	218
N)	SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY	218

IMPORTANT NOTICE

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

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

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

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

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

BASIC ASSESSMENT REPORT PROCESS

- 1) The environmental outcomes, impacts and residual risks of the proposed activity must be set out in the basic assessment report.

OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

- 2) 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 [the] these aspects to determine—
 - i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
 - ii) the degree to which these impacts—
 - aa) can be reversed;
 - bb) may cause irreplaceable loss of resources; and
 - cc) can be avoided, managed or mitigated; and
 - e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—
 - i) identify and motivate a preferred site, activity and technology alternative;
 - ii) identify suitable measures to avoid, manage or mitigate identified impacts; and
 - iii) identify residual risks that need to be managed and monitored.

SCOPING OF ASSESSMENT AND CONTENT OF BASIC ASSESSMENT REPORT

A) DETAILS OF:

i) THE EAP WHO PREPARED THE REPORT

ii) EXPERTISE OF THE EAP

Name of Practitioner	Qualifications	Contact details
Ms. Lizanne Esterhuizen	Honours Degree in Environmental Science (refer to Appendix 1)	Tel No.: (018) 011 1925 Fax No. : (053) 963 2009 e-mail address: lizanne@milnex-sa.co.za
Mr. Christiaan Baron	Master's Degree in Environmental Management (M.ENV.MAN) (refer to Appendix 1)	Tel No.: (018) 011 1925 Fax No.: (053) 963 2009 e-mail address: christiaan@milnex-sa.co.za
Mr. Andile Grant Nxumalo	Honours Degree in Environmental Science (refer to Appendix 1)	Tel No.: (018) 011 1925 Fax No. : (053) 963 2009 e-mail address: andile.grant@milnex-sa.co.za

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

Milnex CC was contracted by **TSB 74 (Pty) Ltd** as the independent environmental consultant to undertake the BAR & EMP process for the Prospecting Right without bulk sampling application to prospect for Limestone (Ls) & Manganese Ore (Mn) near Mahikeng on various portions of the farm Mooimeisjesfontein 118, Registration Division: JO, North-West Province. The property is located approximately 23 km from Mahikeng. Milnex CC does not have any interest in secondary developments that may arise out of the authorisation of the proposed project

Milnex CC is a specialist environmental consultancy with extensive consulting experience in the mining industry which provides a holistic environmental management service, including environmental assessment and planning to ensure compliance with relevant environmental legislation. Milnex CC benefits from the pooled resources, diverse skills and experience in the environmental and mining field held by its team that has been actively involved in undertaking environmental studies for a wide variety of mining related projects throughout South Africa. The Milnex CC team has considerable experience in environmental impact assessment and environmental management, especially in the mining industry.

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

B) DESCRIPTION OF THE PROPERTY.

Farm Name:	<ol style="list-style-type: none"> 1) Remaining extent of Portion 1 of the farm Mooimeisjesfontein 118 Extent: 205.718 ha Title deed: T23801/2018 Registration division: JO 2) Remaining extent of Portion 17 of the farm Mooimeisjesfontein 118 Extent: 128.48 ha Title deed: T92730/2017 Registration division: JO 3) Portion 18 of the farm Mooimeisjesfontein 118 Extent: 194.316 ha Title deed: T92417/2017
-------------------	---

	<p>Registration division: JO</p> <p>4) Remaining extent of Portion 19 of the farm Mooimeisjesfontein 118 Extent: 85.6532 ha Title deed: T92730/2017 Registration division: JO</p> <p>5) Portion 20 of the farm Mooimeisjesfontein 118 Extent: 42.8266 ha Title deed: T92730/2017 Registration division: JO</p> <p>6) Portion 21 of the farm Mooimeisjesfontein 118 Extent: 85.6532 ha Title deed: T23801/2018 Registration division: JO</p> <p>7) Portion 22 of the farm Mooimeisjesfontein 118 Extent: 85.6532 ha Title deed: T23801/2018 Registration division: JO</p> <p>8) Remaining extent of Portion 23 of the farm Mooimeisjesfontein 118 Extent: 159.264 ha Title deed: T71839/2018 Registration division: JO</p> <p>9) Portion 25 of the farm Mooimeisjesfontein 118 Extent: 34.2613 ha Title deed: T89455/2012 Registration division: JO</p> <p>10) Portion 26 of the farm Mooimeisjesfontein 118 Extent: 88.537 ha Title deed: T71839/2018 Registration division: JO</p> <p>11) Portion 27 of the farm Mooimeisjesfontein 118 Extent: 177.067 ha Title deed: T71839/2018 Registration division: JO</p> <p>12) Portion 28 of the farm Mooimeisjesfontein 118 Extent: 85.6532 ha Title deed: T23801/2018 Registration division: JO</p> <p>13) Remaining extent of Portion 31 of the farm Mooimeisjesfontein 118 Extent: 513.822 ha Title deed: T89455/2012 Registration division: JO</p> <p>14) Remaining extent of Portion 37 of the farm Mooimeisjesfontein 118 Extent: 329.132 ha Title deed: T90534/2012 Registration division: JO</p> <p>15) Portion 38 of the farm Mooimeisjesfontein 118 Extent: 613.529 ha Title deed: T76850/2017 Registration division: JO</p>
--	---

- 16) Portion 39 of the farm Mooimeisjesfontein 118
Extent: 1.4990 ha
Title deed:
Registration division: JO
- 17) Remaining extent of Portion 41 of the farm Mooimeisjesfontein 118
Extent: 95.3482 ha
Title deed: T55100/2018
Registration division: JO
- 18) Portion 44 of the farm Mooimeisjesfontein 118
Extent: 42.8266 ha
Title deed: T71839/2018
Registration division: JO
- 19) Portion 45 of the farm Mooimeisjesfontein 118
Extent: 173.877 ha
Title deed: T71684/1992
Registration division: JO
- 20) Portion 46 of the farm Mooimeisjesfontein 118
Extent: 173.878 ha
Title deed: T92730/2017
Registration division: JO
- 21) Portion 47 of the farm Mooimeisjesfontein 118
Extent: 173.953 ha
Title deed: T23801/2018
Registration division: JO
- 22) Remaining extent of Portion 50 of the farm Mooimeisjesfontein 118
Extent: 38.5411 ha
Title deed: T55100/2018
Registration division: JO
- 23) Portion 51 of the farm Mooimeisjesfontein 118
Extent: 51.7859 ha
Title deed:
Registration division: JO
- 24) Remaining extent of Portion 52 of the farm Mooimeisjesfontein 118
Extent: 122.371 ha
Title deed: T49297/2000
Registration division: JO
- 25) Portion 53 of the farm Mooimeisjesfontein 118
Extent: 55.5444 ha
Title deed: T71839/2018
Registration division: JO
- 26) Portion 54 of the farm Mooimeisjesfontein 118
Extent: 111.089 ha
Title deed: T71839/2018
Registration division: JO
- 27) Portion 55 of the farm Mooimeisjesfontein 118
Extent: 111.089 ha
Title deed: T71839/2018
Registration division: JO

	<p>28) Portion 62 of the farm Mooimeisjesfontein 118 Extent: 112.362 ha Title deed: T71839/2018 Registration division: JO</p> <p>29) Portion 63 of the farm Mooimeisjesfontein 118 Extent: 229.7585 ha Title deed: Registration division: JO</p> <p>30) Portion 65 of the farm Mooimeisjesfontein 118 Extent: 718.834 ha Title deed: T55544/2018 Registration division: JO</p> <p>31) Portion 66 of the farm Mooimeisjesfontein 118 Extent: 645.539 ha Title deed: T55544/2018 Registration division: JO</p>
Application area (Ha)	5687.8614 hectares
Magisterial district:	Ngaka Modiri Molema District Municipality Mafikeng Local Municipality
Registration Division	JO
Distance and direction from nearest town	The property is located approximately 23 km from Mafikeng.
21-digit Surveyor General Code for each farm portion	<p>1) TOJO00000000011800001</p> <p>2) TOJO00000000011800017</p> <p>3) TOJO00000000011800018</p> <p>4) TOJO00000000011800019</p> <p>5) TOJO00000000011800020</p> <p>6) TOJO00000000011800021</p> <p>7) TOJO00000000011800022</p> <p>8) TOJO00000000011800023</p> <p>9) TOJO00000000011800025</p> <p>10) TOJO00000000011800026</p> <p>11) TOJO00000000011800027</p> <p>12) TOJO00000000011800028</p> <p>13) TOJO00000000011800031</p> <p>14) TOJO00000000011800037</p> <p>15) TOJO00000000011800038</p> <p>16) TOJO00000000011800039</p> <p>17) TOJO00000000011800041</p> <p>18) TOJO00000000011800044</p> <p>19) TOJO00000000011800045</p> <p>20) TOJO00000000011800046</p> <p>21) TOJO00000000011800047</p> <p>22) TOJO00000000011800050</p> <p>23) TOJO00000000011800051</p> <p>24) TOJO00000000011800052</p> <p>25) TOJO00000000011800053</p> <p>26) TOJO00000000011800054</p> <p>27) TOJO00000000011800055</p> <p>28) TOJO00000000011800062</p> <p>29) TOJO00000000011800063</p>

	30) TOJO00000000011800065 31) TOJO00000000011800066
Minerals applied for	Limestone (Ls) Manganese Ore (Mn)
Locality map	Attach a locality map at a scale not smaller than 1:250000 and attach as Appendix 2

III. FARM CO-ORDINATES

APPLICATION AREA	
Please see the list of portions of the farm Mooimeisjesfontein 118	
1) Remaining extent of Portion 1	17) Remaining extent of Portion 41
2) Remaining extent of Portion 17	18) Portion 44
3) Portion 18	19) Portion 45
4) Remaining extent of Portion 19	20) Portion 46
5) Portion 20	21) Portion 47
6) Portion 21	22) Remaining extent of Portion 50
7) Portion 22	23) Portion 51
8) Remaining extent	24) Remaining extent of Portion 52
9) Portion 25	25) Portion 53
10) Portion 26	26) Portion 54
11) Portion 27	27) Portion 55
12) Portion 28	28) Portion 62
13) Remaining extent of Portion 31	29) Portion 63
14) Remaining extent of Portion 37	30) Portion 65
15) Portion 38	31) Portion 66
16) Portion 39	
Coordinates	
Longitude	Latitude
25°48' 19.812"E	25°57'6.276"S
25°51'13.083"E	25°57'18.044"S
25°52'53.937"E	25°57'53.350"S
25°52'14.576"E	26°0'41.445"S
25°51'52.862"E	26°0'29.214"S
25°51'47.817"E	26°0'50.776"S
25°52'8.296"E	26°1'8.296"S
25°51'59.136"E	26°1'47.304"S
25°47' 22.297"E	26°0'38.155"S

C. LOCALITY MAP (show nearest town, scale not smaller than 1:250000 attached as **Appendix 3**).

A Locality map is attached in **Appendix 3** and on figure 1 below.

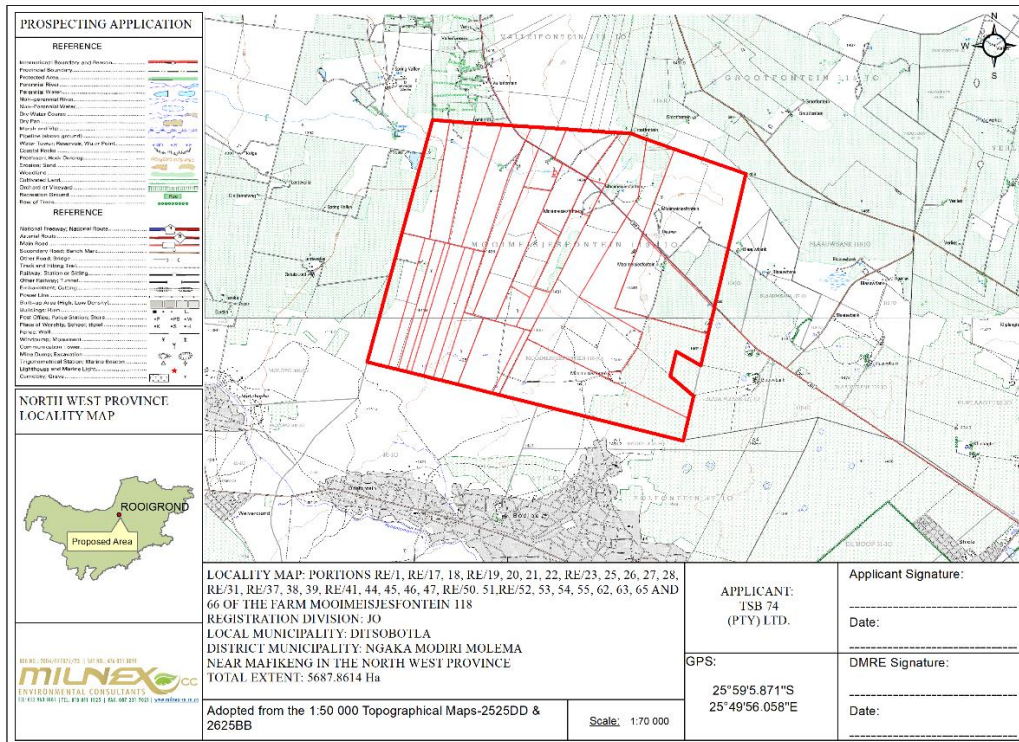


Figure 1: Locality Map

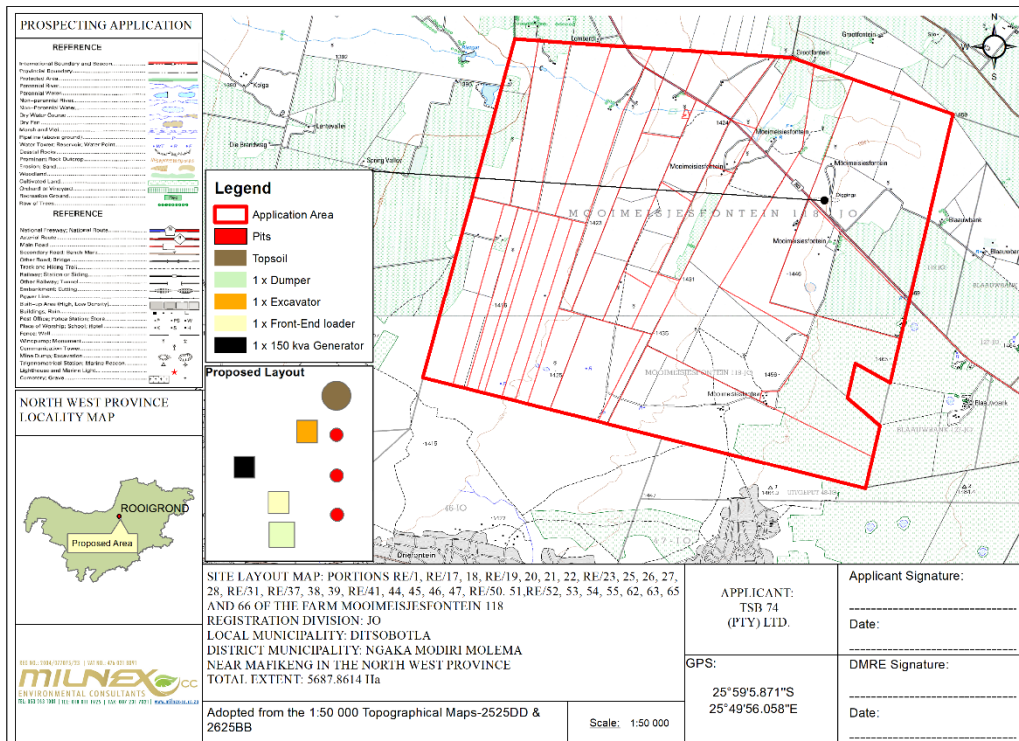


Figure 2: Site Plan Map

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

i) LISTED AND SPECIFIED ACTIVITIES

NAME OF ACTIVITY (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc E.g. for mining,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	Aerial extent of the Activity Ha or m²	LISTED ACTIVITY (Mark with an X where applicable or affected).	APPLICABLE LISTING NOTICE (GNR 324, GNR 325 or GNR 326)	WASTE MANAGEMENT AUTHORISATION (Indicate whether an authorisation is required in terms of the Waste Management Act). (Mark with an X)
Prospecting without bulk sampling: 300 pits (3m x 2m x 2m deep). Listing Notice 1 (GNR 327), Activity 19: <i>"The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;"</i>	Extent of the proposed portions are 5687.8614 Ha Concurrent backfilling will take place in order to rehabilitate.	X	Listing Notice 1 (GNR 327), Activity 19	-
Prospecting without bulk sampling: 300 pits (3m x 2m x 2m deep). Listing Notice 1 (GNR 327), Activity 20 (Amended GNR 517: 2021): <i>"Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the prospecting right"</i>	Extent of the proposed portions are 5687.8614 Ha Concurrent backfilling will take place in order to rehabilitate.	X	Listing Notice 1 (GNR 327), Activity 20 (Amended GNR 517: 2021)	-
Prospecting Right without bulk sampling: 300 pits (3m x 2m x 2m deep). Listing Notice 1 (GNR 327), Activity 27: <i>"The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation."</i>	Extent of the proposed portions are 5687.8614 Ha Concurrent backfilling will take place in order to rehabilitate.	X	Listing Notice 1 (GNR 327), Activity 27	-

<p>Prospecting Right without bulk sampling: 300 pits (3m x 2m x 2m deep).</p> <p>Listing Notice 3 (GNR 324), Activity 4: <i>“The development of a road wider than 4 metres with a reserve less than 13,5 metres. (h): North West.; (ii) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (iv) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority</i></p>	<p>Extent of the proposed portions are 5687.8614 Ha</p> <p>Concurrent backfilling will take place in order to rehabilitate.</p>	<p>X</p>	<p>Listing Notice 3 (GNR 324), Activity 4 (h)(ii)(iv)</p>	<p>-</p>
<p>Prospecting Right without bulk sampling: 300 pits (3m x 2m x 2m deep).</p> <p>Listing Notice 3, (GNR324), Activity 12: <i>“The clearance of an area of 300 square metres or more of indigenous vegetation (h) North-West, (iv): Within critical biodiversity areas identified in systematic bioregional plans adopted by the competent authority; (v) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; or (vi) Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.</i></p>	<p>Extent of the proposed portions are 5687.8614 Ha</p> <p>Concurrent backfilling will take place in order to rehabilitate.</p>	<p>X</p>	<p>Listing Notice 3 (GNR 324), Activity 12(h)(iv)(v)(vi)</p>	<p>-</p>

Listed activities

<p>Description of the overall activity.</p> <p>(Indicate Mining Right, Mining Permit, Prospecting right, Bulk Sampling, Production Right, Exploration Right, Reconnaissance permit, Technical co-operation permit, Additional listed activity)</p>	<ol style="list-style-type: none"> 1) Listing Notice 1 (GNR 327), Activity 19: <i>"The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;"</i> 2) Listing Notice 1 (GNR 327), Activity 20 (Amended GNR 517: 2021): "Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the prospecting right" 3) Listing Notice 1 (GNR 327), Activity 27: <i>"The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation."</i> 4) Listing Notice 3 (GNR 324), Activity 4: <i>"The development of a road wider than 4 metres with a reserve less than 13,5 metres. (h) North West; (ii) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (iv) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority</i> 5) Listing Notice 3, (GNR324), Activity 12: <i>"The clearance of an area of 300 square metres or more of indigenous vegetation (h) North-West, (iv): Within critical biodiversity areas identified in systematic bioregional plans adopted by the competent authority; (v) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; or (vi) Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.</i> <p>Prospecting right without bulk sampling for the prospecting of Limestone (Ls) & Manganese Ore (Mn) including associated infrastructure, structure and earthworks. Application of Prospecting right without bulk sampling.</p>
---	---

ii) DESCRIPTION OF THE ASSOCIATED STRUCTURES AND INFRASTRUCTURE RELATED TO THE DEVELOPMENT

(Describe Methodology or technology to be employed, and for a linear activity, a description of the route of the activity)

TSB 74 (Pty) Ltd has embarked on a process for applying for a Prospecting Right without bulk sampling application to prospect for Limestone (Ls) & Manganese Ore (Mn) near Mahikeng on various portions of the farm Mooimeisjesfontein 118, Registration Division: JO, North-West Province. The property is located approximately 23 km from Mahikeng. These portions are preferred due to the sites possible mineral resources.

TSB 74 (Pty) Ltd requires a prospecting right without bulk sampling in terms of NEMA and the Mineral and Petroleum Resources Development Act to prospect for minerals mentioned above within the Ditsobotla Local Municipality, North West province (refer to a locality map attached in **Appendix 3**).

Access road

Access will be obtained from existing gravel roads off the R503 tar road. Where no roads are roads may be created.

Water Supply

This is a prospecting right application without bulk sampling. It is envisaged that small amounts of water will be utilized to be used as dust suppression & for the cooling of equipment

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

Ablution

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

Storage of dangerous goods

During the prospecting activities, limited quantities of diesel and fuel, oil and lubricants if any will be stored on site. These goods should be placed in a bunded area one and a half times the volume of the total amount of goods to be stored. Less than 30 cubic metres of dangerous good will be stored on site.

List of equipment's & infrastructure

List of equipment
1 x Dumper
1 x Excavator
1 x Front-end Loader
1 x 150 Kva Generator

Prospecting activities and phases

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

Rehabilitation

The conditions of the EMP will be adhered to throughout the prospecting operation and commitment to rehabilitation is of paramount importance in order to obtain a closure certificate from DMRE.

iii) **DESCRIPTION OF PLANNED NON-INVASIVE ACTIVITIES:**

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

PHASE 1 - SITE VISIT

The applicant will appoint a geologist to conduct the site visit. It is foreseen that more than one site visit will be conducted. The purpose of the site visit shall be to familiarize the parties of the area including the topography and the general geology before invasive prospecting activities shall be commenced with.

During the site visit, the applicant shall assess the roads, the infrastructure that may be used and if it will be necessary to construct any infrastructure needed for the prospecting activities. From a site visit much more details shall be obtained about the process to be followed to properly conduct the prospecting activities than from near desktop studies.

Site visit shall assist the applicant to make a better assessment of the prospecting work to be done during the respective phases where the prospecting work shall be commenced with and what additional equipment may be required to properly conduct the prospecting activities.

The site visit shall also assist the applicant to assess prospecting information of earlier prospecting activities. During this process the applicant shall also review all documentation that has received in relation to the geology of the area.

A site visit will be done within 90 days after the prospecting right was executed.

PHASE 2 - DESKTOP STUDIES

Desktops studies would be undertaken after the site visit was done to determine the target areas including the identification of any infrastructure to be built and any potential problems that may need to be addressed during the prospecting activities.

Both these two phases will be Non-Invasive and restricted to a desktop study which will include literature survey, Interpretation of aerial photographs, satellite images and ground validation of targets.

During the desktop studies the applicant with the appointed geologist shall study all available geological information and historical data about the previous prospecting and mining activities.

It is hope that for the desktop studies, a preliminary analysis of the operating environment shall be obtained. The desktop studies may improve in project efficiency and reduced the cost by providing a clearer understanding of the challenges the prospecting activities may entail.

The desktop studies shall be finalized by the compilation and the analysis of pre-existing relevant data. The preliminary operating areas shall be identified for these studies. A working document shall be drafted by the geologist after the finalization of the desktop studies.

iv) DESCRIPTION OF PLANNED INVASIVE ACTIVITIES:

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

PHASE 3 - PITTING

Phase 3 of the invasive prospecting will initially consist of surface limestone and manganese sampling on a regular grid over areas that have been defined as limestone bearing outcrop at the surface. The samples will have to be taken from the surface and in some instances pitting to penetrate the wind-blown sand that is common in this area. This may involve digging a small shallow hole (<2m deep) to sample the limestone and manganese bedrock. The hole will be rehabilitated immediately after the sample has been taken. The sample lines will be traversed by foot so no new tracks will be formed by the field vehicles. The samples will be analysed for their calcium carbonate content. The data will be interpreted, and an anomaly map developed of the most prospective areas.

These pits will be positioned as determined by the geologist and after the geologist has assessed information obtained from the earlier prospecting activities.

A trial pit / test pit or inspection pit investigation is a highly effective way of obtaining data on the sub surface soil and rock conditions which underlie a prospecting sight. It

allows for the various soils and rock types to be locked, the soil to be sampled and a preliminary assessment to be made.

To dig the pits, the applicant shall make use of the systems of the appointed geologist.

The applicant shall at the end of the pitting process have locked the pits with the following information:

- A description of the soil and rock types from ground level to the base of the pits;
- Record of rock head depth and refusal depth, a list of where the samples will be taken, a record of where ground water seepage will be recorded;
- A general note of the geologist and conditions in the vicinity of the test pit.

Calculations

It is planned that 300 pits will be dug (it may be less depending on the results) at an extent of 3m (length) x 2m (wide) x 2m (depth) in 24 Months

300 pits / 2 =	150 pits	Pits that will be dug per year
150 pits x 3m (length) x 2m (wide) =	900m ²	Total area to be disturbed square meters per year
900m ² / 10 000 =	0.09ha	Total area disturbed in hectares per year
0.09ha x 2 years =	0.18ha	Total area disturbed in hectares

- v) **DESCRIPTION OF PRE-FEASIBILITY STUDIES** (Activities in this section includes but are not limited to: initial, geological modelling, resource determination, possible future funding models, etc.)

PHASE 4: PRE-FEASIBILITY STUDIES

The prospecting activities will be conducted to determine the limestone and manganese resource. The non-invasive prospecting activities will consist of a preliminary Economic Assessment (PEA) of the limestone and manganese deposit. In this study the mine plan for a 10-year life-of-mine will be developed including the crushing and transport of the product to end users in the area. If this assessment is positive the Company will apply for a Mining right.

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

Each physical phase of prospecting shall be followed by desktop studies involving interpretation and modeling of all data gathered. These studies will determine the manner in which the work programme is to be proceeded with in terms of the activity, quantity, resources, expenditure and duration.

A GIS data base will be constructed capturing all the exploration data.

All data shall be consolidated and processed to determine the limestone and manganese resource on the property.

E. POLICY AND LEGISLATIVE CONTEXT

Title of legislation, policy or guideline:	Administering authority:	Promulgation Date:
National Environmental Management Act No. 107 of 1998 as amended.	Department of Environmental Affairs	27 November 1998
Constitution of South Africa Act 108 of 1996	National	18 December 1996
The National Heritage Resources Act (Act No. 25 of 1999)	SAHRA	1999
Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)	Department of Mineral Resources & Energy (DMRE)	2002
National Infrastructure Plan	National	
National Environmental Management: Biodiversity Act No. 10 of 2004	Department of Environmental Affairs	7 June 2004
National Environmental Management Waste Act, 2008 (Act No. 59 of 2008)	National & Provincial	1 July 2009
EIA regulations under NEMA	Department of Environmental Affairs	14 December 2014
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	Department of Agriculture Forestry and Fisheries	1 June 1984
National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004).	National and Provincial	11 September 2004
National Water Act, 1998 (Act No. 36 of 1998).	National	20 August 1998
Ngaka Modiri Molema District Municipality Integrated Development Plan (IDP)	Municipal	
Ditsobotla Local Municipality Integrated Development Plan (IDP)	Municipal	
National Forest Act (Act 84 of 1998) (NFA)	National	30 October 1998
National Veld & Forest Fires Act (Act 101 of 1998)	National	27 November 1998

POLICY AND LEGISLATIVE CONTEXT

Title of legislation, policy or guideline:	Reference where applied	How does this development comply with and respond to the legislation and policy context.	Reference where applied
Constitution of South Africa Act 108 of 1996	Section 24	<p>The Constitution is the supreme law of the Republic and all law and conduct must be consistent with the Constitution. The Chapter on the Bill of Rights contains a number of provisions, which are relevant to securing the protection of the environment. Section 24 of the Constitution of the Republic of South Africa (Act 108 of 1996) states the following:</p> <p><i>“Everyone has the right –</i></p> <p><i>(a) to an environment that is not harmful to their health or well-being; and</i></p> <p><i>(b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –</i></p> <p><i>i) prevent pollution and ecological degradation;</i></p> <p><i>ii) promote conservation; and</i></p> <p><i>iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”</i></p> <p>The Constitution therefore, compels government to give effect to the people’s environmental right and places government under a legal duty to act as a responsible custodian of the countries environment. It compels government to pass legislation and use other measures to protect the environment, to prevent pollution and ecological degradation, promote conservation and secure sustainable development.</p>	Throughout the entire EIA process.
National Environmental Management Act No. 107 of 1998 as amended.	S24(1) of NEMA S28(1) of NEMA	<p>In order to give effect to the general objectives of integrated environmental management laid down in this Chapter, the potential consequences for or impacts on the environment of listed activities or specified activities must be considered, investigated, assessed and reported on to the competent authority or the Minister responsible for mineral resources, as the case may be, except in respect of those activities that may commence without having to obtain an environmental authorisation in terms of this Act.</p> <p>Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.</p>	Throughout the entire EIA process.
EIA regulations as amended under NEMA	Listing notice 1 Listing notice 2 Listing Notice 3	<p>The National Environmental Management Act 107 of 1998 (NEMA), as amended, makes provision for the identification and assessment of activities that are potentially detrimental to the environment. These activities are detailed in Listing Notice 1 (as amended by GNR 327 of 7 April 2017), Listing Notice 2 (as amended by GNR325 of 7 April 2017) and Listing Notice 3 (as amended by GNR324 of 7 April 2017). Undertaking activities specified in the Listing Notices are only allowed once Environmental Authorisation has been obtained from the competent authority. Such Environmental Authorisation will only be considered once there has been compliance with the EIA Regulations, 2014. The Environmental Authorisation which may be granted subject to conditions.</p>	Throughout the entire EIA process.

Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)	Section 10, 16, 22, 27, 38A and 48	<p>Any person who wishes to apply to the Minister for a prospecting right, mining right or mining permit must simultaneously apply for an environmental authorisation and must lodge the application -</p> <p>Once the application is accepted, an Environmental Impact Assessment (BAR or EIR process), including stakeholder consultation and reporting, must be conducted as per Chapter 5 of the National Environmental Management Act, 1998 (NEMA).</p>	Throughout the entire EIA process.
Mineral and Petroleum Resources Development Regulations, 2014.	Regulations 3, 5, 10 and 14	MPRDA Regulations prescribe how an application for a permit or right must be lodged.	Throughout the entire mineral right process
The National Heritage Resources Act (Act No. 25 of 1999)	Section 35 Section 38	The National Heritage Resources Act (Act No 25 of 1999, Section 35) protects South Africa's unique and non-renewable archaeological and palaeontological heritage sites. These sites may not be disturbed without a permit from the relevant heritage resources authority. Section 38 of the NHRA provides guidelines for Cultural Resources Management and proposed developments:	Throughout the entire EIA process.
National Environmental Management: Biodiversity Act No. 10 of 2004	Chapter 4 Chapter 5	<p>The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) is part of a suite of legislation falling under NEMA. The Act provides for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; the protection of species and ecosystems that warrant protection; the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute; and for matters connected therewith (SANBI).</p> <p>Chapter 4 of NEMBA deals with threatened and protected ecosystems and species to ensure the maintenance of their ecological integrity, their survival in the wild, the utilisation of biodiversity is managed in an ecologically sustainable way and to regulate international trade in specimens of endangered species. Chapter 5 of NEMA deals with species and organisms posing potential threats to biodiversity. The purpose of this chapter is to prevent the introduction and spread of alien species and invasive species, also to manage, control and eradicate alien species and invasive species</p>	Throughout the entire EIA process.
National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004).	Section 21	<p>The object of this Act is to protect the environment by providing reasonable measures for the protection and enhancement of the quality of air in the Republic; the prevention of air pollution and ecological degradation; and securing ecologically sustainable development while promoting justifiable economic and social development.</p> <p>Regulations No. R248 (of 31 March 2010) promulgated in terms of Section 21(1) (a) of the National Environmental Management Act: Air Quality Act (39 of 2004) determine that an Atmospheric Emission License (AEL) is required for certain listed activities, which result in atmospheric emissions which have or may have a detrimental effect on the environment. The Regulation also sets out the minimum emission standards for the listed activities. It is not envisaged that an Atmospheric Emission License will be required for the proposed development.</p>	Throughout the entire EIA process.

<p>National Water Act, 1998 (Act No. 36 of 1998).</p>	<p>Section 21</p>	<p>Sustainability and equity are identified as central guiding principles in the protection, use, development, conservation, management and control of water resources. The intention of the Act is to promote the equitable access to water and the sustainable use of water, redress past racial and gender discrimination, and facilitate economic and social development. The Act provides the rights of access to basic water supply and sanitation, and environmentally, it provides for the protection of aquatic and associated ecosystems, the reduction and prevention of pollution and degradation of water resources.</p> <p>As this Act is founded on the principle that National Government has overall responsibility for and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest, a person can only be entitled to use water if the use is permissible under the Act. Chapter 4 of the Act lays the basis for regulating water use.</p>	<p>Throughout the entire EIA process.</p>
<p>National Forest Act (Act 84 of 1998) (NFA)</p>	<p>Regulation 7</p>	<p>The protection, sustainable management and use of forests and trees within South Africa are provided for under the National Forests Act (Act 84 of 1998).</p> <p>Regulation 7 from the Act states the following:</p> <p>Prohibition on destruction of trees in natural forests.</p> <p>(1) No person may -</p> <p>(a) cut, disturb, damage or destroy any indigenous tree in a natural forest; or</p> <p>(b) possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any tree, or any forest product derived from a tree contemplated in paragraph (a), except in terms of-</p> <p>(i) a licence issued under subsection (4) or section 23; or</p> <p>(ii) an exemption from the provisions of this subsection published by the Minister in the Gazette on the advice of the Council.</p>	<p>Throughout the entire EIA process.</p>
<p>National Veld & Forest Fires Act (Act 101 of 1998)</p>	<p>Regulation 13 Chapter 5</p>	<p>The purpose of the Act is to prevent and combat veld, forest and mountain fires throughout the Republic and provides for a variety of institutions, methods and practices for achieving the purpose. Regulations 13 provides the requirement for firebreaks. Chapter 5 places a duty on all owners to acquire equipment and have available personnel to fight fires.</p>	<p>Throughout the entire EIR / BAR & EMPr.</p>
<p>Conservation of Agricultural Resources Act (Act No. 85 of 1983)</p>		<p>The purpose of the Act is to provide for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.</p> <p>The objects of this Act are to provide for the conservation of the natural agricultural resources of the Republic by the maintenance of the production potential of land, by the combating and prevention of erosion and weakening or destruction of the water sources, and by the protection of the vegetation and the combating of weeds and invader plants.</p>	<p>Throughout the entire EIA process.</p>

National Infrastructure Plan		<p>The National Government adopted a National Infrastructure Plan in 2012. With the plan they aim to transform the South African economic landscape while simultaneously creating significant numbers of new jobs, and strengthening the delivery of basic services.</p> <p>This mining activity will indirectly contribute to the growing of the South African economy by supplying SANRAL with material to build and upgrade road infrastructure.</p>	Throughout the entire EIA process.
District Municipality Integrated Development Plan (IDP)		The IDP and SDFs of the relevant municipalities was examined and relevant information was included in the EIA report.	EIA report.
Local Municipality Integrated Development Plan (IDP)		The IDP and SDFs of the relevant municipalities was examined and relevant information was included in the EIA report.	EIA report.
National Environmental Management: Protected Areas Act 57 of 2003		This Act provides for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes. It also seeks to provide for the sustainable utilization of protected areas and to promote participation of local communities in the management of protected areas.	Throughout the entire EIA process.
National Environmental Management: Waste Act, 2008 (Act No. 59 Of 2008) Regulations regarding the Planning & Management of Residue Stockpiles & Residue Deposits from a Prospecting, Mining, Exploration or Production Operation		The purpose of these Regulations is to regulate the planning and management of residue stockpiles and residue deposits from a prospecting, mining, exploration or production operation.	Throughout the entire EIA process.

<p>Hazardous Substances Act (No. 15 of 1979)</p>		<p>The object of the Act is inter alia to 'provide for the control of substances which may cause injury or ill health to, or death of, human beings by reason of their toxic, corrosive, irritant, strongly sensitising or flammable nature or the generation of pressure thereby in certain circumstances; for the control of electronic products; for the division of such substances or products into groups in relation to the degree of danger; for the prohibition and control of such substances.'</p> <p>In terms of the Act, substances are divided into schedules, based on their relative degree of toxicity, and the Act provides for the control of importation, manufacture, sale, use, operation, application, modification, disposal and dumping of substances in each schedule.</p>	<p>Throughout the entire EIA process.</p>
<p>Subdivision of Agricultural Land Act (No. 70 of 1970)</p>		<p>This Act regulates the subdivision of agricultural land and its use for purposes other than agriculture. The Directorate of Resource Conservation is responsible for the enforcement thereof. Investigations are done by the Provincial Department in support of the execution of the Act. The Act also deals with aspects associated with rezoning land.</p>	<p>EIA process.</p>
<p>Occupational Health and Safety Act (No. 85 of 1993)</p>		<p>The Occupational Health and Safety Act (No. 85 of 1993) (OHSA) provides a legislative framework for the provision of reasonably healthy and safe conditions in the workplace. It also places extensive legal duties on employees and users of machinery and makes major inroads on employers' and employees' common law rights.</p> <p>The OHSA is applicable and states that any person involved with construction, upgrades or developments for use at work or on any premises shall ensure as far as reasonably practicable that nothing about the manner in which it is installed, erected or constructed makes it unsafe or creates a risk to health when properly used</p>	<p>EMPr.</p>
<p>Mine Health and Safety Act (No. 29 of 1996)</p>		<p>The Mine Health and Safety Act (No. 29 of 1996) (MHSA) aims to protect and promote the health and safety of employees and persons that may be affected by the activities at a mine and outlines both the rights and responsibilities of an employer, as well as the obligations of employees working thereat.</p> <p>The following principles are considered applicable to the Proposed Project and are detailed below:</p> <ul style="list-style-type: none"> • The primary responsibility for ensuring a health and safe working environment in the mining site is placed on the mine owner. The Act sets out in detail the steps that employers must take to identify, assess records and control health and safety hazards in the mine; • The right of workers to participate in health and safety decisions, the right to receive health and safety information, the right to training and the right to withdraw from the workplace in face of danger; • The Act requires the establishment of institutions to promote a culture of health and safety and develop policy, legislation and regulations; and • The responsibility for enforcing MHSA lies with the Mine Health and Safety Inspectorate. The Inspectorate's powers are recast and include the power to impose administrative fines upon employers who contravene the MHSA. <p>The Act also contains innovative approaches to the investigation of accidents, diseases and other occurrences that threaten health and safety.</p>	<p>EMPr.</p>
<p>Government Notice Regulation 704 of 1999</p>		<p>GNR.704 of 1999 under the NWA provides regulations on the use of water for mining and related activities aimed at the protection of water resources (requirements for clean and dirty water separation). GNR.704 requires inter alia the following:</p> <ul style="list-style-type: none"> • Separation of clean (unpolluted) water from dirty water; • Collection and confinement of the water arising within any dirty area into a dirty water system; 	<p>Throughout the entire EIA process.</p>

	<ul style="list-style-type: none"> • Design, construction, maintenance and operation of the clean water and dirty water management systems so that it is not likely for either system to spill into the other more than once in 50 years; • Design, construction, maintenance and operation of any dam that forms part of a dirty water system to have a minimum freeboard of 0.8m above full supply level, unless otherwise specified in terms of Chapter 12 of the Act; and • Design, construction, and maintenance of all water systems in such a manner as to guarantee the serviceability of such conveyances for flows up to and including those arising as a result of the maximum flood with an average period of recurrence of once in 50 years. <p><u>GNR.704 also stipulates that no person in control of a mine or activity may:</u></p> <p>Locate or place any residue deposit, dam, reservoir, together with any associated structure or any other facility within the 1:100 year flood line or within a horizontal distance of 100m from any watercourse or estuary, borehole or well, excluding boreholes or wells drilled specifically to monitor the pollution of groundwater, or on water-logged ground, or on ground likely to become water-logged, undermined, unstable or cracked;</p> <p>Place or dispose of any residue or substance which causes or is likely to cause pollution of a water resource, in the workings of any underground or opencast mine excavation, prospecting diggings, pit or any other excavation; or</p> <p>Use any area or locate any sanitary convenience, fuel depots, reservoir or depots for any substance which causes or is likely to cause pollution of a water resource within the 1:50 year flood line of any watercourse or estuary.</p>	
--	--	--

F. 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).

Mining has played a vital role in the economy of South Africa for over 100 years. In 2015 the mining industry contributed R286 billion towards South African Gross Domestic Product (GDP) representing 7.1% of overall GDP. Mining is a significant contributor to employment in the nation, with 457 698 individuals directly employed by the sector in 2015. This represents just over 3% of all employed nationally. (Chamber of Mines, South Africa, 17:2016)

G. MOTIVATION FOR THE PREFERRED DEVELOPMENT FOOTPRINT WITHIN THE APPROVED SITE INCLUDING A FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED DEVELOPMENT FOOTPRINT WITHIN THE APPROVED 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.

Location of the site

The property is located near Mahikeng in the North West province.

The location of the site is preferred due to the possibility of shallow Limestone (Ls) & Manganese Ore (Mn).

According to **Figure 20 and Figure 21** the proposed area is mostly covered by natural vegetation, cultivation, some water bodies and a degraded area.

The google earth map (**figure 22**) show the natural area and cultivated lands. The proposed area is used for agricultural activities such as crop cultivation, livestock grazing and homesteads. Some of the homesteads are abandoned (**Appendix 5**).

If applicable a Water Use License Application will be launched for conducting prospecting without bulk sampling operations.

All infrastructure will be temporary and/or mobile.

Preferred activity

According to **Figure 20 and Figure 21** the proposed area is mostly covered by natural vegetation, cultivation, some water bodies and a degraded area.

The google earth map (**figure 22**) show the natural area and cultivated lands. The proposed area is used for agricultural activities such as crop cultivation, livestock grazing and homesteads. Some of the homesteads are abandoned (**Appendix 5**).

The applicant wishes to prospect for Limestone (Ls) & Manganese Ore (Mn). The prospecting activities will provide more job opportunities.

Technology alternatives

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

H. A FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED DEVELOPMENT FOOTPRINT WITHIN THE APPROVED SITE, INCLUDING:

i) DETAILS OF THE DEVELOPMENT FOOTPRINT ALTERNATIVES CONSIDERED;

- **Consideration of alternatives**

The DEAT 2006 guidelines on 'assessment of alternatives and impacts' proposes the consideration of four types of alternatives namely, the no-go, site, activity, and technology alternatives. It is however, important to note that the regulation and guidelines specifically state that only 'feasible' and 'reasonable' alternatives should be explored. It also recognizes that the consideration of alternatives is an iterative process of feedback between the developer, the EAP and Interested and affected parties, which in some instances culminates in a single preferred project proposal. The following sections explore each type of alternative in relation to the proposed activity.

- **Location alternatives**

This alternative asks the question, if there is not, from an environmental perspective, a more suitable location for the proposed activity. Also, it is expected that the applied for minerals have been deposited on this farm and therefore the applicant would like to commence with their prospecting activities.

According to **Figure 20 and Figure 21** the proposed area is mostly covered by natural vegetation, cultivation, some water bodies and a degraded area.

The google earth map (**figure 22**) show the natural area and cultivated lands. The proposed area is used for agricultural activities such as crop cultivation, livestock grazing and homesteads. Some of the homesteads are abandoned (**Appendix 5**).

Land capability

The proposed area falls within Land in **Class III (3), Class IV (4), Class VI (6)** (refer to Land capability map on **figure 6** and attached as **Appendix 5**).

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

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

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

- **Activity alternatives**

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

The proposed area is used for agricultural activities such as crop cultivation, livestock grazing and homesteads.

- **Design and layout alternatives**

The purpose of prospecting it to investigate an area of land to identifying an actual or probable mineral deposit. The location of activities will be determined based on the location of the mineral.

All the infrastructure will be temporary and/or mobile.

- **Operational alternatives**

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

The objective of the prospecting work programme is to target all minerals in question seams available with a view of increasing the geological confidence factor to assess its bulk sampling potential.

- **No-go alternative**

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

- **Technology Alternatives**

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

The preferred technology for the proposed invasive prospecting activity, will dig pits. A trial pit / test pit or inspection pit investigation is a highly effective way of obtaining data on the sub surface soil and rock conditions which underlie a prospecting sight. It allows for the various soils and rock types to be locked, the soil to be sampled and a preliminary assessment to be made. To dig the pits, the applicant shall make use of the systems of the appointed geologist. The applicant shall at the end of the pitting process have locked the pits with the following information:

- A description of the soil and rock types from ground level to the base of the pits;
- Record of rock head depth and refusal depth, a list of where the samples will be taken, a record of where ground water seepage will be recorded;
- A general note of the geologist and conditions in the vicinity of the test pit.

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

ii) DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED

Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings. (Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.

ADVERTISEMENT AND NOTICES

Two advertisements were placed in English in the local newspaper (**Mafikeng Mail**) notifying the public of the EIA process and requesting Interested and Affected Parties (I&APs) to register with, and submit their comments to Milnex CC. I&APs were given the opportunity to raise comments within 30 days of the advertisement. (see **Appendix 6(iv)**)

- First advert was placed on 28 October 2022.
- Second advert was placed on 12 May 2023.

SITE NOTICES

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

- First site notices that were placed.

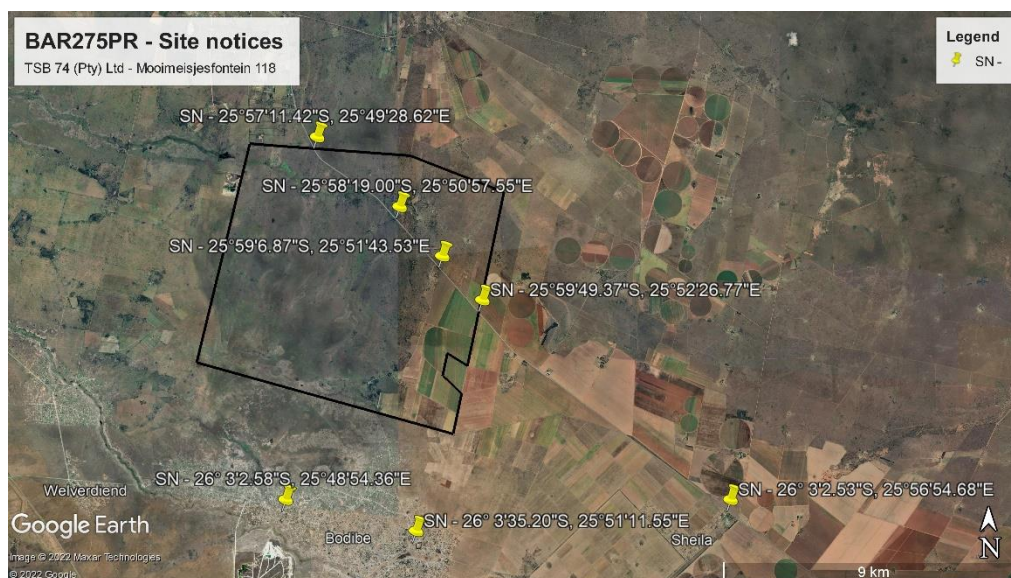
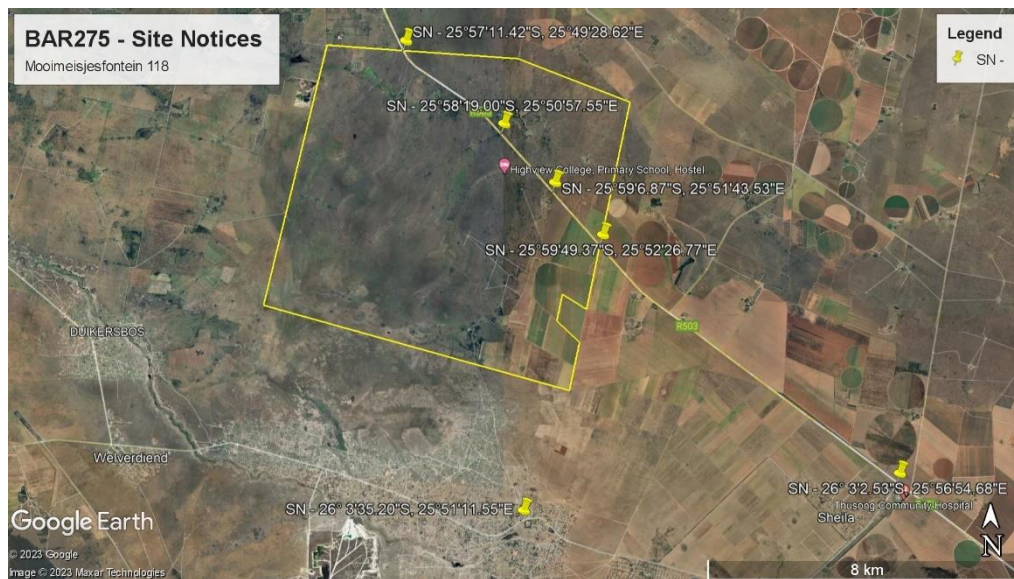


Figure 3: Site notices

- Second site notices that were placed.



Direct notification and circulation of Basic Assessment Report to identified I&AP, stakeholder, landowners, surrounding landowners, and occupiers.

- First registered letters

Identified I&APs, including key Stakeholders representing various sectors, Landowners, Surrounding landowners and Occupiers are directly informed of the proposed development and the availability of the **Basic Assessment Report** via registered post or email on **21 October 2022** and were requested to submit comments by **20 November 2022**. For a complete list of stakeholder details and for proof of registered post see **Appendix 6**. The consultees included:

Table 1: List of Stakeholders, Landowners, & surrounding landowners

Stakeholders
Department of Economic Development, Environment, Conservation & Tourism (DEDECT)
Department of Water & Sanitation (DWS)
Department of Agriculture, Forestry & Fisheries (DAFF)
Provincial Heritage Resources Agency (PHRA) North West
Department of Public Works and Roads (DPWR)
Department of Mineral Resources & Energy (DMRE)
Department of Agriculture & Rural Development (DARD)
Department of Environment, Forestry & Fisheries (DEFF)
Department of Cooperative Governance and Traditional Affairs (DCGTA)
Department of Human Settlements (DHS)
Department of Community Safety and Transport Management (DCSTM)
Ditsobotla Local Municipality, Municipal Manager
Ditsobotla Local Municipality, Ward 12 Councillor
WESSA
Ngaka Modiri Molema District Municipality
South African National Roads Agency SOC Ltd, (SANRAL)
Landowner
Barolong Boo Rapulana Communal Property Association
Tau Rapulana Tribal Authority

Department of Agriculture, Land Reform and Rural Development on behalf of National Government of the Republic of South Africa
Deputy Land Claims Commissioner: National Office Ms Cindy Benyane
Land Claims Commissioner: National Office Ms Nomfundo Ntloko-Gobodo
Communication Services Ms Linda Page
Lili Lucia Mahamba
James Ramokoloko Mokheche Maine
Maleshane Martha Maine
Surrounding landowners
Republiek van Bophuthatswana
Department of Agriculture, Land Reform and Rural Development on behalf of National Government of the Republic of South Africa
Deputy Land Claims Commissioner: National Office Ms Cindy Benyane
Land Claims Commissioner: National Office Ms Nomfundo Ntloko-Gobodo
Communication Services Ms Linda Page
Selebaleng Anna Ratshikana
Radipadi Samuel Lenong
Amberock Five Properties CC
Markus Wynand Buys
Noami Buys
Naphtron Properties CC
Mamosadi Rosinah Nkau
Gofetile Olebile Benjamin Ratshikana
Mokgathane Cattle Farm CC

It is expected from I&APs to provide their inputs and comments within 30 days after receipt of the notification or Basic Assessment Report.

Direct notification and circulation of Basic Assessment Report inclusive of the findings of the specialist studies to identified I&AP, stakeholder, landowners, surrounding landowners, and occupiers.

- **Second registered letters**

Identified I&APs, including key Stakeholders representing various sectors, Landowners, Surrounding landowners and Occupiers are directly informed of the proposed development and the availability of the **Basic Assessment Report** via registered post or email on **08 May 2023** and were requested to submit comments by **07 June 2023**. For a complete list of stakeholder details and for proof of registered post see **Appendix 6**. The consultees included table 1 above.

It is expected from I&APs to provide their inputs and comments within 30 days after receipt of the notification or Basic Assessment Report.

Public Meeting

Please note that the Stakeholders & Interested and Affected Parties (I&APs) were informed about the proposed project with the use of press advertisement, registered letters and site notices. I

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

Landowner meetings

Landowner 1: Barolong Boo Rapulana Communal Property Association / Tau Rapulana Tribal Authority

TSB 74 (Pty) Ltd

The applicant (**TSB 74 (Pty) Ltd**) had a few meetings with the Barolong Boo Rapulana Communal Property Association / Tau Rapulana Tribal Authority.

The first meeting was held on 01/02/2022. The signed consent letter and attendance register are annexed under **Annexure 6(vi)**.

A second meeting was arranged by the CPA and held on 21 April 2023. The minutes of the meeting and signed attendance register is available under **Annexure 6(vi)**. Please see the minutes as received from TSB 74 (Pty) Ltd, below:

Feedback of the between TSB74 and CPA Meeting

1. *Attended register attached*
2. *Introduction*
3. *Reason for the meeting*
4. *Conclusion*

Opening of the meeting

- *Opening and welcomed by Chairperson Mr Thapelo Magonare, and*
- *Secretary General Malema request all attended to introduced themselves.*
- *All attended people introduced themselves.*

Reason for the meeting

- *Chairman requested TSB 74 (Pty)Ltd to explain why the requested a meeting*
- *Director of TSB74, inform the committee that TSB74 management have meet with the King of Bodibe and his committee in two to three meetings, to discuss the land of mooimeisjesfontein area, and the Rapulane council has agreed that TSB74 can apply for the prospecting rights on the mooimeisjesfontein and therefore the council will give the details of the farms under their authority, of which they did provide us with the list of the farms.*
- *TSB74 apologies for not informing the CPA in time about the request of TSB74, because TSB74 was not aware of the CPA.*
- *Director informed the committee and member that the agreement between the Rapulane Council and TSB74 was just to do prospecting right nothing was paid to the council for that process.*
- *Mr Moiloa (Young king) confirmed that yes TSB74 did request him to introduced them to the Repulane king and Council f which he did introduce TSB74. Therefore, he was not part of the other meeting as he was not invited.*
- *Richards of the member, said they have informed the Milnex environmental consultants that they have already applied for the mining rights.*
- *One of woman whom, we did have his name said that if the CPA been granted the right to mine they might invite us to come and mine.*

Inclusion

Chairperson closed the meeting and TSB74 management was request the leave the office area and the CPA remained to finalised their own meeting.

Milnex CC

A meeting was scheduled for the 29th of November 2022 between Milnex CC and Mr. James R.M. Maine. Annexed hereto as **Annexure 6(vi)** is the minutes of the meeting and signed attendance register. Please see the minutes below:

3. Questions/Comments by the CPA

The Council asked the following questions:

- 1) Who is TSB74 (Pty) Ltd

- a. The applicant is TSB74- its Director is Tshidiso Bohope.
- 2) Why is Milnex here? For consultation?
 - a. WB: In order to identify landowners (I&AP's) and to correspond with the CPA.
 - b. Milnex wanted to elaborate on the project as well as receive any comments, concerns, or objections that the CPA may have.
 - c. In terms of the National Environmental Management Act (NEMA), an independent environmental consultant must be appointed by an applicant in order to assess the impact of the proposed activities on the environment.
 - i. A part of this process is to consult with any interested and affected party (in this case- the CPA).
 - ii. We receive the comments/ objections in order to mitigate the possible impacts.
 - d. WB inquired about the application of the CPA on the property.
 - i. The chairperson of the CPA stated that the CPA had wanted to meet first before it shared its documents.
- 3) Who was consulted?
 - a. JC: Mr James Maine, Mr Buti Mbyiya.
- 4) The CPA stated that it only brought an application over its own property.
- 5) WB: TSB74's application was accepted by the DMRE and they assess the application as well and that Milnex needed to comply with the MPRDA before consulting with the CPA.
- 6) Who will monitor the process and how will it be monitored?
 - a. WB explained that the Environmental Authorisation and mineral right applications must be done simultaneously. Once the environmental authorisation is granted, it is executed by the Regional Manager of the DMRE.
 - b. After the mineral right is executed, and registered, the applicant may commence with the prospecting activities.
 - c. These activities are regulated by NEMA and the applicant must comply with these regulations.
 - d. If these regulations are not followed, the proponent will act in non-compliance. A S31L notice will be given to the proponent by the DMRE, which orders the immediate ceasing of the operation until the proponent can act in compliance with the NEMA regulations.
- 7) Deputy chairperson felt cautious of asking questions as the CPA has its own application and that the CPA should wait pending the outcome of its own application; if the CPA's application is rejected, then they will negotiate.
- 8) The CPA is familiar with TSB74 and wanted to work with them. TSB74 applied for the right after its meeting with the CPA and were they dishonest and untrustworthy. If TSB74 applied for a prospecting right, do they have permission to prospect?
 - a. WB: No, they do not have such permission; in order to legally prospect, the right must be granted and then executed before mining may start.
- 9) Who executes the right?
- 10) WB: The Regional Manager of the DMRE executes the right.
- 11) CPA followed up with regard to the creation of jobs etc. as they do not want to give false hope to the community.
- 12) Milnex must note that TSB74 is not from the area and that the applicant must be told that the community must be respected.
 - a. The CPA is the most important of the 3 role players and that they will wait for the outcome of the application.
 - b. The CPA will engage with Milnex in the future, pending the outcome of the application.
- 13) WB asked the CPA to provide Milnex with their application in order to make the DMRE aware of both applications.
 - a. WB thanked everyone for their time and efforts to attend the meeting.
 - b. WB reiterated the importance of the CPA and that the application cannot proceed without engagement with the CPA.
 - i. Further, that Milnex is only there in our capacity as environmental consultants and that the applicant can answer any operational questions that the CPA may have.

- ii. Further, that Milnex will try to bring the applicant to the next meeting to answer certain questions.
- c. WB requested to receive a copy of the CPA's application.
 - i. The CPA confirmed that a copy of their application will be provided to Milnex.

Meeting closed at 10h40.

Landowner 4: James R. M. Maine

A meeting was scheduled for the 29th of November 2022 between Milnex CC and Mr. James R.M. Maine. Annexed hereto as **Annexure 6(vi)** is the minutes of the meeting and signed attendance register.

Questions/Comments during meeting:

The landowner and his sons asked the following questions:

- 1) What does Milnex CC do?
 - a. *Milnex representative are environmental consultants, we do EA application, WULA applications and offer a few services. I referred them to our website to view all of our services.*
- 2) How does compensation work?
 - a. *Milnex representative explained that a surface-use agreement must be agreed upon between the applicant and the landowner, in terms of which the specific details will be discussed, e.g., compensation, security and all other matters in relation to the use of the surface of the property.*
- 3) They inquired how damage to their property and cattle will be handled.
 - a. *Milnex representative referred them to the surface-use agreement.*

Landowner 2: Martins (Buti) Mbyiya

A meeting was held with the landowner and Milnex CC on 29th of November 2022. According to Mr. Mbyiya he is the landowner of Portion 25 of the farm Mooimeisjesfontein 25/118 even though SearchWorks say it the National Government of the Republic of South Africa.

Questions/Comments during meeting:

According to the minutes of the meeting the landowner had no questions, neither had he any objections toward the application. A letter of consent will be sent to him for signing.

Issues Raised by Interested and Affected Parties

Comments received during this period are attached as comment & response report as well as populated in the table of summary of issues raised (See **Appendix 6** for comments and response form).

iii) SUMMARY OF ISSUES RAISED BY I&APS
(Complete the table summarising comments and issues raised, and reaction to those responses)

Interested and Affected Parties		Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issue and or response where incorporated
List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.				
Organisation	Contact person			
Landowner				
Mooimeisjesfontein RE/1/118, RE/17/118, 18/118, RE/19/118, 20/118, 21/118, 22/118, RE/23/118, 26/118, 27/118, 28/118, 44/118, 46/118, 47/118, 53/118, 54/118, 55/118, 62/118, 65/118				
Mooimeisjesfontein 25/118, RE/31/118, RE/37/118	Department of Agriculture, Land Reform and Rural Development On behalf of National Government of the Republic of South Africa			
	Deputy Land Claims Commissioner: National Office Ms Cindy Benyane			
	Land Claims Commissioner: National Office Ms Nomfundo Ntloko-Gobodo			
	Communication Services Ms Linda Page			
Mooimeisjesfontein RE/41/118, RE/50/118,	Lili Lucia Mahamba			

Mooimeisjesfontein RE/52/118	James Ramokoloko Mokheche Maine Kenneth Maine			
Mooimeisjesfontein 25/118	Martins (Buti) Mbyiya			
Mooimeisjesfontein 39/118	No information available on SearchWorks			
Mooimeisjesfontein 45/118	Boikago Association			
Mooimeisjesfontein 51/118	No information available on SearchWorks			
Mooimeisjesfontein 63/118	Portion not found on SearchWorks			
Mooimeisjesfontein 66/118	No information available on SearchWorks			
Surrounding Landowners				
Driefontein RE/46	Republiek van Bophuthatswana			
Blaauwbank RE/414 Molopo-Ratshidi RE/302	Department of Agriculture, Land Reform and Rural Development On behalf of National Government of the Republic of South Africa			
	Deputy Land Claims Commissioner: National Office Ms Cindy Benyane			
	Land Claims Commissioner: National Office Ms Nomfundo Ntloko- Gobodo			

	Communication Services Ms Linda Page			
Blaauwbank 21/119	Selebaleng Anna Ratshikana			
Grootfontein 46/115	Radipadi Samuel Lenong			
Grootfontein 48/115, Valleifontein RE/35/113, Valleifontein 31/113	Amberock Five Properties CC			
Valleifontein 125/113	Markus Wynand Buys			
	Noami Buys			
Valleifontein 147/113, Valleifontein 44/113	Naphtron Properties CC			
Valleifontein RE/96/113 & 129/113	Mamosadi Rosinah Nkau			
Lente 415	Gofetile Olebile Benjamin Ratshikana			
Lentevallei 4/133	Mokgathane Cattle Farm CC			
Spring Valley RE/131	No information available on SearchWorks			
Blaauwbank 2/414	No information available on SearchWorks			
Uitgeput 48	No information available on SearchWorks			
Valleifontein 39/113	Oagile-Mathudi Trust			
Valleifontein 114/113 Valleifontein 94/113	Boikago Association			
Valleifontein 123/113	No information on SearchWorks			
Valleifontein 130/113	Hester Hilda Hill			

The Municipality in which jurisdiction the development is located				
Ditsobotla Local Municipality	Municipal Manager: To whom it may concern			
Municipal councillor of the ward in which the site is located				
Ditsobotla Local Municipality	Ward 12 Councillor			
Organs of state having jurisdiction				
Department of Economic Development, Environment, Conservation & Tourism (DEDECT)				
Department of Water & Sanitation (DWS)				
Department of Agriculture, Forestry & Fisheries (DAFF)				
Provincial Heritage Resources Agency (PHRA) North West				
Department of Public Works and Roads (DPWR)				
Department of Mineral Resources & Energy (DMRE)				
Department of Agriculture & Rural Development (DARD)				
Department of Environment, Forestry & Fisheries (DEFF)				
Department of Cooperative Governance and Traditional Affairs (DCGTA)				
Department of Human Settlements (DHS)				
Department of Community Safety and Transport Management (DCSTM)				

Department of Agriculture Land Reform & Rural Development (DALRRD)				
Office of the Regional Land Claims Commissioner: North West				
Other–				
Ngaka Modiri Molema District Municipality				
WESSA (National Office)				
South African National Roads Agency SOC Ltd, (SANRAL)				
Interested and Affected Party				
South African Heritage Resources Agency (SAHRA)				
Interested and Affected Party: Barolong Boo Rapulana Beneficiaries				

iv) **THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE SITES**

Baseline Environment

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

Results of the environmental sensitivity of the proposed area (Screening tool)

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification.

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

No	EIA Reference No	Classification	Status of application	Distance from proposed area (km)
1	14/12/16/3/3/1/997	Solar PV	Approved	11.7
2	14/12/16/3/3/2/974	Solar PV	Approved	25.8
3	14/12/16/3/3/2/272	Solar PV	Approved	19.5
4	14/12/16/3/3/2/1093	Solar PV	Approved	27.9
5	14/12/16/3/3/2/975	Solar PV	Approved	25.8
6	14/12/16/3/3/2/1062	Solar PV	Approved	25.9
7	14/12/16/3/3/2/1092	Solar PV	Approved	25.1
8	14/12/16/3/3/2/1091	Solar PV	Approved	27.2

Proposed Development Area Environmental Sensitivity

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

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

Type of environment affected by the proposed activity.

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

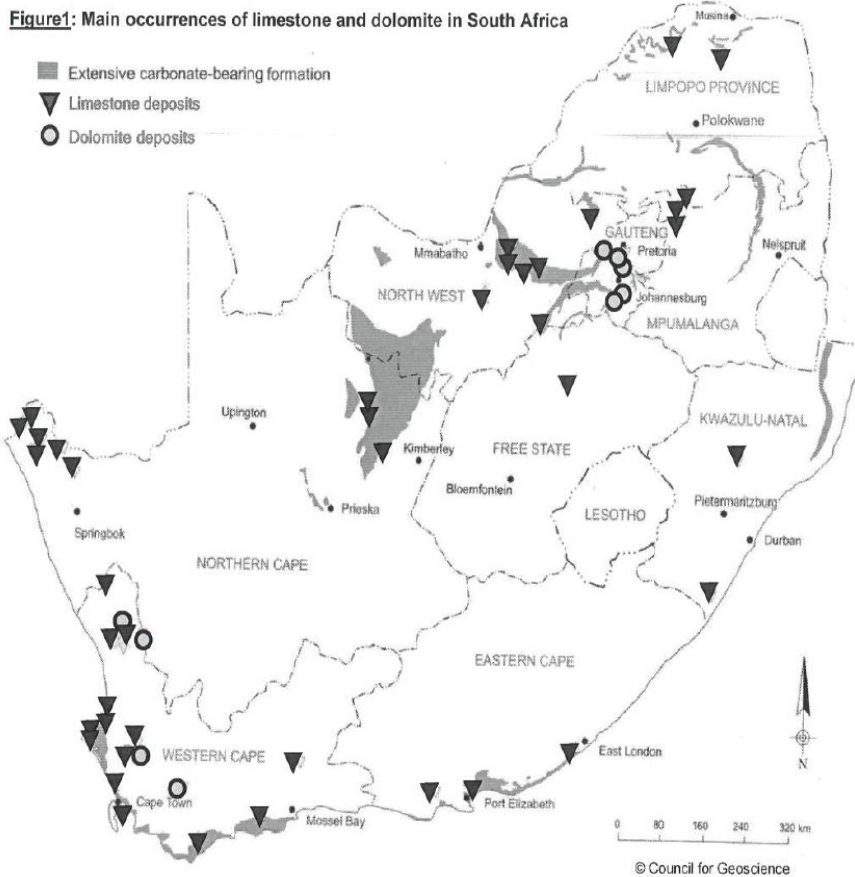
GEOLOGY AND SOILS

The surface rocks on the farm consist mainly of chert-free dolomite (Vo) of the Transvaal Sequence, Group Chuniespoort, Sub-Group Malmani, Formation Oaktree. There is a narrow outcrop of either chert, quartzite of basal conglomerate (Vbr) which runs from north to the south-east of the farm. Elsewhere is reported that the Malmani Subgroup and Oaktree Formation consists of an alternation of chert-bearing and chert-free dolomite. On this basis it may be subdivided further into four, or in some places even five formations. At the base carbonaceous shale and quartzite are found in some localities and the contact with underlying Black Reef Formation is gradational. The outcrop can in fact also be the Black Reef Formation which is common in the area.

The area of Mahikeng, Lichtenburg and Delareyville are famous for the quality of limestone present. A number of Cement Factories are present. One of these Cement Factories has been operational since the 1950's.

Despite its highly variable ore grade, sedimentary carbonates, constitute South Africa’s major resources of limestone and dolomite. Deposits of economic significance are hosted in 5 sedimentary units: (1) the Campbell

Rand Subgroup and the Malmani Subgroup, the former in the Northern Cape Province and the later in the Gauteng, Limpopo, Mpumalanga and North West provinces (2) the Mapumulo Group outcropping at Marble Delta in southern Kwazulu-Natal, (3) the Nama Group in Vanrhynsdorp area of the Western Cape, (4) the Malmesbury Group in the Western and Eastern Cape (5) and the Tertiary and Quaternary coastal limestone along the Cape coast. Calcrete and dolocrete deposits are located in the arid regions of the country and provide important resources of low-grade material for both cement manufacturing and agricultural industries. Travertine deposits are generally small, the exception being the deposits are generally small. The largest limestone resource in South Africa occur in a relatively narrow 150km long belt.



ECOLOGICAL HABITAT AND LANDSCAPE FEATURES

The result obtained by plotting the coordinates are as follow:

The proposed area falls within vegetation unit Gh 13, Gh 14 and Gh 15 which is known as the Klerksdorp Thornveld, Western Highveld Sandy Grassland and Carletonville Dolomite Grassland. All of them are part of the Dry Highveld Grassland Bioregion, which is a sub-bioregion for the Grassland Biome.

Klerksdorp Thornveld

According to Mucina and Rutherford (2006:386), the Klerksdorp Thornveld vegetation covers the North West Province: In two sets of patches, one in the Wolmaransstad, Ottosdal and Hartbeesfontein region and the other from the Botsolano Game Park north of Mafikeng to the vicinity of Madibogo in the south. This Thornveld is situated on an altitude of 1260-1580m.

The area often has plains or slightly irregular undulating plains with open to dense *Acacia karroo* bush clumps in dry grassland.

Some other important Taxa found on in the area:

Small Trees: *Acacia karroo* (d), *A. caffra*, *Celtis africana*, *Rhus lancea*, *Ziziphus mucronata*.

Tall Shrubs: *Acacia hebeclada*, *Diospyros lycioides* subsp. *lycioides*, *Ehretia rigida*, *Grewia flava*, *Gymnosporia buxifolia*, *Rhus pyroides*, *Tarchonanthus camphoratus*.

Woody climber: *Asparagus africanus*.

Low Shrubs: *Asparagus laricinus* (d), *A. suaveolens* (d), *Felicia muricata* (d), *Anthospermum hispidulum*, *A. rigidum* subsp. *pumilum*, *Aptosimum elongatum*, *Gnidia capitata*, *Gomphocarpus fruticosus* subsp. *fruticosus*, *Helichrysum dregeanum*, *Leucas capensis*, *Pavonia burchellii*, *Pentzia globose*, *Solanum supinum* var. *supinum*, *Triumfetta sonderi*, *Ziziphus zeyheriana*.

Graminoids: *Aristida congesta* (d), *Cynodon dactylon* (d), *Eragrostis lehmanniana* (d), *E. trichophora* (d), *Microchloa caffra* (d), *Panicum coloratum* (d), *Sporobolus fimbriatus* (d), *Themeda triandra* (d), *Andropogon schirensis*, *Aristida junciformis* subsp. *galpinii*, *A. stipitata* subsp. *graciliflora*, *Brachiaria nigropedata*, *B. serrata*, *Bulbostylis burchellii*, *Cymbopogon pospischilii*, *Digitaria eriantha*, *Diheteropogon amplexans*, *Elionurus muticus*, *Eragrostis curvula*, *E. obtuse*, *E. racemose*, *E. superba*, *Eustachys paspaloides*, *Heteropogon contortus*, *Setaria sphacelata*, *Sporobolus africanus*, *Tragus berteronianus*, *Trichoneura grandiglumis*, *Triraphis andropogonoides*.

Herbs- *Acalypha angustata*, *Acanthospermum austral*, *Berkheya onopordifolia* var. *onopordifolia*, *B. setifera*, *Blepharis integrifolia* var. *clarkei*, *Chamaesyce inaequilatera*, *Chascanum adenostachyum*, *Dicoma macrocephala*, *Helichrysum nudifolium* var. *nudifolium*, *Hermannia lancifolia*, *Hibiscus pusillus*, *Justicia anagaloides*, *lippie scaberrima*, *Nidorella microcephala*, *Nolletia ciliaris*, *Pollichia campestris*, *Rhynchosia adenodes*, *Salvia radula*, *Selago densiflora*, *Teucrium trifidum*, *Tolpis capensis*.

Geophytic Herbs: *Bulbine narcissifolia*, *Ledebouria marginata*, *Ornithogalum tenuifolium* subsp. *tenuifolium*, *Raphionacme hirsute*.

Herbaceous Climber: *Rhynchosia venulose*

Mucina and Rutherford (2006:387) also states that the conservation of this thornveld type, is vulnerable with a target of 24%. Only 2.5% is statutorily conserved in the Mafikeng Game Reserve, private Botsolano Game Park and Faan Meintjies Nature Reserve. Almost a third already transformed for cultivation and by urban sprawl. This vegetation unit has a high grazing capacity and this leads to overutilisation and degradation, and subsequent invasion of *Acacia Karroo* into adjacent dry grassland. Due to the great habitat and floristic diversity and for aesthetical reasons, the landscape deserves to be conserved.

Western Highveld Sandy Grassland

According to Mucina and Rutherford (2006:387), Western Highveld Sandy Grassland covers the North West Provinces, from Mafikeng to Schweizer-Reneke in the south and from Broedersput and Kameel in the west to Lichtenburg and Ottosdal in the east. This vegetation is situated at an altitude of 1280-1520m and the main area at 1340-1380 m. The area often has flat to gently undulating plains with short dry grassland, with some woody species occurring in bush clumps.

Some other important Taxa found on in the area:

Graminoids: *Antheophora pubescens* (d), *Aristida congesta* (d), *A. diffusa* (d), *Cymbopogon pospischilii* (d), *Cynodon dactylon* (d), *Eragrostis lehmanniana* (d), *trichophora* (d), *Panicum coloratum* (d), *Pogonarthria squarrosa* (d), *Setaria sphacelata* (d), *Sporobolus africanus* (d), *Themeda triandra* (d), *Aristida adscensionis*, *A. canescens*, *A. stipitata* subsp. *graciliflora*, *Brachiaria serrata*, *Digitaria argyrograpta*, *D. eriantha*, *Diheteropogon amplexans*, *Elionurus muticus*, *Eragrostis chloromelas*, *E. curvula*, *E. gummiflua*, *E. racemose*, *Eustachys paspaloides*, *Heteropogon contortus*, *Melinis nerviglumis*, *Sporobolus discosporus*, *S. fimbriatus*, *Trichoneura grandiglumis*, *Triraphis andropogonoides*.

Herbs: *Gazania Krebsiana* subsp. *krebsiana* (d), *Stachys spathulata* (d), *Barleria macrostegia*, *Berkheya onopordifolia* var. *onopordifolia*, *Chamaecrista mimosoides*, *Chamaesyce inaequilatera*, *Dicoma anomala*, *D. macrocephala*, *Helichrysum callicomum*, *Hermannia depressa*, *H. tomentosa*, *Kyphocarpa angustifolia*, *Lippia scaberrima*, *Monsonia burkeana*, *Nolletia ciliaris*, *Osteospermum muricatum* subsp. *longiradiatum*, *Pollichia campestris*, *Rhynchosia adenodes*, *Sebaea grandis*, *Trichodesma angustifolium* subsp. *angustifolium*, *Vernonia oligocephala*

Geophytic Herb: *Boophone disticha*.

Low Shrubs: *Anthospermum rigidum* subsp. *pimilum* (d), *Aptosimum elongatum*, *Felicia muricata*, *Gnidia capitata*, *Helichrysum paronychioides*, *Indigofera comosa*, *Leucas capensis*, *Polygala hottentotta*, *Sida dregei*, *Solanum panduriforme*, *Stoebe plumose*.

Tall Shrubs: *Acacia hebeclada*, *Diospyros lycioides* subsp. *lycioides*.

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

Carletonville Dolomite Grassland

According to Mucina and Rutherford (2006:388), Carletonville Dolomite Grassland mainly covers the North West Provinces, at times Gauteng Province and marginally into the Free State Province. In the region of Potchefstroom, Ventersdorp and Carletonville, extending westwards to the vicinity of Ottoshoop, but also occurring as far east as Centurion and Bapsfontein in Gauteng Province.

The vegetation and landscape can be described as slightly undulating plains dissected by prominent rocky chert ridges. Species-rich grasslands forming a complex mosaic pattern dominated by many species.

Some other important Taxa found on in the area:

Graminoids: *Aristida congesta* (d), *Brachiaria serrata* (d), *Cynodon dactylon* (d), *Digitaria tricholaenoides* (d), *Diheteropogon amplexans* (d), *Eragrostis chloromelas* (d), *E. racemose* (d), *Heteropogon contortus* (d), *Loudetia simplex* (d), *Schizachyrium sanguineum* (d), *Setaria sphacelata* (d), *Themeda triandra* (d), *Alloterospis semialata* subsp. *eckloniana*, *Andropogon schirensis*, *Aristida canescens*, *A. diffusa*, *Bewisia biflora*, *Bulbostylis burchellii*, *Cymbopogon caesius*, *C. pospischilii*, *Elionurus muticus*, *Eragrostis curvula*, *E. gummiflua*, *E. plana*, *Eustachys paspaloides*, *Hyparrhenia hirta*, *Melinis nerviglumis*, *M. repens* subsp. *repens*, *Monocymbium ceresiiforma*, *Panicum coloratum*, *Pogonarthria squarrosa*, *Trichoneura grandiglumis*, *Triraphis andropogonoides*, *Tristachya leucothrix*, *T. rehmannii*.

Herbs: *Acalypha angustata*, *Barleria macrostegia*, *Chamaecrista mimosoides*, *Chamaesyce inaequilatera*, *Crabbea angustifolia*, *Dianthus mooiensis*, *Dicoma anomala*, *Helichrysum caespitium*, *H. miconiifolium*, *H. nudifolium* var. *nudifolium*, *Ipomoea ommaneyi*, *Justicia anagalloides*, *Kohautia amatymbica*, *Kyphocarpa angustifolia*, *Ophrestia oblongifolia*, *Pollichia campestris*, *Senecio coronatus*, *Vernonia oligocephala*.

Geophytic Herbs: *Boophone disticha*, *Habenaria mossii*.

Low Shrubs: *Anthospermum rigidum* subsp. *pimilum*, *Indigofera comosa*, *Pygmaeothamnus zeyheri* var. *rogersiim*, *Rhus magalismsontana*, *Tylosema esculentum*, *Ziziphus zeyheriana*.

Geoxylic Suffrutices: *Elephantorrhiza elephantine*, *Parinari capensis* subsp. *capensis*.

Mucina and Rutherford (2006:388) also states that the conservation is vulnerable with a target of 24%. Small extent conserved in statutory (Sterfontein Caves – Part of the Cradle of Humankind World Heritage Site, Oog van Malmanie, Abe Bailey, Boskop Dam, Schoonspruit, Krugersdorp, Olifantsvlei, Groenkloof) and in at least six private conservation areas. Almost a quarter

already transformed for cultivation, by urban sprawl or by mining activity as well as the building of the Boskop and Klerkskraal Dams. Erosion of this vegetation type is very low (84%) and low (15%).

BAR275PR: VEGETATION MAP

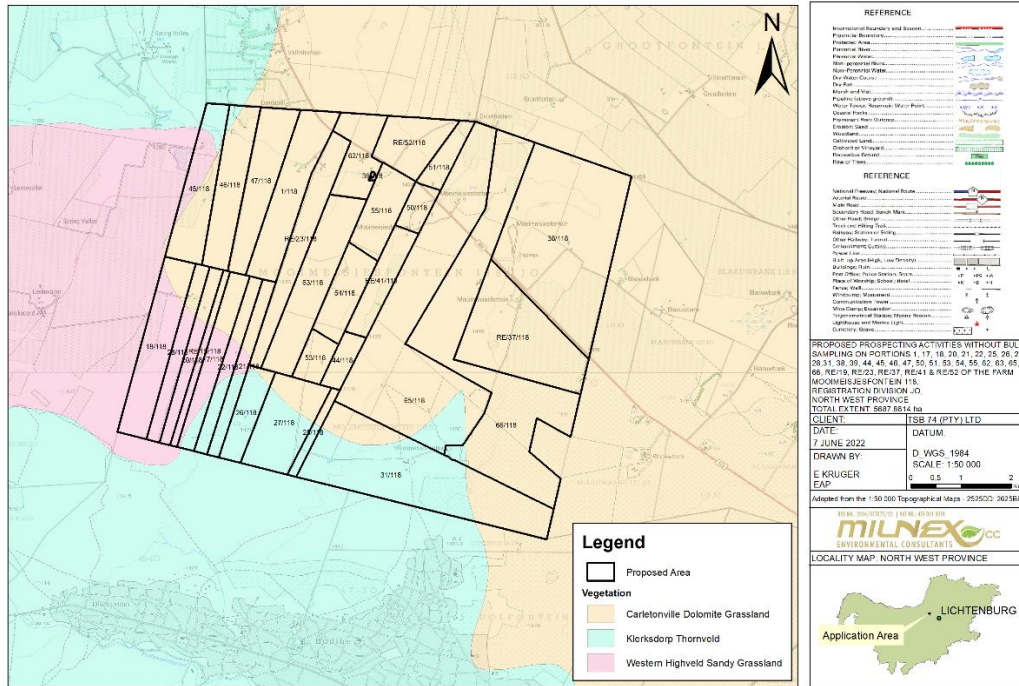


Figure 4: Vegetation types associated with the study site

According to the DFFE Screening Report the proposed area falls within Very High Terrestrial Biodiversity sensitivity and to a lesser extent Low sensitivity. Please see **Appendix 7** for the colour map.



Figure 10: Terrestrial Biodiversity Combined Sensitivity

An Ecological Assessment Report was conducted by AJH Lamprecht from EcoFocus Consulting (Pty) Ltd. The Report is available under **Annexure 12**. Please see the findings below:

Terrestrial Environment

The majority of the assessment area constitutes an intact reasonably natural, undeveloped terrestrial landscape intertwined to a lesser extent, with portions of historically cultivated agricultural croplands. The historical cultivation activities however appear to have ceased in the distant past, which has allowed for such portions to recover and return back to an ecologically functional and viable state.

A significantly sized area within the eastern and south-eastern portions of the assessment area as well as a small area within the north-western portion, however consist of actively/recently cultivated agricultural croplands. These areas are not viewed as being of any overall conservational significance/value.

The terrestrial landscape is categorised into the following main vegetation units, mainly based on differences in vegetation structure but also slight variations in species composition and representation:

- *Moderate- to high-density bushveld savannah*
 - *Slight variations are furthermore evident within this vegetation unit*
- *Open to moderate-density woody shrubland savannah*
- *Medium-height grassland*

It must however be kept in mind that although the assessment area is being artificially/anthropogenically categorised into different vegetation units for reporting purposes, these units do not function independently and should not be viewed as separate, isolated systems. They rather form part of the larger interconnected ecosystem associated with the local and broader landscape surrounding assessment area.

As discussed under heading 6.3, the conservationally important terrestrial CBA and ESA categorisations of the assessment area are as a result of the area forming a critical linkage/congregation point between three viably remaining intact regional ecological corridors, which traverse and connect the broader ecological landscape. These three ecological corridors link up with- and 'funnel/bottleneck' into the assessment area from the north-west, north-east and south-west, respectively. The assessment area with the exception of the portions consisting of actively/recently cultivated agricultural croplands, is therefore viewed as being of high overall conservational significance/value for the continued ecological connectivity, - functionality and -integrity of the broader landscape.

8.3.1. Moderate- to High-Density Bushveld Savannah

The majority of the terrestrial landscape throughout the assessment area constitutes a reasonably flat, moderate- to high-density bushveld savannah habitat with a well-established grass layer. The woody component of the bushveld savannah habitat is mainly dominated by medium-height tree individuals, while low-growing to medium-height woody shrub individuals are also well-represented throughout the landscape.

The density of the woody component varies considerably throughout this vegetation unit. Slight variations in vegetation structure as well as species composition and representation throughout this vegetation unit, are furthermore also evident within the north-western and north-eastern portions of the assessment area (discussed later on under this heading).

The majority of the bushveld savannah habitat is in a reasonably natural ecological state, although certain isolated portions are situated on old historically cultivated agricultural croplands. As discussed earlier, the historical cultivation activities however appear to have ceased in the distant past, which has allowed for such portions of bushveld savannah habitat to recover and return back to an ecologically functional and viable state. Evidence of recent burning of portions of the bushveld savannah habitat is also visible throughout the landscape.

*The woody component throughout the bushveld savannah landscape is mainly dominated by the species *Searsia lancea*, *S pyroides* and *Vachellia karroo*, while the species *Ziziphus mucronata*, *Grewia flava* and *Ehretia rigida* were also found to be well-represented. The species *Olea europaea*, *Gymnosporia buxifolia* and *Searsia ciliata* are also present throughout the landscape, but to significantly lesser extent.*

Slight disturbance as a result of historical and continued long-term overgrazing, is evident throughout significant portions of the grass layer associated with the bushveld savannah habitat. The grass layer is mainly dominated by the species

Eragrostis lehmanniana, *Aristida* spp., *Melinis repens*, *Digitaria* sp. and *Cynodon dactylon*, while the species *Eragrostis gummiflua* and *Heteropogon contortus* were also found to be well-represented throughout the landscape. The grass species *Eragrostis curvula*, *E obtusa*, *E superba*, *Setaria* spp., *Sporobolus* spp., *Hyparrhenia hirta*, *Themeda triandra* and *Cymbopogon pospischilii* were merely found to be very sparsely present throughout the bushveld savannah habitat.

The forb- and succulent species *Bulbine narcissifolia*, *Aloe transvaalensis*, *Geigeria ornativa*, *Ledebouria* sp., *Crabbea hirsuta*, *Aptosimum spinescens*, *Barleria macrostegia*, *Blepharis mitrata*, *Hermannia depressa*, *Oxalis* sp., *Vernonia* spp., *Salvia* spp., *Helichrysum* sp., *Elephantorrhiza elephantina*, *Pseudognaphalium luteo-album*, *Nidorella anomala*, *Bidens bipinnata*, *B pilosa*, *Tagetes minuta* and *Schkuhria pinnata* were found to be present throughout the bushveld savannah habitat. The presence of the latter seven species tends to increase in dominance throughout the portions where evidence of recent burning is visible and where overgrazing has taken place. Individuals and clusters of the underground bulb species *Ammocharis coranica* and *Boophone disticha* were also found to be sporadically present throughout the bushveld savannah habitat. A number of forb species observed during the site assessments are still in the process of being identified after which an additional list of these species will be provided, at a later stage.



Figure 15: Two images illustrating examples of the reasonably flat, moderate-density terrestrial bushveld savannah habitat, which is present throughout the assessment area

Figure 16: Two images illustrating examples of the reasonably flat, high-density terrestrial bushveld savannah habitat, which is present throughout the assessment area

The bushveld savannah habitat associated with the north-eastern portion of the assessment area constitutes a slightly undulating landscape, as opposed to the reasonably flat majority landscape. The area consists of a mosaic of moderate-density bushveld savannah within the lower lying areas intertwined with more open grassland/shrubland throughout the elevated areas of the undulating landscape.

The area houses a similar vegetation species composition and representation to that of the rest of the bushveld savannah habitat, but with the additional moderate presence of the nationally protected tree species *Vachellia erioloba* (density of approximately 2 individuals/ha). This species is diagnostically absent from the rest of the bushveld savannah habitat. The tree species *Olea europaea* is also more represented relative to the rest of the bushveld savannah habitat. This habitat variation of the area is therefore viewed as being of moderate conservational significance/value for representative landscape variation purposes.



Figure 17: Image illustrating an example of the slightly undulating, moderate-density bushveld savannah, which is present throughout the lower lying areas of the north-eastern portion of the assessment area



Figure 18: Image illustrating an example of the slightly undulating, more open grassland/shrubland, which is present throughout the elevated areas of the north-eastern portion of the assessment area

The bushveld savannah habitat associated with the north-western portion of the assessment area constitutes a reasonably flat, open thornveld savannah, which is overwhelmingly dominated by the tree species *Vachellia tortilis* and to a lesser extent, *Senegalia caffra*, with few, if any other woody species being present. These two species are diagnostically absent from the rest of the bushveld savannah habitat.

The main reason for this variation in vegetation structure as well as species composition and representation, is the fact that the area is situated on old historically cultivated agricultural croplands. This habitat variation of the area is therefore merely viewed as being of low conservational significance/value for representative landscape variation purposes.



Figure 19: Image illustrating an example of the reasonably flat, open thornveld savannah, which is present throughout the north-western portion of the assessment area

No Red Data Listed-, other nationally protected- or provincially protected plant species or any other plant species of conservational significance/value, were found to be present throughout the terrestrial bushveld savannah habitat. As stated under heading 2, it must however be noted that the seasonal timing of the assessments was not necessarily favourable for successful identification of underground bulb plant species individuals. The limited duration and timing of the site assessment for the proposed prospecting along with the significant size of the assessment area, furthermore merely included a general overview of the floral ecology.

8.3.2. Open to Moderate-Density Woody Shrubland Savannah

A broad corridor is situated in-between and separates the majority moderate- to high-density bushveld savannah habitat (see heading 8.3.1) from the medium-height grassland in the south-western portion of the assessment area (see heading 8.3.3). This area constitutes a transitional zone between these two vegetation units and consists of a reasonably flat, open to moderate-density terrestrial woody shrubland savannah habitat with a well-established grass layer. The woody component of the shrubland savannah habitat is mainly dominated by low-growing to medium-height woody shrub individuals, while low-growing tree individuals are merely sparsely present throughout the landscape.

The majority of the shrubland savannah habitat is in a reasonably natural ecological state, although certain isolated portions are situated on old historically cultivated agricultural croplands. As discussed earlier, the historical cultivation activities however appear to have ceased in the distant past, which has allowed for such portions of shrubland savannah habitat to recover and return back to an ecologically functional and viable state. Evidence of recent burning of portions of the shrubland savannah habitat is also visible throughout the landscape.

*Although the vegetation structure of the shrubland savannah habitat visibly differs from that of the bushveld savannah habitat, the vegetation species composition and representation is fairly similar. The woody component throughout the shrubland savannah landscape is mainly dominated by the species *Searsia lancea*, *S pyroides* and *Vachellia karroo*, while the species *Grewia flava* and *Ehretia rigida* were also found to be well-represented. The species *Ziziphus mucronata*, *Gymnosporia buxifolia* and *Searsia ciliata* are also present throughout the landscape, but to significantly lesser extent. The tree species *Olea europaea* which is present throughout the bushveld savannah habitat as well as the nationally protected tree species *Vachellia erioloba* which is present throughout the north-eastern portion of the assessment area, are however diagnostically absent from the shrubland savannah habitat.*

*Slight disturbance as a result of historical and continued long-term overgrazing, is evident throughout significant portions of the grass layer associated with the shrubland savannah habitat. The grass layer is mainly dominated by the species *Eragrostis lehmanniana*, *Aristida* spp., *Melinis repens*, *Digitaria* sp. and *Cynodon dactylon*, while the species *Eragrostis gummiflua* and *Heteropogon contortus* were also found to be well-represented throughout the landscape. The grass species *Eragrostis curvula*, *E obtusa*, *E superba*, *Setaria* spp., *Sporobolus* spp., *Hyparrhenia hirta*, *Themeda triandra* and *Cymbopogon pospischilii* were merely found to be very sparsely present throughout the shrubland savannah habitat.*

*The forb- and succulent species *Bulbine narcissifolia*, *Aloe transvaalensis*, *Geigeria ornativa*, *Ledebouria* sp., *Crabbea hirsuta*, *Aptosimum spinescens*, *Barleria macrostegia*, *Blepharis mitrata*, *Hermannia depressa*, *Oxalis* sp., *Vernonia* spp., *Salvia* spp., *Helichrysum* sp., *Elephantorrhiza elephantina*, *Pseudognaphalium luteo-album*, *Nidorella anomala*, *Bidens bipinnata*, *B pilosa*, *Tagetes minuta* and *Schkuhria pinnata* were found to be present throughout the shrubland savannah habitat. The presence of the latter seven species tends to increase in dominance throughout the portions where evidence of recent burning is visible and where overgrazing has taken place. Individuals and clusters of the underground bulb species *Ammocharis coranica* and *Boophone disticha* were also found to be sporadically present throughout the shrubland savannah habitat. A number of forb species observed during the site assessments are still in the process of being identified after which an additional list of these species will be provided, at a later stage.*

No Red Data Listed-, nationally protected- or provincially protected plant species or any other plant species of conservational significance/value, were found to be present throughout the terrestrial woody shrubland savannah habitat. As stated under heading 2, it must however be noted that the seasonal timing of the assessments was not necessarily favourable for successful identification of underground bulb plant species individuals. The limited duration and timing of the site assessment for the proposed prospecting along with the significant size of the assessment area, furthermore merely included a general overview of the floral ecology.



Figure 20: Three images illustrating examples of the open to moderate-density terrestrial woody shrubland savannah habitat, which is present throughout the assessment area



Figure 21: Two images illustrating examples of the prominent, slightly elevated calcrete ridges/outcrops, which are present throughout the southern portion of the assessment area

A number of prominent, slightly elevated calcrete ridges/outcrops are present throughout the southern portion of the assessment area. The vegetation structure as well as species composition and representation of these calcrete ridges/outcrops is however fairly similar to that of the surrounding shrubland savannah habitat. This habitat variation of the area is therefore merely viewed as being of low conservational significance/value for representative landscape variation purposes.

8.3.3. Medium-Height Grassland

A significantly sized area within the south-western portion of the assessment area constitutes a reasonably flat, medium-height terrestrial grassland habitat. Low-growing to medium-height woody shrub individuals are merely very sporadically scattered throughout the grassland landscape.

Evidence of recent burning of substantial portions of the grassland habitat is visible throughout the landscape. Virtually the entire grassland landscape is furthermore situated on old historically cultivated agricultural croplands. Additionally, it is evident that the area is underlain by dolomitic materials as opposed to the expected basaltic and/or andesitic lavas, which are associated with the relevant Western Highveld Sandy Grassland vegetation type (Gh 14). The grassland habitat is therefore not reminiscent of the natural climax state of this vegetation type, which reduces the conservational significance of the area.

The historical cultivation activities however appear to have ceased in the distant past, which has allowed for the grassland habitat to recover and return back to an ecologically functional and viable sub-climax state. The grassland habitat is mainly dominated by the grass species *Hyparrhenia hirta* and *Heteropogon contortus*, while the species *Eragrostis lehmanniana* and *Melinis repens* were also found to be well-represented throughout the landscape. The grass species *Themeda triandra* and *Aristida* spp. are also well-represented throughout certain areas of the grassland habitat, while the species *Eragrostis*

curvula, E obtusa, E superba, Setaria spp., Sporobolus spp. and Cymbopogon pospischilii were merely found to be sparsely present throughout the landscape.

The very sporadically scattered woody shrub individuals throughout the grassland landscape mainly consist of the species Searsia lancea, S pyroides and Vachellia karroo, while clusters of the woody shrub species Searsia ciliata are also present throughout the landscape.

A diverse forb- or succulent layer was not evident throughout the grassland habitat, during the site assessment. This is likely as a result of the historical cultivation activities. The forb species Hermannia depressa, Oxalis sp., Vernonia spp., Salvia spp., Helichrysum sp., Geigeria ornativa, Elephantorrhiza elephantina, Pseudognaphalium luteo-album and Nidorella anomala were found to be present throughout the landscape. The presence of the latter three species tends to increase in dominance throughout the portions where recent burning has taken place. Individuals and clusters of the underground bulb species Ammocharis coranica were also found to be sporadically present throughout the grassland habitat.

No Red Data Listed-, nationally protected- or provincially protected plant species or any other plant species of conservational significance/value, were found to be present throughout the terrestrial grassland habitat. As stated under heading 2, it must however be noted that the seasonal timing of the assessments was not necessarily favourable for successful identification of underground bulb plant species individuals. The limited duration and timing of the site assessment for the proposed prospecting along with the significant size of the assessment area, furthermore merely included a general overview of the floral ecology.



Figure 22: Two images illustrating examples of the reasonably flat, medium-height terrestrial grassland habitat, which is present within the south-western portion of the assessment area



Figure 23: Image illustrating an example of the recently burnt portions which are present throughout the grassland habitat

According to the DFFE Screening Report the Relative Plant Species Theme Sensitivity is Low. Please see **Appendix 7** for the colour map.

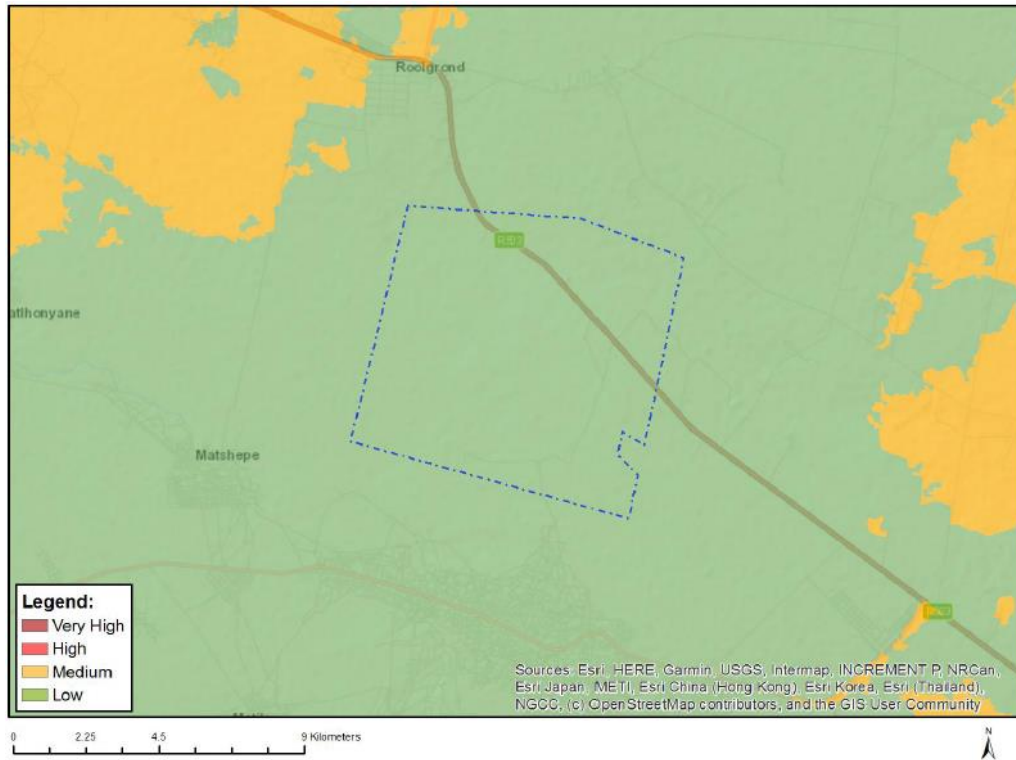


Figure 5: Plant Species Combined Sensitivity

An Ecological Assessment specialist study was conducted by AJH Lamprecht from EcoFocus Consulting (Pty) Ltd. Please see the findings below:

8.4. Plant Species List for the Assessment Area

According to the Environmental Screening Tool Report, the Plant Species Biodiversity Theme of the assessment area is rated as being of 'low sensitivity'.

Table 5: Plant species list for the assessment area (Nationally protected species highlighted in orange)

Graminoids	Forbs & Succulents	Woody Shrubs/Trees
<i>Aristida spp.</i>	<i>Aloe transvaalensis</i>	<i>Ehretia rigida</i>
<i>Cymbopogon pospischilii</i>	<i>Amaranthus hybridus</i>	<i>Grewia flava</i>
<i>Cynodon dactylon</i>	<i>Ammocharis coranica</i>	<i>Gymnosporia buxifolia</i>
<i>Digitaria sp.</i>	<i>Aptosimum spinescens</i>	<i>Olea europaea</i>
<i>Echinochloa holubii</i>	<i>Barleria macrostegia</i>	<i>Searsia ciliata</i>
<i>Eragrostis curvula</i>	<i>Bidens bipinnata</i>	<i>Searsia lancea</i>
<i>Eragrostis gummiflua</i>	<i>Bidens pilosa</i>	<i>Searsia pyroides</i>
<i>Eragrostis lehmanniana</i>	<i>Blepharis mitrata</i>	<i>Senegalia caffra</i>
<i>Eragrostis obtusa</i>	<i>Boophone disticha</i>	<i>Vachellia erioloba</i>
<i>Eragrostis plana</i>	<i>Bulbine narcissifolia</i>	<i>Vachellia karroo</i>
<i>Eragrostis superba</i>	<i>Crabbea hirsuta</i>	<i>Vachellia tortilis</i>
<i>Heteropogon contortus</i>	<i>Elephantorrhiza elephantina</i>	<i>Ziziphus mucronata</i>
<i>Hyparrhenia hirta</i>	<i>Geigeria ornativa</i>	-
<i>Imperata cylindrica</i>	<i>Helichrysum sp.</i>	-
<i>Melinis repens</i>	<i>Hermannia depressa</i>	-
<i>Paspalum spp.</i>	<i>Ledebouria sp.</i>	-
<i>Phragmites australis</i>	<i>Nidorella anomala</i>	-
<i>Schoenoplectus tabernaemontani</i>	<i>Oxalis sp.</i>	-
<i>Setaria spp.</i>	<i>Pseudognaphalium luteo-album</i>	-
<i>Sporobolus spp.</i>	<i>Salvia spp.</i>	-
<i>Themeda triandra</i>	<i>Schkuhria pinnata</i>	-
<i>Typha capensis</i>	<i>Tagetes minuta</i>	-
-	<i>Vernonia spp.</i>	-

A number of forb species observed during the site assessments are still in the process of being identified after which an additional list of these species will be provided, at a later stage.

8.5. Vegetation Unit Map

The vegetation unit map below (see A3 sized map in the Appendices) illustrates the delineated aquatic ecological features as well as the identified terrestrial vegetation units throughout the assessment area.

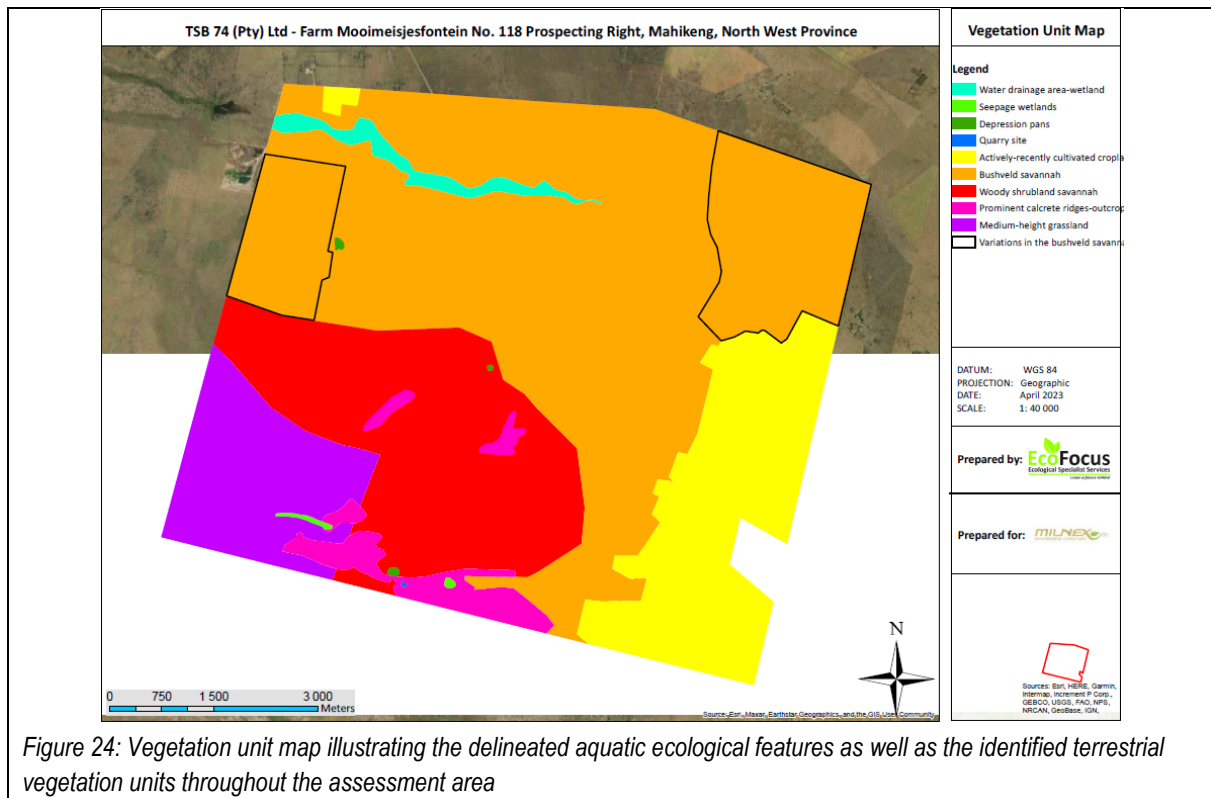


Figure 24: Vegetation unit map illustrating the delineated aquatic ecological features as well as the identified terrestrial vegetation units throughout the assessment area

AGRICULTURAL / LAND CAPABILITY

The proposed area falls within Land in Class III (3), Class IV (4) and Class VI (6) (refer to Land capability map on **figure 6** and attached as **Appendix 5**).

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

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

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

BAR275PR: LAND CAPABILITY MAP

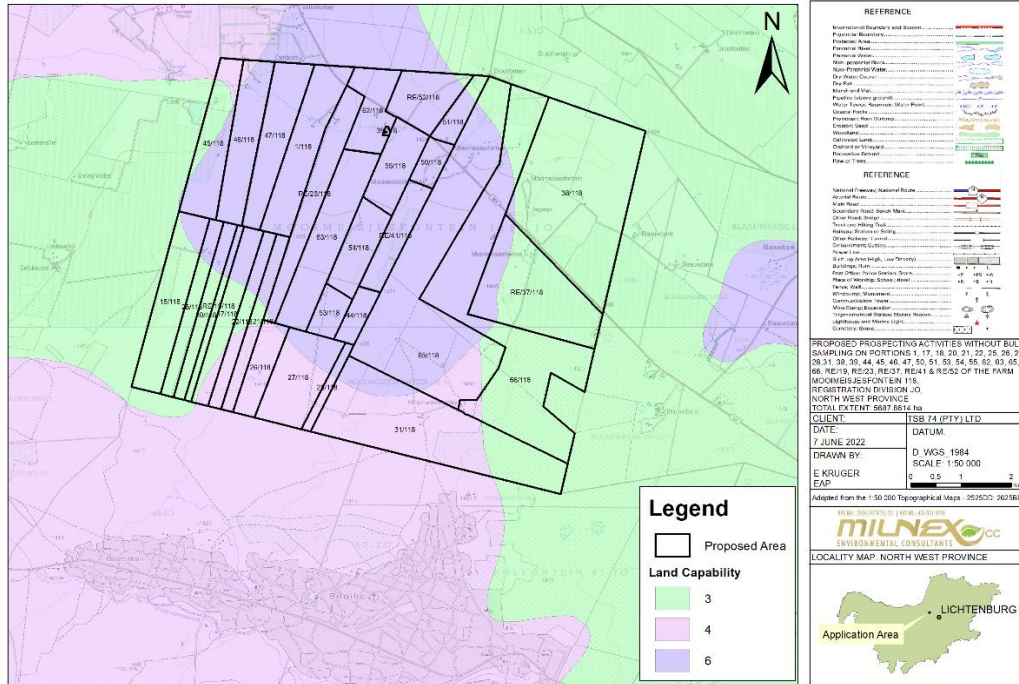


Figure 6: Land capability

According to the DFFE Screening Report the Agriculture theme sensitivity of the proposed area falls mostly within medium sensitivity and to a lesser extent High, Low and Very High sensitivity. Please see **Appendix 7** for the colour map.

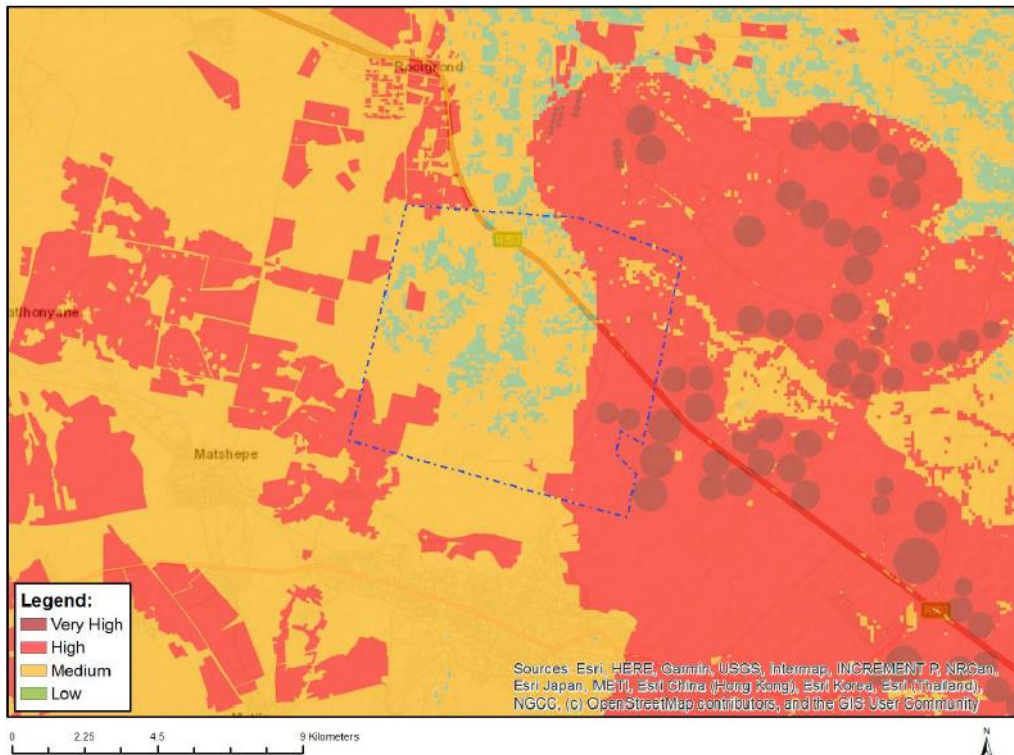


Figure 7: Agriculture Combined Sensitivity

THREATENED ECOSYSTEMS

Ecosystem threat status outlines the degree to which ecosystems are still intact or alternatively losing vital aspects of their structure, function and composition, on which their ability to provide ecosystem services ultimately depends (Driver et al. 2011). Datasets have been developed by SANBI (2016) in order to outline threatened ecosystems, with the primary objective of limiting the rate of ecosystem extinctions. Four established categories group these ecosystems namely: Critically Endangered (CR), Endangered (EN), Vulnerable (VU) and Protected.

According to **Figure 8**, a certain area falls within the Western Highveld Sandy Grassland threatened ecosystem.

PROTECTED AREAS

Formally protected areas are protected either by national or provincial legislation. Based on the SANBI (2010) Protected Areas Map (**Figure 8**), the proposed area does not fall within a formally protected area.

BAR275PR: PROTECTED AREAS MAP

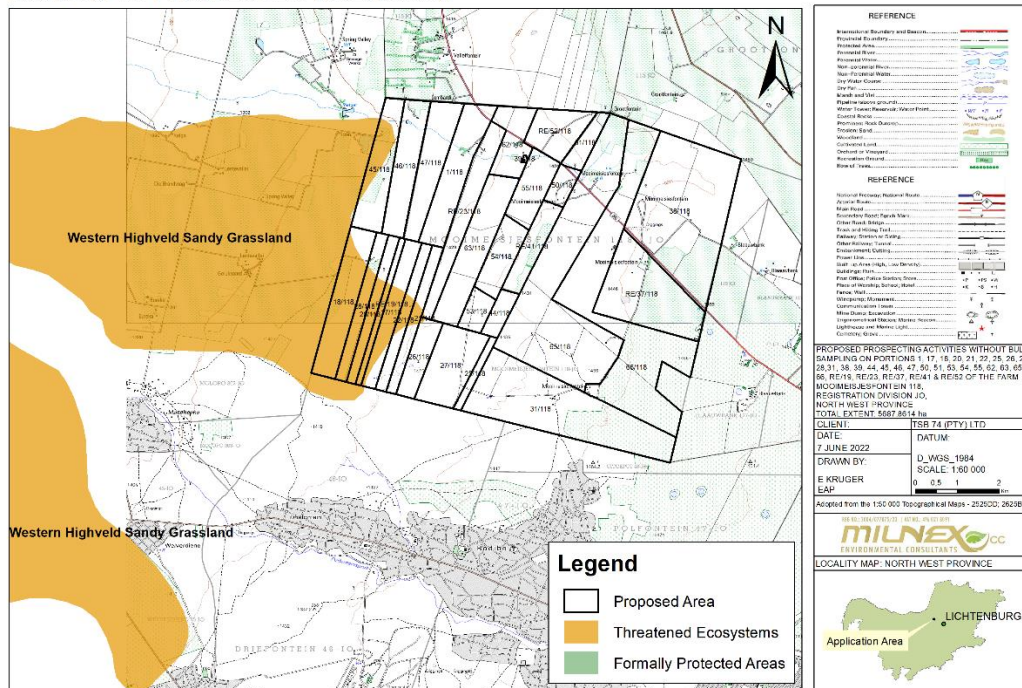


Figure 8: Threatened Ecosystems and Formally Protected Area.

CRITICAL BIODIVERSITY AREA

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

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

The proposed area falls within CBA1, CBA2 ESA1 and ESA2, as illustrated on the map below (Figure 9).

BAR275PR: CRITICAL BIODIVERSITY AREAS MAP

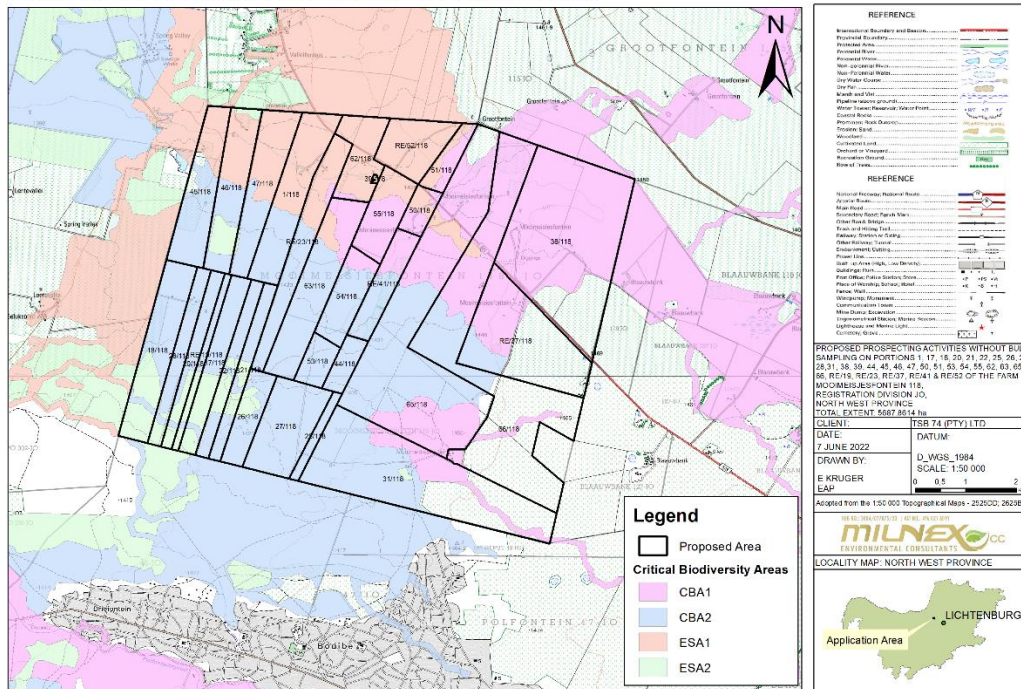


Figure 9: Critical Biodiversity Areas (CBAs) associated with the study site.

An Ecological Assessment Report was conducted by AJH Lamprecht from EcoFocus Consulting (Pty) Ltd. The Report is available under **Annexure 12**. Please see the findings below:

8.7. Site Ecological Importance (SEI)

The Site Ecological Importance (SEI) of the assessment area is classified as medium-high as it is viewed as being ecologically important and/or sensitive on provincial scale. Avoidance mitigation is recommended wherever possible. Minimisation mitigation – changes to project infrastructure design and/or reduction in footprint area sizes to limit the amount of habitat impacted; limited development activities of low impact acceptable. Offset mitigation may be required for high impact activities.

Reasoning:

As discussed under heading 6.3, the majority of the assessment area is categorised as terrestrial Critical Biodiversity Area one (CBA 1) and terrestrial Critical Biodiversity Area two (CBA 2), according to the North West Biodiversity Spatial Plan 2015 (NW BSP), which sets out biodiversity priority areas in the province. The north-western portion of the assessment area is categorised as terrestrial Ecological Support Area one (ESA 1), while merely the small south-western corner is categorised as terrestrial Ecological Support Area two (ESA 2), according to the North West Biodiversity Spatial Plan 2015 (NW BSP).

According to the Environmental Screening Tool Report, the Terrestrial Biodiversity Theme of the assessment area, is rated as being of 'very high sensitivity' for the presence of the terrestrial Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA), protected areas expansion strategy and the presence of the Endangered Western Highveld Sandy Grassland vegetation type (Gh 14).

These conservationally important terrestrial categorisations of the assessment area are as a result of the area forming a critical linkage/congregation point between three viably remaining intact regional ecological corridors, which traverse and connect the broader ecological landscape. These three ecological corridors link up with- and 'funnel/bottleneck' into the assessment area from the north-west, north-east and south-west, respectively. The assessment area with the exception of the portions consisting of actively/recently cultivated agricultural croplands, is therefore viewed as being of high overall conservational significance/value for the continued ecological connectivity, -functionality and -integrity of the broader landscape.

According to the Environmental Screening Tool Report, the Animal Species Biodiversity Theme of the overwhelming majority of the assessment area is rated as being of 'low sensitivity'. A small portion situated directly adjacent inside the south-western boundary of the assessment area, is however rated as being of 'medium sensitivity' for the potential presence of the Globally Vulnerable Red Listed mammalian species *Acinonyx jubatus* (Cheetah). A minute portion situated within the central portion of the assessment area, is furthermore rated as being of 'high sensitivity' for the potential presence of the Globally Vulnerable Red Listed mammalian species *Smutsia temminckii* (Temminck's Pangolin).

Various threatened aquatic and terrestrial faunal and avifaunal species are indicated on the Biodiversity and Development Institute's Virtual Museum and the IUCN Red List of Threatened Species (<https://www.iucnredlist.org>) as potentially/likely occurring throughout the local and broader landscape into which the assessment area falls (see heading 8.6). Although none of these species were observed throughout the assessment area during the site assessment, the reasonably natural bushveld savannah- and woody shrubland savannah landscapes associated with the assessment area, provide suitable/favourable habitat and prey availability for the potential/likely presence of a number of these species. The limited duration and timing of the site assessment for the proposed prospecting along with the significant size of the assessment area, furthermore merely included a general overview of the faunal and avifaunal ecology.

Due to the minute sizes and isolated nature of the proposed pits, it is not anticipated that the proposed prospecting would pose any significant risk to the continued ecological connectivity, -functionality and -integrity of the assessment area or broader terrestrial landscape. The subsequently envisaged potential future mining activities within the assessment area, could however highly likely result in significant impact to the ecology of the broader terrestrial landscape and consequently pose a significant risk to achieving and maintaining national and/or provincial conservation- and persistence targets of the area.

According to the DFFE Screening Report the proposed area falls mostly within Low Animal Species theme sensitivity but there are area that fall within Medium and High sensitivity. Please see **Appendix 7** for the colour map.

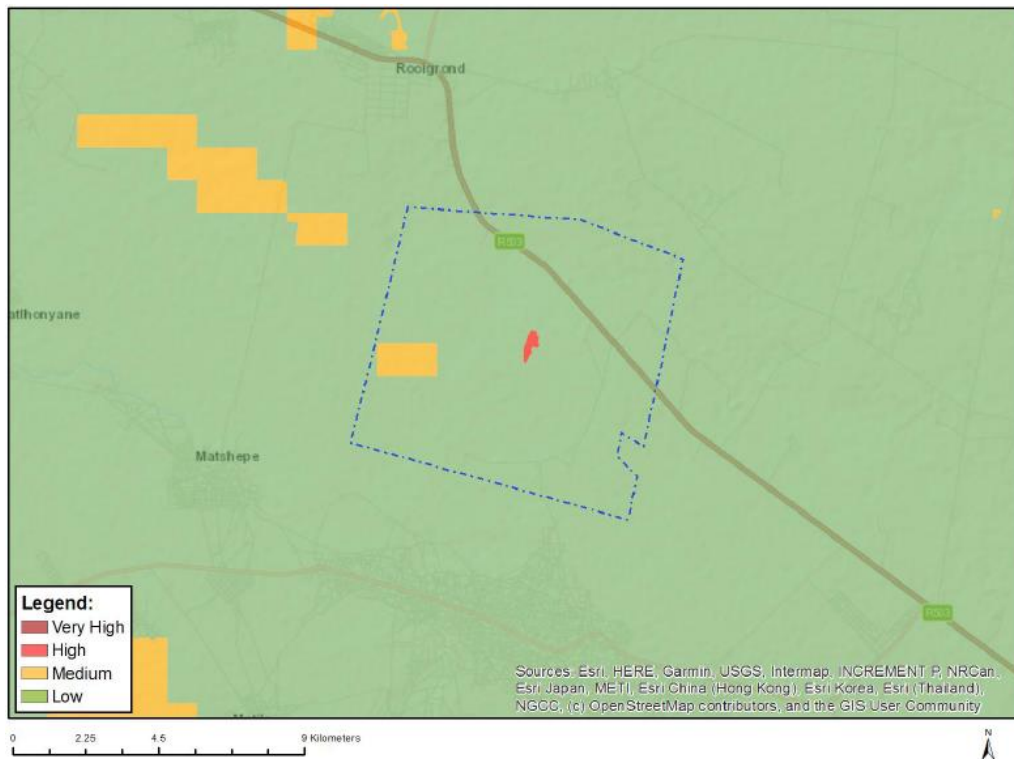


Figure 12: Animal Species theme sensitivity

An Ecological Assessment Report was conducted by AJH Lamprecht from EcoFocus Consulting (Pty) Ltd. The Report is available under **Annexure 12**. Please see the findings below:

8.6. Fauna and Avifauna

8.6.1. Environmental Screening Tool

According to the Environmental Screening Tool Report, the Animal Species Biodiversity Theme of the overwhelming majority of the assessment area is rated as being of 'low sensitivity'.

*A small portion situated directly adjacent inside the south-western boundary of the assessment area, is however rated as being of 'medium sensitivity' for the potential presence of the Globally Vulnerable Red Listed mammalian species *Acinonyx jubatus* (Cheetah). No individuals of this species were however observed throughout the assessment area, during the site assessment. Due to the size and predatory nature of this species, the realistic chance/possibility of this species potentially occurring in the wild throughout the local or broader area and remaining undetected, is furthermore extremely low. It is therefore not expected/anticipated that any individuals of this species would specifically utilise the assessment area as refuge or for breeding, foraging and/or persistence purposes.*

*A minute portion situated within the central portion of the assessment area, is furthermore rated as being of 'high sensitivity' for the potential presence of the Globally Vulnerable Red Listed mammalian species *Smutsia temminckii* (Temminck's Pangolin). According to the IUCN Red List of Threatened Species (<https://www.iucnredlist.org>), this species is predominantly nocturnal, solitary and terrestrial and mainly inhabits savannas and woodlands in low-lying regions with moderate to dense scrub. It can however also occur in floodplain grassland, rocky slopes and sandveld, but does not inhabit forests or true desert habitats. It often occurs widely on well-managed livestock farms, where it is afforded protection from human persecution, but is absent from croplands and human settlements.*

The most important habitat requirements of this species are believed to be adequate availability of its various ant and termite prey species and the availability of dens, above-ground debris in which to shelter. This species mostly lives in large, deep burrows. Although this species is capable of digging its own burrows, it often prefers to occupy those abandoned by warthogs or aardvarks or even to lie in dense vegetation.

Inactive large animal burrows were found to be very sporadically present throughout the bushveld savannah- and woody shrubland savannah habitats, associated with the assessment area. No individuals of this species were however observed throughout the assessment area, during the site assessment. Although this is the case, the reasonably natural bushveld savannah- and woody shrubland savannah landscapes provide suitable/favourable habitat and prey availability for the potential/likely presence of this species. The limited duration and timing of the site assessment for the proposed prospecting along with the significant size of the assessment area, furthermore merely included a general overview of the faunal ecology.

8.6.2. Mammals

The following mammalian species are indicated by the Biodiversity and Development Institute's Virtual Museum (MammalMap; <http://vmus.adu.org.za>) as potentially/likely occurring throughout the square grids into which the assessment area falls:

Table 11: List of mammalian species which can potentially/likely occur throughout the assessment area (conservationally significant species are highlighted based on their threatened status)

Scientific name	Common name	Red List Categories
<i>Lycaon pictus</i>	African wild dog	Endangered (2016)
<i>Felis nigripes</i>	Black-footed Cat	Vulnerable (2016)
<i>Panthera pardus</i>	Leopard	Vulnerable (2016)
<i>Smutsia temminckii</i>	Ground Pangolin	Vulnerable (2016)
<i>Crocidura mariquensis</i>	Swamp Musk Shrew	Near Threatened (2016)
<i>Equus quagga</i>	Plains Zebra	Near Threatened (IUCN, 2016)
<i>Hyaena brunnea</i>	Brown Hyena	Near Threatened (2015)
<i>Otomys auratus</i>	Southern African Vlei Rat (Grassland type)	Near Threatened (2016)
<i>Aepyceros melampus</i>	Impala	Least Concern
<i>Aethomys ineptus</i>	Tete Veld Aethomys	Least Concern (2016)
<i>Aethomys namaquensis</i>	Namaqua Rock Mouse	Least Concern
<i>Alcelaphus buselaphus</i>	Hartebeest	
<i>Antidorcas marsupialis</i>	Springbok	Least Concern (2016)
<i>Canis mesomelas</i>	Black-backed Jackal	Least Concern (2016)
<i>Caracal caracal</i>	Caracal	Least Concern (2016)
<i>Chlorocebus pygerythrus</i>	Vervet Monkey	Least Concern (2016)
<i>Connochaetes gnou</i>	Black Wildebeest	Least Concern (2016)
<i>Connochaetes taurinus</i>		Least Concern (2016)
<i>Cynictis penicillata</i>	Yellow Mongoose	Least Concern (2016)
<i>Damaliscus pygargus phillipsi</i>	Blesbok	Least Concern (2016)
<i>Dendromus melanotis</i>	Gray African Climbing Mouse	Least Concern (2016)
<i>Gerbilliscus leucogaster</i>	Bushveld Gerbil	Least Concern (2016)
<i>Graphiurus (Graphiurus) murinus</i>	Forest African Dormouse	Least Concern
<i>Herpestes sanguineus</i>	Slender Mongoose	Least Concern (2016)
<i>Hystrix africaeaustralis</i>	Cape Porcupine	Least Concern
<i>Ictonyx striatus</i>	Striped Polecat	Least Concern (2016)
<i>Kobus ellipsiprymnus ellipsiprymnus</i>		Least Concern (2016)
<i>Lepus capensis</i>	Cape Hare	Least Concern
<i>Lepus saxatilis</i>	Scrub Hare	Least Concern
<i>Lemniscomys rosalia</i>	Single-Striped Lemniscomys	Least Concern (2016)
<i>Miniopterus natalensis</i>	Natal Long-fingered Bat	Least Concern (2016)
<i>Mungos mungo</i>	Banded Mongoose	Least Concern (2016)
<i>Oryx gazella</i>	Gemsbok	Least Concern (2016)
<i>Paraxerus cepapi</i>	Smith's Bush Squirrel	Least Concern (2016)
<i>Phacochoerus africanus</i>	Common Warthog	Least Concern (2016)
<i>Procavia capensis capensis</i>	Cape Rock Hyrax	LC (IUCN 2015, global sp. level)
<i>Proteles cristata</i>	Aardwolf	Least Concern (2016)
<i>Raphicerus campestris</i>	Steenbok	Least Concern (2016)
<i>Redunca fulvorufula</i>	Mountain Reedbuck	Least Concern
<i>Suricata suricatta</i>	Meerkat	Least Concern (2016)
<i>Sylvicapra grimmia</i>	Bush Duiker	Least Concern (2016)
<i>Syncerus caffer</i>	African Buffalo	Least Concern (2008)
<i>Taurotragus oryx</i>	Common Eland	Least Concern (2016)
<i>Tragelaphus strepsiceros</i>	Greater Kudu	Least Concern (2016)
<i>Vulpes chama</i>	Cape Fox	Least Concern (2016)
<i>Xerus inauris</i>	South African Ground Squirrel	Least Concern

The following threatened mammalian species are furthermore indicated by the IUCN Red List of Threatened Species (<https://www.iucnredlist.org>) as potentially/likely occurring throughout the local and broader landscape into which the assessment area falls:

Table 12: List of threatened mammalian species which can potentially/likely occur throughout the assessment area (species are highlighted based on their threatened status)

Scientific name	Common name	Red List Categories
<i>Diceros bicornis</i>	Black Rhino	Critically Endangered
<i>Acinonyx jubatus</i>	Cheetah	Vulnerable
<i>Felis nigripes</i>	Black-footed Cat	Vulnerable
<i>Giraffa camelopardalis</i>	Giraffe	Vulnerable
<i>Mystromys albicaudatus</i>	White-tailed Rat	Vulnerable
<i>Panthera pardus</i>	Leopard	Vulnerable
<i>Smutsia temminckii</i>	Temminck's Pangolin	Vulnerable
<i>Aonyx capensis</i>	African Clawless Otter	Near Threatened
<i>Ceratotherium simum</i>	White Rhino	Near Threatened
<i>Equus quagga</i>	Plains Zebra	Near Threatened
<i>Hydrictris maculicollis</i>	Spotted-necked Otter	Near Threatened
<i>Otomys auratus</i>	Vlei Rat	Near Threatened
<i>Parahyaena brunnea</i>	Brown Hyaena	Near Threatened
<i>Syncerus caffer</i>	African Buffalo	Near Threatened

No individuals of any of the indicated/highlighted conservationally significant threatened mammalian species were observed throughout the assessment area, during the site assessment. Due to the sizes and predatory natures of a number of these species as well as the lack of suitable perennial aquatic habitat/watercourses throughout the assessment area required for a number of these habitat-specific species, the realistic chance/possibility of most of these species potentially occurring in the wild throughout the local or broader area and remaining undetected, is furthermore extremely low. It is therefore not expected/anticipated that any individuals of most of these species would specifically utilise the assessment area as refuge or for breeding, foraging and/or persistence purposes.

Based on the identified vegetation units and habitat attributes throughout the assessment area and surrounding landscape (see headings 8.2 and 8.3), the only indicated/highlighted conservationally significant threatened mammalian species, which have a realistic chance/possibility of potentially/likely occurring throughout the assessment area are as follows:

- ***Felis nigripes* (Black-footed Cat)**

- According to the IUCN Red List of Threatened Species (<https://www.iucnredlist.org>), this species is predominantly ground-dwelling and will not readily take to trees, unlike most cat species. This species is predominantly solitary and terrestrial and is strictly crepuscular and nocturnal. During the day, this species makes use of dens. It prefers hollowed out abandoned termite mounds when available, but will also use dens dug by other animals such as Springhares, Ground Squirrels (*Xerus inauris*) and Aardvark (*Orycteropus afer*). This species is a specialist of open, short grass areas with an abundance of small rodents and ground-roosting birds. It inhabits dry, open savannah, grasslands and Karoo semi-desert with sparse shrub and tree cover. It is however not found in the driest and sandiest parts of the Namib and Kalahari Deserts.
- No individuals or dens of this species were observed throughout the assessment area, during the site assessment. Although this is the case, the reasonably natural bushveld savannah- and woody shrubland savannah landscapes associated with the assessment area, provide suitable/favourable habitat and prey availability for the potential/likely presence of this species. The limited duration and timing of the site assessment for the proposed prospecting along with the significant size of the assessment area, furthermore merely included a general overview of the faunal ecology.

- ***Crocidura mariquensis* (Swamp Musk Shrew)**

- Restricted to the semi-aquatic wetland habitats which in this case, are recommended to be buffered out of the proposed prospecting area (see headings 8.2 and 8.8.1).

- ***Mystromys albicaudatus* (White-tailed Rat)**

- According to the IUCN Red List of Threatened Species (<https://www.iucnredlist.org>), this species is terrestrial and nocturnal. They construct high-sided, cup-shaped nests which resemble 'Elizabethan neck ruffs'. It is often associated with calcrete soils within grasslands. This species is however never found on soft, sandy substrate, rocks, wetlands or river banks. Furthermore, records from the Free State Province and Borakalalo Nature Reserve, North-West Province show that this species can occur in disturbed, heavily grazed areas as well as sparse grasslands. This species may have a preference for the Carletonville Dolomite Grassland vegetation type (Gh 15) in the North West Province, as is suggested by museum records. It does not occur in transformed habitat (croplands, fallow fields or old fields). However, as it selects microhabitats, such as slopes and ridges, small

- numbers may survive in non-arable patches within an agricultural matrix. The habitat requirements and ecology of this species however merits further research.*
- *No individuals or nests of this species were observed throughout the assessment area, during the site assessment. Although this is the case, the reasonably natural bushveld savannah- and woody shrubland savannah landscapes associated with the assessment area, provide suitable/favourable habitat for the potential/likely presence of this species. The limited duration and timing of the site assessment for the proposed prospecting along with the significant size of the assessment area, furthermore merely included a general overview of the faunal ecology.*
 - **Otomys auratus (Southern African Vlei Rat; Grassland type)**
 - *Restricted to the semi-aquatic wetland habitats which in this case, are recommended to be buffered out of the proposed prospecting area (see headings 8.2 and 8.8.1).*
 - **Parahyaena brunnea (Brown Hyaena)**
 - *According to the IUCN Red List of Threatened Species (<https://www.iucnredlist.org>), this species is found in dry areas, particularly along the coast, semi-desert, open scrub and open woodland savanna. The species is predominantly nocturnal in its activity and demonstrates an ability to survive in close proximity to urban areas. It requires some type of cover in which to hide during the day. For this it often favours rocky, mountainous areas with bush cover in the bushveld areas of South Africa. Old burrows, previously dug by species such as aardvark or warthog, are often used as dens. This species has a social hierarchy similar to that of wolves, with a mated pair and their offspring. They live in clans composed of extended families of four to six individuals.*
 - *Inactive large animal burrows were found to be very sporadically present throughout the bushveld savannah- and woody shrubland savannah habitats, associated with the assessment area. No individuals of this species were however observed throughout the assessment area, during the site assessment. Although this is the case, the reasonably natural bushveld savannah- and woody shrubland savannah landscapes associated with the assessment area, provide suitable/favourable habitat for the potential/likely presence of this species. The limited duration and timing of the site assessment for the proposed prospecting along with the significant size of the assessment area, furthermore merely included a general overview of the faunal ecology.*
 - **Smutsia temminckii (Temminck's Pangolin)**
 - *See earlier discussion above.*

BIODIVERSITY PRIORITY AREAS FOR MINING

The Mining and Biodiversity Guideline was developed in 2013 for the purpose of mainstreaming biodiversity management practices into the mining sector (DEA, DMR, Chamber of Mines, SAMBF & SANBI 2013). This Guideline provides explicit direction in terms of where mining-related impacts are legally prohibited, where biodiversity priority areas may present high risks for mining projects, and where biodiversity may limit the potential for mining. The Guideline distinguishes between four categories of biodiversity priority areas in relation to their importance from a biodiversity and ecosystem service perspective as well as the implications for mining in these areas (**Table 2**).

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

Category	Biodiversity Priority Areas	Risks for Mining	Implications for Mining
A. Legally Protected	<ul style="list-style-type: none"> ● Protected areas (including National Parks, Nature Reserves, World Heritage Sites, Protected Environments, Nature Reserves) ● Areas declared under Section 49 of the Mineral and Petroleum Resources Development Act (No. 28 of 2002) 	Mining Prohibited	<p>Mining projects cannot commence as mining is legally prohibited. Although mining is prohibited in Protected Areas, it may be allowed in Protected Environments if both the Minister of Mineral Resources and Minister of Environmental Affairs approve it.</p> <p>In cases where mining activities were conducted lawfully in protected areas before Section 48 of the Protected Areas Act (No. 57 of 2003) came into effect, the Minister of Environmental Affairs may, after consulting with the Minister of Mineral Resources, allow such mining activities to continue, subject to</p>

			prescribed conditions that reduce environmental impacts.
B. Highest Biodiversity Importance	<ul style="list-style-type: none"> • Critically endangered and endangered ecosystems • Critical Biodiversity Areas (or equivalent areas) from provincial spatial biodiversity plans • River and wetland Freshwater Ecosystem Priority Areas (FEPAs) and a 1km buffer around these FEPAs • Ramsar Sites 	Highest Risk for Mining	<p>Environmental screening, environmental impact assessment (EIA) and their associated biodiversity specialist studies should focus on confirming the presence and significance of these biodiversity features, and to provide site-specific basis on which to apply the mitigation hierarchy to inform regulatory decision-making for mining, water use licences, and environmental authorisations.</p> <p>If they are confirmed, the likelihood of a fatal flaw for new mining projects is very high because of the significance of the biodiversity features in these areas and the associated ecosystem services. These areas are viewed as necessary to ensure protection of biodiversity, environmental sustainability, and human well-being.</p> <p>An EIA should include the strategic assessment of optimum, sustainable land use for an area and will determine the significance of the impact on biodiversity.</p> <p>This assessment should fully consider the environmental sensitivity of the area, the overall environmental and socio-economic costs and benefits of mining, as well as the potential strategic importance of the minerals to the country.</p> <p>Authorisations may well not be granted. If granted, the authorisation may set limits on allowed activities and impacts and may specify biodiversity offsets that would be written into licence agreements and/or authorisations.</p>
C. High Biodiversity Importance	<ul style="list-style-type: none"> • Protected area buffers (including buffers around National Parks, World Heritage Sites* and Nature Reserves) • Transfrontier Conservation Areas (remaining areas outside of formally proclaimed protected areas) • Other identified priorities from provincial spatial biodiversity plans • High water yield areas • Coastal Protection Zone • Estuarine functional zone <p>*Note that the status of buffer areas of World Heritage Sites is subject to a current intra-governmental process</p>	High Risk for Mining	<p>These areas are important for conserving biodiversity, for supporting or buffering other biodiversity priority areas, and for maintaining important ecosystem services for communities or the country.</p> <p>An EIA should include an assessment of optimum, sustainable land use for an area and will determine the significance of the impact on biodiversity.</p> <p>Mining options may be limited in these areas, and limitations for mining projects are possible.</p> <p>Authorisations may set limits and specify biodiversity offsets that would be written into licence agreements and/or authorisations.</p>

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

Based on **Figure 13**, the proposed area falls in Category B (Highest Biodiversity Importance – Highest risk for mining) and Category C (High Biodiversity Importance – High risk for mining).

BAR275PR: MINING GUIDE MAP

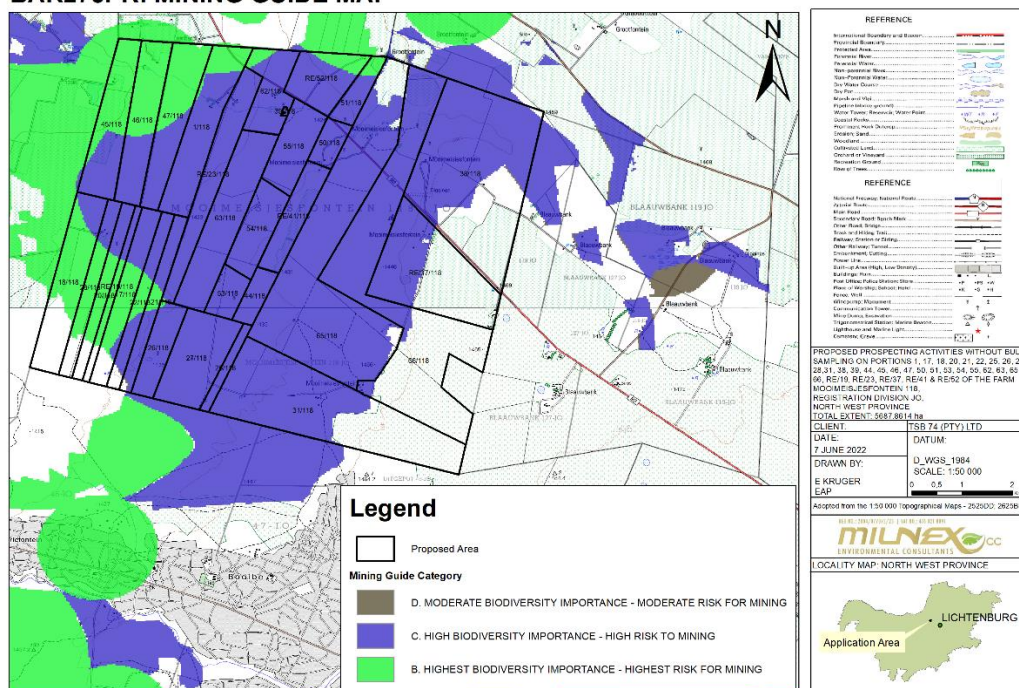


Figure 13: Biodiversity priority areas, in accordance with the Mining of Biodiversity Guidelines, associated with the study site.

WETLAND AREAS

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

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

BAR275PR: WETLAND VEGETATION MAP

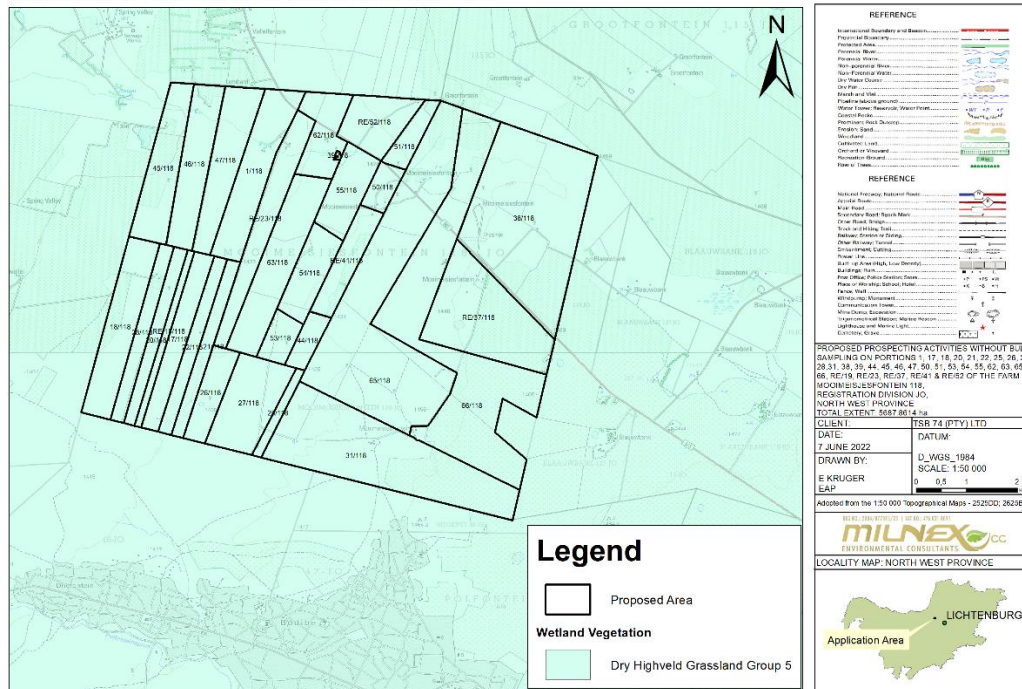


Figure 15: Wetland vegetation types associated with the study site.

An Ecological Assessment Report was conducted by AJH Lamprecht from EcoFocus Consulting (Pty) Ltd. The Report is available under Annexure 12. Please see the findings below:

8.2.2. Watercourses and Wetlands

Surface water drainage area with an associated unchanneled valley-bottom wetland

A significantly sized surface water drainage area with an associated unchanneled valley-bottom wetland, commences within the central-northern portion of the assessment area and flows in a westerly direction, from where it exits the assessment area in the north-western corner. The surface water drainage area continues in a north-westerly direction and eventually discharges into the Molopo River, approximately 22 km north-west of the assessment area. No other significant watercourses are present throughout the assessment area or the local surrounding landscape.

It is clearly evident from Google Earth imagery that extensive portions of the water drainage area and associated unchanneled valley-bottom wetland had been historically agriculturally cultivated in the distant past. The habitat integrity of the unchanneled valley-bottom wetland has however adequately recovered over time and it currently mainly constitutes a mosaic of reasonably natural, actively functional semi-aquatic, waterlogged habitat intertwined with transitional terrestrial habitat portions along its length. Fully aquatic habitat portions are in fact also present in certain isolated depression and dammed-up areas of the wetland.

Aboveground hydrophytic grass biomass within such drainage areas/wetlands, usually tends to recover more readily and swiftly relative to more terrestrial landscapes, even in the event of significant disturbance. This is mainly as a result of the more consistent availability of surface- and subsurface water flow through such areas along with the more robust/resilient nature of hydrophytic grasses and aquatic/semi-aquatic vegetation.

The semi-aquatic habitat is mainly dominated by the sedge species *Cyperus spp.* as well as the hydrophytic grass species *Eragrostis plana*, *E. curvula*, *Themeda triandra*, *Imperata cylindrica*, *Setaria spp.* and *Paspalum spp.* The sedge species *Typha capensis* was also found to be present throughout the semi-aquatic habitat, but to a lesser extent.

The isolated aquatic habitat portions are mainly dominated by the sedge species *Cyperus spp.* and *Typha capensis*, while the reed species *Phragmites australis* and the sedge species *Schoenoplectus tabernaemontani* were also found to be

present, but to a significantly lesser extent. The isolated aquatic habitat portions are also mostly surrounded/sheltered by significantly increased tree- and woody shrub densities of the species Searsia lancea and Vachellia karroo.

No Red Data Listed-, nationally protected- or provincially protected plant species or any other plant species of conservational significance/value, were found to be present throughout the surface water drainage area or associated unchanneled valley-bottom wetland. As stated under heading 2, it must however be noted that the seasonal timing of the assessments was not necessarily favourable for successful identification of underground bulb plant species individuals. The limited duration and timing of the site assessment for the proposed prospecting along with the significant size of the assessment area, furthermore merely included a general overview of the floral ecology.

No conservationally significant or important avifaunal species/nests or other -faunal species were observed throughout the surface water drainage area and associated unchanneled valley-bottom wetland, during the site assessment. Although this is the case, the limited duration and timing of the site assessment for the proposed prospecting along with the significant size of the assessment area, merely included a general overview of the faunal and avifaunal ecology. The surface water drainage area and associated unchanneled valley-bottom wetland provide locally distinct and important semi-aquatic- and aquatic habitat, which is likely utilised by various common and habitat-specific aquatic bird-, amphibian- and other aquatic faunal species as refuge and for breeding, foraging and/or persistence purposes (see heading 8.6). Numerous individuals of the raptor species Elanus caeruleus (Black winged kite), were in fact observed hunting specifically within the wetland, during the site assessment. The surface water drainage area and associated unchanneled valley-bottom wetland furthermore also provide an important and reliable watering site for terrestrial fauna of the local and broader surrounding landscape.

Furthermore, although the portion of the D41A – 1180 Sub Quaternary Reach (SQR) associated with the assessment area, does not fall within any Fish Support Area, -Sanctuary, -Corridor or -Rehabilitation Area, according to the National Freshwater Ecosystem Priority Areas Database (NFEPA, 2011), the surface water drainage area flows into a Fish Support area approximately 16 km downstream of the assessment area (see heading 8.6).

It is therefore evident from a hydrological- and aquatic biodiversity perspective, that the surface water drainage area and associated unchanneled valley-bottom wetland form an important part of the aquatic ecology of the area as well as the local and broader quaternary surface water catchment- and drainage area, towards the north-west.



Figure 6: Three images illustrating examples of the reasonably natural semi-aquatic, waterlogged habitat of the surface water drainage area and associated unchanneled valley-bottom wetland

Figure 7: Three images illustrating examples of the fully aquatic habitat portions which are present in certain isolated depression and dammed-up areas of the wetland

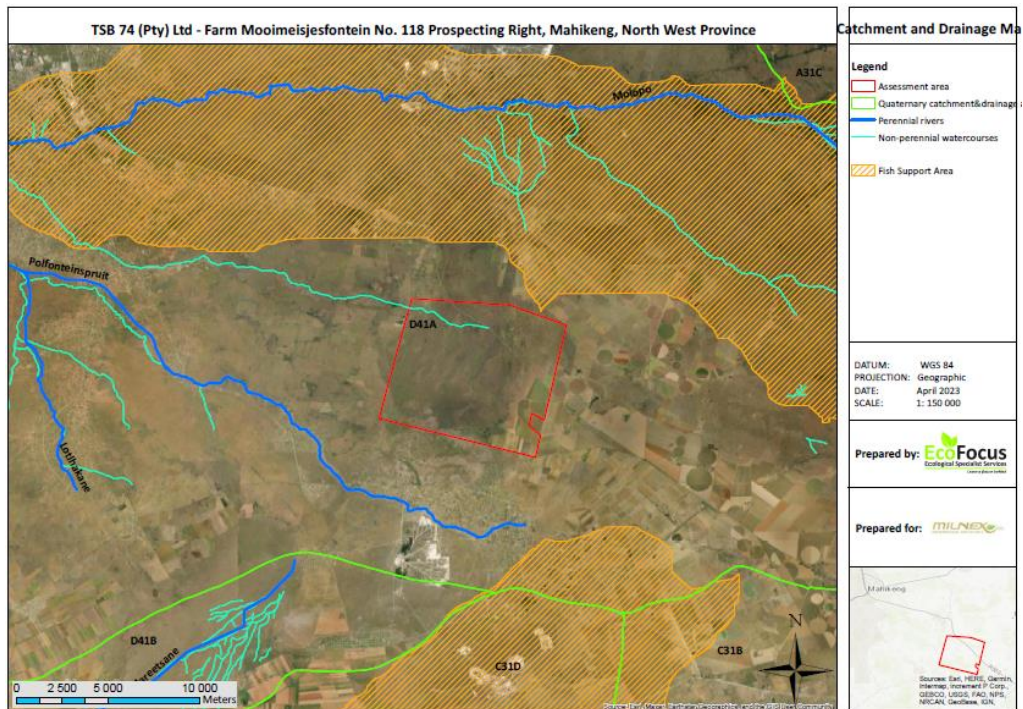


Figure 8: Water catchment and drainage map illustrating the watercourses, Fish Support Areas as well as the quaternary surface water catchment- and drainage area associated with the assessment area

Two seepage wetlands

Two small isolated seepage wetlands were found to be present within the south-western and central-southern portions of the assessment area. A number of prominent, slightly elevated calcrete ridges/outcrops are present throughout the southern portion of the assessment area (see heading 8.3.2), from which these two wetlands are continuously fed with seepage water.

*These wetlands mainly constitute reasonably natural, actively functional semi-aquatic, waterlogged habitat with small isolated fully aquatic habitat portions. The semi-aquatic- and aquatic habitat is mainly dominated by the sedge species *Cyperus* spp. as well as the hydrophytic grass species *Eragrostis plana*, *Eragrostis curvula*, *Themeda triandra* and *Setaria* spp. The sedge species *Typha capensis* was also found to be present, but to a significantly lesser extent.*

No Red Data Listed-, nationally protected- or provincially protected plant species or any other plant species of conservational significance/value, were found to be present throughout the two seepage wetlands. As stated under heading 2, it must however be noted that the seasonal timing of the assessments was not necessarily favourable for successful identification of underground bulb plant species individuals. The limited duration and timing of the site assessment for the proposed prospecting along with the significant size of the assessment area, furthermore merely included a general overview of the floral ecology.

*No conservationally significant or important avifaunal species/nests or other -faunal species were observed throughout the two seepage wetlands, during the site assessment. Although this is the case, the limited duration and timing of the site assessment for the proposed prospecting along with the significant size of the assessment area, merely included a general overview of the faunal and avifaunal ecology. The two seepage wetlands provide locally distinct and important semi-aquatic- and aquatic habitat, which is likely utilised by various common and habitat-specific aquatic bird-, amphibian- and other aquatic faunal species as refuge and for breeding, foraging and/or persistence purposes (see heading 8.6). Individuals of the small waterbird species *Gallinago nigripennis* (African snipe), were in fact observed foraging specifically within the wetlands, during the site assessment. The two seepage wetlands furthermore also provide important and reliable watering sites for terrestrial fauna of the local and broader surrounding landscape.*

It is therefore evident from an aquatic biodiversity perspective, that the two seepage wetlands form an important part of the aquatic ecology of the area.



Figure 9: Three images illustrating examples of the reasonably natural semi-aquatic, waterlogged habitat of the westerly located seepage wetland



Figure 10: Three images illustrating examples of the reasonably natural semi-aquatic, waterlogged habitat of the easterly located seepage wetland

Three depression pans

Three very small isolated depression pans were found to be present throughout the assessment area. The three pans are seasonally/temporarily inundated and no distinct surface water flow paths into or out of the pans are evident, as they rather constitute endorheic slight surface depressions within the local landscape. The three pans therefore merely collect rainwater as well as general surface water runoff from a very limited upstream area.

The two northerly located pans have been significantly disturbed and degraded by historical and continued overgrazing and livestock watering activities. They do not house any locally distinct or important actively functional semi-aquatic habitat within their basins or around their edges and are mainly infested with undesired alien weed species such as *Amaranthus hybridus*, *Bidens bipinnata* and *B pilosa*. The hardy Increaser 2 type grass species *Cynodon dactylon* is mainly dominant throughout these two pans, which further reiterates their disturbed and degraded state.

The two pans are therefore not expected to be specifically utilised by any habitat-specific aquatic bird-, amphibian- or other aquatic faunal species as refuge and for breeding, foraging and/or persistence purposes. Due to their seasonally/temporarily inundated nature, the two pans also do not provide reliable watering sites for terrestrial fauna of the local and broader surrounding landscape.

It is therefore evident from a hydrological- and aquatic biodiversity perspective, that the two northerly located pans do not form an important part of the aquatic ecology of the area or the local and broader quaternary surface water catchment- and drainage area, towards the north-west.



Figure 11: Two images illustrating the presence of the two northerly located significantly disturbed and degraded depression pans (top: eastern pan, bottom: western pan); the undesired alien weed species infestations are also evident

The most southerly located depression pan constitutes a reasonably natural, actively functional semi-aquatic, waterlogged habitat. The pan is situated directly in-between the two seepage wetlands as discussed earlier above and is also associated with the prominent, slightly elevated calcrete ridges/outcrops, which are present throughout the southern portion of the assessment area (see heading 8.3.2).

The semi-aquatic habitat is mainly dominated by the sedge species *Cyperus* spp. as well as the hydrophytic grass species *Echinochloa holubii* and *Eragrostis plana*.

No Red Data Listed-, nationally protected- or provincially protected plant species or any other plant species of conservational significance/value, were found to be present throughout the most southerly located depression pan. As stated under heading 2, it must however be noted that the seasonal timing of the assessments was not necessarily favourable for successful identification of underground bulb plant species individuals. The limited duration and timing of the site assessment for the proposed prospecting along with the significant size of the assessment area, furthermore merely included a general overview of the floral ecology.

No conservationally significant or important avifaunal species/nests or other -faunal species were observed throughout the most southerly located depression pan, during the site assessment. Although this is the case, the limited duration and timing of the site assessment for the proposed prospecting along with the significant size of the assessment area, merely included a general overview of the faunal and avifaunal ecology. The most southerly located depression pan provides locally distinct and important semi-aquatic habitat, which is likely utilised by various common and habitat-specific aquatic bird-, amphibian- and other aquatic faunal species as refuge and for breeding, foraging and/or persistence purposes (see heading 8.6). The most southerly located depression pan furthermore also provides an important and reliable watering site for terrestrial fauna of the local and broader surrounding landscape.

It is therefore evident from an aquatic biodiversity perspective, that the most southerly located depression pan forms an important part of the aquatic ecology of the area.



Figure 12: Two images illustrating examples of the reasonably natural semi-aquatic, waterlogged habitat of the most southerly located depression pan

Quarry site

A very small isolated artificially/anthropogenically created historical quarry site which has filled up with water over time, was found to be present on the plateau of one of the prominent, slightly elevated calcrete ridges/outcrops and is situated in close proximity to the most southerly located depression pan, as discussed earlier.

The filled-up quarry site houses an actively functional fully aquatic habitat. No Red Data Listed-, nationally protected- or provincially protected plant species or any other plant species of conservational significance/value, were found to be present throughout the filled-up quarry site. As stated under heading 2, it must however be noted that the seasonal timing of the assessments was not necessarily favourable for successful identification of underground bulb plant species individuals. The limited duration and timing of the site assessment for the proposed prospecting along with the significant size of the assessment area, furthermore merely included a general overview of the floral ecology.

No conservationally significant or important avifaunal species/nests or other -faunal species were observed throughout the filled-up quarry site, during the site assessment. Although this is the case, the limited duration and timing of the site assessment for the proposed prospecting along with the significant size of the assessment area, merely included a general overview of the faunal and avifaunal ecology. The filled-up quarry site provides locally distinct and important aquatic habitat, which is likely utilised by various common and habitat-specific aquatic bird-, amphibian- and other aquatic faunal species as refuge and for breeding, foraging and/or persistence purposes (see heading 8.6). Individuals of the water turtle species *Pelomedusa subrufa* (African helmeted turtle), were in fact observed foraging specifically within the filled-up quarry site, during the site assessment. The filled-up quarry site furthermore also provides an important and reliable watering site for terrestrial fauna of the local and broader surrounding landscape.

It is therefore evident from an aquatic biodiversity perspective, that although artificially/anthropogenically created the filled-up quarry site forms an important part of the aquatic ecology of the area.



Figure 13: Image illustrating an example of the fully aquatic habitat of artificially/anthropogenically created historical filled-up quarry site

AQUATIC ENVIRONMENT

According to the DFFE Screening Report the proposed area falls High Aquatic Biodiversity theme sensitivity and a smaller area within Very High sensitivity. Please see **Appendix 7** for the colour map.

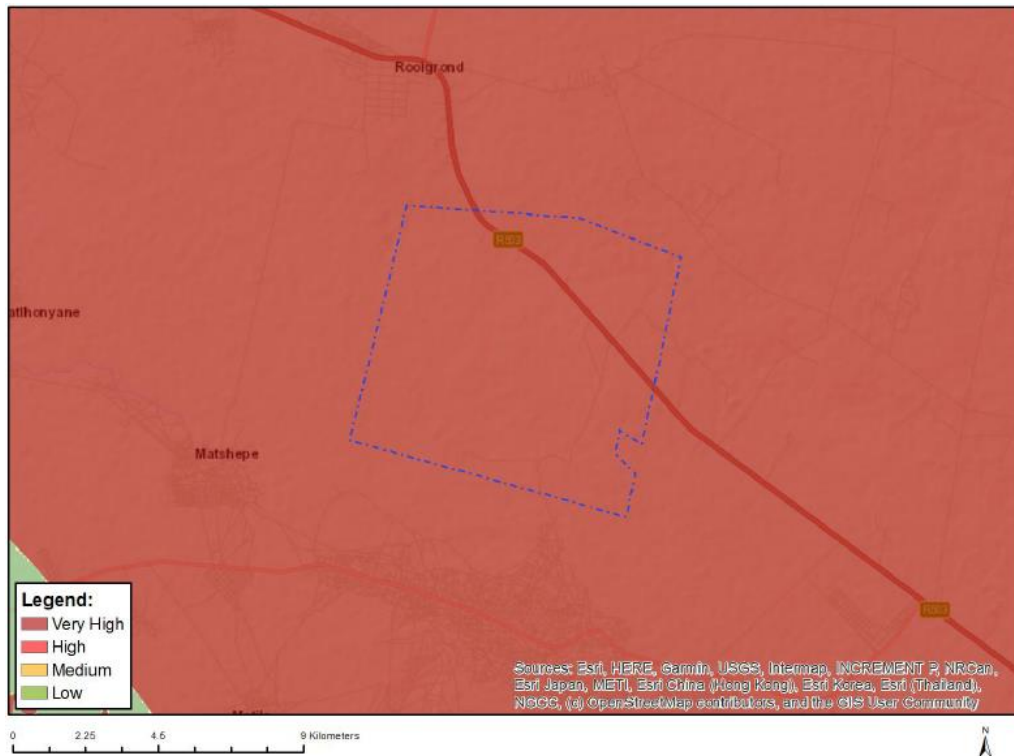


Figure 11: Aquatic Biodiversity Combined Sensitivity

An Ecological Assessment Report was conducted by AJH Lamprecht from EcoFocus Consulting (Pty) Ltd. The Report is available under **Annexure 12**. Please see the findings below:

8.2. Aquatic Environment

8.2.1. Water Catchment and Drainage

The assessment area falls within the Lower Vaal Water Management Area (WMA 10) and the associated D41A quaternary surface water catchment- and drainage area. It is furthermore situated in the D41A – 1180 Sub Quaternary Reach (SQR), within the Highveld Ecoregion (11). The assessment area and surrounding landscape generally flows in a westerly to north-westerly direction.

According to the Environmental Screening Tool Report, the Aquatic Biodiversity Theme of the assessment area, is rated as being of 'very high sensitivity' for the presence of aquatic Critical Biodiversity Areas (CBA), the potential presence of wetlands and the area falling within the Bo-Molopo Karst Belt Strategic Water Source Area for groundwater.

IMPORTANT BIRD AND BIODIVERSITY AREAS

Important Bird and Biodiversity Areas (IBAs) are a network of sites that are significant for the long-term viability of naturally occurring bird populations (Birdlife 2019). Many sites are also important for other forms of biodiversity; therefore, the conservation of Important Bird & Biodiversity Areas ensures the survival of a correspondingly large number of other animals and plants.

No IBAs were identified within the vicinity of the study site.

BAR275PR: IMPORTANT BIRD AREAS MAP

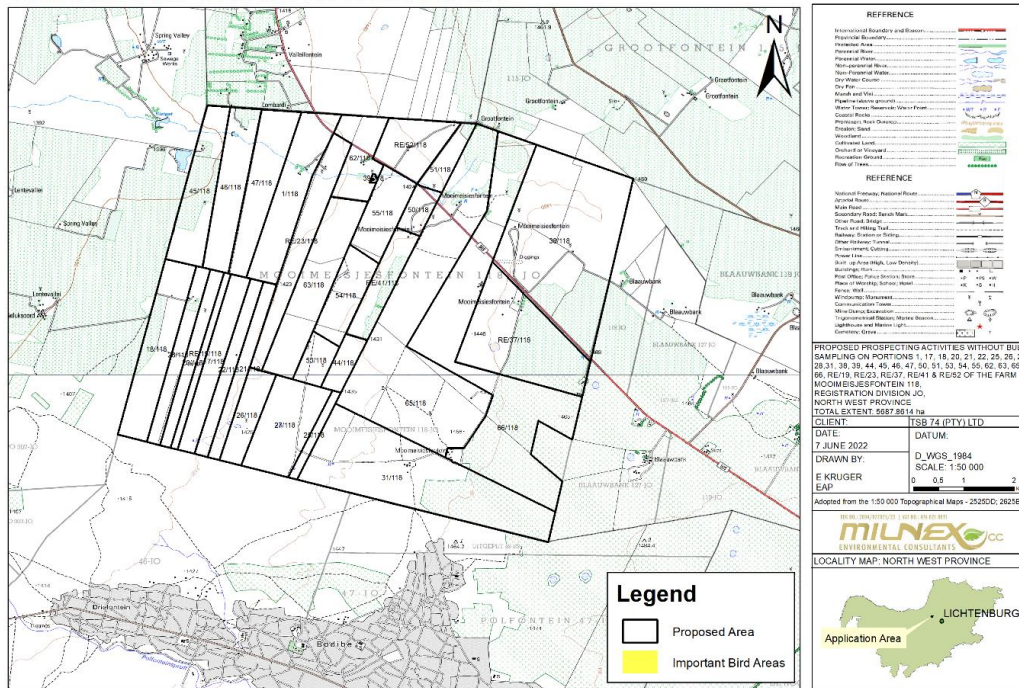


Figure 16: Important Bird and Biodiversity Areas associated with the study site.

An Ecological Assessment Report was conducted by AJH Lamprecht from EcoFocus Consulting (Pty) Ltd. The Report is available under **Annexure 12**. Please see the findings below:

8.6.3. Avifauna
 The assessment area does not fall within any Important Bird Areas (IBA) as per the latest IBA map obtained from the Birdlife SA website (<https://www.birdlife.org.za/what-we-do/important-bird-and-biodiversity-areas/media-and-resources/#1553597171790-6f83422a-a731>).

The following threatened avifaunal species are indicated by the IUCN Red List of Threatened Species (<https://www.iucnredlist.org>) as potentially/likely occurring throughout the local and broader landscape into which the assessment area falls:

Table 13: List of threatened avifaunal species which can potentially/likely occur throughout the assessment area (conservationally significant species are highlighted based on their threat status)

Scientific name	Common name	Red List Categories
<i>Gyps africanus</i>	White-backed Vulture	Critically Endangered
<i>Trigonoceps occipitalis</i>	White-headed Vulture	Critically Endangered
<i>Circus maurus</i>	Black Harrier	Endangered
<i>Oxyura maccoa</i>	Maccoa Duck	Endangered
<i>Polemaetus bellicosus</i>	Martial Eagle	Endangered
<i>Sagittarius serpentarius</i>	Secretarybird	Endangered
<i>Torgos tracheliotos</i>	Lappet-faced Vulture	Endangered
<i>Aquila rapax</i>	Tawny Eagle	Vulnerable
<i>Egretta vinaceigula</i>	Slaty Egret	Vulnerable
<i>Falco vespertinus</i>	Red-footed Falcon	Vulnerable
<i>Gyps coprotheres</i>	Cape Vulture	Vulnerable
<i>Anthus hoeschi</i>	Mountain Pipit	Near Threatened
<i>Ardeotis kori</i>	Kori Bustard	Near Threatened
<i>Calidris ferruginea</i>	Curlew Sandpiper	Near Threatened
<i>Circus macrourus</i>	Pallid Harrier	Near Threatened
<i>Gallinago media</i>	Great Snipe	Near Threatened
<i>Glareola nordmanni</i>	Black-winged Pratincole	Near Threatened
<i>Numenius arquata</i>	Eurasian Curlew	Near Threatened
<i>Phoeniconaias minor</i>	Lesser Flamingo	Near Threatened

The following of these avifaunal species if potentially present throughout the assessment area, are habitat-specific and will be restricted to the semi-aquatic wetland habitats which in this case, are recommended to be buffered out of the proposed prospecting area (see headings 8.2 and 8.8.1):

- *Calidris ferruginea* (Curlew Sandpiper)
- *Egretta vinaceigula* (Slaty Egret)
- *Gallinago media* (Great Snipe)
- *Glareola nordmanni* (Black-winged Pratincole)
- *Numenius arquata* (Eurasian Curlew)
- *Oxyura maccoa* (Maccoa Duck)
- *Phoeniconaias minor* (Lesser Flamingo)

No individuals or nests of any of the indicated/highlighted conservationally significant threatened avifaunal species were observed throughout the assessment area, during the site assessment. The reasonably natural bushveld savannah- and woody shrubland savannah landscapes associated with the assessment area, do not provide adequately sized thorn tree- or other suitable tree nesting habitat, which is required by vulture and large raptor species. It is therefore not expected/anticipated that any individuals of such species would specifically utilise the assessment area for nesting or breeding purposes. The bushveld savannah- and woody shrubland savannah landscapes however still provide suitable/favourable foraging and/or persistence habitats for such species.

Although no individuals or nests were observed, the reasonably natural bushveld savannah- and woody shrubland savannah landscapes associated with the assessment area, furthermore also provide suitable/favourable habitat for the potential/likely presence of a number of the other indicated/highlighted avifaunal species. The limited duration and timing of the site assessment for the proposed prospecting along with the significant size of the assessment area, furthermore merely included a general overview of the avifaunal ecology

HERPETOFAUNA

An Ecological Assessment Report was conducted by AJH Lamprecht from EcoFocus Consulting (Pty) Ltd. The Report is available under **Annexure 12**. Please see the findings below:

8.6.4. Herpetofauna

The following herpetofaunal species are indicated by the Biodiversity and Development Institute's Virtual Museum (ReptileMap & FrogMap; <http://vmus.adu.org.za>) as potentially/likely occurring throughout the square grids into which the assessment area falls:

Table 14: List of reptilian species which can potentially/likely occur throughout the assessment area (conservationally significant species are highlighted based on their threatened status)

Scientific name	Common name	Red List Categories
<i>Psammophis leightoni</i>	Cape Sand Snake	Vulnerable (SARCA 2014)
<i>Agama aculeata distanti</i>	Distant's Ground Agama	Least Concern (SARCA 2014)
<i>Agama atra</i>	Southern Rock Agama	Least Concern (SARCA 2014)
<i>Aparallactus capensis</i>	Black-headed Centipede-eater	Least Concern (IUCN 2021)
<i>Bitis arietans arietans</i>	Puff Adder	Least Concern (SARCA 2014)
<i>Boaedon capensis</i>	Brown House Snake	Least Concern (SARCA 2014)
<i>Cordylus vittifer</i>	Common Girdled Lizard	Least Concern (SARCA 2014)
<i>Dasypeltis scabra</i>	Rhombic Egg-eater	Least Concern (SARCA 2014)
<i>Gerrhosaurus flavigularis</i>	Yellow-throated Plated Lizard	Least Concern (SARCA 2014)
<i>Leptotyphlops scutifrons scutifrons</i>	Peters' Thread Snake	
<i>Lycophidion capense capense</i>	Cape Wolf Snake	Least Concern (SARCA 2014)
<i>Lygodactylus capensis</i>	Common Dwarf Gecko	Least Concern (SARCA 2014)
<i>Nucras holubi</i>	Holub's Sandveld Lizard	Least Concern (SARCA 2014)
<i>Pachydactylus capensis</i>	Cape Gecko	Least Concern (SARCA 2014)
<i>Panaspis wahlbergii</i>	Wahlberg's Snake-eyed Skink	Least Concern (IUCN 2021)
<i>Psammophis brevirostris</i>	Short-snouted Grass Snake	Least Concern (SARCA 2014)
<i>Psammophylax tritaeniatus</i>	Striped Grass Snake	Least Concern (SARCA 2014)
<i>Pseudaspis cana</i>	Mole Snake	Least Concern (SARCA 2014)
<i>Rhinotyphlops lalandei</i>	Delalande's Beaked Blind Snake	Least Concern (SARCA 2014)
<i>Trachylepis capensis</i>	Cape Skink	Least Concern (SARCA 2014)
<i>Trachylepis sp. (Transvaal varia)</i>	Skink sp. 1	
<i>Trachylepis varia sensu lato</i>	Common Variable Skink Complex	Least Concern (SARCA 2014)

No individuals of the indicated/highlighted conservationally significant threatened reptilian species *Psammophis leightoni* (Cape Sand Snake) were observed throughout the assessment area, during the site assessment. It must however be noted that the seasonal timing of the assessments was not necessarily favourable for successful observation of individuals of this species. According to the IUCN Red List of Threatened Species (<https://www.iucnredlist.org>), this species is widespread in fynbos, Karoo, dry savanna and desert habitats. It is therefore expected/anticipated that individuals of this species could potentially/likely utilise the assessment area as refuge and for breeding, foraging and/or persistence purposes.

Table 15: List of amphibian species which can potentially/likely occur throughout the assessment area (conservationally significant species are highlighted based on their threatened status)

Scientific name	Common name	Red List Categories
<i>Amietia delalandii</i>	Delalande's River Frog	Least Concern (2017)
<i>Cacosternum boettgeri</i>	Common Caco	Least Concern (2013)
<i>Kassina senegalensis</i>	Bubbling Kassina	Least Concern
<i>Phrynomantis bifasciatus</i>	Banded Rubber Frog	Least Concern
<i>Sclerophrys garmani</i>	Olive Toad	Least Concern (IUCN, 2016)
<i>Sclerophrys gutturalis</i>	Guttural Toad	Least Concern (IUCN, 2016)
<i>Tomopterna cryptotis</i>	Tremelo Sand Frog	Least Concern

These amphibian species if potentially present throughout the assessment area, are habitat-specific and will be restricted to the semi-aquatic wetland habitats which in this case, are recommended to be buffered out of the proposed prospecting area (see headings 8.2 and 8.8.1).

RIVER ECOSYSTEM STATUS

The Polfonteinspruit is approximately 4km South of the proposed area and its status is Moderately Modified (Class C). The figure below depicts the river ecosystem status.

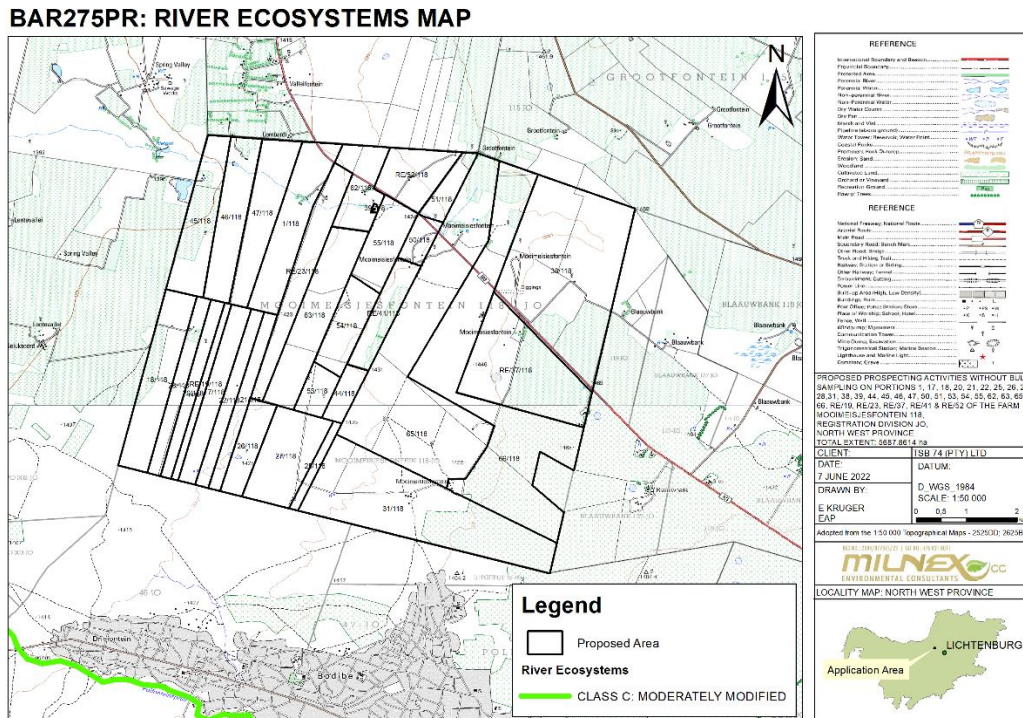


Figure 17: River Ecosystem Status

An Ecological Assessment Report was conducted by AJH Lamprecht from EcoFocus Consulting (Pty) Ltd. The Report is available under **Annexure 12**. Please see the findings below:

8.6.5. Fish

According to the National Freshwater Ecosystem Priority Areas Database (NFEPA, 2011), the portion of the D41A – 1180 Sub Quaternary Reach (SQR) associated with the assessment area, does not fall within any Fish Support Area, -Sanctuary, -Corridor or -Rehabilitation Area. No populations of conservationally significant threatened fish species have been recorded throughout the assessment area or local downstream region or are expected to specifically utilise the assessment area as refuge or for breeding, foraging and/or persistence purposes.

The significantly sized surface water drainage area which commences within the central-northern portion of the assessment area and flows in a westerly direction, from where it exits the assessment area in the north-western corner (see heading 8.2.2), however flows into a Fish Support area approximately 16 km downstream of the assessment area.

The respective Globally Vulnerable and Near-Threatened Red Listed fish species *Oreochromis mossambicus* (Mozambique Tilapia) and *Enteromius motebensis* (Marico Barb) are indicated by the IUCN Red List of Threatened Species (<https://www.iucnredlist.org>) as potentially/likely occurring throughout the local and broader landscape into which the assessment area falls. Due to the lack of suitable perennial aquatic habitat/watercourses throughout the assessment area, the presence of these species is however highly improbable.

CULTURAL AND HERITAGE ASPECTS

According to the DFFE Screening Report the proposed area falls mostly within low Archaeological and Cultural Heritage Theme Sensitivity with a small area illustrated as High sensitivity. Please see map colour map under **Appendix 7**.

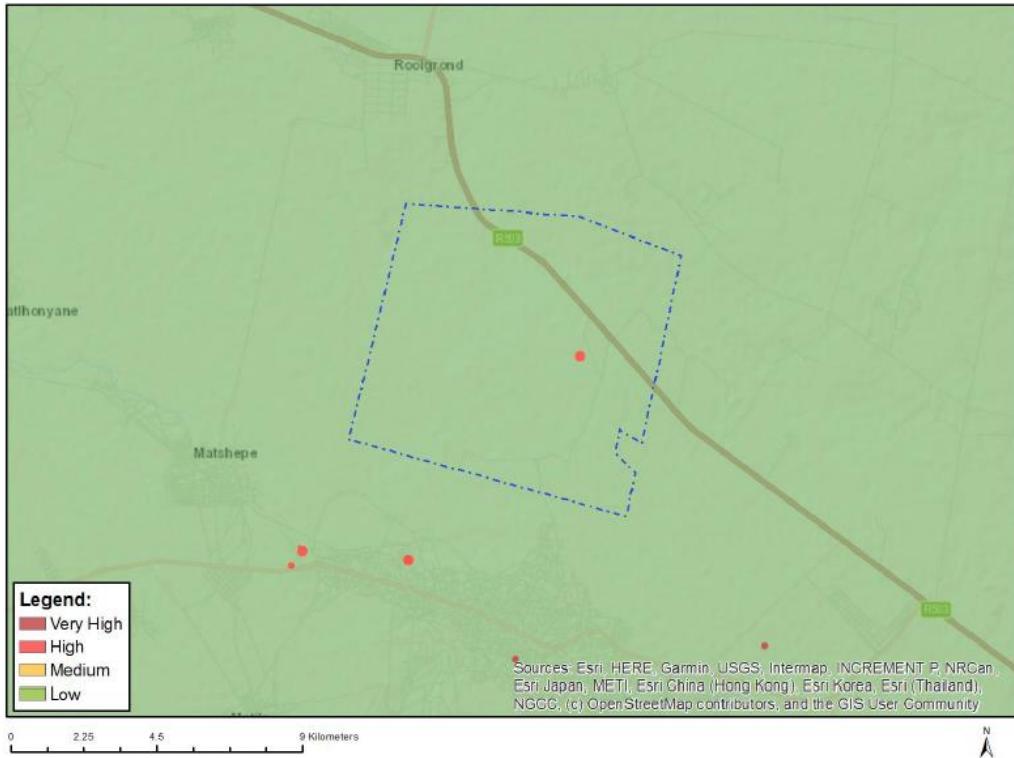


Figure 18: Archaeological and Cultural Heritage Combined Sensitivity

According to the DFFE Screening Report the proposed area falls mostly within Very High Paleontology Theme Sensitivity followed by Medium sensitivity. Please see map colour map under **Appendix 7**.

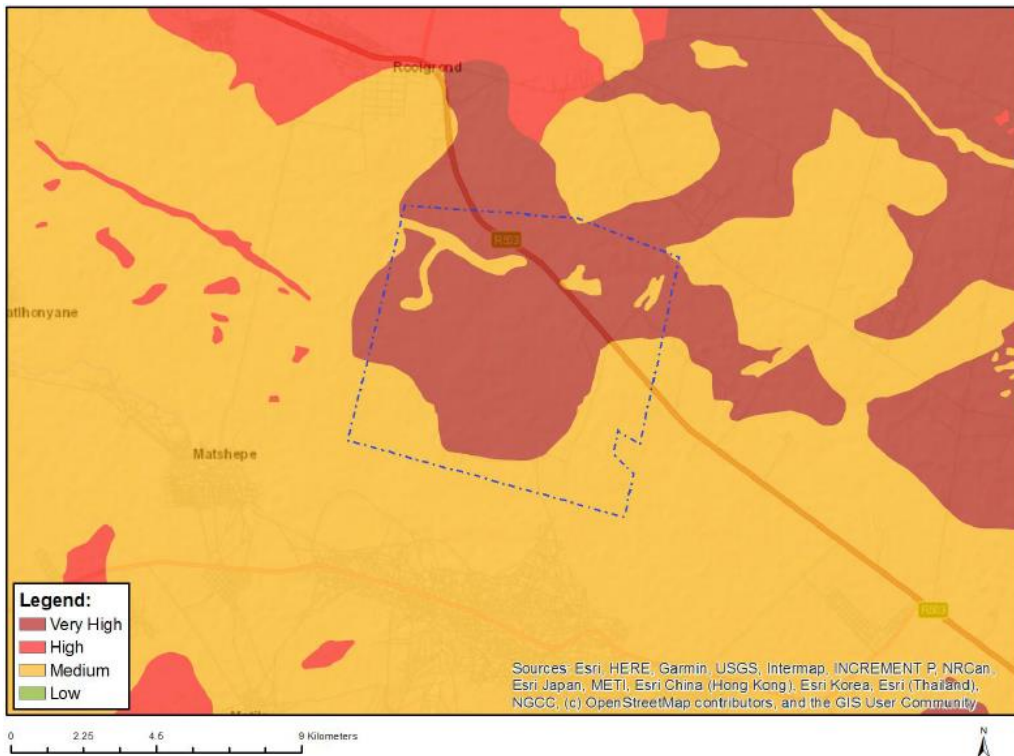


Figure 19: Relative Paleontology Theme Sensitivity

A Phase 1 Cultural Heritage Impact Assessment was conducted by Dr J A van Schalkwyk and a Palaeontological Impact Assessment was conducted by Elize Butler from Banzai Environmental. Please see the findings below:

Phase 1 Cultural Heritage Impact Assessment finding:

6.3 Site specific review

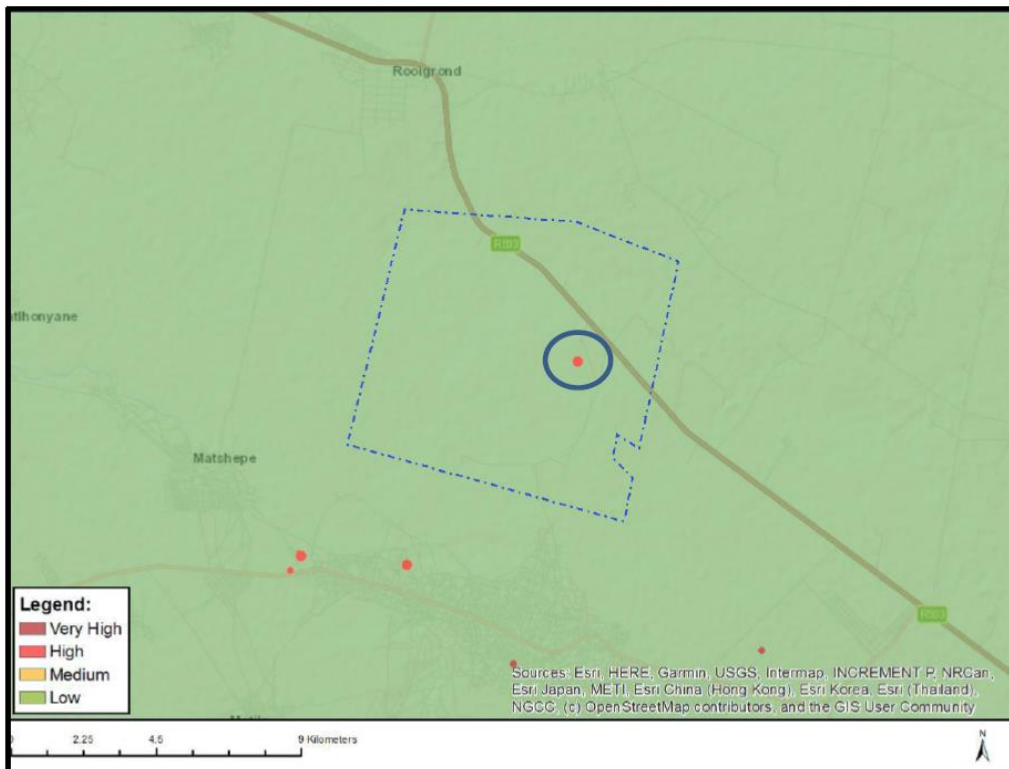
Based on a study of old maps and aerial photographs, it is clear that the whole of the project area of the farm was originally used for agricultural purposes. Developments that took place was the establishment of the farmstead as well as some regional roads that crosses the farm. This changes with the establishment of some limestone mining in various sections of the farm.

6.4 Site Sensitivity Verification

According to the DFFE National Screening Tool, the project area has a low sensitivity for archaeological and cultural heritage themes, as indicated on the map in Fig. 12 below. The results of the investigation have indicated that this is the case:

- Section 5.2.1: Prefeasibility Assessment (also see Table 1 & Fig. 3);
- Section 5.2.2 Field Survey;
- Section 6.2: Cultural Landscape;
- Section 6.3: Site Specific Review (also see Fig. 7 – 11).

- It should be noted that the site circled in blue on the Screening map below is wrong as it forms part of a cluster of sites located in Mpumalanga Province (SAHRA Heritage Sites for SA: <https://sahris.sahra.org.za/allsitesfinder>). It's location here is probably the result of a typographical error when the coordinates were entered.
 - Consequently, based on the above explanation, the sensitivity as per the DFFE Screening Tool is adapted to be of Low Sensitivity.



Very high sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		X

Sensitivity features:

Sensitivity	Features (s)
High	Within 150m of a Grade IIIa heritage site
Low	Low sensitivity

Figure 12. Archaeological and cultural heritage sensitivity as per the DFFE National Screening Tool (<https://screening.environment.gov.za/screeningtool>)

7. SURVEY RESULTS

During the survey, the following sites, features and objects of cultural significance were identified in the project area (Fig. 17).

7.1 Stone Age

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

7.2 Iron Age

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

7.3 Historic period



NHRA Category	Graves, Cemeteries and Burial Grounds - Section 36
7.3.1. Type: Burial site. Farm: Mooimeisjesfontein 118JO Coordinates: S 25,98558; E 25,85374	
Description: A small informal burial site with two or three graves marked only with stone cairns. The site is very overgrown with grass and weeds, which makes it difficult to determine the full extent of the site.	
Significance of site/feature	Generally protected 4A: High/medium significance.
Reasoned opinion: Burial sites are viewed as having high emotional and sentimental value. However, mitigation is possible if proper procedures have been followed.	
References: -	
	

Figure 13. Overview of the burial site and one of the graves



NHRA Category	Graves, Cemeteries and Burial Grounds - Section 36
7.3.2. Type: Burial site. Farm: Mooimeisjesfontein 118JO. Coordinates: S 25,97102; E 25,85209	
Description: A formal burial site with five graves with headstones, as well as a number that are only marked with stone cairns. The marked graves are all members of the Holder Family, and it is taken that they were former landowners.	
Significance of site/feature	Generally protected 4A: High/medium significance.
Reasoned opinion: Burial sites are viewed as having high emotional and sentimental value. However, mitigation is possible if proper procedures have been followed.	
References: -	
	

Figure 14. Views over the burial site

NHRA Category	Structures older than 60 years - Section 34
7.3.3. Type: Farm: Mooimeisjesfontein 118JO. Coordinates: S 25,99051; E 25,82548	
7.3.4. Type: Farm: Mooimeisjesfontein 118JO. Coordinates: S 25,99425; E 25,82394	
7.3.5. Type: Farm: Mooimeisjesfontein 118JO. Coordinates: S 25,99586; E 25,81191	
7.3.6. Type: Farm: Mooimeisjesfontein 118JO. Coordinates: S 25,98652; E 25,80434	
7.3.7. Type: Farm: Mooimeisjesfontein 118JO. Coordinates: S 25,98499; E 25,81813	
7.3.8. Type: Farm: Mooimeisjesfontein 118JO. Coordinates: S 26,01382; E 25,84931	
7.3.9. Type: Farm: Mooimeisjesfontein 118JO. Coordinates: S 25,97003; E 25,85009	
<p>Description: Various structures, all either former houses or farming related features. Most of the structures have been stripped of all recyclable material and it is only the walls that remains. Based on the materials used for building of the structures it can be determined that they are not very old. This is confirmed by a study of old maps and aerial photographs which indicates that those structures that can be seen are not very old, dating to the last 30 to 40 years.</p>	
<p>Significance of site/feature</p>	<p>Generally protected 4B: Medium significance - Should be recorded before destruction.</p>
<p>Reasoned opinion: It represents the remains of a way of life that is becoming rare as farming areas are increasingly being abandoned and people moving to settle in adjacent towns.</p>	
<p>References: -</p>	



7.3.3



7.3.4



7.3.4



7.3.5



7.3.5



Figure 15. Views over the old structures

NHRA Category		Structures older than 60 years - Section 34
7.3.10. Type: Limestone mine Farm: Mooimeisjesfontein 118JO. Coordinates: S 26,01715; E 25,82145		
Description: Remains of an old lime mining operation. A few ruined structures occur adjacent to a large and deep excavation. A number of smaller lime excavation sites occur all over the area. These are signified by shallow excavations and rock dumps.		
Significance of site/feature	Generally protected 4B: Medium significance - Should be recorded before destruction.	
Reasoned opinion: It represents the remains of a way of life that is becoming rare as farming areas are increasingly being abandoned and people moving to settle in adjacent towns.		
References: -		



Figure 16. Views over the old lime quarry and some of the smaller activities

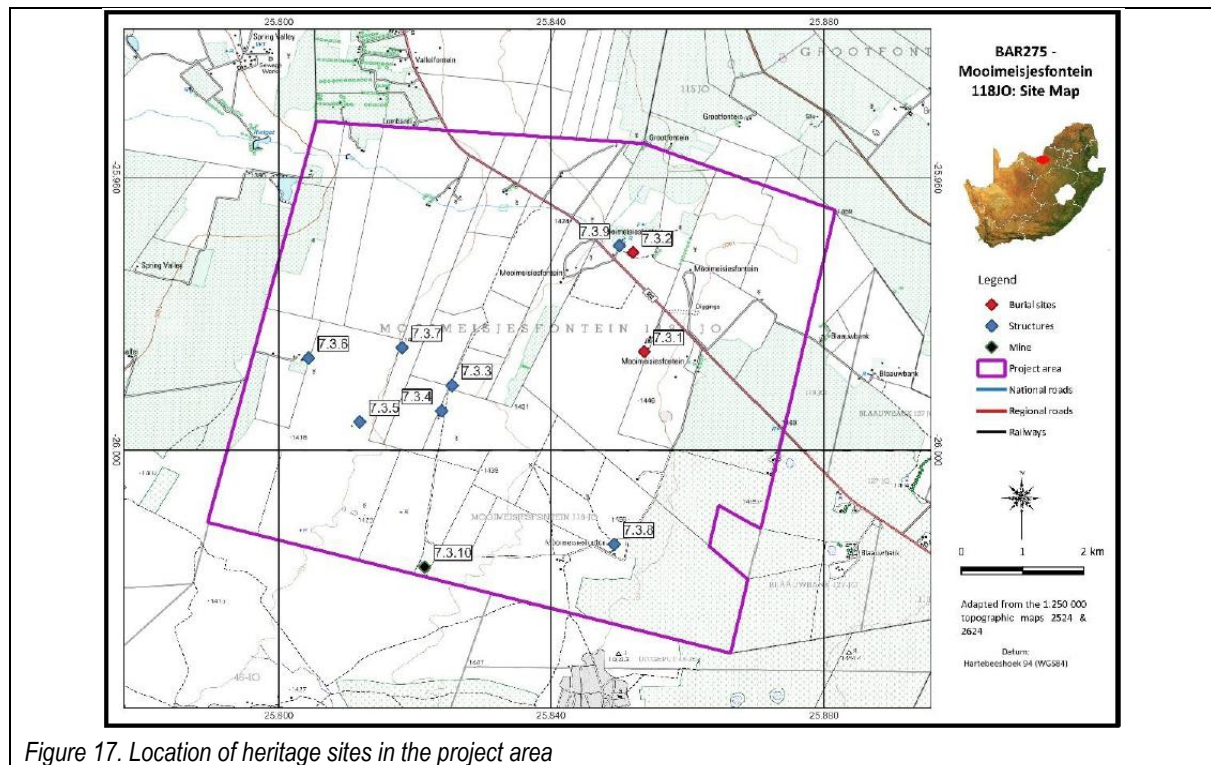


Figure 17. Location of heritage sites in the project area

Palaeontological impact assessment findings:

5 GEOLOGICAL AND PALAEOLOGICAL HISTORY

The proposed Prospecting Right Application is depicted on the Mafikeng 2524 (1991) and 2624 Vryburg (1993) Geological map (Council of Geoscience, Pretoria) (Figure 3, Table 2-3). The study area is underlain by Quaternary superficial deposits that includes Quaternary alluvium (yellow single bird figure), Quaternary sands (Qs, yellow), and Tertiary to Quaternary calcretes (T-Qc, dark yellow). The largest portion of the development is underlain by the Oaktree Formation (Malmani Subgroup, Chuniespoort Group and Transvaal Supergroup), while a very small portion in the west is underlain by the Black Reef Formation (Chuniespoort Group, Transvaal Supergroup). Updated geology (Figure 4) indicates that the study area is mainly underlain by the Malmani Group, with a small portion in the west underlain by the Black Reef Formation and the southern and eastern portion is underlain by alluvium, colluvium, elluvium and gravel. According to the South African Heritage Resources Information System (SAHRIS, Figure 5, Table 4), the Palaeontological Sensitivity of the Quaternary alluvium is Low (blue), that of the Quaternary sands and Calcrete is moderate (green) while that of the Oaktree and Black Reef Formations are very High. The National Environmental Web-based Screening Tool (Figure 6) also indicates that the Palaeontological Sensitivity of the development is Very High (dark red).

The unconsolidated Quaternary sands present in the Prospecting Right Application most probably does not contain any fossils. The late Cretaceous to Recent Kalahari Group has been reviewed by the following authors: Thomas (1981), Dingle et al. (1983), Thomas & Shaw 1991, Haddon (2000) and Partridge et al. 2006. The Quaternary Gordonia Formation (Kalahari Group) are dated as Late Pliocene/Early Pleistocene to Recent times by the Middle to Later Stone Age stone tools recovered from them (Dingle et al (1983). The fossil assemblages of the Quaternary are generally Low in diversity and occur over a wide range and mostly has a Moderate Paleontologically Sensitivity. These fossils represent terrestrial plants and animals with a close resemblance to living forms. Fossil assemblages include bivalves, diatoms, gastropod shells, ostracods, and trace fossils. The palaeontology of the Quaternary superficial deposits has been relatively neglected in the past. Late Cenozoic calcrete may comprise of bones, horn corns as well as mammalian teeth. Tortoise remains have also been uncovered as well as trace fossils which includes termite and insect's burrows and mammalian trackways. Amphibian and crocodile skeletons have been uncovered where the depositional settings in the past were wetter.

The Quaternary deposits are very important because palaeoclimatic changes are reflected in the different geological formations (Hunter et al., 2006). During the climate fluctuations in the Cenozoic Era most geomorphologic features in southern Africa where formed (Maud, 2012). Barnosky (2005) indicated that various warming and cooling events occurred in the Cenozoic but states that climatic changes during the Quaternary Period, specifically the last 1.8 Ma, were the most

drastic climate changes relative to all climate variations in the past. Climate variations that occurred in the Quaternary Period were both drier and wetter than the present and resulted in changes in river flow patterns, sedimentation processes and vegetation variation (Tooth et al., 2004).

The Late Tertiary to Quaternary calcretes (T-Qc) may be stratigraphically comparable to the Pleistocene or Late Pliocene Mokalanen Formation of the Kalahari Group (Figure 7), while others may be younger (Partridge et al. 2006, Moen 2007). These sediments include layers of nodular or structureless calcretes overlying the Namaqua-Natal Province basement rocks.

The proposed Prospecting Right Application is located in the Transvaal Basin with the Black Reef Formation the oldest deposit in the study area. The Oaktree Formation (Malmani Subgroup) overlies the Black Reef Formation. This unit is an intermediate from siliciclastic sedimentation to platform carbonates and comprise of locally developed quartzites, 10–200 m of carbonaceous shales, and stromatolitic dolomites. Marin et al (1998) dated the tuff layer in the upper Oaktree Formation at 2585 Ma.

The Malmani Subgroup carbonates of the Transvaal Basin (Figure 7) comprise of an assortment of stromatolites (microbial laminates), ranging from supratidal mats to intertidal columns and large subtidal domes (Eriksson et al. 2006). Stromatolites are layered mounds, columns and sheet-like sedimentary rocks. These structures were originally formed by the growth of layer upon layer of cyanobacteria, a single-celled photosynthesizing microbe. Cyanobacteria are prokaryotic cells (simplest form of modern carbon-bases life). Stromatolites are first found in Precambrian rocks and are known as the earliest known fossils. These algae photosynthesised in the low oxygen atmosphere and deposited layer upon layer of calcium sulphate, magnesium sulphate and calcium carbonate as well as other compounds to form these domes. Researchers have examined and classified the stromatolite structures but seldomly find preserved algal cells. The oxygen atmosphere that we depend on today was generated by numerous cyanobacteria photosynthesizing during the Archaean and Proterozoic Era.

Stromatolites and oolites from the Transvaal Supergroup have been described by various authors (Eriksson and Altermann, 1998). Detailed descriptions of South African Archaean stromatolites are available in the literature (Altermann, 2001; Buick, 2001; and Schopf, 2006). The Malmani stromatolites literature includes articles by Truswell and Eriksson (1972, 1973, 1975), Eriksson and MacGregor (1981), Eriksson and Altermann (1998), Sumner (2000), Schopf (2006).

The Malmani Subgroup succession is about 2 km-thick and consists of a series of formations of oolitic and stromatolitic carbonates (limestones and dolomites), black carbonaceous shales and minor secondary cherts. The Malmani Dolomites also consist of historic lime mines, and palaeocave fossil deposits. Dolomite (limestone rock) forms in warm, shallow seas from slow gathering remainders of marine microorganisms and fine-grained sediment. Dolomites of the Malmani Subgroup has a higher magnesium content than other limestones. These materials contain high levels of calcium carbonate and are often referred to as carbonates.

Currently very few palaeontologists study stromatolites but geologists find the stromatolites interesting because they reveal the change from a reducing environment (that is an oxygen-poor) to an oxidizing environment (oxygen--rich). This transition is known as the Great Oxygen Event (Eroglu et al., 2017).

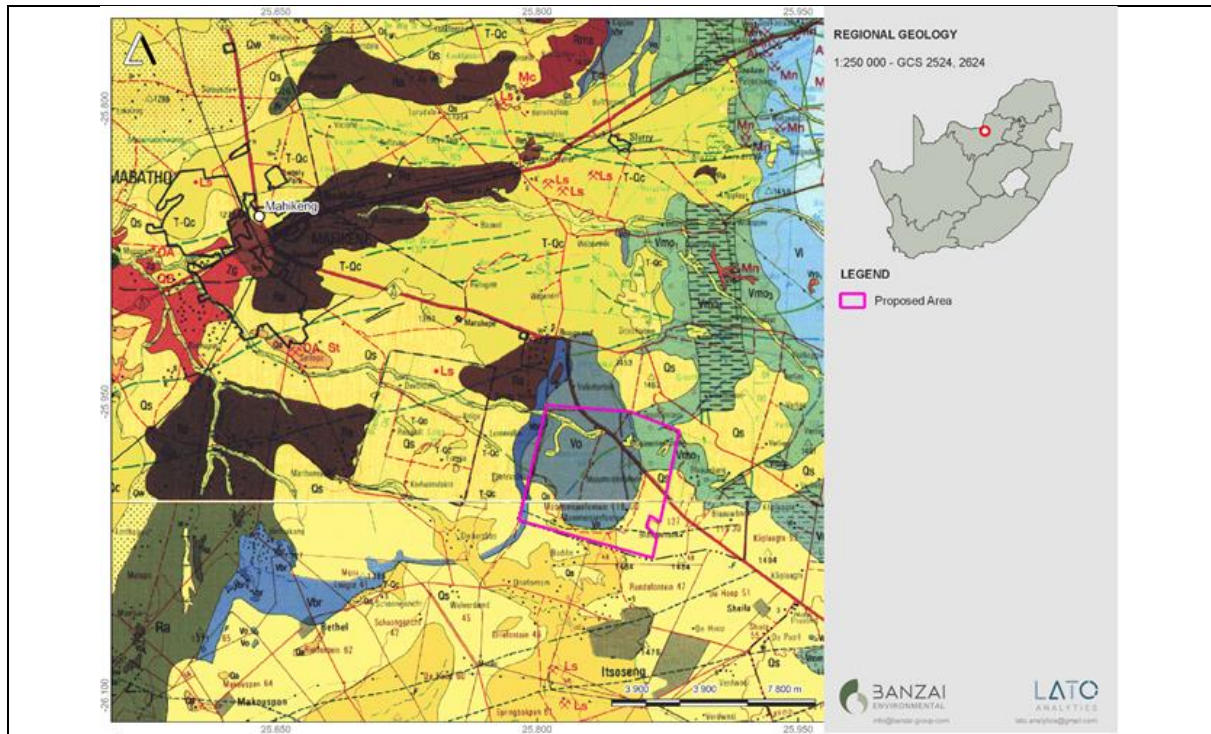


Figure 1: Extract of the 1:250 000 Prieska 2922 (1995) Geological map (Council of Geoscience, Pretoria) indicating the proposed development in pink.

The proposed development is underlain by a portion of Quaternary superficial deposits while the largest portion is underlain by the Transvaal Supergroup.

Table 2: Legend of the 1:250 000 Mafikeng 2524 (1991) Geological map (Council of Geoscience, Pretoria) Relevant lithology is indicated in red

GROEP GROUP	SUBGROEP SUBGROUP	FORMASIE FORMATION			
KWATERNER QUATERNARY	KALAHARI	Gordonia	~ Riviersand, alluvium River sand, alluvium		
			Qs Oppervlaksettings Superficial deposits		
			Qw Windgewaaid, deels herbewerkte sand; kolluvium Wind-blown, partially reworked sand; colluvium		
			Qg Windgewaaid sand Wind-blown sand		
			Qsi Silikaryke sandsteen, rolsteenkongloraat, grintsteen, silikreet Siliceous sandstone, pebble conglomerate, griststone, silcrete		
			Qa Rivierterrasgruis River terrace gravel		
			T-Qc Kalkkreet Calcrete		
TERSIER TERTIARY	CHUNIESPOORT	Malmani	Frisko Vf		
			Eccles Ve		
			Lytelton Vi		
			Monte Christo Vm0, Vm1, Vm2, Vm3, Vm4		
			Oaktree Vo		
			Swartrif Vtr		
			CAMPBELL GROEP CAMPBELL GROUP	Kuruman Member	Vc
					Vyburg Formasie Vyburg Formation
					Qg W
					Vo Chertarm dolomiet; skalie (); chert (); Chert-poor dolomite; shale (); chert ()
		Vtr Kwartsiet, skalie; basale kongloraat Quartzite shale; basal conglomerate			

Table 3: Legend of the 1:250 000 Vryburg 2624 (19931) Geological map (Council of Geoscience, Pretoria) Relevant lithology is indicated in red

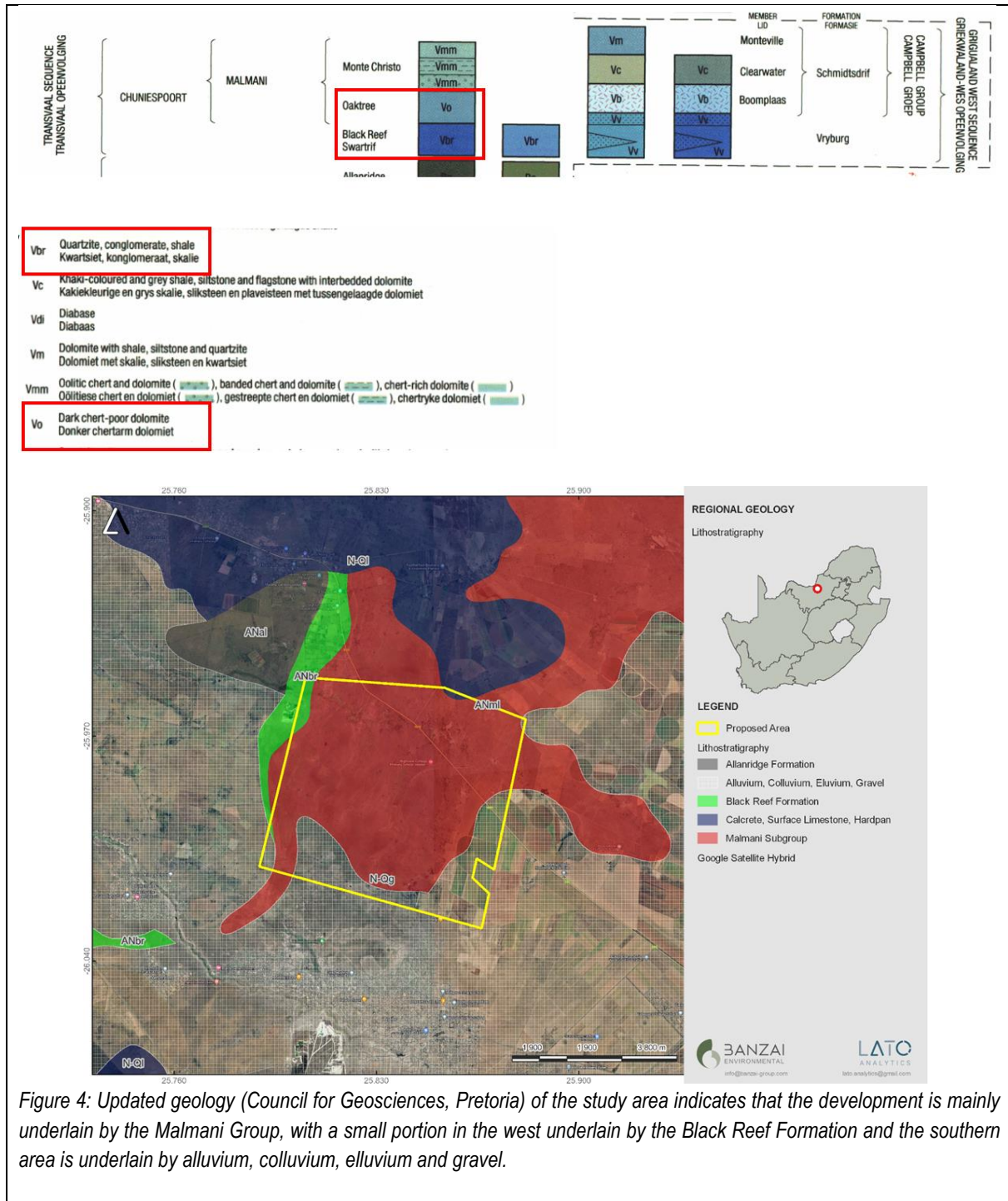


Figure 4: Updated geology (Council for Geosciences, Pretoria) of the study area indicates that the development is mainly underlain by the Malmani Group, with a small portion in the west underlain by the Black Reef Formation and the southern area is underlain by alluvium, colluvium, elluvium and gravel.

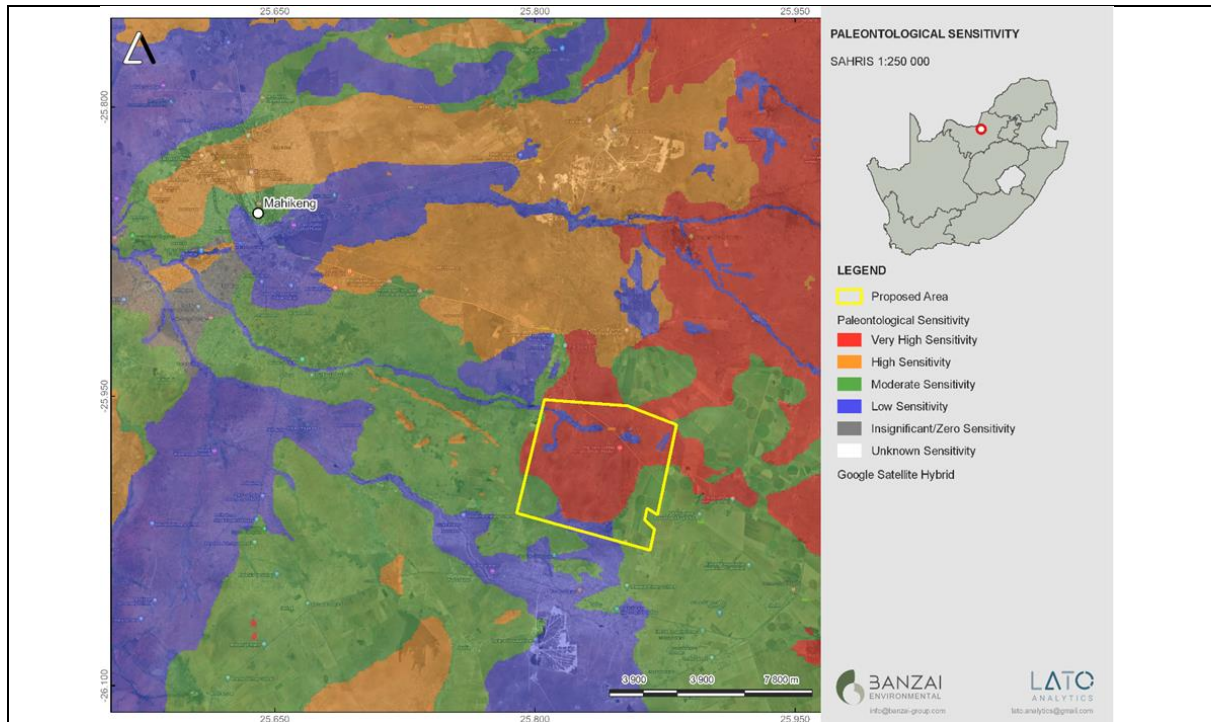


Figure 5: Extract of the 1 in 250 000 SAHRIS PalaeoMap (Council of Geosciences) indicating the Palaeontological Sensitivity of the proposed development.

According to the SAHRIS Palaeosensitivity map (Figure 5) the proposed development is underlain by sediments with a Very High (red), Moderate (green), and Low (blue) Palaeontological Significance.

Table 4: SAHRIS Palaeosensitivity ratings table.

The relevant sensitivities are highlighted

Colour	Sensitivity	Required Action
RED	VERY HIGH	Field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	Desktop study is required and based on the outcome of the desktop study; a field assessment is likely
GREEN	MODERATE	Desktop study is required
BLUE	LOW	No palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	No palaeontological studies are required
WHITE/CLEAR	UNKNOWN	These areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

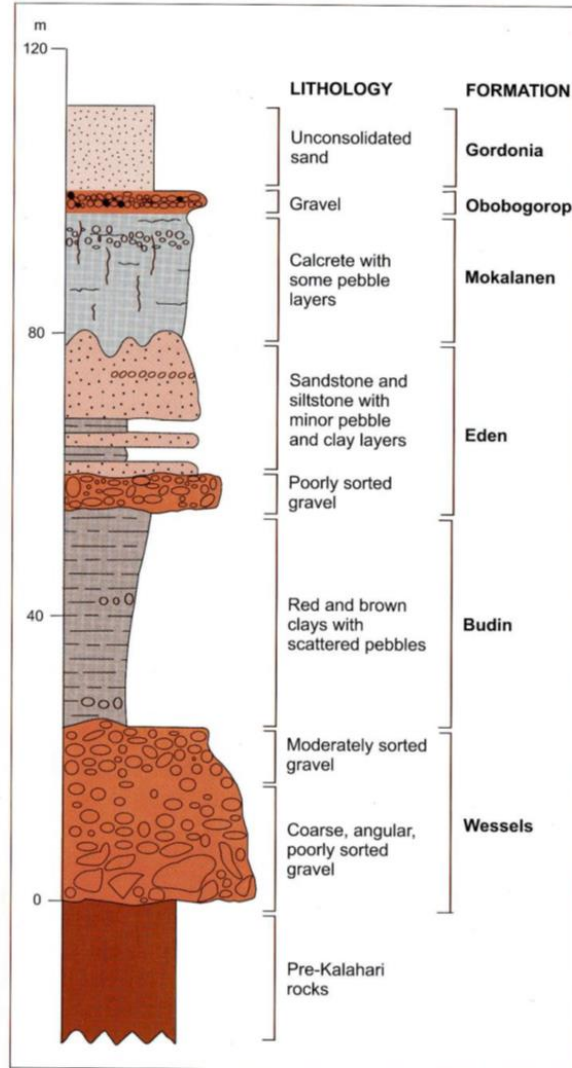


Figure 7: Stratigraphy of the Kalahari Group (Image taken from Partridge et al., 2006). Calcretes and aeolian sands of the Gordonia Formation possibly corresponds to the Mokalanen Formation

9 SITE VISIT

A site-specific field survey of the development footprint was conducted on foot on and vehicle on 27 April 2023. During the site investigation no fossiliferous outcrop was detected. However, numerous dolomite outcrops were identified.



Figure 8: General view of the proposed development indicates a low topography.



Figure 9: Dolomite outcrops are scattered throughout the study area.

DESCRIPTION OF THE SOCIO-ECONOMIC ENVIRONMENT

Ditsobotla Local Municipality

Ditsobotla Local Municipality is located in the Ngaka Modiri Molema District Municipality in the North West Province and covers approximately 6500 km². The municipality is home to approximately 181 8652 people.

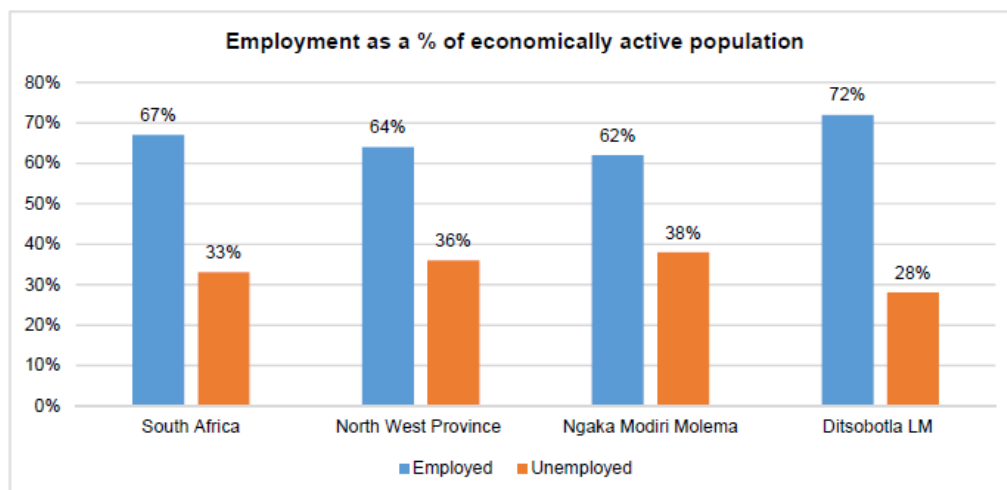
Ditsobotla Local Municipality consists of two main towns of Lichtenburg and Coligny and four semiurban areas (townships) of Itsoseng, Tlhabologang, Itekeng and Boikhutso. It is also surrounded by a vast number of rural areas (villages) as well as commercial farming areas. The village composition of the municipality includes among others the following main residential areas:

- Bodibe;
- Matile;
- Springbokpan;
- Verdwaal;
- Bakerville;
- Ga-Motlatla; and
- Putfontein.

Employment Rate

Statistics South Africa defines an economically active person as one who is available for work and is aged between 15 and 65 years of age, regardless of whether that person is employed or not. According to Statistics South Africa (2004), an employed person is defined as one who works for remuneration, profit or family gain. The definition includes employers and employees, as well as those who are self-employed or a working family member. This includes both the formal and informal sector.

Available statistics indicate that Ngaka Modiri Molema District and Ditsobotla Municipality have employment rates of 62% and 72% of the economically active population being employed respectively, while 38% and 28% of the economic active population is respectively unemployed (Global Insight 2013).



Economic Profile

The Table below shows the share of GDP contributed by each sector in Ditsobotla Municipality, Ngaka Modiri Molema District, the North West Province and South Africa.

Sector	North West		Ngaka Modiri Molema		Ditsobotla Local Municipality	
	2011	2012	2011	2012	2011	2012
Agriculture	8%	8%	5%	6%	9%	10%
Mining	15%	16%	4%	4%	13%	13%
Manufacturing	11%	13%	6%	6%	17%	17%
Electricity and Water	2%	2%	3%	3%	0%	0%
Construction	2%	2%	2%	2%	2%	3%
Trade	10%	10%	10%	10%	11%	11%
Transport	9%	8%	7%	7%	8%	8%
Finance	13%	12%	16%	14%	15%	13%
Community Service (including government)	30%	29%	48%	49%	24%	25%
Total	100%	100%	100%	100%	100%	100%

Source: IHS Global Insight 2013

The table above indicates that the GDP of the municipality was slightly more than R5 billion during 2012. The Community Services (including Government) sector made the biggest contribution with 25% to the economy of Ditsobotla Municipality in 2012. The contribution of the Community Services has, increased from 24% in 2011, and is currently still far less than the average contributions made by this sector at the district level. This shows that although this sector is still the highest in the municipality, it is not as important when compared to the average of the district.

The second highest GDP contributing sectors in the municipality is that of the manufacturing sector (17%) followed by mining and the finance (13%) respectively. In the instance of both the manufacturing and mining sectors, they are much more than the average of the district and are not far behind that of the province. This shows the importance of both the sectors for the municipality.

This probably contributes towards the strong trade sector in the municipality and the spin-offs created by the trade sector towards the finance sector.

The agriculture sector contributed approximately 10% to the economy of the municipality, constituting a higher share in its economy than in the province (8%) and district with 6%. The agriculture share to the municipality's economy has however increased from the 9% contribution in 2011. Again, this shows that agriculture is an important contributor to the economy of the municipality.

The electricity and water, construction transport sectors share has remained relatively constant over the aforementioned timeframe and are well within the average range of both the district and the provincial contributions.

Interestingly the manufacturing sector is the second highest contributor to GDP, even higher than both district and province. This shows that there is great scope for local manufacturing and further beneficiation in this area.

DESCRIPTION OF THE CURRENT LAND USES.

According to **Figure 20 and Figure 21** the proposed area is mostly covered by natural vegetation, cultivation, some water bodies and a degraded area.

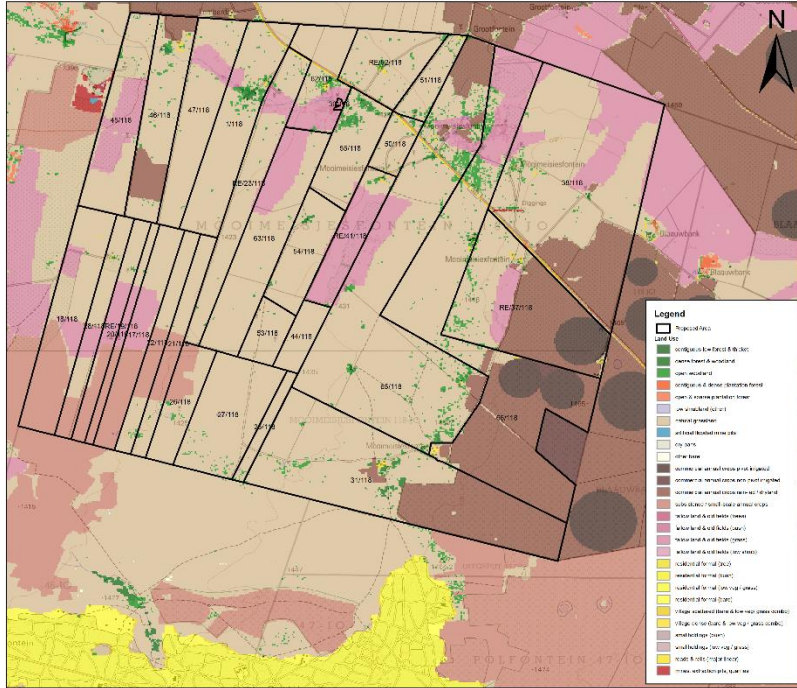
The google earth map (**figure 22**) show the natural area and cultivated lands. The proposed area is used for agricultural activities such as crop cultivation, livestock grazing and homesteads. Some of the homesteads are abandoned (**Appendix 5**).

If applicable a Water Use License Application will be launched for conducting prospecting without bulk sampling operations.

All infrastructure will be temporary and/or mobile.

Milnex CC: BAR275PR – BAR & EMPR: The proposed Prospecting Right without bulk sampling for the prospecting of Limestone (Ls) & Manganese Ore (Mn) near Mahikeng on various portions of the farm Mooimeisjesfontein 118, Registration Division: JO, North-West Province.

BAR275PR: LAND USE MAP



REFERENCE:

PROPOSED PROSPECTING ACTIVITIES WITHOUT BULK SAMPLING ON PORTIONS 1, 17, 18, 20, 21, 22, 25, 26, 27, 28, 31, 38, 39, 44, 45, 46, 47, 50, 51, 53, 54, 55, 59, 60, 65, 66, RE/19, RE/23, RE/37, RE/41 & RE/2 OF THE FARM MOOMEISJESFONTEIN 118 (REGISTRATION DIVISION JO), NORTH WEST PROVINCE. TOTAL EXTENT: 3687,8614 ha

CLIENT: ISB 74 (PTY) LTD
 DATE: 9 JUNE 2022
 DRAWN BY: E KRUGER
 EAP: EAP

DATE: 17 JUNE 2022
 DRAWN BY: D. WGS, 1984
 SCALE: 1:50 000
 E KRUGER
 EAP: 0, 0, 0, 1, 5

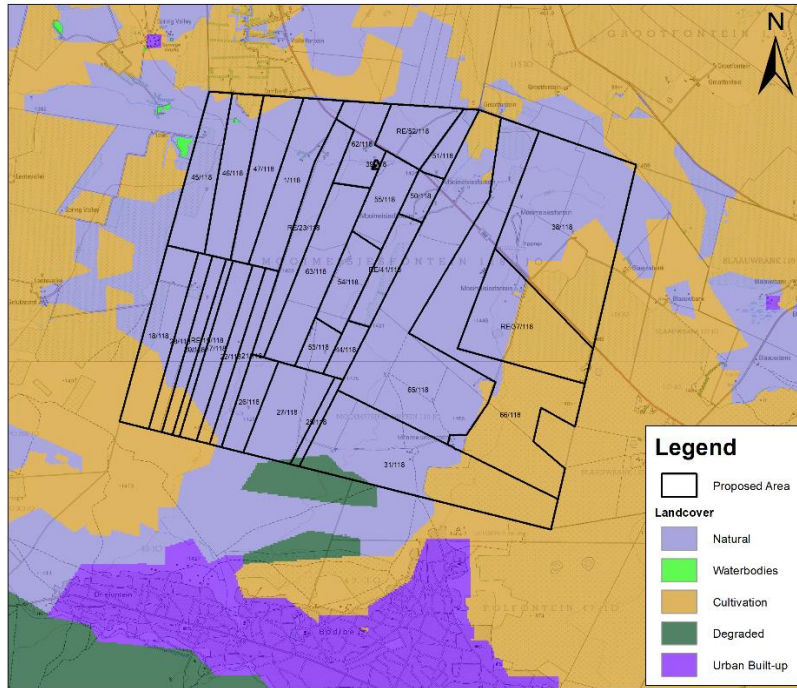
Adopted from the 1:50 000 Topographical Maps - 232500, 262985

MILNEX
 ENVIRONMENTAL CONSULTANTS

LOCALITY MAP: NORTH WEST PROVINCE

Figure 20: Land use map associated with study site and surrounding areas.

BAR275PR: LAND COVER MAP



REFERENCE:

PROPOSED PROSPECTING ACTIVITIES WITHOUT BULK SAMPLING ON PORTIONS 1, 17, 18, 20, 21, 22, 25, 26, 27, 28, 31, 38, 39, 44, 45, 46, 47, 50, 51, 53, 54, 55, 59, 60, 65, 66, RE/19, RE/23, RE/37, RE/41 & RE/2 OF THE FARM MOOMEISJESFONTEIN 118 (REGISTRATION DIVISION JO), NORTH WEST PROVINCE. TOTAL EXTENT: 3687,8614 ha

CLIENT: ISB 74 (PTY) LTD
 DATE: 17 JUNE 2022
 DRAWN BY: D. WGS, 1984
 SCALE: 1:50 000
 E KRUGER
 EAP: 0, 0, 0, 1, 5

Adopted from the 1:50 000 Topographical Maps - 232500, 262985

MILNEX
 ENVIRONMENTAL CONSULTANTS

LOCALITY MAP: NORTH WEST PROVINCE

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

Milnex CC: BAR275PR – BAR & EMP: The proposed Prospecting Right without bulk sampling for the prospecting of Limestone (Ls) & Manganese Ore (Mn) near Mahikeng on various portions of the farm Mooimeisjesfontein 118, Registration Division: JO, North-West Province.

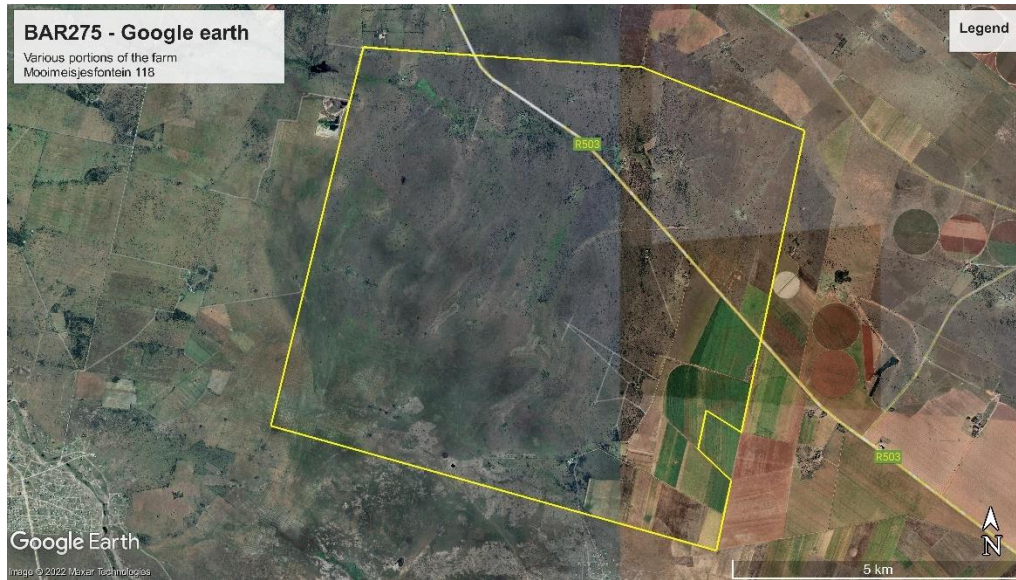


Figure 22: Google earth map of the proposed area.

v) **IMPACTS AND RISKS IDENTIFIED INCLUDING THE NATURE, SIGNIFICANCE, CONSEQUENCE, EXTENT, DURATION AND PROBABILITY OF THE IMPACTS, INCLUDING THE DEGREE TO WHICH THESE IMPACTS -**

(aa) can be reversed;

(bb) may cause irreplaceable loss of resources; and

(cc) can be avoided, managed or mitigated;

Significance of potential impacts according to the Ecological Assessment Report

The following sections present the outcome of the significance rating exercise. The results suggest that the prospecting activities will have an impact on the natural vegetation and the agricultural activities, if not properly mitigated.

Please see the impacts according to the Ecological Assessment Report. The Report is available under **Annexure 12**.

INITIAL CLEARANCE, SITE PREPARATION PHASE AND OPERATIONAL PHASE

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

- Transformation of vegetation within the assessment area associated with the Carletonville Dolomite Grassland (Gh 15), Western Highveld Sandy Grassland (Gh 14) and Klerksdorp Thornveld (Gh 13) vegetation types

An Ecological Assessment Report was conducted by AJH Lamprecht from EcoFocus Consulting (Pty) Ltd. The Report is available under **Annexure 12**. Please see the impact assessment:

Transformation of vegetation within the assessment area associated with the Carletonville Dolomite Grassland (Gh 15), Western Highveld Sandy Grassland (Gh 14) and Klerksdorp Thornveld (Gh 13) vegetation types

According to SANBI (2006-2019), the majority of the assessment area falls within the Carletonville Dolomite Grassland vegetation type (Gh 15). Portions of the assessment area along the western boundary fall within the Western Highveld Sandy Grassland vegetation type (Gh 14) (SANBI, 2006-2019). The southern portion and very small north-western corner of the assessment area fall within the Klerksdorp Thornveld vegetation type (Gh 13) (SANBI, 2006-2019).

The assessment area constitutes a single footprint area of approximately 5 707 ha in size, although the proposed prospecting will merely constitute the excavation of approximately 300 pits of 3 m x 2 m x 2 m (deep). This will therefore result in an excavation footprint area of approximately 1 800 m² in total combined size over the entire assessment area.

The mechanical clearance and excavation associated with the proposed pits, will in all probability merely transform the existing surface vegetation within- and directly surrounding each isolated pit footprint area. It is however not anticipated that the proposed prospecting will impact significantly wider than these minute isolated pit footprint areas.

The significance of this potential impact associated with the proposed prospecting will be low prior to- and after implementation of recommended mitigation measures.

Mitigation measures to reduce impacts are recommended under heading 9.4.

	Proposed prospecting	No-go alternative
Identified Environmental Impact	<i>Transformation of vegetation within the assessment area associated with the Carletonville Dolomite Grassland (Gh 15), Western Highveld Sandy Grassland (Gh 14) and Klerksdorp Thornveld (Gh 13) vegetation types</i>	
Magnitude of Negative or Positive Impact	<i>Very low (2)</i>	
Duration of Negative or Positive Impact	<i>Short term (2)</i>	
Extent of Positive or Negative Impact	<i>Local (2)</i>	
Irreplaceability of Natural Resources being impacted upon	<i>Low (2)</i>	
Reversibility of Impact	<i>High (2)</i>	
Probability of Impact Occurrence	<i>Low (2)</i>	
Cumulative Impact Rating prior to mitigation	<i>Low</i>	
Environmental Significance Score and Rating prior to mitigation	<i>Low (20)</i>	
Mitigation Measures to be implemented	<p><i>The proposed pit footprint areas must be kept as small as practicably possible to reduce the surface impact on surrounding vegetation and no unnecessary/unauthorised footprint expansion into the surrounding undeveloped landscape may take place.</i></p> <p><i>No site construction basecamps may be established within the surrounding undeveloped landscape.</i></p> <p><i>Adequately cordon off the proposed pit footprint areas and ensure that no excavation activities, machinery or equipment operate or impact within the surrounding undeveloped landscape outside the cordoned off areas.</i></p> <p><i>Adequate operational procedures for excavation machinery and equipment must be developed in order to strictly govern and restrict movement of machinery only within the proposed pit footprint areas and to ensure environmentally responsible excavation practices and activities.</i></p> <p><i>Existing roads and farm tracks in close proximity to the proposed pit footprint areas, must be used during the excavation processes. No new temporary roads or tracks may be constructed or implemented through the surrounding undeveloped landscape.</i></p>	

	<p><i>Disturbed areas within and immediately surrounding the proposed pit footprint areas must be adequately closed-up again and rehabilitated as soon as practicably possible after excavation and sampling completion. A Rehabilitation Management Plan must be compiled by a suitably qualified and experienced ecologist.</i></p> <p><i>It is recommended that a sufficient grazing management plan and practices must be implemented for livestock of the local farmers/land users, in order to prevent continued significant overgrazing of the landscape and to attempt to improve/restore the ecological condition, over time.</i></p>	
Cumulative Impact Rating after mitigation implementation	Low	
Environmental Significance Score and Rating after mitigation implementation	Low (9)	

- Transformation of Critical Biodiversity Areas one and two (CBA 1 & 2) as well as Ecological Support Areas one and two (ESA 1 & 2) and consequent fragmentation of ecological connectivity, associated with the assessment area.

Ecological Assessment Report was conducted by AJH Lamprecht from EcoFocus Consulting (Pty) Ltd. The Report is available under **Annexure 12**. Please see the impact assessment:

	Proposed prospecting	No-go alternative
Identified Environmental Impact	<i>Transformation of Critical Biodiversity Areas one and two (CBA 1 & 2) as well as Ecological Support Areas one and two (ESA 1 & 2) and consequent fragmentation of ecological connectivity, associated with the assessment area</i>	
Magnitude of Negative or Positive Impact	Very low (2)	
Duration of Negative or Positive Impact	Short term (2)	
Extent of Positive or Negative Impact	Local (2)	
Irreplaceability of Natural Resources being impacted upon	High (4)	
Reversibility of Impact	High (2)	
Probability of Impact Occurrence	Low (2)	
Cumulative Impact Rating prior to mitigation	Low	
Environmental Significance Score and Rating prior to mitigation	Low (24)	

<p>Mitigation Measures to be implemented</p>	<p>Mitigation Measures to be implemented <i>It is recommended that a continuous ecologically viable corridor of sufficient width and size must be adequately buffered out of the proposed prospecting area, from the outset. No current or future development is allowed to take place within this buffered zone.</i></p> <p><i>An ecological corridor of minimum 4 km in width is proposed for the assessment area (see heading 8.9). This is based on an approximate 50 % width of the assessment area (8 km) as well as the approximate average width of the three entry points associated with the three ecological corridors which link up with- and ‘funnel/bottleneck’ into the assessment area from the north-west, north-east and south-west, respectively. This will prevent these three ecological corridors from further congesting and avoid a further narrowed ‘funnel/bottleneck’ through the assessment area. It is however recommended that relevant representatives from the North West Department of Economic Development, Environment, Conservation and Tourism must be consulted during the Public Participation Process (PPP) for this current application, in order to assist with determining/calculating a suitably sized and located ecological corridor that will ensure the persistence/livelihood of faunal and floral communities as well as for achieving and maintaining national and/or provincial conservation- and persistence targets of the area.</i></p> <p><i>In the event that an adequate ecological corridor is agreed to and accepted by the North West Department of Economic Development, Environment, Conservation and Tourism, it is the opinion of the specialist that the proposed prospecting and subsequently envisaged potential future mining activities do not necessarily warrant the requirement of a Biodiversity Offset to be identified or assessed, for the proposed transformation of the remaining portions of CBA or ESA, as part of the NEMA mitigation hierarchy. The North West Department of Economic Development, Environment, Conservation and Tourism must however provide a final decision and recommendations in this regard.</i></p> <p><i>In the event that such a suitable ecological corridor is however not agreed to and accepted between the applicant and the North West Department of Economic Development, Environment, Conservation and Tourism, it is the opinion of the specialist that this should initially be considered a Fatal Flaw for the proposed development. A Biodiversity Offset Feasibility Assessment can however be conducted by a suitably qualified and experienced ecologist to adequately advise the applicant and competent authority regarding the feasibility or not of potentially offsetting the significant transformation of CBA and ESA, which is expected to be caused by the subsequently envisaged potential future mining activities. This must be done in order to enable the competent authority to make an informed decision in terms of the relevant Environmental Authorisation application.</i></p> <p><i>It is recommended that the identified conservationally significant aquatic ecological features must be adequately buffered out of the proposed prospecting area, from the outset. No current or future development is allowed to take place within these buffered zones. It is however the opinion of the specialist that it is not necessary for the two disturbed and degraded depression pans to be buffered out of the proposed prospecting area.</i></p>
---	---

A minimum approximately 150 m Water Quality Buffer distance is therefore recommended to be implemented around the identified conservationally significant aquatic ecological features.

Due to the expected significant ecological impacts of the subsequently envisaged potential future mining activities within the assessment area and after consultation with well-known and recognized avifaunal specialists, it is therefore recommended that a minimum approximately 300 m Biodiversity Buffer distance be implemented around the surface water drainage area and associated unchanneled valley-bottom wetland as well as the two seepage wetlands. A slightly reduced 200 m Biodiversity Buffer distance is furthermore recommended to be implemented around the most southerly located depression pan and filled-up quarry site.

It is however recommended that in the potential future event that a full Environmental Impact Assessment (EIA) is to be conducted for a subsequently envisaged Mining Right application within the assessment area, a comprehensive Avifaunal Assessment must be conducted of the identified aquatic ecological features. This must be done to provide final recommendations on suitable aquatic avifaunal species- and habitat buffer zones in order to adequately advise the competent authority regarding the potential ecological impacts of the proposed mining activities on aquatic avifaunal species and the subsequent feasibility or not of the proposed mining, in order for them to make an informed decision in terms of the relevant Environmental Authorisation application.

It is recommended that in the potential future event that a full Environmental Impact Assessment (EIA) is to be conducted for a subsequently envisaged Mining Right application within the assessment area, a comprehensive Geo-hydrological assessment must be conducted of all groundwater resources within the assessment area and local surrounding landscape. This must be done to adequately assesses and advise the competent authority regarding the potential ecological impacts of the proposed mining activities on these resources and the subsequent feasibility or not of the proposed mining, in order for them to make an informed decision in terms of the relevant Environmental Authorisation application.

The proposed pit footprint areas must be kept as small as practicably possible to reduce the surface impact on surrounding vegetation and no unnecessary/unauthorised footprint expansion into the surrounding undeveloped landscape may take place.

No site construction basecamps may be established within the surrounding undeveloped landscape.

Adequately cordon off the proposed pit footprint areas and ensure that no excavation activities, machinery or equipment operate or impact within the surrounding undeveloped landscape outside the cordoned off areas.

Adequate operational procedures for excavation machinery and equipment must be developed in order to strictly govern and restrict movement of machinery only within the proposed pit footprint areas and to ensure environmentally responsible excavation practices and activities.

	<p><i>Existing roads and farm tracks in close proximity to the proposed pit footprint areas, must be used during the excavation processes. No new temporary roads or tracks may be constructed or implemented through the surrounding undeveloped landscape.</i></p> <p><i>Disturbed areas within and immediately surrounding the proposed pit footprint areas must be adequately closed-up again and rehabilitated as soon as practicably possible after excavation and sampling completion. A Rehabilitation Management Plan must be compiled by a suitably qualified and experienced ecologist.</i></p> <p><i>It is recommended that a sufficient grazing management plan and practices must be implemented for livestock of the local farmers/land users, in order to prevent continued significant overgrazing of the landscape and to attempt to improve/restore the ecological condition, over time.</i></p>	
Cumulative Impact Rating after mitigation implementation	Low	
Environmental Significance Score and Rating after mitigation implementation	Low (9)	

- Destruction of-/damage to Red Data Listed, nationally- and/or provincially protected species individuals/habitats and consequent fragmentation of habitat connectivity, associated with the assessment area

Ecological Assessment Report was conducted by AJH Lamprecht from EcoFocus Consulting (Pty) Ltd. The Report is available under **Annexure 12**. Please see the impact assessment:

	Proposed prospecting	No-go alternative
Identified Environmental Impact	<i>Transformation of Critical Biodiversity Areas one and two (CBA 1 & 2) as well as Ecological Support Areas one and two (ESA 1 & 2) and consequent fragmentation of ecological connectivity, associated with the assessment area</i>	
Magnitude of Negative or Positive Impact	Very low (2)	
Duration of Negative or Positive Impact	Short term (2)	
Extent of Positive or Negative Impact	Local (2)	
Irreplaceability of Natural Resources being impacted upon	High (4)	
Reversibility of Impact	High (2)	
Probability of Impact Occurrence	Low (2)	
Cumulative Impact Rating prior to mitigation	Low	

<p>Environmental Significance Score and Rating prior to mitigation</p>	<p>Low (24)</p>	
<p>Mitigation Measures to be implemented</p>	<p><i>It is recommended that a continuous ecologically viable corridor of sufficient width and size must be adequately buffered out of the proposed prospecting area, from the outset. No current or future development is allowed to take place within this buffered zone.</i></p> <p><i>An ecological corridor of minimum 4 km in width is proposed for the assessment area (see heading 8.9). This is based on an approximate 50 % width of the assessment area (8 km) as well as the approximate average width of the three entry points associated with the three ecological corridors which link up with- and ‘funnel/bottleneck’ into the assessment area from the north-west, north-east and south-west, respectively. This will prevent these three ecological corridors from further congesting and avoid a further narrowed ‘funnel/bottleneck’ through the assessment area. It is however recommended that relevant representatives from the North West Department of Economic Development, Environment, Conservation and Tourism must be consulted during the Public Participation Process (PPP) for this current application, in order to assist with determining/calculating a suitably sized and located ecological corridor that will ensure the persistence/livelihood of faunal and floral communities as well as for achieving and maintaining national and/or provincial conservation- and persistence targets of the area.</i></p> <p><i>In the event that an adequate ecological corridor is agreed to and accepted by the North West Department of Economic Development, Environment, Conservation and Tourism, it is the opinion of the specialist that the proposed prospecting and subsequently envisaged potential future mining activities do not necessarily warrant the requirement of a Biodiversity Offset to be identified or assessed, for the proposed transformation of the remaining portions of CBA or ESA, as part of the NEMA mitigation hierarchy. The North West Department of Economic Development, Environment, Conservation and Tourism must however provide a final decision and recommendations in this regard.</i></p> <p><i>In the event that such a suitable ecological corridor is however not agreed to and accepted between the applicant and the North West Department of Economic Development, Environment, Conservation and Tourism, it is the opinion of the specialist that this should initially be considered a Fatal Flaw for the proposed development. A Biodiversity Offset Feasibility Assessment can however be conducted by a suitably qualified and experienced ecologist to adequately advise the applicant and competent authority regarding the feasibility or not of potentially offsetting the significant transformation of CBA and ESA, which is expected to be caused by the subsequently envisaged potential future mining activities. This must be done in order to enable the competent authority to make an informed decision in terms of the relevant Environmental Authorisation application.</i></p> <p><i>It is recommended that the identified conservationally significant aquatic ecological features must be adequately buffered out of the proposed prospecting area, from the outset. No current or future development is allowed to take place within these buffered zones. It is however the opinion of the specialist that it is not necessary for the two disturbed and degraded depression pans to be buffered out of the proposed prospecting area..</i></p>	

A minimum approximately 150 m Water Quality Buffer distance is therefore recommended to be implemented around the identified conservationally significant aquatic ecological features.

Due to the expected significant ecological impacts of the subsequently envisaged potential future mining activities within the assessment area and after consultation with well-known and recognized avifaunal specialists, it is therefore recommended that a minimum approximately 300 m Biodiversity Buffer distance be implemented around the surface water drainage area and associated unchanneled valley-bottom wetland as well as the two seepage wetlands. A slightly reduced 200 m Biodiversity Buffer distance is furthermore recommended to be implemented around the most southerly located depression pan and filled-up quarry site.

It is however recommended that in the potential future event that a full Environmental Impact Assessment (EIA) is to be conducted for a subsequently envisaged Mining Right application within the assessment area, a comprehensive Avifaunal Assessment must be conducted of the identified aquatic ecological features. This must be done to provide final recommendations on suitable aquatic avifaunal species- and habitat buffer zones in order to adequately advise the competent authority regarding the potential ecological impacts of the proposed mining activities on aquatic avifaunal species and the subsequent feasibility or not of the proposed mining, in order for them to make an informed decision in terms of the relevant Environmental Authorisation application.

It is recommended that if any individuals of the identified underground bulb species Ammocharis coranica and Boophone disticha as well as Red Data Listed-, nationally protected- or provincially protected plant species or any other plant species of conservational significance/value are found to be present at the proposed pit locations, they must be adequately relocated to other suitable and similar areas as to where they were removed from. These relocation processes must be completed prior to the commencement of any vegetation clearance- and/or excavation activities. A Plant Species Relocation Management Plan must be compiled by a suitably qualified and experienced ecologist. A Provincial Flora Permit also has to be obtained from the North West Department of Economic Development, Environment, Conservation and Tourism in this regard.

It is recommended that no individuals of the nationally protected tree species Vachellia erioloba may be removed or damaged during the proposed prospecting.

Due to the presence of suitable/favourable habitat and prey availability for the threatened mammalian species Smutsia temminckii (Temminck's Pangolin), Felis nigripes (Black-footed Cat), Parahyaena brunnea (Brown Hyaena) and Mystromys albicaudatus (White-tailed Rat) along with their low detectability (nocturnal and solitary nature), it is recommended that in the potential future event that a full Environmental Impact Assessment (EIA) is to be conducted for a subsequently envisaged Mining Right application within the assessment area, the presence/absence of these species must be specifically investigated and confirmed by specialists who are suitably registered with the South African Council for Natural Scientific Professions (SACNASP) in fields of practice relevant to the taxonomic groups ("taxa") of these species. This is required in accordance with the Animal Species Theme Biodiversity Protocol. This must

	<p><i>be done to adequately advise the competent authority regarding the potential ecological impacts of the proposed mining activities on these species and the subsequent feasibility or not of the proposed mining, in order for them to make an informed decision in terms of the relevant Environmental Authorisation application.</i></p> <p><i>According to the IUCN Red List of Threatened Species (https://www.iucnredlist.org), the assessment area is however situated on the most north-westerly extent of the known distribution range of the latter species in South Africa, which slightly reduces the likelihood of the presence of this species. It is therefore recommended that relevant representatives from the North West Department of Economic Development, Environment, Conservation and Tourism must be included in the Public Participation Process (PPP) for this current application, in order to provide feedback and a final recommendation in this regard.</i></p> <p><i>The proposed pit footprint areas must be kept as small as practicably possible to reduce the surface impact on surrounding vegetation and no unnecessary/unauthorised footprint expansion into the surrounding undeveloped landscape may take place.</i></p> <p><i>No site construction basecamps may be established within the surrounding undeveloped landscape.</i></p> <p><i>Adequately cordon off the proposed pit footprint areas and ensure that no excavation activities, machinery or equipment operate or impact within the surrounding undeveloped landscape outside the cordoned off areas.</i></p> <p><i>Adequate operational procedures for excavation machinery and equipment must be developed in order to strictly govern and restrict movement of machinery only within the proposed pit footprint areas and to ensure environmentally responsible excavation practices and activities.</i></p> <p><i>Existing roads and farm tracks in close proximity to the proposed pit footprint areas, must be used during the excavation processes. No new temporary roads or tracks may be constructed or implemented through the surrounding undeveloped landscape.</i></p> <p><i>Disturbed areas within and immediately surrounding the proposed pit footprint areas must be adequately closed-up again and rehabilitated as soon as practicably possible after excavation and sampling completion. A Rehabilitation Management Plan must be compiled by a suitably qualified and experienced ecologist.</i></p> <p><i>It is recommended that a sufficient grazing management plan and practices must be implemented for livestock of the local farmers/land users, in order to prevent continued significant overgrazing of the landscape and to attempt to improve/restore the ecological condition, over time.</i></p>	
<p>Cumulative Impact Rating after mitigation implementation</p>	<p>Low</p>	

Environmental Significance Score and Rating after mitigation implementation	Low (11)	
--	----------	--

- Terrestrial and aquatic alien invasive species establishment

Ecological Assessment Report was conducted by AJH Lamprecht from EcoFocus Consulting (Pty) Ltd. The Report is available under **Annexure 12**. Please see the impact assessment:

	Proposed prospecting	No-go alternative
Identified Environmental Impact	<i>Terrestrial and aquatic alien invasive species establishment</i>	
Magnitude of Negative or Positive Impact	Very low (2)	
Duration of Negative or Positive Impact	Long term (4)	
Extent of Positive or Negative Impact	Regional (3)	
Irreplaceability of Natural Resources being impacted upon	High (4)	
Reversibility of Impact	Moderate (3)	
Probability of Impact Occurrence	Low (2)	
Cumulative Impact Rating prior to mitigation	Low	
Environmental Significance Score and Rating prior to mitigation	Low (32)	
Mitigation Measures to be implemented	<p><i>Implement an adequate Alien Invasive Species Management and Prevention Plan for the proposed prospecting area. Such a Management Plan must be compiled by a suitably qualified and experienced ecologist.</i></p> <p><i>Disturbed areas within and immediately surrounding the proposed pit footprint areas must be adequately closed-up again and rehabilitated as soon as practicably possible after excavation and sampling completion. A Rehabilitation Management Plan must be compiled by a suitably qualified and experienced ecologist.</i></p>	
Cumulative Impact Rating after mitigation implementation	Low	
Environmental Significance Score and Rating after mitigation implementation	Low (11)	

- Impeding and contamination of the flow regimes of the identified conservationally significant aquatic ecological features and/or groundwater resources, within the associated local and broader quaternary surface water catchment- and drainage area

Ecological Assessment Report was conducted by AJH Lamprecht from EcoFocus Consulting (Pty) Ltd. The Report is available under **Annexure 12**. Please see the impact assessment:

	Proposed prospecting	No-go alternative
Identified Environmental Impact	<i>Terrestrial and aquatic alien invasive species establishment</i>	
Magnitude of Negative or Positive Impact	<i>Very low (2)</i>	
Duration of Negative or Positive Impact	<i>Short term (2)</i>	
Extent of Positive or Negative Impact	<i>Local (2)</i>	
Irreplaceability of Natural Resources being impacted upon	<i>High (4)</i>	
Reversibility of Impact	<i>Moderate (3)</i>	
Probability of Impact Occurrence	<i>Low (2)</i>	
Cumulative Impact Rating prior to mitigation	<i>Low</i>	
Environmental Significance Score and Rating prior to mitigation	<i>Low (26)</i>	
Mitigation Measures to be implemented	<p><i>It is recommended that the identified conservationally significant aquatic ecological features must be adequately buffered out of the proposed prospecting area, from the outset. No current or future development is allowed to take place within these buffered zones. It is however the opinion of the specialist that it is not necessary for the two disturbed and degraded depression pans to be buffered out of the proposed prospecting area.</i></p> <p><i>A minimum approximately 150 m Water Quality Buffer distance is therefore recommended to be implemented around the identified conservationally significant aquatic ecological features.</i></p> <p><i>Due to the expected significant ecological impacts of the subsequently envisaged potential future mining activities within the assessment area and after consultation with well-known and recognized avifaunal specialists, it is therefore recommended that a minimum approximately 300 m Biodiversity Buffer distance be implemented around the surface water drainage area and associated unchanneled valley-bottom wetland as well as the two seepage wetlands. A slightly reduced 200 m Biodiversity Buffer distance is furthermore recommended to be implemented around the most southerly located depression pan and filled-up quarry site.</i></p> <p><i>It is however recommended that in the potential future event that a full Environmental Impact Assessment (EIA) is to be conducted for a subsequently envisaged Mining Right application within the assessment area, a comprehensive Avifaunal Assessment must be conducted of the identified aquatic ecological features. This must be done to provide final recommendations on suitable aquatic avifaunal</i></p>	

	<p><i>species- and habitat buffer zones in order to adequately advise the competent authority regarding the potential ecological impacts of the proposed mining activities on aquatic avifaunal species and the subsequent feasibility or not of the proposed mining, in order for them to make an informed decision in terms of the relevant Environmental Authorisation application.</i></p> <p><i>Disturbed areas within and immediately surrounding the proposed pit footprint areas must be adequately closed-up again and rehabilitated as soon as practicably possible after excavation and sampling completion. A Rehabilitation Management Plan must be compiled by a suitably qualified and experienced ecologist.</i></p> <p><i>If hydrocarbons or other chemicals are to be stored on site during the proposed prospecting, the storage areas must be situated outside the recommended buffer zones.</i></p> <p><i>Hydrocarbon and other chemical storage areas must be adequately banded in order to be able to contain a minimum of 150 % of the capacity of storage tanks/units.</i></p> <p><i>Adequate hydrocarbon and other chemical storage, handling, usage and spillage clean-up procedures must be developed and all relevant employees must be sufficiently trained on- and apply these procedures during the proposed prospecting.</i></p> <p><i>Spill kits must be readily available at the proposed prospecting area. All relevant employees must be adequately trained on the correct procedure and use of the spill kits.</i></p>	
Cumulative Impact Rating after mitigation implementation	Low	
Environmental Significance Score and Rating after mitigation implementation	Low (11)	

INITIAL CLEARANCE AND SITE PREPARATION PHASE

Significance of potential impacts

- Loss of topsoil – Topsoil may be lost due to poor topsoil management (burial, erosion, etc.) during construction related soil profile disturbance (levelling, excavations, disposal of spoils from excavations etc.) The effect will be the loss of soil fertility on disturbed areas after rehabilitation.

However, loss of topsoil is unlikely to be significant because the Prospecting Work Programme (PWP) states it is planned that 300 pits will be dug (it may be less depending on the results) at an extent of 3m (length) x 2m (wide) x 2m (depth) in 24 Months.

It was calculated the disturbance will be ± 0.18 ha. The whole application area is 5687.8614ha thus the ± 0.18 ha disturbance is very small compared to the size of the application area.

Loss of topsoil	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Geographical extent	Site (1)	Site (1)
Probability	Possible (2)	Unlikely (1)
Duration	Medium term (2)	Short term (1)
Magnitude	Medium (2)	Low (1)
Reversibility	Partly reversible (2)	Completely reversible (1)
Irreplaceable loss of resources	Marginal loss of resource (2)	Marginal loss of resource (2)
Cumulative impact	Low cumulative impacts (2)	
Significance	Negative low (22)	Negative low (8)
Can impacts be mitigated?	<p>The following mitigation or management measures are provided:</p> <ul style="list-style-type: none"> • If an activity will mechanically disturb below surface in any way, then any available topsoil should first be stripped from the entire surface and stockpiled for re-spreading during rehabilitation. • Topsoil stockpiles must be conserved against losses through erosion by establishing vegetation cover on them. • Dispose of all subsurface spoils from excavations where they will not impact on undisturbed land. • During rehabilitation, the stockpiled topsoil must be evenly spread over the entire disturbed surface. • Erosion must be controlled where necessary on top soiled areas. <p>Establish an effective record keeping system for each area where soil is disturbed for constructional purposes. These records should be included in environmental performance reports, and should include all the records below.</p> <ul style="list-style-type: none"> • Record the GPS coordinates of each area. • Record the date of topsoil stripping. • Record the GPS coordinates of where the topsoil is stockpiled. • Record the date of cessation of constructional (or operational) activities at the particular site. • Photograph the area on cessation of constructional activities. • Record date and depth of re-spreading of topsoil. • Photograph the area on completion of rehabilitation and on an annual basis thereafter to show vegetation establishment and evaluate progress of restoration over time. 	

	Section (f) of the EMPr also provide mitigation measures related to topsoil management.
--	---

- **Soil erosion** – Soil erosion due to alteration of the land surface run-off characteristics. Alteration of run-off characteristics may be caused by construction-related land surface disturbance, vegetation removal and the establishment of roads. Erosion will cause loss and deterioration of soil resources. This may result in grazing and cultivation areas being lost.

However, soil erosion is unlikely to be significant because according to the Prospecting Work Programme (PWP) it is planned that 300 pits will be dug (it may be less depending on the results) at an extent of 3m (length) x 2m (wide) x 2m (depth) in 24 Months.

It was calculated the disturbance will be ± 0.18ha. The whole application area is 5687.8614ha thus the ±0.18ha disturbance is very small compared to the size of the application area.

Soil erosion	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Geographical extent	Site (1)	Site (1)
Probability	Possible (2)	Unlikely (1)
Duration	Medium term (2)	Short term (1)
Magnitude	Medium (2)	Low (1)
Reversibility	Partly reversible (2)	Completely reversible (1)
Irreplaceable loss of resources	Marginal loss of resource (2)	No loss of resource (1)
Cumulative impact	Low cumulative impact (2).	
Significance	Negative Low (22)	Negative low (7)
Can impacts be mitigated?	<p>The following mitigation or management measures are provided:</p> <ul style="list-style-type: none"> • Implement an effective system of run-off control, where it is required, that collects and safely disseminates run-off water from all hardened surfaces and prevents potential down slope erosion. • Monitor the area regularly after larger rainfall events to determine where erosion may be initiated and then mitigate by modifying the soil micro-topography and revegetation or soil erosion control efforts accordingly. <p>Include periodical site inspection in environmental performance reporting that inspects the effectiveness of the run-off control system and specifically records the occurrence any erosion on site or downstream – refer to section (f) of the EMPr..</p>	

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

Temporary noise disturbance	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Probable (3)	Possible (2)
Duration	Short term (1)	Short term (1)
Magnitude	Medium (2)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	Negligible cumulative impact (1).	

Significance	Negative low (18)	Negative low (8)
Can impacts be mitigated?	Yes, management actions related to noise pollution are included in section (f) of the EMPr.	

- Generation of waste - general waste, construction waste, sewage and grey water - The workers on site are likely to generate general waste such as food wastes, packaging, bottles, etc. Sufficient ablution facilities must be provided, in the form of portable/VIP toilets.

Generation of waste	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Site (1)	Site (1)
Probability	Possible (2)	Unlikely (1)
Duration	Medium term (2)	Short term (1)
Magnitude	Medium (2)	Low (1)
Reversibility	Partly reversible (2)	Completely reversible (1)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	Low cumulative impact (2) - An additional demand for landfill space could result in significant cumulative impacts if services become unstable or unavailable, which in turn would negatively impact on the local community	
Significance	Negative low (20)	Negative low (7)
Can impacts be mitigated?	Yes, it is therefore important that all management actions and mitigation measures included in section (f) of the EMPr are implemented.	

Impacts on heritage objects and fossil heritage

A Phase 1 Cultural Heritage Impact Assessment was conducted by Dr J A van Schalkwyk and a Palaeontological Impact Assessment was conducted by Elize Butler from Banzai Environmental. Please see the findings below:

Phase 1 Cultural Heritage Impact Assessment impacts

8. IMPACT ASSESSMENT RATINGS AND MITIGATION MEASURES

Table 2: Calculation of the impact on the identified heritage features

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

7.3.3 – 7.3.9. Type: Built features		
Impact assessment		
These feature are located inside the project area. Due to their location, it might be impacted on by the proposed prospecting activities. However, as all of the sites have been vandalised with all usable material having been removed; as well as the fact that most are not older than 60 years, their significance in viewed to be low.		
	Without mitigation	With mitigation
Extent	Site (1)	Site (1)
Duration	Permanent (5)	Permanent (5)
Intensity (Magnitude)	Low (1)	Low (1)
Probability	Probable (2)	Improbable (2)
Significance	Medium (14)	Low (14)
Status (positive or negative)	Neutral	Neutral
Reversibility	Non-reversible	Non-reversible
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated	Yes	
Cumulative impact: Loss of a singular feature in the larger landscape.		

7.3.10. Type: Old lime mine		
Impact assessment		
This feature is located close to the border of the project area. Due to its location, it might be impacted on by the proposed prospecting activities. Industrial heritage is usually not given much attention during impact assessments and in this manner information contributing the the developments in the larger region is ignored.		
	Without mitigation	With mitigation
Extent	Site (1)	Site (1)
Duration	Permanent (5)	Permanent (5)
Intensity (Magnitude)	Low (4)	Low (1)
Probability	Highly probable (4)	Improbable (2)
Significance	Medium (40)	Low (14)
Status (positive or negative)	Neutral	Neutral
Reversibility	Non-reversible	Non-reversible
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated	Yes	
Cumulative impact: Loss of a singular feature in the larger landscape.		

8.2 Mitigation measures

Mitigation: means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.

7.3.1- 7.3.3 Type: Burial sites
Mitigation
(1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and applies where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact. This measure often includes the change / alteration of development planning and therefore impact zones in order not to impact on resources. <ul style="list-style-type: none"> If it is decided to retain the burial sites, it should be fenced off permanently by means of a wire fence or brick wall, with a buffer zone of at least 100m.
Requirements: In the event of an impact occurring on the identified burial sites, a permit for mitigation and/or destruction must be obtained from SAHRA/PHRA prior to any work being carried out. <ul style="list-style-type: none"> The appropriate steps to take are indicated in Section 9 of the report, as well as in the Management Plan: Burial Grounds and Graves, with reference to general heritage sites, in the Addendum, Section 12.5.

<p>7.3.3. – 7.3.9. Type: Old structures</p> <p>Mitigation</p> <p>(5) No further action required: This is applicable only where sites or features have been rated to be of such low significance that it does not warrant further documentation, as it is viewed to be fully documented after inclusion in this report.</p> <ul style="list-style-type: none"> • Site monitoring during development, by an ECO or the heritage specialist are often added to this recommendation to ensure that no undetected heritage/remains are destroyed. <p>Requirements: None</p>
<p>7.3.10. Type: Old limestone mine</p> <p>Mitigation</p> <p>(2) Archaeological investigation: This is appropriate where development occurs in a context of heritage significance and where the impact is such that it can be mitigated. Mitigation is to document the site (map and photograph) and analyse the recovered material to acceptable standards.</p> <ul style="list-style-type: none"> • This option should be implemented when it is impossible to avoid impacting on an identified site or feature. <p>Requirements: In the event of an impact occurring on the identified site or feature, a permit for mitigation and/or destruction must be obtained from SAHRA/PHRA prior to any work being carried out.</p>

Palaeontological Impact Assessment impacts:

10.1 Summary of Impact Tables

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

	Site	Probability	Duration	Magnitude	Reversibility	Irreplicable Loss	Cumulative Effect	Significance
Pre-mitigation	1	2	4	3	4	4	2	51
Post-mitigation	1	2	4	1	4	4	2	17

Indirect impacts: The nuisance aspects generally associated with the installation of infrastructure or ground preparation will also be applicable to this development, which relates primarily to the increase in vehicle traffic associated with prospecting practices, the influx of job seekers to the area, risk to safety, livestock and farm infrastructure, and increased risk of veld fires.

- Increase in vehicle traffic – The movement of heavy vehicles have the potential to damage local farm roads and create dust and safety impacts for other road users in the area. Access will be obtained from existing gravel roads off the R503 road. The volume of traffic along this R503 road is **Medium to High**.

Because the application is for a prospecting right without bulk sampling, movement of heavy vehicles along this road is unlikely and unlikely to damage the road surface and impact on other road users.

Increase in vehicle traffic	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Possible (2)	Unlikely (1)
Duration	Medium term (2)	Medium term (2)
Magnitude	Low (1)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	Marginal loss of resource (2)	No loss of resource (1)
Cumulative impact	Low cumulative impact (2). If damage to roads is not repaired, then this will affect the surrounding road users, and result in higher maintenance costs for vehicles of the road users. The costs will be borne by road users who were not responsible for the damage.	
Significance	Negative Low (11)	Negative low (9)
Can impacts be mitigated?	<p>The potential impacts associated with heavy vehicles can be effectively mitigated. The mitigation measures include:</p> <ul style="list-style-type: none"> The contractor must ensure that damage caused by construction on the off-gravel roads. The costs associated with the repair must be borne by the contractor; Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers; All vehicles must be road-worthy, and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits. <p>Also refer section (f) of the EMP. For mitigation measures related to traffic.</p>	

- Risk to safety, livestock / game, and infrastructure - The presence on and movement of workers on and off the site poses a potential safety threat to the natural area and the communities in the vicinity of the site. In addition, infrastructure, such as fences and gates, may be damaged and livestock losses may also result from gates being left open and/or fences being damaged or livestock theft linked either directly or indirectly to the presence of mine workers on the site.

Risk to safety, livestock and infrastructure	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Possible (2)	Possible (2)
Duration	Medium term (2)	Medium term (2)
Magnitude	Medium (2)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	Marginal loss of resource (2)	No loss of resource (1)
Cumulative impact	Low cumulative effects (2), provided losses are compensated for.	
Significance	Negative low (22)	Negative low (10)
Can impacts be mitigated?	<p>Key mitigation measures include:</p> <ul style="list-style-type: none"> TSB 74 (Pty) Ltd should enter into an agreement with the landowner / local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences; The construction area should be fenced off prior to the commencement of the construction phase. The movement of 	

	<p>construction workers on the site should be confined to the fenced off area;</p> <ul style="list-style-type: none"> Contractors appointed by TSB 74 (Pty) Ltd should provide daily transport for low and semi-skilled workers to and from the site. This would reduce the potential risk of trespassing on the remainder of the farm and adjacent properties. TSB 74 (Pty) Ltd should hold contractors liable for compensating landowner/local farmers in full for any crop losses / livestock losses and/or damage to infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors and neighbouring landowners. The agreement should also cover losses and costs associated with fires caused by construction workers or construction related activities (see below); The Environmental Management Programme (EMPr) should outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested. Contractors appointed TSB 74 (Pty) Ltd must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms. Contractors appointed by TSB 74 (Pty) Ltd must ensure that construction workers who are found guilty of trespassing, stealing livestock and/or damaging infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation;
--	--

- Increased risk of veld fires - The presence of construction workers and construction-related activities on the site poses an increased risk of grass fires that could in turn pose a threat to livestock, crops, wildlife, farmsteads and the communities in the area. In the process, infrastructure may also be damaged or destroyed and human lives threatened. The potential risk of grass fires was heightened by the windy conditions in the area, especially during the dry, windy winter months from May to October. In terms of potential mitigation measures, a fire-break should be constructed around the perimeter of the site prior to the commencement of the construction phase. In addition, fire-fighting equipment should be provided on site during the different phase of prospect.

Increased risk of veld fires	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Site (1)
Probability	Possible (2)	Unlikely (1)
Duration	Medium term (2)	Medium term (2)
Magnitude	High (3)	Medium (2)
Reversibility	Irreversible (4)	Partly reversible (2)
Irreplaceable loss of resources	Significant loss of resource (3)	Marginal loss of resource (2)
Cumulative impact	Negligible cumulative effects (1), provided losses are compensated for.	
Significance	Negative medium (42)	Negative low (18)
Can impacts be mitigated?	<p>The mitigation measures include:</p> <ul style="list-style-type: none"> A fire-break should be constructed around the perimeter of the site prior to the commencement of the construction phase; Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas; Contractor to ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are 	

	<p>confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high risk dry, windy winter months;</p> <ul style="list-style-type: none"> • Contractor to provide adequate firefighting equipment on-site, including a fire fighting vehicle; • Contractor to provide fire-fighting training to selected construction staff; • No construction staff, with the exception of security staff, to be accommodated on site over night; • As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the firefighting costs borne by farmers and local authorities.
--	--

OPERATIONAL PHASE

Direct impacts: During the operational phase the study area will serve as a prospecting area and the impacts are generally associated with soil erosion, change in land use, impacts associated with the, increase in storm water runoff, increased consumption of water, visual intrusion, the generation of general waste, leakage of hazardous materials, and the change in the sense of place. The operational phase will also have a direct positive impact through the provision of permanent employment opportunities and facilitating a positive economic growth. The abovementioned impacts are discussed in more detail below:

- Soil erosion – The largest risk factor for soil erosion will be during the operational phase when the prospecting activity ensues and soil is left bare until rehabilitation is initiated. Erosion will be localised within the site. This will ultimately lead to the irretrievable commitment of this resource. The measurable effect of reducing erosion by utilizing mitigation measures may reduce possible erosion significantly.

However, soil erosion is unlikely to be significant because according to the Prospecting Work Programme (PWP) it is planned that 300 pits will be dug (it may be less depending on the results) at an extent of 3m (length) x 2m (wide) x 2m (depth) in 24 Months. It was calculated the disturbance will be ± 0.18ha. The whole application area is 5687.8614ha thus the ±0.18ha disturbance is very small compared to the size of the application area. The area will also be concurrently rehabilitated.

Soil erosion	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Site (1)	Site (1)
Probability	Possible (2)	Unlikely (1)
Duration	Medium term (2)	Short term (1)
Magnitude	Medium (2)	Low (1)
Reversibility	Partly reversible (2)	Completely reversible (1)
Irreplaceable loss of resources	Marginal loss of resource (2)	No loss of resource (1)
Cumulative impact	Low cumulative impact (2).	
Significance	Negative Low (22)	Negative low (7)
Can impacts be mitigated?	<p>Yes, to avoid soil erosion it will be a good practice to not remove all the vegetation at once but to only clear the area as it becomes necessary and to implement concurrent rehabilitation.</p> <ul style="list-style-type: none"> • The following mitigation or management measures are provided: Implement an effective system of run-off control, where it is required, that 	

	<p>collects and safely disseminates run-off water from all hardened surfaces and prevents potential down slope erosion.</p> <ul style="list-style-type: none"> • Monitor the area regularly after larger rainfall events to determine where erosion may be initiated and then mitigate by modifying the soil micro-topography and revegetation or soil erosion control efforts accordingly <p>Also refer to section (f) of the EMPr.</p>
--	---

- Change in land-use – The use of the area for the operation of the prospecting activity will not disturb existing activities on most of the portions as both (existing activities and prospecting activities) can be done concurrently. The proposed area is currently being used for crop production and livestock grazing.

According to **Figure 20 and Figure 21** the proposed area is mostly covered by natural vegetation, cultivation, some water bodies and a degraded area.

The google earth map (**figure 22**) show the natural area and cultivated lands. The proposed area is used for agricultural activities such as crop cultivation, livestock grazing and homesteads. Some of the homesteads are abandoned (**Appendix 5**).

If applicable a Water Use License Application will be launched for conducting prospecting without bulk sampling operations.

All infrastructure will be temporary and/or mobile.

Change in land use	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Site (1)	Site (1)
Probability	Possible (2)	Unlikely (1)
Duration	Medium term (2)	Medium term (2)
Magnitude	Medium (2)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	Marginal loss of resource (2)	Marginal loss of resource (2)
Cumulative impact	Low cumulative effects (2) – the right holder should enter into a surface use agreement with the landowner to compensate for any financial losses.	
Significance	Negative low (20)	Negative low (9)
Can impacts be mitigated?	<p>The proponent should establish a Rehabilitation Fund to be used to rehabilitate the area once the proposed facility has been decommissioned. The fund should be funded by revenue generated during the operational phase of the project. The motivation for the establishment of a Rehabilitation Fund is based on the experience in the mining sector where many mines on closure have not set aside sufficient funds for closure and decommissioning.</p> <p>Also refer to section (f) of the EMPr.</p>	

- Generation of alternative land use income – Income generated through the potential prospecting without bulk sampling of the minerals applied for will provide the community/landowners with increased cash flow and rural livelihood and thereby improve the financial sustainability of farming on site.

Generation of alternative land use income	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Positive	Positive
Geographical extent	Local (2)	Local (2)
Probability	Possible (2)	Possible (2)
Duration	Medium term (2)	Medium term (2)
Magnitude	Medium (2)	Medium (2)

Reversibility	Irreversible (4)	Irreversible (4)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	Medium cumulative impact (3)	
Significance	Positive Low (28)	Positive Low (28)
Can impacts be mitigated?	No mitigation required.	

- Increase in storm water runoff – The development may potentially result in an increase in storm water run-off that needs to be managed to prevent soil erosion, especially where vegetation will be cleared. Not all the vegetation should be removed at once.

However, the increase in storm water runoff is unlikely to be significant because according to the Prospecting Work Programme (PWP) it is planned that 300 pits will be dug (it may be less depending on the results) at an extent of 3m (length) x 2m (wide) x 2m (depth) in 24 Months. It was calculated the disturbance will be ± 0.18ha. The whole application area is 5687.8614ha thus the ±0.18ha disturbance is very small compared to the size of the application area. The area will also be concurrently rehabilitated.

Increase in storm water runoff	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Site (1)	Site (1)
Probability	Possible (2)	Unlikely (1)
Duration	Medium term (2)	Medium term (2)
Magnitude	Medium (2)	Low (1)
Reversibility	Partly reversible (2)	Completely reversible (1)
Irreplaceable loss of resources	Marginal loss of resource (2)	No loss of resource (1)
Cumulative impact	Low cumulative impact (2) - Should these impacts occur, there will be a cumulative impacts on the wider area.	
Significance	Negative Low (22)	Negative low (8)
Can impacts be mitigated?	Yes. It is therefore important that all management actions and mitigation measures included in section (f) of the EMPr. are implemented to ensure that these impacts do not occur	

- Increased consumption of water – Additional water requirements related to the potable water supply for employees and workers. Water may be used for dust suppression if needed.

Increased consumption of water	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Possible (2)	Unlikely (1)
Duration	Medium term (2)	Medium term (2)
Magnitude	Low (1)	Low (1)
Reversibility	Irreversible (4)	Irreversible (4)
Irreplaceable loss of resources	Marginal loss of resources (2)	Marginal loss of resources (2)
Cumulative impact	Low cumulative impacts (2) - An additional demand on water sources could result in a significant cumulative impact with regards to the availability of water.	
Significance	Negative low (14)	Negative Medium (13)
Can impacts be mitigated?	Yes, management actions and mitigation measures related to the use of water are included in section (f) of the EMPr.	

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

Generation of waste	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Site (1)	Site (1)
Probability	Possible (2)	Unlikely (1)
Duration	Medium term (2)	Short term (1)
Magnitude	Medium (2)	Low (1)
Reversibility	Partly reversible (2)	Completely reversible (1)
Irreplaceable loss of resources	Marginal loss of resource (2)	No loss of resource (1)
Cumulative impact	Low cumulative impact (2) - An additional demand for landfill space could result in significant cumulative impacts with regards to the availability of landfill space.	
Significance	Negative low (22)	Negative low (7)
Can impacts be mitigated?	Yes, management actions related to waste management are included in section (f) of the EMPr.	

- Leakage of hazardous materials - The proposed prospecting activity will make use of machinery that use fuel and oil. Leakage of these oils and fuel can contaminate water supplies and must be prevented by constructing oil and diesel permeable bunds to ensure that any spills are suitably attenuated and not released into the environment.

Leakage of hazardous materials	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Site (1)
Probability	Possible (2)	Unlikely (1)
Duration	Medium term (2)	Short term (1)
Magnitude	Medium (2)	Medium (2)
Reversibility	Barely reversible (3)	Partly reversible (2)
Irreplaceable loss of resources	Significant loss of resource (3)	Marginal loss of resource (2)
Cumulative impact	The impact would result in negligible to no cumulative effects (1) if mitigation measures and management plans are put in place.	
Significance	Negative low (26)	Negative low (16)
Can impacts be mitigated?	Yes. It is therefore important that all management actions and mitigation measures included in the section (f) of EMPr are implemented to ensure that these impacts do not occur.	

- Noise disturbance - Prospecting activities may result in the generation of noise over a period of 3-5 years. Sources of noise are likely to include vehicles, the use of machinery such as excavator, people working on the site, etc; but prospecting activities should be limited to normal working days and some Saturdays and hours (6:00 – 18:00).

Temporary noise disturbance	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Definite (4)	Possible (2)
Duration	Medium term (2)	Medium term (2)
Magnitude	Medium (2)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	No loss of resource (1)	No loss of resource (1)
Cumulative impact	Low cumulative impact (2).	
Significance	Negative low (24)	Negative low (10)
Can impacts be mitigated?	Yes, management actions related to noise pollution are included in section (f) of the EMPr.	

Indirect impacts: The operational phase will have an indirect negative impact through the change in the sense of place and an indirect positive impact through the provision of additional electrical infrastructure.

- Potential impact on tourism – There are no tourist facilities in close proximity to the proposed area.

Potential impacts on tourism	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Unlikely (1)	Unlikely (1)
Duration	Medium term (2)	Medium term (2)
Magnitude	Medium (2)	Low (1)
Reversibility	Completely reversible (1)	Completely reversible (1)
Irreplaceable loss of resources	N/A	N/A
Cumulative impact	N/A	
Significance	Negative low (12)	Negative low (6)
Can impacts be mitigated?	No mitigation required	

DECOMMISSIONING PHASE (MINE CLOSURE AND REHABILITATION)

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

- Rehabilitation of the physical environment – The physical environment will benefit from the closure of the prospecting area since the site will be restored to its pre-prospecting state. The areas that were prospected must be rehabilitated in such a way that it can support the existing pre-prospecting activity of that specific area. Existing pre-prospecting activities include agricultural activities (livestock grazing & crop production).

Rehabilitation of the physical environment	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Positive	Positive
Extent	Site (1)	Site (1)
Probability	Definite (4)	Definite (4)
Duration	Long term (3)	Long term (3)
Magnitude	High (3)	High (3)
Reversibility	N/A	N/A
Irreplaceable loss of resources	N/A	N/A
Cumulative impact	The impact would result in negligible to no cumulative effects (1)	
Significance	Positive low (29)	Positive low (29)
Can impacts be mitigated?	No mitigation measures required.	

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

Loss of employment	Pre-mitigation impact rating	Post mitigation impact rating
Status (positive or negative)	Negative	Negative
Extent	Local (2)	Local (2)
Probability	Possible (2)	Possible (2)
Duration	Permanent (4)	Long term (3)
Magnitude	Low (1)	Low (1)

Reversibility	N/A	N/A
Irreplaceable loss of resources	Significant loss of resource (3)	Significant loss of resource (3)
Cumulative impact	Medium cumulative effects (3)	
Significance	Negative low (14)	Negative low (13)
Can impacts be mitigated?	<p>The following mitigation measures are recommended:</p> <ul style="list-style-type: none"> All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning; TSB 74 (Pty) Ltd should establish an Environmental Rehabilitation Trust Fund to cover the costs of decommissioning and rehabilitation of disturbed areas. 	

Indirect impacts: No indirect impacts are anticipated from the decommissioning phase of the proposed development.

vi) **METHODOLOGY USED IN DETERMINING AND RANKING THE NATURE, SIGNIFICANCE, CONSEQUENCES, EXTENT, DURATION AND PROBABILITY OF POTENTIAL ENVIRONMENTAL IMPACTS AND RISKS**

Method of environmental assessment

The environmental assessment aims to identify the various possible environmental impacts that could result from the proposed development. Different impacts need to be evaluated in terms of their significance and in doing so highlight the most critical issues to be addressed.

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

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

Impact Rating System

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

- Construction
- Operation
- Decommissioning

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

Table: The rating system

NATURE		
Include a brief description of the impact of environmental parameter being assessed in the context of the project. This criterion includes a brief written statement of the environmental aspect being impacted upon by a particular action or activity.		
GEOGRAPHICAL EXTENT		
This is defined as the area over which the impact will be experienced.		
1	Site	The impact will only affect the site.
2	Local/district	Will affect the local area or district.
3	Province/region	Will affect the entire province or region.
4	International and National	Will affect the entire country.
PROBABILITY		
This describes the chance of occurrence of an impact.		
1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than a 75% chance of occurrence).
DURATION		
This describes the duration of the impacts. Duration indicates the lifetime of the impact as a result of the proposed activity.		
1	Short term	The impact will either disappear with mitigation or will be mitigated through natural processes in a span shorter than the construction phase (0 – 1 years), or the impact will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Long term	The impact and its effects will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter (10 – 30 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered indefinite.
INTENSITY/ MAGNITUDE		
Describes the severity of an impact.		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/ component and the quality, use, integrity and functionality of the system or component is severely

		impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very high	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired. Rehabilitation and remediation often impossible. If possible rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.
REVERSIBILITY		
This describes the degree to which an impact can be successfully reversed upon completion of the proposed activity.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures.
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible and no mitigation measures exist.
IRREPLACEABLE LOSS OF RESOURCES		
This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.		
1	No loss of resource	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.
CUMULATIVE EFFECT		
This describes the cumulative effect of the impacts. A cumulative impact is an effect which in itself may not be significant but may become significant if added to other existing or potential impacts emanating from other similar or diverse activities as a result of the project activity in question.		
1	Negligible cumulative impact	The impact would result in negligible to no cumulative effects.
2	Low cumulative impact	The impact would result in insignificant cumulative effects.
3	Medium cumulative impact	The impact would result in minor cumulative effects.
4	High cumulative impact	The impact would result in significant cumulative effects
SIGNIFICANCE		
Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The calculation of the significance of an impact uses the following formula:		
(Extent + probability + reversibility + irreplaceability + duration + cumulative effect) x magnitude/intensity.		
The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.		
Points	Impact significance rating	Description
6 to 28	Negative low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
6 to 28	Positive low impact	The anticipated impact will have minor positive effects.

29 to 50	Negative medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
29 to 50	Positive medium impact	The anticipated impact will have moderate positive effects.
51 to 73	Negative high impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
51 to 73	Positive high impact	The anticipated impact will have significant positive effects.
74 to 96	Negative very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
74 to 96	Positive very high impact	The anticipated impact will have highly significant positive effects.

vii) **THE POSITIVE AND NEGATIVE IMPACTS THAT THE PROPOSED ACTIVITY (IN TERMS OF THE INITIAL SITE LAYOUT) AND ALTERNATIVES WILL HAVE ON THE ENVIRONMENT AND THE COMMUNITY THAT MAY BE AFFECTED.**

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

Impact likely to be medium to low, with no significant impact.

ACTIVITY	PHASE	POTENTIAL NEGATIVE IMPACTS
Site preparation Site Clearance, establishing construction area	Construction Operation Decommissioning	Physical destruction and disturbance of: <ul style="list-style-type: none"> • Biodiversity • Air pollution • Disturbing noise • Visual impacts
Earthworks	Construction Operation Decommissioning	Excavations: <ul style="list-style-type: none"> • Loss of soil resources and land capability • Physical destruction and disturbance of biodiversity • Possible pollution of surface water resources • Possible alteration of natural drainage patterns • Possible contamination of groundwater • Air pollution • Disturbing noise • Visual impacts
Waste rock management Storage, stockpile or final disposal	Operation Decommissioning Closure (final land form)	<ul style="list-style-type: none"> • Loss of soil resources and land capability • Disturbance of biodiversity • Possible pollution of surface water resources • Possible contamination of groundwater • Air pollution • Disturbing noise • Negative landscape and visual impact
Dirty water management Collection, storage of dirty water for re-use, recycling	Construction Operation Decommissioning	<ul style="list-style-type: none"> • Possible pollution of surface water resources • Possible contamination of groundwater • Disturbing noise
Stormwater management Stormwater channels and berms, collection of dirty water, storage for re- use	Construction Operation Decommissioning	<ul style="list-style-type: none"> • Possible alteration of drainage patterns • Possible pollution of surface water resources • Possible contamination of groundwater

Transport systems Use of access points, road transport to and from site for employees and supplies, movement within site boundary (e.g., haul roads, conveyors, pipelines), taxi areas	Construction Operation Decommissioning	<ul style="list-style-type: none"> • Disturbance of biodiversity • Noise • Traffic impacts • Visual impacts
Storage and maintenance services/ facilities Washing vehicles and machinery, storage and handling non-process materials	Construction Operation Decommissioning	<ul style="list-style-type: none"> • Possible pollution of surface water resources • Possible contamination of groundwater resulting from hydrocarbon spills and soil erosion • Disturbing noise
Non-mineralized waste management Transportation of waste materials to waste facility	Construction Operation Decommissioning Closure (limited)	<ul style="list-style-type: none"> • Pollution if not managed and stored properly
Rehabilitation Replacing soil, slope stabilization, landscaping, re-vegetation, restoration	Construction Operation Decommissioning Closure	<ul style="list-style-type: none"> • Disturbance of biodiversity • Alteration of natural drainage patterns • Contamination of groundwater • Air pollution • Visual impacts

ACTIVITY	PHASE	POTENTIAL POSITIVE IMPACTS
Job creation	Construction Operation	<ul style="list-style-type: none"> • Temporary employment and other economic benefits
Maintenance and aftercare Inspection and maintenance of remaining facilities and rehabilitated areas	Closure	<ul style="list-style-type: none"> • Re-establishment of biodiversity

viii) THE POSSIBLE MITIGATION MEASURES THAT COULD BE APPLIED AND THE LEVEL OF RISK.

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/ discussion of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered).

Negative impacts on vegetation, soil and the water resources associated with the prospecting activity have been identified through the BAR & EMPr process. Mitigation measures as set out in the Environmental Management Programme (EMPr) attached in Part B must be implemented in order to minimise these potential impacts.

Noise

Site activities must take place during the day (06:00 – 18:00) to avoid night time noise disturbances and night time collisions with fauna.

Visual impact

Dust suppression measures must be implemented.

Soil

- Disturbances to soil should be limited as far as possible.
- Erosion control measures should be implemented if necessary.
- Oils and lubricants must be stored in lined containment structures.
- Drip trays should be used where necessary.
- Waste bins should be provided and waste should be removed and disposed of at a licensed landfill site.

- Rehabilitation should be done concurrently.

Water

- Before any water is abstracted, a geo-hydro study should be conducted in order to determine the specific yield.
- Oils and lubricants must be stored in lined containment structures.
- Drip trays should be used where necessary.
- Erosion control measures should be implemented if necessary.

ix) MOTIVATION WHERE NO ALTERNATIVE SITES WERE CONSIDERED.

As discussed in the previous section, the possibility to encounter Limestone (Ls) & Manganese Ore (Mn) near Mahikeng on various portions of the farm Mooimeisjesfontein 118, Registration Division: JO, North-West Province, was identified.

x) STATEMENT MOTIVATING THE ALTERNATIVE DEVELOPMENT LOCATION WITHIN THE OVERALL SITE.

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

The site is preferred due to its possibility of having Limestone (Ls) & Manganese Ore (Mn).

I. 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.

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

Process for the identification of key issues

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

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

Checklist analysis

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

Table: Environmental checklist

Question	YES	NO	Un-sure	Description
1. Are any of the following located on the site earmarked for the development?				
I. A river, stream, dam or wetland	✘			According to the Wetland areas map there are Seeps and a Depression on the proposed area.
II. A conservation or open space area			✘	According to the Protected Area map the site does not fall within a Formally Protected area, but a certain area falls within the Western Highveld Sandy Grassland Threatened Ecosystem.
III. An area that is of cultural importance			✘	According to the DFFE Screening Report the area falls mostly within low Archaeological and Cultural Heritage Theme Sensitivity with a small area illustrated as High sensitivity (Appendix 7).
IV. Site of geological significance			✘	According to the DFFE Screening Report the proposed area falls mostly within Very High Paleontology Theme Sensitivity followed by Medium sensitivity. (Appendix 7). If fossil remains or trace fossils are discovered during any phase of construction, either on the surface or exposed by prospecting related activities the Chance Find must be implemented.
V. Areas of outstanding natural beauty		✘		
VI. Highly productive agricultural land			✘	According to the Land Capability map the proposed area falls within land capability Class III (3), Class IV (4) and Class VI (6) (Appendix 5). Certain areas of the proposed area have agricultural fields. Google earth images shows
VII. Floodplain		✘		According to the Wetland areas map there are no Floodplain.
VIII. Indigenous forest			✘	According to Figure 20 and Figure 21 the proposed area is mostly covered by natural vegetation, cultivation, some water bodies and a degraded area. The google earth map (figure 22) show the natural area and cultivated lands. On the proposed area there are homesteads and abandoned homesteads (Appendix 5).
IX. Grass land			✘	According to Figure 20 and Figure 21 the proposed area is mostly covered by natural vegetation, cultivation, some water bodies and a degraded area. The google earth map (figure 22) show the natural area and cultivated lands. On the proposed area there are homesteads and abandoned homesteads (Appendix 5).
X. Bird nesting sites			✘	According to the Important Bird and Biodiversity Areas (IBA) map it does not fall within an IBA.
XI. Red data species			✘	
XII. Tourist resort		✘		
2. Will the project potentially result in potential?				

I. Removal of people		×		None.
II. Visual Impacts	×			The visual impact will be managed
III. Noise pollution	×			The noise impact will be limited to working hours.
IV. Construction of an access road		×		Access will be obtained from existing gravel roads off the R503 gravel road.
V. Risk to human or valuable ecosystems due to explosion/fire/ discharge of waste into water or air.		×		
VI. Accumulation of large workforce (>50 manual workers) into the site.		×		Employment opportunities will be created during the different phase of the project
VII. Utilisation of significant volumes of local raw materials such as water, wood etc.		×		The application is for a prospecting right without bulk sampling.
VIII. Job creation	×			Employment opportunities will be created during the different phase of the project
IX. Traffic generation		×		Little to none
X. Soil erosion	×			The application is for a prospecting right without bulk sampling. Soil erosion could occur but it's unlikely, mitigation measures are available in the EMP
XI. Installation of additional bulk telecommunication transmission lines or facilities		×		None.
3. Is the proposed project located near the following?				
I. A river, stream, dam or wetland	×			The Polfonteinspruit is approximately 4km South of the proposed area.
II. A conservation or open space area		×		
III. An area that is of cultural importance			×	According to the DFFE Screening Report the surrounding area falls within low Archaeological and Cultural Heritage Theme Sensitivity with small areas within High sensitivity (Appendix 7).
IV. A site of geological significance			×	According to the DFFE Screening Report the surrounding area falls within Very High, High and Medium Paleontology Theme Sensitivity (Appendix 7).
V. An area of outstanding natural beauty		×		
VI. Highly productive agricultural land		×		According to the Land Capability map the surrounding area falls within land capability Class III (3), Class IV (4), Class VI (6) (Appendix 5).
VII. A tourist resort			×	
VIII. A formal or informal settlement	×			The Bodibe community is approximately 600m to 2km South of the proposed area.

Matrix analysis

The matrix describes the relevant listed activities, the aspects of the development that will apply to the specific listed activity, a description of the environmental issues and potential impacts, the significance and magnitude of the potential impacts, and the mitigation of the potential impacts. The matrix also highlights areas of particular concern, which requires more in depth assessment. Each cell is evaluated individually in terms of the nature of the impact, duration and its significance – should no

mitigation measures be applied. This is important since many impacts would not be considered insignificant if proper mitigation measures were implemented. The matrix also provides an indication if mitigation measures are available.

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

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

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

LISTED ACTIVITY (The Stressor)	ASPECTS OF THE DEVELOPMENT /ACTIVITY	POTENTIAL IMPACTS			SIGNIFICANCE AND MAGNITUDE OF POTENTIAL IMPACTS			MITIGATION OF POTENTIAL IMPACTS	SPECIALIST STUDIES / INFORMATION
		Receptors	Impact description	Minor	Major	Duration	Possible Mitigation		
CONSTRUCTION PHASE									
<p>Listing Notice 1 (GNR 327), Activity 27: "The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation."</p> <p>Listing Notice 3 (GNR 324), Activity 4: "The development of a road wider than 4 metres with a reserve less than 13,5 metres. (h): North West; (ii) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (iv) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority</p> <p>Listing Notice 3 (GNR 324), Activity 12: Activity 12: "The clearance of an area of 300 square metres or more of indigenous vegetation (h) North-West, (iv): Within critical biodiversity areas identified in systematic bioregional plans adopted by the competent authority; (v) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; or (vi) Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.</p>	<p>Site clearing and preparation Areas earmarked for prospecting will need to be cleared, topsoil will be stockpiled separately.</p>	BIOPHYSICAL ENVIRONMENT	Fauna & Flora	<ul style="list-style-type: none"> Loss or fragmentation of indigenous natural vegetation. Loss of sensitive species. Loss or fragmentation of habitats. 	-		S	Yes	-
			Air	<ul style="list-style-type: none"> Air pollution due to the increase of traffic. Dust from mining/prospecting activities 	-		M	Yes	-
			Soil	<ul style="list-style-type: none"> Soil degradation, including erosion. Loss of topsoil. Disturbance of soils and existing land use (soil compaction). 	-	-	S	Yes	-
			Geology	<ul style="list-style-type: none"> It is not foreseen that the removal of indigenous vegetation will impact on the geology or vice versa. 	-		S	Yes	-
			Existing services infrastructure	<ul style="list-style-type: none"> Generation of waste that need to be accommodated at a licensed landfill site. Generation of sewage that need to be accommodated by the local sewage plant. 	-		S	Yes	-
			Ground water	<ul style="list-style-type: none"> Pollution due to construction vehicles. 	-		S	Yes	-
			Surface water	<ul style="list-style-type: none"> Increase in storm water run-off. Pollution of water sources due to soil erosion. Destruction of watercourses (pans/dams/streams/wetlands). 	-		S	Yes	-
		SOCIAL/ECONOMIC ENVIRONMENT	Local unemployment rate	<ul style="list-style-type: none"> Job creation. Business opportunities. Skills development. 	+		S	Yes	-
			Visual landscape	<ul style="list-style-type: none"> Potential visual impact on residents of farmsteads and motorists in close proximity to proposed facility. 	-		L	Yes	-
			Traffic volumes	<ul style="list-style-type: none"> Increase in construction vehicles. 	-		S	Yes	-
			Health & Safety	<ul style="list-style-type: none"> Air/dust pollution. Road safety. Increased risk of veld fires. 	-		S	Yes	-
			Noise levels	<ul style="list-style-type: none"> The generation of noise as a result of construction vehicles, the use of machinery such as drills, excavators, dumper trucks, people working on the site, etc. 	-		L	Yes	-
			Tourism industry	<ul style="list-style-type: none"> Since there are no tourism facilities in close proximity to the site, the construction activities will not have an impact on tourism in the area. 	N/A	N/A	N/A	N/A	-
Heritage resources	<ul style="list-style-type: none"> Removal or destruction of archaeological and/or paleontological sites. Removal or destruction of buildings, structures, places and equipment of cultural significance. Removal or destruction of graves, cemeteries and burial grounds. 	-		L	Yes	-			

OPERATIONAL PHASE									
<p>Listing Notice 1 (GNR 327), Activity 19: "The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;"</p> <p>Listing Notice 1 (GNR 327), Activity 20 (Amended GNR 517: 2021): "Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the prospecting right"</p> <p>Listing Notice 1 (GNR 327), Activity 27: "The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation."</p> <p>Listing Notice 3 (GNR 324), Activity 4: "The development of a road wider than 4 metres with a reserve less than 13,5 metres. (h): North West; (ii) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (iv) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority</p> <p>Listing Notice 3 (GNR 324), Activity 12: Activity 12: "The clearance of an area of 300 square metres or more of indigenous vegetation (h) North-West, (iv): Within critical biodiversity areas identified in systematic bioregional plans adopted by the competent authority; (v) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; or (vi) Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.</p>	<p>The key components of the proposed project are described below:</p> <ul style="list-style-type: none"> • Supporting Infrastructure - A control facility with basic services such as water and electricity will be constructed on the site and will have an approximate footprint 50m² or less. Other supporting infrastructure includes a site office and workshop area. • Roads – Access will be obtained from an existing gravel roads off the R503. • Fencing - For health, safety and security reasons, the facility will be required to be fenced off from the surrounding farm. 	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">BIOPHYSICAL ENVIRONMENT</p>	Fauna & Flora	<ul style="list-style-type: none"> • Fragmentation of habitats. • Establishment and spread of declared weeds and alien invader plants (operations). 	-		L	Yes	-
			Air quality	<ul style="list-style-type: none"> • Air pollution due to the mining / prospecting activity and transport of the gravel to the designated areas. 	-		S	Yes	-
			Soil	<ul style="list-style-type: none"> • Soil degradation, including erosion. • Disturbance of soils and existing land use (soil compaction). • Loss of agricultural potential (low significance relative to agricultural potential of the site). 	-		L	Yes	-
			Geology	<ul style="list-style-type: none"> • Collapsible soil. • Seepage (shallow water table). • Active soil (high soil heave). • Erodible soil. • The presence of undermined ground. • Instability due to soluble rock. • Steep slopes or areas of unstable natural slopes. • Areas subject to seismic activity. • Areas subject to flooding. 	-		L	Yes	-
			Existing services infrastructure	<ul style="list-style-type: none"> • Generation of waste that need to be accommodated at a licensed landfill site. • Generation of sewage that need to be accommodated by the municipal sewerage system and the local sewage plant. • Increased consumption of water, dust suppression. 	-		L	Yes	-
			Ground water	<ul style="list-style-type: none"> • Leakage of hazardous materials. The machinery on site require oils and fuel to function. Leakage of these oils and fuels can contaminate water supplies. 	-		L	Yes	-
			Surface water	<ul style="list-style-type: none"> • Increase in storm water runoff. The development will potentially result in an increase in storm water run-off that needs to be managed to prevent soil erosion. • Destruction of watercourses (pans/dams/streams/wetlands). • Leakage of hazardous materials. The machinery on site require oils and fuel to function. Leakage of these oils and fuels can contaminate water supplies. 	-		L	Yes	-
			Local unemployment rate	<ul style="list-style-type: none"> • Job creation. Security guards will be required for 24 hours every day of the week. • Skills development. 	-		L	Yes	-
			Visual landscape	<ul style="list-style-type: none"> • The proposed portions are used for livestock grazing and crop production which will still take place simultaneously with the prospecting activity, however this depends on the location of the activity. 	-		L	Yes	-
			Traffic volumes	<ul style="list-style-type: none"> • Increase in vehicles collecting gravel for distribution. 	-		S	Yes	-
			Health & Safety	<ul style="list-style-type: none"> • Air/dust pollution. • Road safety. 	-		S	Yes	-
			Noise levels	<ul style="list-style-type: none"> • The proposed development will result in noise pollution during the operational phase. 	-		M	Yes	-
			Tourism industry	<ul style="list-style-type: none"> • Since there are tourism facilities in close proximity to the site, the decommissioning activities may have an impact on tourism in the area. 	N/A	N/A	N/A	N/A	-
Heritage resources	<ul style="list-style-type: none"> • It is not foreseen that the proposed activity will impact on heritage resources or vice versa. 	N/A	N/A	N/A	N/A	-			

DECOMMISSIONING PHASE									
-	<p><u>Mine closure</u> During the mine closure the Mine and its associated infrastructure will be dismantled.</p> <p><u>Rehabilitation of biophysical environment</u> The biophysical environment will be rehabilitated.</p>	BIOPHYSICAL ENVIRONMENT	Fauna & Flora	<ul style="list-style-type: none"> Re-vegetation of exposed soil surfaces to ensure no erosion in these areas. 	+		L	Yes	-
			Air quality	<ul style="list-style-type: none"> Air pollution due to the increase of traffic of construction vehicles. 	-		S	Yes	-
			Soil	<ul style="list-style-type: none"> Backfilling of all voids Placing of topsoil on backfill 	+		L	Yes	-
			Geology	<ul style="list-style-type: none"> It is not foreseen that the decommissioning phase will impact on the geology of the site or vice versa. 	N/A	N/A	N/A	N/A	-
			Existing services infrastructure	<ul style="list-style-type: none"> Generation of waste that need to be accommodated at the local landfill site. Generation of sewage that need to be accommodated by the municipal sewerage system and the local sewage plant. Increase in construction vehicles. 	-		S	Yes	-
			Ground water	<ul style="list-style-type: none"> Pollution due to construction vehicles. 	-		S	Yes	-
			Surface water	<ul style="list-style-type: none"> Increase in storm water run-off. Pollution of water sources due to soil erosion. Destruction of watercourses (pans/dams/streams/wetlands). 	-		S	Yes	-
		SOCIAL/ECONOMIC ENVIRONMENT	Local unemployment rate	<ul style="list-style-type: none"> Loss of employment. 	-		L	Yes	-
			Visual landscape	<ul style="list-style-type: none"> Potential visual impact on visual receptors in close proximity to proposed facility. 	-		S	Yes	-
			Traffic volumes	<ul style="list-style-type: none"> Increase in construction vehicles. 	-		S	Yes	-
			Health & Safety	<ul style="list-style-type: none"> Air/dust pollution. Road safety. Increased crime levels. The presence of mine workers on the site may increase security risks associated with an increase in crime levels as a result of influx of people in the rural area. 	-		L	Yes	-
			Noise levels	<ul style="list-style-type: none"> The generation of noise as a result of construction vehicles, the use of machinery and people working on the site. 	-		S	Yes	-
			Tourism industry	<ul style="list-style-type: none"> Since there are no tourism facilities in close proximity to the site, the decommissioning activities will not have an impact on tourism in the area. 	N/A	N/A	N/A	N/A	-
			Heritage resources	<ul style="list-style-type: none"> It is not foreseen that the decommissioning phase will impact on any heritage resources. 	-		L	Yes	-

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

K. WHERE APPLICABLE, A SUMMARY OF THE FINDINGS AND IMPACTS MANAGEMENT MEASURES IDENTIFIED IN AN SPECIALIST REPORT COMPLYING WITH APPENDIX 6 OF THESE REGULATIONS AND AN INDICATION AS TO HOW THESE FINDINGS AND RECOMMENDATIONS HAVE BEEN INCLUDED IN THE FINAL REPORT;

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
<p>Phase 1 Cultural Heritage Impact Assessment</p> <p>Conducted by Dr J A van Schalkwyk</p>	<p>10. CONCLUSIONS AND RECOMMENDATIONS</p> <p>This report describes the methodology used, the limitations encountered, the heritage features that were identified and the recommendations and mitigation measures proposed relevant to this. The investigation consisted of a desktop study (archival sources, database survey, maps and aerial imagery) and a physical survey that also included the interviewing of relevant people. It should be noted that the implementation of the mitigation measures is subject to SAHRA/PHRA's approval.</p> <p>The cultural landscape qualities of the region essentially consist of a rural area in which the human occupation is made up of a limited Stone Age occupation. This was followed much later by Tswana-speaking agro-pastoralist that settled to the north on the study region. They were soon followed by a colonial (farmer) component, which gave rise to the development of small villages and towns that dot the larger landscape. The final transformation was brought about by the development of infrastructure in the region, such as roads and railway lines.</p> <p><u>Identified sites</u></p> <p>During the survey the following sites, features or objects of cultural significance were identified.</p> <ul style="list-style-type: none"> • 7.3.1: An informal burial site with two or three graves marked only with stone cairns. The site is much overgrown with grass and trees. • 7.3.2: A formal burial site with five graves with headstones, as well as a number that are only marked with stone cairns. The marked graves are all members of the Holder Family, and it is taken that they were former landowners. • 7.3.3 – 7.3.9: Various structures, all either former houses or farming related features. Most of the structures have been stripped of all recyclable material and it is only the walls that remains. Based on the materials used for building of the structures it can 	<p>X</p>	

	<p>be determined that they are not very old. This is confirmed by a study of old maps and aerial photographs which indicates that those structures that can be seen are not very old, dating to the last 30 to 40 years.</p> <ul style="list-style-type: none"> 7.3.10: Remains of an old lime mining operation. A few ruined structures occur adjacent to a large and deep excavation. A number of smaller lime excavation sites occur all over the area. These are signified by shallow excavations and rock dumps. <p><u>Limitations encountered</u></p> <ul style="list-style-type: none"> The dense vegetation cover encountered over much of the project area obscured ground visibility; and Some areas were not accessible due to the fact that the owners could not be traced/contacted; sections in possession of the Dept of Agriculture, Land Reform and Rural Development, could not be accessed due to no contact details; and some gates were locked with owners not responding to telephone calls. <p><u>Impact assessment and proposed mitigation measures</u></p> <p>Impact analysis of cultural heritage resources under threat of the proposed development, is based on the present understanding of the development:</p> <table border="1"> <thead> <tr> <th>Site No.</th> <th>Site type</th> <th>NHRA category</th> <th>Field rating</th> <th>Impact rating: Before/After mitigation</th> </tr> </thead> <tbody> <tr> <td>7.3.1 - 7.3.2</td> <td>Graves, Cemeteries and Burial Grounds</td> <td>Section 36</td> <td>Generally protected 4A: High/medium significance.</td> <td>Medium (40) Low (14)</td> </tr> <tr> <td colspan="5">Mitigation: (1) Avoidance/Preserve: A minimum buffer of 100m must be established around the burial sites for the duration of the prospecting operations.</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Site No.</th> <th>Site type</th> <th>NHRA category</th> <th>Field rating</th> <th>Impact rating: Before/After mitigation</th> </tr> </thead> <tbody> <tr> <td>7.3.3 – 7.3.9</td> <td>Structures older than 60 years</td> <td>Section 34</td> <td>Generally protected 4B: Medium significance</td> <td>Low (14) Low (14)</td> </tr> <tr> <td colspan="5">Mitigation: 5) No further action required: This is applicable only where sites or features have been rated to be of such low significance that it does not warrant further documentation, as it is viewed to be fully documented after inclusion in this report.</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Site No.</th> <th>Site type</th> <th>NHRA category</th> <th>Field rating</th> <th>Impact rating: Before/After mitigation</th> </tr> </thead> <tbody> <tr> <td>7.3.10</td> <td>Structures older than 60 years</td> <td>Section 34</td> <td>Generally protected 4B: Medium significance</td> <td>Medium (40) Low (14)</td> </tr> <tr> <td colspan="5">Mitigation: (2) Archaeological investigation: This option should be implemented when it is impossible to avoid impacting on an identified site or feature.</td> </tr> </tbody> </table> <p><u>Legal requirements</u></p> <p>The legal requirements related to heritage specifically are specified in Section 3 of this report.</p>	Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation	7.3.1 - 7.3.2	Graves, Cemeteries and Burial Grounds	Section 36	Generally protected 4A: High/medium significance.	Medium (40) Low (14)	Mitigation: (1) Avoidance/Preserve: A minimum buffer of 100m must be established around the burial sites for the duration of the prospecting operations.					Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation	7.3.3 – 7.3.9	Structures older than 60 years	Section 34	Generally protected 4B: Medium significance	Low (14) Low (14)	Mitigation: 5) No further action required: This is applicable only where sites or features have been rated to be of such low significance that it does not warrant further documentation, as it is viewed to be fully documented after inclusion in this report.					Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation	7.3.10	Structures older than 60 years	Section 34	Generally protected 4B: Medium significance	Medium (40) Low (14)	Mitigation: (2) Archaeological investigation: This option should be implemented when it is impossible to avoid impacting on an identified site or feature.						
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation																																												
7.3.1 - 7.3.2	Graves, Cemeteries and Burial Grounds	Section 36	Generally protected 4A: High/medium significance.	Medium (40) Low (14)																																												
Mitigation: (1) Avoidance/Preserve: A minimum buffer of 100m must be established around the burial sites for the duration of the prospecting operations.																																																
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation																																												
7.3.3 – 7.3.9	Structures older than 60 years	Section 34	Generally protected 4B: Medium significance	Low (14) Low (14)																																												
Mitigation: 5) No further action required: This is applicable only where sites or features have been rated to be of such low significance that it does not warrant further documentation, as it is viewed to be fully documented after inclusion in this report.																																																
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation																																												
7.3.10	Structures older than 60 years	Section 34	Generally protected 4B: Medium significance	Medium (40) Low (14)																																												
Mitigation: (2) Archaeological investigation: This option should be implemented when it is impossible to avoid impacting on an identified site or feature.																																																

	<ul style="list-style-type: none"> • The legal requirements related to heritage specifically are specified in Section 3 of this report. For this proposed project, the assessment has determined that sites, features or objects of cultural heritage significance occur in the project area, and therefore relevant permits would be required from SAHRA or the PHRA if there are any impacts on them. • If heritage features are identified during construction, as stated in the management recommendation, these finds would have to be assessed by a specialist, after which a decision will be made regarding the application for relevant permits. <p><u>Reasoned opinion as to whether the proposed activity should be authorised:</u></p> <ul style="list-style-type: none"> • From a heritage point of view, it is recommended that the Proposed Project be allowed to continue on acceptance of the proposed mitigation measures and the conditions presented below. <p><u>Conditions for inclusion in the environmental authorisation:</u></p> <ul style="list-style-type: none"> • The Palaeontological Sensitivity Map (http://www.sahra.org.za/sahris/map/palaeo) indicate that most of the project area (Fig. 6) has a high sensitivity of fossil remains to be found, and therefore afield assessment and protocol for finds is required. • Should archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made. The appropriate steps to take are indicated in Section 9 of the report, as well as in the Management Plan: Burial Grounds and Graves, with reference to general heritage sites, in the Addendum, Section 12.5. 		
<p>Palaeontological Impact Assessment</p> <p>Conducted by Elize Butler from Banzai Environmental</p>	<p>11 FINDINGS AND RECOMMENDATIONS</p> <p>The study area is underlain by Quaternary superficial deposits while the largest portion is underlain by the Oaktree Formation (Malmani Subgroup, Chuniespoort Group, Transvaal Supergroup) and Black Reef Formation (Chuniespoort Group, Transvaal Supergroup). Updated geology indicates that the study area is mainly underlain by the Malmani Group, Black Reef Formation, alluvium, colluvium, elluvium and gravel. According to the South African Heritage Resources Information System (SAHRIS), the Palaeontological Sensitivity of the Quaternary alluvium is Low, that of the Quaternary sands and Calcrete is moderate while that of the Oaktree and Black Reef Formations are very High. The National Environmental Web-based Screening Tool also indicates that the Palaeontological Sensitivity of the study area is Very High.</p>	<p>X</p>	

	<p>A site-specific field survey of the development footprint was conducted on 27 April 2023. During the site investigation no fossiliferous outcrop was detected. It is therefore considered that the proposed prospecting application will not lead to detrimental impacts on the palaeontological heritage of the area. The construction and operation of the project may be authorised, as the whole extent of the development footprint is not considered sensitive in terms of palaeontological heritage.</p> <p>If fossil remains are discovered during any phase of construction, either on the surface or exposed by excavations the Chance Find Protocol must be implemented by the ECO or site manager in charge of these developments. Fossil discoveries ought to be protected and the ECO/site manager must report to SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that suitable mitigation (recording and collection) can be carried out</p> <p>It is consequently recommended that no further palaeontological heritage studies, ground truthing and/or specialist mitigation are required pending the discovery of newly discovered fossils.</p> <p><u>12 CHANCE FIND PROTOCOL</u></p> <p>The following procedure will only be followed if fossils are uncovered during excavation.</p> <p>12.1 Legislation</p> <p>Cultural Heritage in South Africa (includes all heritage resources) is protected by the National Heritage Resources Act (Act No 25 of 1999) (NHRA). According to Section 3 of the Act, all Heritage resources include “all objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens”.</p> <p>Palaeontological heritage is unique and non-renewable and is protected by the NHRA and are the property of the State. It is thus the responsibility of the State to manage and conserve fossils on behalf of the citizens of South Africa. Palaeontological resources may not be excavated, broken, moved, or destroyed by any development without prior assessment and without a permit from the relevant heritage resources authority as per section 35 of the NHRA.</p>		
--	--	--	--

	<p>A fossil is the naturally preserved remains (or traces thereof) of plants or animals embedded in rock. These organisms lived millions of years ago. Fossils are extremely rare and irreplaceable. By studying fossils, it is possible to determine environmental conditions that existed in a specific geographical area, millions of years ago.</p> <p>This informational document is intended for workmen and foremen on construction sites. It describes the actions to be taken when construction activities accidentally uncover fossil material.</p> <p>It is the responsibility of the Environmental Site Officer (ESO) or site manager of the project to train the workmen and foremen in the procedure to follow when a fossil is accidentally uncovered. In the absence of the ESO, a member of the staff must be appointed to be responsible for the proper implementation of the chance find protocol as not to compromise the conservation of fossil material.</p> <p>12.2 Chance Find Procedure</p> <ul style="list-style-type: none"> • If a chance find is made the person responsible for the find must immediately stop working and all work that could impact that finding must cease in the immediate vicinity of the find. • The person who made the find must immediately report the find to his/her direct supervisor which in turn must report the find to his/her manager and the ESO or site manager. The ESO or site manager must report the find to the relevant Heritage Agency (South African Heritage Research Agency, SAHRA). (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za). The information to the Heritage Agency must include photographs of the find, from various angles, as well as the GPS co-ordinates. • A preliminary report must be submitted to the Heritage Agency within 24 hours of the find and must include the following: 1) date of the find; 2) a description of the discovery and a 3) description of the fossil and its context (depth and position of the fossil), GPS co-ordinates. • Photographs (the more the better) of the discovery must be of high quality, in focus, accompanied by a scale. It is also important to have photographs of the vertical section (side) where the fossil was found. 		
--	---	--	--

	<ul style="list-style-type: none"> • Upon receipt of the preliminary report, the Heritage Agency will inform the ESO (or site manager) whether a rescue excavation or rescue collection by a palaeontologist is necessary. • The site must be secured to protect it from any further damage. No attempt should be made to remove material from their environment. The exposed finds must be stabilized and covered by a plastic sheet or sand bags. The Heritage agency will also be able to advise on the most suitable method of protection of the find. • If the fossil cannot be stabilized the fossil may be collected with extreme care by the ESO. Fossils finds must be stored in tissue paper and in an appropriate box while due care must be taken to remove all fossil material from the rescue site. • Once the Heritage Agency has issued the written authorization, the developer may continue with the development on the affected area. 		
<p>Ecological Assessment Report</p> <p>Conducted by AJH Lamprecht from EcoFocus Consulting (Pty) Ltd</p>	<p>Conclusion</p> <p>The assessment area scored a medium-high Site Ecological Importance (SEI) value and moderate Ecological Importance and Sensitivity (EIS) values. The assessment area with the exception of the portions consisting of actively/recently cultivated agricultural croplands, is therefore viewed as being of high overall conservational significance/value for the continued ecological connectivity, -functionality and -integrity of the broader landscape.</p> <p>Due to the minute sizes and isolated nature of the proposed pits, it is not anticipated that the proposed prospecting would pose any significant risk to the continued ecological connectivity, -functionality and -integrity of the assessment area or broader terrestrial landscape. The subsequently envisaged potential future mining activities within the assessment area, could however highly likely result in significant impact to the ecology of the broader terrestrial landscape and consequently pose a significant risk to achieving and maintaining national and/or provincial conservation- and persistence targets of the area.</p> <p>Due to the minute sizes and isolated nature of the proposed pits, it is not anticipated that the proposed prospecting would pose any significant risk to the continued ecological functionality and -integrity of the surface water drainage area and associated unchanneled valley-bottom wetland or two seepage wetlands or three depression pans or quarry site. The subsequently envisaged potential future mining activities within the assessment area, could however highly likely result in significant impact to these identified conservationally significant aquatic ecological features throughout the assessment area.</p>	<p>X</p>	

	<p>Due to the shallow nature of the proposed pits, it is not anticipated that the proposed prospecting would pose any significant risk to the continued ecological functionality and - integrity of any groundwater resources within the assessment area. The subsequently envisaged potential future mining activities within the assessment area, could however highly likely result in significant impact to the groundwater resources within the assessment area.</p> <p>Due to the minute sizes and isolated nature of the proposed pits, it is not anticipated that the proposed prospecting would pose any significant risk to the continued persistence/livelihood of terrestrial or aquatic fauna throughout the local and broader area. The subsequently envisaged potential future mining activities within the assessment area, could however highly likely result in significant impact to important faunal habitats throughout the assessment area.</p> <p>No significant potential long-term ecological impacts were therefore identified for the proposed prospecting. The cumulative impact associated with the low-level potential ecological impacts identified for the proposed prospecting, will be negligible relative to the existing negative impacts caused by the extensive existing agricultural cropland cultivation and residential transformation, which is evident throughout the local and broader landscape surrounding the assessment area.</p> <p>It is furthermore the opinion of the specialist, by application of the NEMA Mitigation Hierarchy, that all the identified potential cumulative ecological impacts associated with the proposed prospecting, can be suitably reduced and mitigated to within acceptable residual levels, by implementation of the recommended mitigation measures (see headings 8.8 and 9.3). It is therefore not anticipated that the proposed prospecting will add any significant residual cumulative ecological impacts to the surrounding environment, if all recommended mitigation measures as per this ecological report are adequately implemented and managed.</p> <p>It is the opinion of the specialist that the proposed prospecting within the indicated ecologically acceptable areas situated outside the recommended ecological corridor (see heading 8.9), should be considered by the competent authority for Environmental Authorisation and approval. All recommended mitigation measures as per this ecological report must however be adequately implemented and managed (see headings 8.8 and 9.3). All necessary authorisations, permits and licenses must also be obtained prior to the commencement of any vegetation clearance- and/or excavation activities.</p>		
--	--	--	--

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

Specialist study according to DFFE Screening tool		Response
Agriculture Impact Assessment		<p>We do not see a need for specialist studies at this stage. If sufficient resource is determined, and the applicant want to amend the right to include bulk sampling or apply for a mining/prospecting right (with bulk sampling) then specialist studies will be considered.</p> <p>According to Figure 20 and Figure 21 the proposed area is mostly covered by natural vegetation, cultivation, some water bodies and a degraded area.</p> <p>The google earth map (figure 22) show the natural area and cultivated lands. The proposed area is used for agricultural activities such as crop cultivation, livestock grazing and homesteads. Some of the homesteads are abandoned (Appendix 5).</p> <p>The land capability for the proposed area and surrounding area also falls withing Land in Class III (3), Class IV (4) and Class VI (6).</p> <p>According to the Prospecting Work Programme (PWP) it is planned that 300 pits will be dug (it may be less depending on the results) at an extent of 3m (length) x 2m (wide) x 2m (depth) in 24 Months. It was calculated the disturbance will be ± 0.18ha.</p> <p>The whole application area is 5687.8614ha thus the ± 0.18ha disturbance is very small compared to the size of the application area. The impact is expected to be low, and the area will be concurrently rehabilitated. The prospecting activity will not disturb existing activities on the portions as both (existing activities and prospecting activities) can be done concurrently</p>
Biodiversity study	Animal Species Assessment	We do not see a need for specialist studies at this stage. If sufficient resource is determined, and the applicant want to amend the right to include bulk sampling or apply for a mining/prospecting right (with bulk sampling) then specialist studies will be considered.
	Aquatic Biodiversity Impact Assessment	The application is for a prospecting right without bulk sampling. According to the Prospecting Work Programme (PWP) it is planned that 300 pits will be dug at an extent of 3m (length) x 2m (wide) x 2m (depth), which calculated to a disturbance of ± 0.18 ha.
	Plant Species Assessment	The whole application area is 5687.8614ha and the prospecting without bulk sampling activities will disturb ± 0.18 ha. Even though the DFFE identified some of the areas as sensitive the disturbance to the area is very little (± 0.18 ha). The impact is expected to be low, and the area will be concurrently rehabilitated.
	Terrestrial Biodiversity Impact Assessment	<p>DFFE Screening Report findings:</p> <ul style="list-style-type: none"> • <i>Plant Species theme sensitivity</i>: Low sensitivity • <i>Aquatic Biodiversity sensitivity</i>: High sensitivity • <i>Terrestrial Biodiversity sensitivity</i>: Mostly very High and to a lesser extent Low sensitivity • <i>Animal Species sensitivity</i>: Mostly within Low sensitivity but there are area that fall within Medium and High sensitivity

		<p>According to the Prospecting Work Programme (PWP) it is planned that 300 pits will be dug (it may be less depending on the results) at an extent of 3m (length) x 2m (wide) x 2m (depth) in 24 Months. It was calculated the disturbance will be ± 0.18ha.</p> <p>The whole application area is 5687.8614ha thus the ± 0.18ha disturbance is very small compared to the size of the application area. The impact is expected to be low, and the area will be concurrently rehabilitated. The prospecting activity will not disturb existing activities on the portions as both (existing activities and prospecting activities) can be done concurrently</p> <p>Some of the mitigation measure include:</p> <ul style="list-style-type: none"> ○ No animals may be hunted or killed during the prospecting phase. ○ An adequate buffer will be maintained from any water bodies, should any prospecting be conducted within the regulated zones, a Water Use Licence will be applied for. ○ No protected trees may be removed without a permit.
Archaeological and Cultural Heritage Impact Assessment	Specialist studies were conducted	
Palaeontology Impact Assessment		
Noise Impact Assessment	We do not see the need for this study as noise is limited to working hours.	
Radioactivity Impact Assessment	We do not see the need for this study as this application is without bulk sampling.	

L. ENVIRONMENTAL IMPACT STATEMENT

i) SUMMARY OF THE KEY FINDINGS

This section provides a summary of the assessment and conclusions drawn from the proposed prospecting area. In doing so, it draws on the information gathered as part of the environmental impact assessment process and the knowledge gained by the environmental consultant during the course of the process and presents an informed opinion on the environmental impacts associated with the proposed project. The following conclusions can be drawn for the proposed prospecting activity:

➤ Potential impacts on biodiversity:

An Ecological Assessment specialist study was conducted by AJH Lamprecht from EcoFocus Consulting (Pty) Ltd. Please see the findings below:

10. Summary and Conclusion

Proposed Development Area Clearance

The assessment area constitutes a single footprint area of approximately 5 707 ha in size, although the proposed prospecting will merely constitute the excavation of approximately 300 pits of 3 m x 2 m x 2 m (deep). This will therefore result in an excavation footprint area of approximately 1 800 m² in total combined size over the entire assessment area.

The mechanical clearance and excavation associated with the proposed pits, will in all probability merely transform the existing surface vegetation within- and directly surrounding each isolated pit footprint area. It is however not anticipated that the proposed prospecting will impact significantly wider than these minute isolated pit footprint areas.

However, as prospecting is conducted with the objective of potential future mining, the subsequently envisaged mining activities within the assessment area must from the outset, also be taken into consideration during the ecological assessment process. This must be done with the principles of environmentally sustainable and responsible development in mind and underpinning all decision making. The precautionary principle of the National Environmental Management Act (Act 107 of 1998) therefore also applies by following a proactive assessment approach towards expected potential/likely future development activities in the area and associated ecological impacts.

Vegetation Type and Conservation Status

According to SANBI (2006-2019), the majority of the assessment area falls within the Carletonville Dolomite Grassland vegetation type (Gh 15). Portions of the assessment area along the western boundary fall within the Western Highveld Sandy Grassland vegetation type (Gh 14) (SANBI, 2006-2019). The southern portion and very small north-western corner of the assessment area fall within the Klerksdorp Thornveld vegetation type (Gh 13) (SANBI, 2006-2019).

The majority of the assessment area is categorised as terrestrial Critical Biodiversity Area one (CBA 1) and terrestrial Critical Biodiversity Area two (CBA 2), according to the North West Biodiversity Spatial Plan 2015 (NW BSP), which sets out biodiversity priority areas in the province. The north-western portion of the assessment area is categorised as terrestrial Ecological Support Area one (ESA 1), while merely the small south-western corner is categorised as terrestrial Ecological Support Area two (ESA 2), according to the North West Biodiversity Spatial Plan 2015 (NW BSP).

These conservationally important terrestrial categorisations of the assessment area are as a result of the area forming a critical linkage/congregation point between three viably remaining intact regional ecological corridors, which traverse and connect the broader ecological landscape. These three ecological corridors link up with- and 'funnel/bottleneck' into the assessment area from the north-west, north-east and south-west, respectively. The assessment area is therefore viewed as being of high overall conservational significance/value for the continued ecological connectivity, -functionality and -integrity of the broader landscape.

A significant first-order seasonal watercourse/drainage area commences within the central-northern portion of the assessment area and flows in a westerly direction, from where it exits the assessment area in the north-western corner. This watercourse/drainage area along with two other minute, isolated portions throughout the assessment area are

categorised as aquatic Ecological Support Area one (ESA 1), according to the North West Biodiversity Spatial Plan 2015 (NWBSP).

Aquatic Environment

Water Catchment and Drainage

The assessment area falls within the Lower Vaal Water Management Area (WMA 10) and the associated D41A quaternary surface water catchment- and drainage area. It is furthermore situated in the D41A – 1180 Sub Quaternary Reach (SQR), within the Highveld Ecoregion (11). The assessment area and surrounding landscape generally flows in a westerly to north-westerly direction.

Watercourses and Wetlands

A significantly sized surface water drainage area with an associated unchanneled valley-bottom wetland, commences within the central-northern portion of the assessment area and flows in a westerly direction, from where it exits the assessment area in the north-western corner. The surface water drainage area continues in a north-westerly direction and eventually discharges into the Molopo River, approximately 22 km north-west of the assessment area. No other significant watercourses are present throughout the assessment area or the local surrounding landscape.

It is evident from a hydrological- and aquatic biodiversity perspective, that the surface water drainage area and associated unchanneled valley-bottom wetland form an important part of the aquatic ecology of the area as well as the local and broader quaternary surface water catchment- and drainage area, towards the north-west.

Two small isolated seepage wetlands were found to be present within the south-western and central-southern portions of the assessment area. A number of prominent, slightly elevated calcrete ridges/outcrops are present throughout the southern portion of the assessment area (see heading 8.3.2), from which these two wetlands are continuously fed with seepage water. It is evident from an aquatic biodiversity perspective, that the two seepage wetlands form an important part of the aquatic ecology of the area.

Three very small isolated depression pans were found to be present throughout the assessment area. The three pans are seasonally/temporarily inundated and no distinct surface water flow paths into or out of the pans are evident, as they rather constitute endorheic slight surface depressions within the local landscape. The three pans therefore merely collect rainwater as well as general surface water runoff from a very limited upstream area.

The two northerly located pans have been significantly disturbed and degraded by historical and continued overgrazing and livestock watering activities. It is therefore evident from a hydrological- and aquatic biodiversity perspective, that the two northerly located pans do not form an important part of the aquatic ecology of the area or the local and broader quaternary surface water catchment- and drainage area, towards the north-west.

The most southerly located depression pan constitutes a reasonably natural, actively functional semi-aquatic, waterlogged habitat. The pan is situated directly in-between the two seepage wetlands as discussed earlier above and is also associated with the prominent, slightly elevated calcrete ridges/outcrops, which are present throughout the southern portion of the assessment area (see heading 8.3.2). It is evident from an aquatic biodiversity perspective, that the most southerly located depression pan forms an important part of the aquatic ecology of the area.

A very small isolated artificially/anthropogenically created historical quarry site which has filled up with water over time, was found to be present on the plateau of one of the prominent, slightly elevated calcrete ridges/outcrops and is situated in close proximity to the most southerly located depression pan, as discussed earlier. It is evident from an aquatic biodiversity perspective, that although artificially/anthropogenically created the filled-up quarry site forms an important part of the aquatic ecology of the area.

Terrestrial Environment

The majority of the assessment area constitutes an intact reasonably natural, undeveloped terrestrial landscape intertwined to a lesser extent, with portions of historically cultivated agricultural croplands. The historical cultivation activities however

appear to have ceased in the distant past, which has allowed for such portions to recover and return back to an ecologically functional and viable state.

A significantly sized area within the eastern and south-eastern portions of the assessment area as well as a small area within the north-western portion, however consist of actively/recently cultivated agricultural croplands. These areas are not viewed as being of any overall conservational significance/value.

The terrestrial landscape is categorised into the following main vegetation units, mainly based on differences in vegetation structure but also slight variations in species composition and representation:

- *Moderate- to high-density bushveld savannah*
 - *Slight variations are furthermore evident within this vegetation unit*
- *Open to moderate-density woody shrubland savannah*
- *•Medium-height grassland*

It must however be kept in mind that although the assessment area is being artificially/anthropogenically categorised into different vegetation units for reporting purposes, these units do not function independently and should not be viewed as separate, isolated systems. They rather form part of the larger interconnected ecosystem associated with the local and broader landscape surrounding assessment area.

As discussed earlier above, the conservationally important terrestrial CBA and ESA categorisations of the assessment area are as a result of the area forming a critical linkage/congregation point between three viably remaining intact regional ecological corridors, which traverse and connect the broader ecological landscape. These three ecological corridors link up with- and 'funnel/bottleneck' into the assessment area from the north-west, north-east and south-west, respectively. The assessment area with the exception of the portions consisting of actively/recently cultivated agricultural croplands, is therefore viewed as being of high overall conservational significance/value for the continued ecological connectivity, - functionality and -integrity of the broader landscape.

Moderate- to High-Density Bushveld Savannah

The majority of the terrestrial landscape throughout the assessment area constitutes a reasonably flat, moderate- to high-density bushveld savannah habitat with a well-established grass layer. The woody component of the bushveld savannah habitat is mainly dominated by medium-height tree individuals, while low-growing to medium-height woody shrub individuals are also well-represented throughout the landscape.

The density of the woody component varies considerably throughout this vegetation unit. Slight variations in vegetation structure as well as species composition and representation throughout this vegetation unit, are furthermore also evident within the north-western and north-eastern portions of the assessment area (see discussion below).

The majority of the bushveld savannah habitat is in a reasonably natural ecological state, although certain isolated portions are situated on old historically cultivated agricultural croplands. As discussed earlier, the historical cultivation activities however appear to have ceased in the distant past, which has allowed for such portions of bushveld savannah habitat to recover and return back to an ecologically functional and viable state. Evidence of recent burning of portions of the bushveld savannah habitat is also visible throughout the landscape.

The bushveld savannah habitat associated with the north-eastern portion of the assessment area constitutes a slightly undulating landscape, as opposed to the reasonably flat majority landscape. The area consists of a mosaic of moderate-density bushveld savannah within the lower lying areas intertwined with more open grassland/shrubland throughout the elevated areas of the undulating landscape. This habitat variation of the area is viewed as being of moderate conservational significance/value for representative landscape variation purposes.

*The bushveld savannah habitat associated with the north-western portion of the assessment area constitutes a reasonably flat, open thornveld savannah, which is overwhelmingly dominated by the tree species *Vachellia tortilis* and to a lesser extent, *Senegalia caffra*, with few, if any other woody species being present. These two species are diagnostically absent*

from the rest of the bushveld savannah habitat. The main reason for this variation in vegetation structure as well as species composition and representation, is the fact that the area is situated on old historically cultivated agricultural croplands. This habitat variation of the area is therefore merely viewed as being of low conservational significance/value for representative landscape variation purposes.

Open to Moderate-Density Woody Shrubland Savannah

A broad corridor is situated in-between and separates the majority moderate- to high-density bushveld savannah habitat (see heading 8.3.1) from the medium-height grassland in the south-western portion of the assessment area (see heading 8.3.3). This area constitutes a transitional zone between these two vegetation units and consists of a reasonably flat, open to moderate-density terrestrial woody shrubland savannah habitat with a well-established grass layer. The woody component of the shrubland savannah habitat is mainly dominated by low-growing to medium-height woody shrub individuals, while low-growing tree individuals are merely sparsely present throughout the landscape.

The majority of the shrubland savannah habitat is in a reasonably natural ecological state, although certain isolated portions are situated on old historically cultivated agricultural croplands. As discussed earlier, the historical cultivation activities however appear to have ceased in the distant past, which has allowed for such portions of shrubland savannah habitat to recover and return back to an ecologically functional and viable state. Evidence of recent burning of portions of the shrubland savannah habitat is also visible throughout the landscape.

A number of prominent, slightly elevated calcrete ridges/outcrops are present throughout the southern portion of the assessment area. The vegetation structure as well as species composition and representation of these calcrete ridges/outcrops is however fairly similar to that of the surrounding shrubland savannah habitat. This habitat variation of the area is therefore merely viewed as being of low conservational significance/value for representative landscape variation purposes.

Medium-Height Grassland

A significantly sized area within the south-western portion of the assessment area constitutes a reasonably flat, medium-height terrestrial grassland habitat. Low-growing to medium-height woody shrub individuals are merely very sporadically scattered throughout the grassland landscape.

Evidence of recent burning of substantial portions of the grassland habitat is visible throughout the landscape. Virtually the entire grassland landscape is furthermore situated on old historically cultivated agricultural croplands. Additionally, it is evident that the area is underlain by dolomitic materials as opposed to the expected basaltic and/or andesitic lavas, which are associated with the relevant Western Highveld Sandy Grassland vegetation type (Gh 14). The grassland habitat is therefore not reminiscent of the natural climax state of this vegetation type, which reduces the conservational significance of the area. The historical cultivation activities however appear to have ceased in the distant past, which has allowed for the grassland habitat to recover and return back to an ecologically functional and viable sub-climax state.

Fauna and Flora

Various threatened aquatic and terrestrial faunal and avifaunal species are indicated on the Biodiversity and Development Institute's Virtual Museum and the IUCN Red List of Threatened Species (<https://www.iucnredlist.org>) as potentially/likely occurring throughout the local and broader landscape into which the assessment area falls (see heading 8.6). Although none of these species were observed throughout the assessment area during the site assessment, the reasonably natural bushveld savannah- and woody shrubland savannah landscapes associated with the assessment area, provide suitable/favourable habitat and prey availability for the potential/likely presence of a number of these species. The limited duration and timing of the site assessment for the proposed prospecting along with the significant size of the assessment area, furthermore merely included a general overview of the faunal and avifaunal ecology.

Conclusion

The assessment area scored a medium-high Site Ecological Importance (SEI) value and moderate Ecological Importance and Sensitivity (EIS) values. The assessment area with the exception of the portions consisting of actively/recently cultivated agricultural croplands, is therefore viewed as being of high overall conservational significance/value for the continued ecological connectivity, -functionality and -integrity of the broader landscape.

Due to the minute sizes and isolated nature of the proposed pits, it is not anticipated that the proposed prospecting would pose any significant risk to the continued ecological connectivity, -functionality and -integrity of the assessment area or broader terrestrial landscape. The subsequently envisaged potential future mining activities within the assessment area, could however highly likely result in significant impact to the ecology of the broader terrestrial landscape and consequently pose a significant risk to achieving and maintaining national and/or provincial conservation- and persistence targets of the area.

Due to the minute sizes and isolated nature of the proposed pits, it is not anticipated that the proposed prospecting would pose any significant risk to the continued ecological functionality and -integrity of the surface water drainage area and associated unchanneled valley-bottom wetland or two seepage wetlands or three depression pans or quarry site. The subsequently envisaged potential future mining activities within the assessment area, could however highly likely result in significant impact to these identified conservationally significant aquatic ecological features throughout the assessment area.

Due to the shallow nature of the proposed pits, it is not anticipated that the proposed prospecting would pose any significant risk to the continued ecological functionality and -integrity of any groundwater resources within the assessment area. The subsequently envisaged potential future mining activities within the assessment area, could however highly likely result in significant impact to the groundwater resources within the assessment area.

Due to the minute sizes and isolated nature of the proposed pits, it is not anticipated that the proposed prospecting would pose any significant risk to the continued persistence/livelihood of terrestrial or aquatic fauna throughout the local and broader area. The subsequently envisaged potential future mining activities within the assessment area, could however highly likely result in significant impact to important faunal habitats throughout the assessment area.

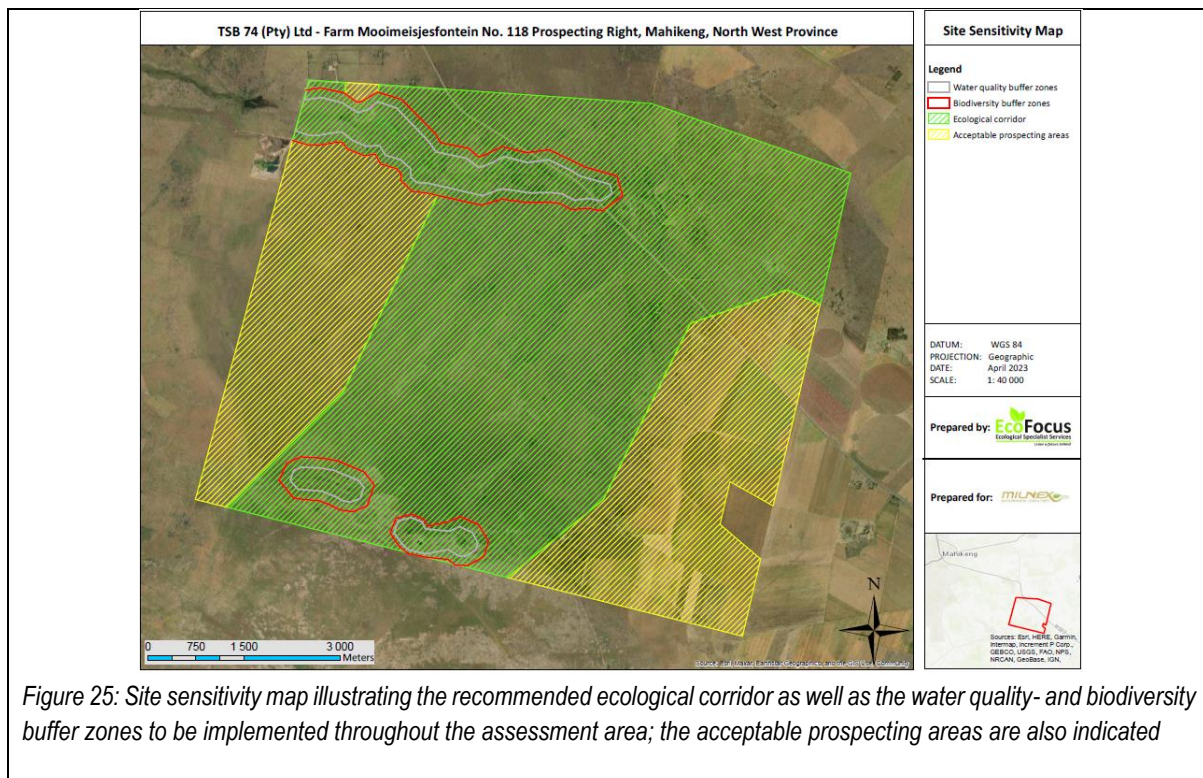
No significant potential long-term ecological impacts were therefore identified for the proposed prospecting. The cumulative impact associated with the low-level potential ecological impacts identified for the proposed prospecting, will be negligible relative to the existing negative impacts caused by the extensive existing agricultural cropland cultivation and residential transformation, which is evident throughout the local and broader landscape surrounding the assessment area.

It is furthermore the opinion of the specialist, by application of the NEMA Mitigation Hierarchy, that all the identified potential cumulative ecological impacts associated with the proposed prospecting, can be suitably reduced and mitigated to within acceptable residual levels, by implementation of the recommended mitigation measures (see headings 8.8 and 9.3). It is therefore not anticipated that the proposed prospecting will add any significant residual cumulative ecological impacts to the surrounding environment, if all recommended mitigation measures as per this ecological report are adequately implemented and managed.

It is the opinion of the specialist that the proposed prospecting within the indicated ecologically acceptable areas situated outside the recommended ecological corridor (see heading 8.9), should be considered by the competent authority for Environmental Authorisation and approval. All recommended mitigation measures as per this ecological report must however be adequately implemented and managed (see headings 8.8 and 9.3). All necessary authorisations, permits and licenses must also be obtained prior to the commencement of any vegetation clearance- and/or excavation activities.

8.9. Ecological Site Sensitivity Map

The site sensitivity map below (see A3 sized map in the Appendices) illustrates the recommended ecological corridor as well as the water quality- and biodiversity buffer zones to be implemented throughout the assessment area. The acceptable prospecting areas are also indicated.



➤ Potential impact on Archaeological artifacts and Palaeontological resources:

A Phase 1 Cultural Heritage Impact Assessment was conducted by Dr J A van Schalkwyk and a Palaeontological Impact Assessment was conducted by Elize Butler from Banzai Environmental. Please see the findings below:

Phase 1 Cultural Heritage Impact Assessment finding:

- Identified sites**
- During the survey the following sites, features or objects of cultural significance were identified.**
- 7.3.1: An informal burial site with two or three graves marked only with stone cairns. The site is much overgrown with grass and trees.
 - 7.3.2: A formal burial site with five graves with headstones, as well as a number that are only marked with stone cairns. The marked graves are all members of the Holder Family, and it is taken that they were former landowners.
 - 7.3.3 – 7.3.9: Various structures, all either former houses or farming related features. Most of the structures have been stripped of all recyclable material and it is only the walls that remains. Based on the materials used for building of the structures it can be determined that they are not very old. This is confirmed by a study of old maps and aerial photographs which indicates that those structures that can be seen are not very old, dating to the last 30 to 40 years.
 - 7.3.10: Remains of an old lime mining operation. A few ruined structures occur adjacent to a large and deep excavation. A number of smaller lime excavation sites occur all over the area. These are signified by shallow excavations and rock dumps.

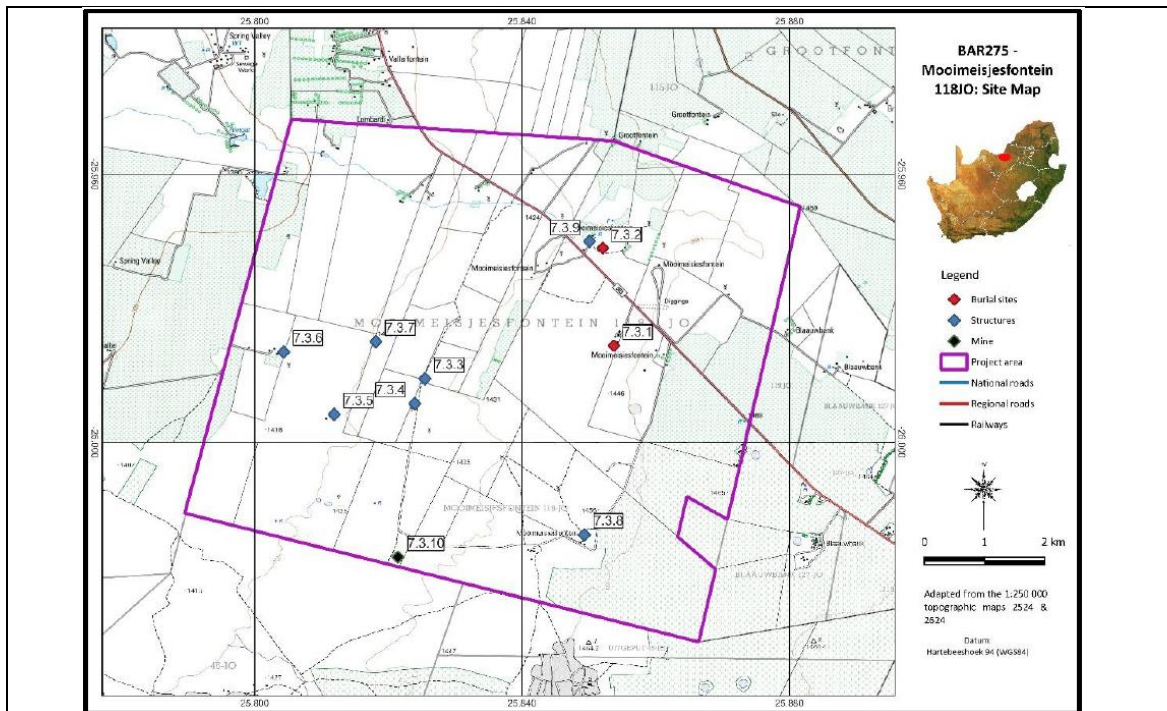


Figure 17. Location of heritage sites in the project area

Limitations encountered

- The dense vegetation cover encountered over much of the project area obscured ground visibility; and
- Some areas were not accessible due to the fact that the owners could not be traced/contacted; sections in possession of the Dept of Agriculture, Land Reform and Rural Development, could not be accessed due to no contact details; and some gates were locked with owners not responding to telephone calls.

Impact assessment and proposed mitigation measures

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

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

Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.3.3 – 7.3.9	Structures older than 60 years	Section 34	Generally protected 4B: Medium significance	Low (14) Low (14)
Mitigation: 5) No further action required: This is applicable only where sites or features have been rated to be of such low significance that it does not warrant further documentation, as it is viewed to be fully documented after inclusion in this report.				

Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.3.10	Structures older than 60 years	Section 34	Generally protected 4B: Medium significance	Medium (40) Low (14)
Mitigation: (2) Archaeological investigation: This option should be implemented when it is impossible to avoid impacting on an identified site or feature.				

Legal requirements

The legal requirements related to heritage specifically are specified in Section 3 of this report.

- The legal requirements related to heritage specifically are specified in Section 3 of this report. For this proposed project, the assessment has determined that sites, features or objects of cultural heritage significance occur in the project area, and therefore relevant permits would be required from SAHRA or the PHRA if there are any impacts on them.

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

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

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

Conditions for inclusion in the environmental authorisation:

- *The Palaeontological Sensitivity Map (<http://www.sahra.org.za/sahris/map/palaeo>) indicate that most of the project area (Fig. 6) has a high sensitivity of fossil remains to be found, and therefore a field assessment and protocol for finds is required.*
- *Should archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.*
- *The appropriate steps to take are indicated in Section 9 of the report, as well as in the Management Plan: Burial Grounds and Graves, with reference to general heritage sites, in the Addendum, Section 12.5.*

Palaeontological Impact Assessment findings:

The study area is underlain by Quaternary superficial deposits while the largest portion is underlain by the Oaktree Formation (Malmani Subgroup, Chuniespoort Group, Transvaal Supergroup) and Black Reef Formation (Chuniespoort Group, Transvaal Supergroup). Updated geology indicates that the study area is mainly underlain by the Malmani Group, Black Reef Formation, alluvium, colluvium, elluvium and gravel. According to the South African Heritage Resources Information System (SAHRIS), the Palaeontological Sensitivity of the Quaternary alluvium is Low, that of the Quaternary sands and Calcrete is moderate while that of the Oaktree and Black Reef Formations are very High. The National Environmental Web-based Screening Tool also indicates that the Palaeontological Sensitivity of the study area is Very High.

A site-specific field survey of the development footprint was conducted on 27 April 2023. During the site investigation no fossiliferous outcrop was detected. It is therefore considered that the proposed prospecting application will not lead to detrimental impacts on the palaeontological heritage of the area. The construction and operation of the project may be authorised, as the whole extent of the development footprint is not considered sensitive in terms of palaeontological heritage.

If fossil remains are discovered during any phase of construction, either on the surface or exposed by excavations the Chance Find Protocol must be implemented by the ECO or site manager in charge of these developments. Fossil discoveries ought to be protected and the ECO/site manager must report to SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that suitable mitigation (recording and collection) can be carried out

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

➤ **Potential impacts on land use:**

According to **Figure 20** and **Figure 21** the proposed area is mostly covered by natural vegetation, cultivation, some water bodies and a degraded area.

The google earth map (**figure 22**) show the natural area and cultivated lands. The proposed area is used for agricultural activities such as crop cultivation, livestock grazing and homesteads. Some of the homesteads are abandoned (**Appendix 5**).

All infrastructure will be temporary and/or mobile.

The activity will be subject to concurrent rehabilitation. The prospecting activity will not disturb existing activities on the portions as both (existing activities and prospecting activities) can be done concurrently.

➤ **Potential social impacts:**

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

➤ **Potential negative impacts:**

(noise, dust, soil degradation, storm water, traffic, health and safety) associated with the operation of the facility are expected to be of low - medium impact, of medium terms and site specific. These can be mitigated or negated through the implementation of practical and appropriate mitigation measures.

➤ **Positive impacts:**

The prospecting of Limestone (Ls) & Manganese Ore (Mn) without bulk sampling, may result in socio-economic benefit to the area.

All possible negative impacts and risks that have been identified in this report can be effectively mitigated and managed by implementing the migratory measures as set out in the Environmental Management Programme (EMP) attached in Part B.

ii) **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.

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

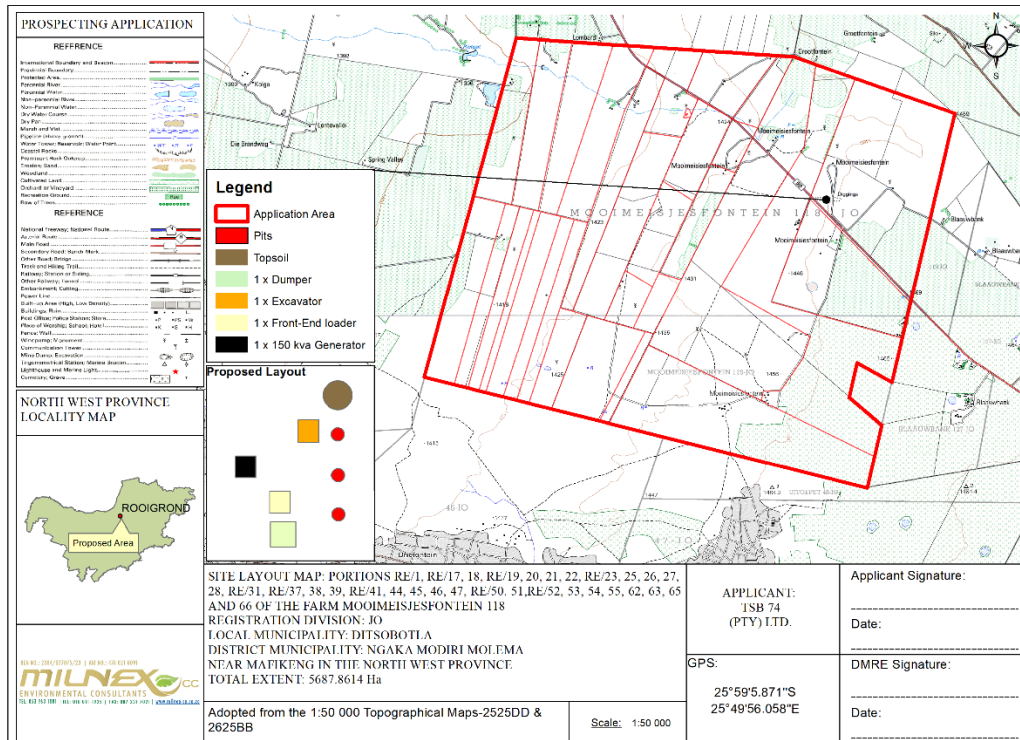


Figure 23: Site Plan

A Phase 1 Cultural Heritage Impact Assessment was conducted by Dr J A van Schalkwyk Please see the findings below:

Identified sites

During the survey the following sites, features or objects of cultural significance were identified.

- 7.3.1: An informal burial site with two or three graves marked only with stone cairns. The site is much overgrown with grass and trees.
- 7.3.2: A formal burial site with five graves with headstones, as well as a number that are only marked with stone cairns. The marked graves are all members of the Holder Family, and it is taken that they were former landowners.
- 7.3.3 – 7.3.9: Various structures, all either former houses or farming related features. Most of the structures have been stripped of all recyclable material and it is only the walls that remains. Based on the materials used for building of the structures it can be determined that they are not very old. This is confirmed by a study of old maps and aerial photographs which indicates that those structures that can be seen are not very old, dating to the last 30 to 40 years.
- 7.3.10: Remains of an old lime mining operation. A few ruined structures occur adjacent to a large and deep excavation. A number of smaller lime excavation sites occur all over the area. These are signified by shallow excavations and rock dumps.

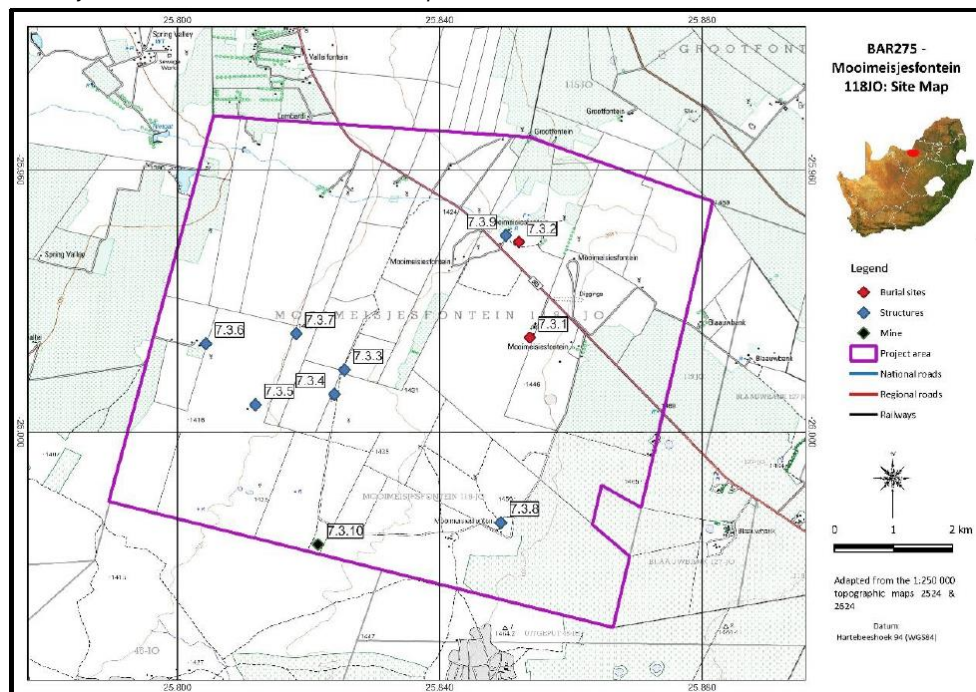


Figure 17. Location of heritage sites in the project area

Impact assessment and proposed mitigation measures

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

Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.3.1 - 7.3.2	Graves, Cemeteries and Burial Grounds	Section 36	Generally protected 4A: High/medium significance.	Medium (40) Low (14)
Mitigation: (1) Avoidance/Preserve: A minimum buffer of 100m must be established around the burial sites for the duration of the prospecting operations.				
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.3.3 – 7.3.9	Structures older than 60 years	Section 34	Generally protected 4B: Medium significance	Low (14) Low (14)
Mitigation: 5) No further action required: This is applicable only where sites or features have been rated to be of such low significance that it does not warrant further documentation, as it is viewed to be fully documented after inclusion in this report.				
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.3.10	Structures older than 60 years	Section 34	Generally protected 4B: Medium significance	Medium (40) Low (14)
Mitigation: (2) Archaeological investigation: This option should be implemented when it is impossible to avoid impacting on an identified site or feature.				

An Ecological Assessment specialist study was conducted by AJH Lamprecht from EcoFocus Consulting (Pty) Ltd. Please see the findings below:

8.9. Ecological Site Sensitivity Map

The site sensitivity map below (see A3 sized map in the Appendices) illustrates the recommended ecological corridor as well as the water quality- and biodiversity buffer zones to be implemented throughout the assessment area. The acceptable prospecting areas are also indicated.

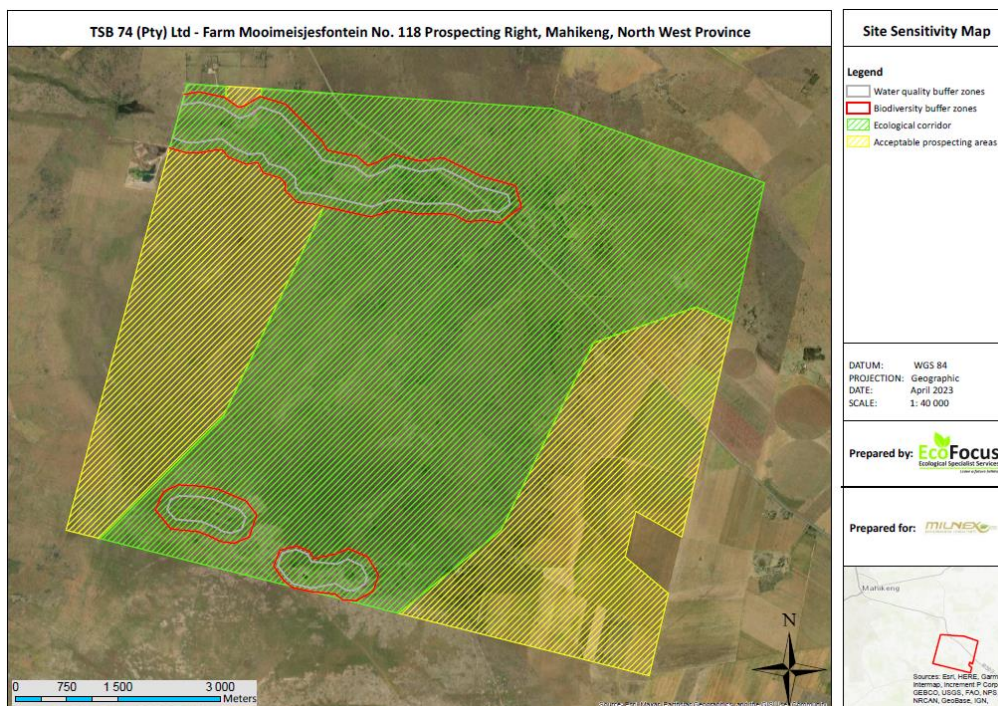


Figure 25: Site sensitivity map illustrating the recommended ecological corridor as well as the water quality- and biodiversity buffer zones to be implemented throughout the assessment area; the acceptable prospecting areas are also indicated

iii) SUMMARY OF THE POSITIVE AND NEGATIVE IMPLICATIONS AND RISKS OF THE PROPOSED ACTIVITY AND IDENTIFIED ALTERNATIVES

There are regional socio-economic benefits due to the Limestone (Ls) & Manganese Ore (Mn) being prospected in the North West province and greater knowledge is gained on the mineralogy of South Africa. All possible negative impacts and risks that have been identified in this report can be effectively mitigated and managed by implementing the mitigation measures as set out in the Environmental Management Programme (EMPr) attached in Part B. Significant adverse social environmental impacts are anticipated.

M. PROPOSED IMPACT MANAGEMENT OBJECTIVES AND THE IMPACT MANAGEMENT OUTCOMES FOR INCLUSION IN THE EMPR (Based on the assessment and where applicable the recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation)

Management objectives include:

- Ensure that the prospecting activity does not cause pollution to the environment or harm to persons.
- Minimise production of waste.
- All prospecting activities must be conducted in a manner that minimises noise impact, litter, environmental degradation and health hazards i.e. injuries.
- The mine must be kept neat and tidy during waste handling to prevent unsightliness and accidents.

Expected outcomes include:

- Minimum impacts on the environment as a result of prospecting
- Compliance with legislative requirements.
- Mine is neat and tidy and well managed.

FINAL PROPOSED ALTERNATIVES

(Provide an explanation for the final layout of the infrastructure and activities on the overall site as shown on the final site map together with the reasons why they are the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment)

This alternative asks the question, if there is not, from an environmental perspective, a more suitable location for the proposed activity. Due to the expected mineral resources, **TSB 74 (Pty) Ltd** would like to potentially prospect for Limestone (Ls) & Manganese Ore (Mn) near Mahikeng on various portions of the farm Mooimeisjesfontein 118, Registration Division: JO, North-West Province. The property is located approximately 23 km from Mahikeng. The proposed area is preferred therefore no other alternative are considered (i.e. to facilitate the movement of machinery, equipment, infrastructure).

N. ASPECTS FOR INCLUSION AS CONDITIONS OF AUTHORISATION.

Any aspects which have not formed part of the EMPr that must be made conditions of the Environmental Authorisation

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

O. DESCRIPTION OF ANY ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE. (Which relate to the assessment and mitigation measures proposed)

The uncertainties in results are mostly related to the availability of information, time available to gather the relevant information as well as the sometimes-subjective nature of the assessment methodology. If the authority feels that specialists' studies need to be conducted, such will be corresponded to the applicant.

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

Reasons why the activity should be authorized or not.

The option of not approving the activities will result in a significant loss of possible valuable minerals being exploited and all economic benefits will be lost. Considering that most of the impacts are rated as low, it is the opinion of the Environmental Assessment Practitioner that the Authorization may be granted

Q. CONDITIONS THAT MUST BE INCLUDED IN THE AUTHORISATION

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

The EMPr should be binding on all managers and contractors operating/utilizing the site.

Period for which the Environmental Authorisation is required.

For a minimum of 3 years.

R. UNDERTAKING

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

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

I, **Lizanne Esterhuizen** (EAP) herewith confirms

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

Signature of the environmental assessment practitioner:

Milnex CC

Name of company:

02/06/2023

Date:

S. FINANCIAL PROVISION

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

XXX

Calculations

It is planned that 300 pits will be dug (it may be less depending on the results) at an extent of 3m (length) x 2m (wide) x 2m (depth) in 24 Months

300 pits / 2 =	150 pits	Pits that will be dug per year
150 pits x 3m (length) x 2m (wide) =	900m ²	Total area to be disturbed square meters per year
900m ² / 10 000 =	0.09ha	Total area disturbed in hectares per year
0.09ha x 2 years =	0.18ha	Total area disturbed in hectares

Concurrent backfilling will take place in order to rehabilitate.

i) Explain how the aforesaid amount was derived.

The closure cost estimate provided above is aligned with the Financial Provision Regulations. The amount was calculated by Milnex CC.

Financial Guarantee

The financial guarantee for the rehabilitation for land disturbed by **TSB 74 (Pty) Ltd**, will be submitted to the department on request

Rehabilitation Fund

TSB 74 (Pty) Ltd will also make provision for rehabilitation during closure by establishing a rehabilitation trust.

ii) Motivation for the deviation.

Not applicable

T. OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

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:

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

The following impacts may be regarded as community impacts:

- Increased noise levels
- Potential water and soil pollution impacts.
- Potential loss of fauna and flora.
- Increased vehicle activity.

- Increased dust levels.
- Increase in water consumption and possible depletion of groundwater resources.
- Potential visual impacts.

Indirect socio-economic benefits are expected to be associated with the creation of employment.

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

According to the DFFE Screening Report the proposed area falls mostly within low Archaeological and Cultural Heritage Theme Sensitivity with a small area illustrated as High sensitivity. The proposed area falls mostly within Very High Paleontology Theme Sensitivity followed by Medium sensitivity. Please see map colour map under **Appendix 7**.

A Phase 1 Cultural Heritage Impact Assessment was conducted by Dr J A van Schalkwyk and a Palaeontological Impact Assessment was conducted by Elize Butler from Banzai Environmental. Please see the findings below:

Phase 1 Cultural Heritage Impact Assessment finding:

6.3 Site specific review

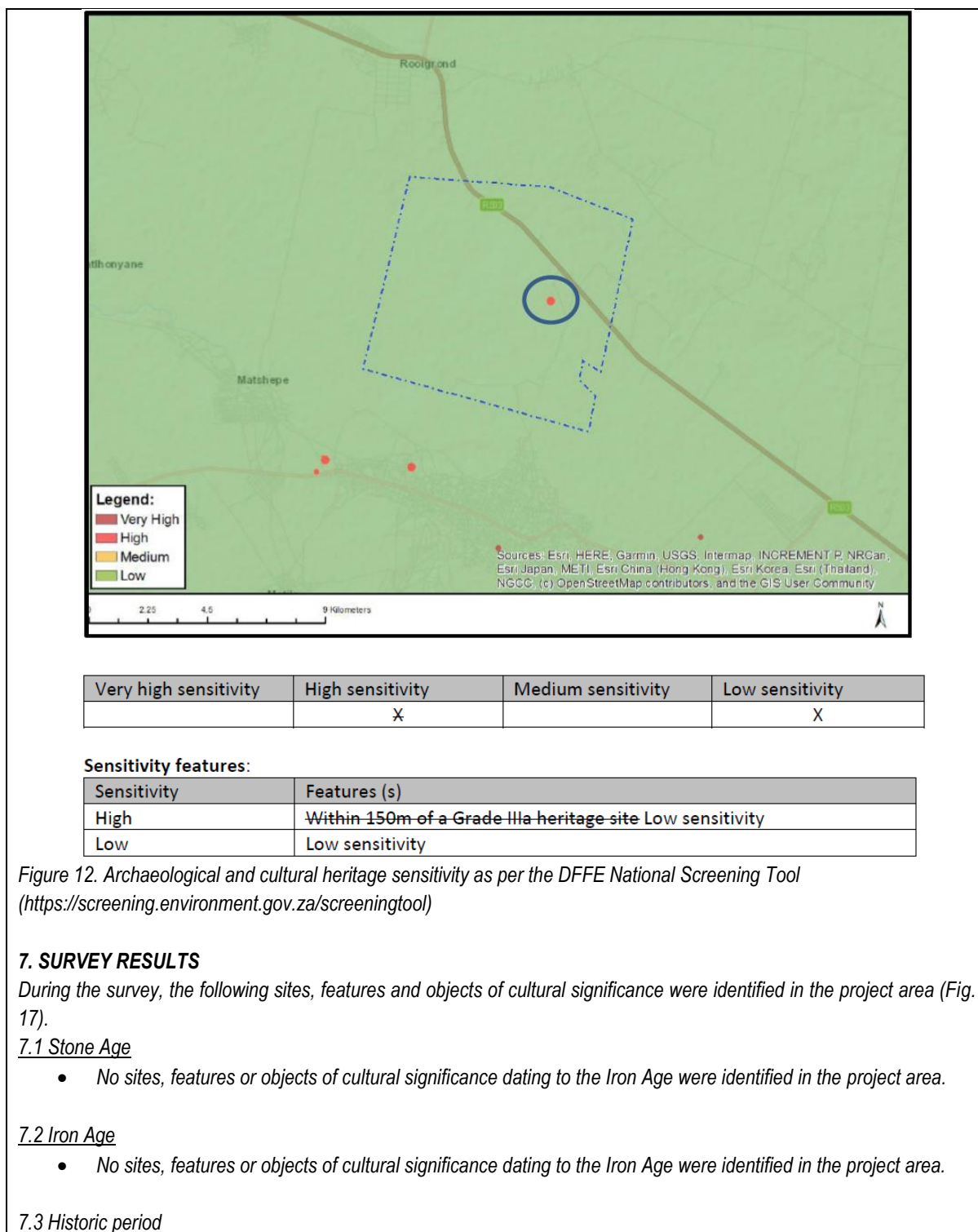
Based on a study of old maps and aerial photographs, it is clear that the whole of the project area of the farm was originally used for agricultural purposes. Developments that took place was the establishment of the farmstead as well as some regional roads that crosses the farm. This changes with the establishment of some limestone mining in various sections of the farm.

6.4 Site Sensitivity Verification

According to the DFFE National Screening Tool, the project area has a low sensitivity for archaeological and cultural heritage themes, as indicated on the map in Fig. 12 below. The results of the investigation have indicated that this is the case:

- *Section 5.2.1: Prefeasibility Assessment (also see Table 1 & Fig. 3);*
- *Section 5.2.2 Field Survey;*
- *Section 6.2: Cultural Landscape;*
- *Section 6.3: Site Specific Review (also see Fig. 7 – 11).*

- *It should be noted that the site circled in blue on the Screening map below is wrong as it forms part of a cluster of sites located in Mpumalanga Province (SAHRA Heritage Sites for SA: <https://sahris.sahra.org.za/allsitesfinder>). It's location here is probably the result of a typographical error when the coordinates were entered.*
 - *Consequently, based on the above explanation, the sensitivity as per the DFFE Screening Tool is adapted to be of Low Sensitivity.*





NHRA Category		Graves, Cemeteries and Burial Grounds - Section 36
7.3.1. Type: Burial site. Farm: Mooimeisjesfontein 118JO Coordinates: S 25,98558; E 25,85374		
Description: A small informal burial site with two or three graves marked only with stone cairns. The site is very overgrown with grass and weeds, which makes it difficult to determine the full extent of the site.		
Significance of site/feature	Generally protected 4A: High/medium significance.	
Reasoned opinion: Burial sites are viewed as having high emotional and sentimental value. However, mitigation is possible if proper procedures have been followed.		
References: -		
		

Figure 13. Overview of the burial site and one of the graves



NHRA Category		Graves, Cemeteries and Burial Grounds - Section 36
7.3.2. Type: Burial site. Farm: Mooimeisjesfontein 118JO. Coordinates: S 25,97102; E 25,85209		
Description: A formal burial site with five graves with headstones, as well as a number that are only marked with stone cairns. The marked graves are all members of the Holder Family, and it is taken that they were former landowners.		
Significance of site/feature	Generally protected 4A: High/medium significance.	
Reasoned opinion: Burial sites are viewed as having high emotional and sentimental value. However, mitigation is possible if proper procedures have been followed.		
References: -		
		

Figure 14. Views over the burial site

NHRA Category	Structures older than 60 years - Section 34
<p>7.3.3. Type: Farm: Mooimeisjesfontein 118JO. Coordinates: S 25,99051; E 25,82548</p> <p>7.3.4. Type: Farm: Mooimeisjesfontein 118JO. Coordinates: S 25,99425; E 25,82394</p> <p>7.3.5. Type: Farm: Mooimeisjesfontein 118JO. Coordinates: S 25,99586; E 25,81191</p> <p>7.3.6. Type: Farm: Mooimeisjesfontein 118JO. Coordinates: S 25,98652; E 25,80434</p> <p>7.3.7. Type: Farm: Mooimeisjesfontein 118JO. Coordinates: S 25,98499; E 25,81813</p> <p>7.3.8. Type: Farm: Mooimeisjesfontein 118JO. Coordinates: S 26,01382; E 25,84931</p> <p>7.3.9. Type: Farm: Mooimeisjesfontein 118JO. Coordinates: S 25,97003; E 25,85009</p>	
<p>Description: Various structures, all either former houses or farming related features. Most of the structures have been stripped of all recyclable material and it is only the walls that remains. Based on the materials used for building of the structures it can be determined that they are not very old. This is confirmed by a study of old maps and aerial photographs which indicates that those structures that can be seen are not very old, dating to the last 30 to 40 years.</p>	
Significance of site/feature	Generally protected 4B: Medium significance - Should be recorded before destruction.
<p>Reasoned opinion: It represents the remains of a way of life that is becoming rare as farming areas are increasingly being abandoned and people moving to settle in adjacent towns.</p>	
<p>References: -</p>	



7.3.3



7.3.4



7.3.4



7.3.5



7.3.5



7.3.6



7.3.6



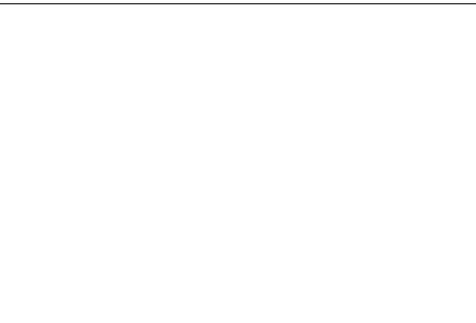
7.3.7



7.3.7



7.3.8



7.3.9



Figure 15. Views over the old structures

NHRA Category	Structures older than 60 years - Section 34
7.3.10. Type: Limestone mine Farm: Mooimeisjesfontein 118JO. Coordinates: S 26,01715; E 25,82145	
Description: Remains of an old lime mining operation. A few ruined structures occur adjacent to a large and deep excavation. A number of smaller lime excavation sites occur all over the area. These are signified by shallow excavations and rock dumps.	
Significance of site/feature	Generally protected 4B: Medium significance - Should be recorded before destruction.
Reasoned opinion: It represents the remains of a way of life that is becoming rare as farming areas are increasingly being abandoned and people moving to settle in adjacent towns.	
References: -	



Figure 16. Views over the old lime quarry and some of the smaller activities

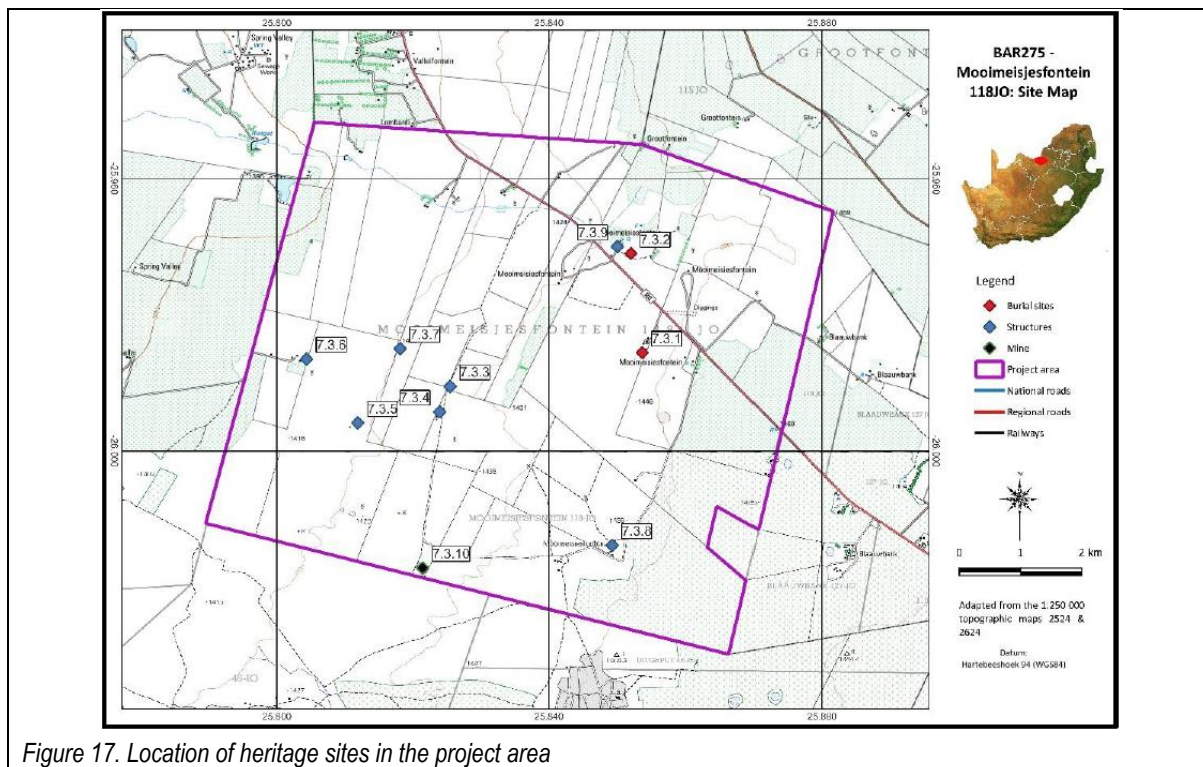


Figure 17. Location of heritage sites in the project area

Palaeontological impact assessment findings:

5 GEOLOGICAL AND PALAEOLOGICAL HISTORY

The proposed Prospecting Right Application is depicted on the Mafikeng 2524 (1991) and 2624 Vryburg (1993) Geological map (Council of Geoscience, Pretoria) (Figure 3, Table 2-3). The study area is underlain by Quaternary superficial deposits that includes Quaternary alluvium (yellow single bird figure), Quaternary sands (Qs, yellow), and Tertiary to Quaternary calcretes (T-Qc, dark yellow). The largest portion of the development is underlain by the Oaktree Formation (Malmani Subgroup, Chuniespoort Group and Transvaal Supergroup), while a very small portion in the west is underlain by the Black Reef Formation (Chuniespoort Group, Transvaal Supergroup). Updated geology (Figure 4) indicates that the study area is mainly underlain by the Malmani Group, with a small portion in the west underlain by the Black Reef Formation and the southern and eastern portion is underlain by alluvium, colluvium, elluvium and gravel. According to the South African Heritage Resources Information System (SAHRIS, Figure 5, Table 4), the Palaeontological Sensitivity of the Quaternary alluvium is Low (blue), that of the Quaternary sands and Calcrete is moderate (green) while that of the Oaktree and Black Reef Formations are very High. The National Environmental Web-based Screening Tool (Figure 6) also indicates that the Palaeontological Sensitivity of the development is Very High (dark red).

The unconsolidated Quaternary sands present in the Prospecting Right Application most probably does not contain any fossils. The late Cretaceous to Recent Kalahari Group has been reviewed by the following authors: Thomas (1981), Dingle et al. (1983), Thomas & Shaw 1991, Haddon (2000) and Partridge et al. 2006. The Quaternary Gordonina Formation (Kalahari Group) are dated as Late Pliocene/Early Pleistocene to Recent times by the Middle to Later Stone Age stone tools recovered from them (Dingle et al (1983). The fossil assemblages of the Quaternary are generally Low in diversity and occur over a wide range and mostly has a Moderate Paleontologically Sensitivity. These fossils represent terrestrial plants and animals with a close resemblance to living forms. Fossil assemblages include bivalves, diatoms, gastropod shells, ostracods, and trace fossils. The palaeontology of the Quaternary superficial deposits has been relatively neglected in the past. Late Cenozoic calcrete may comprise of bones, horn corns as well as mammalian teeth. Tortoise remains have also been uncovered as well as trace fossils which includes termite and insect's burrows and mammalian trackways. Amphibian and crocodile skeletons have been uncovered where the depositional settings in the past were wetter.

The Quaternary deposits are very important because palaeoclimatic changes are reflected in the different geological formations (Hunter et al., 2006). During the climate fluctuations in the Cenozoic Era most geomorphologic features in southern Africa where formed (Maud, 2012). Barnosky (2005) indicated that various warming and cooling events occurred in the Cenozoic but states that climatic changes during the Quaternary Period, specifically the last 1.8 Ma, were the most

drastic climate changes relative to all climate variations in the past. Climate variations that occurred in the Quaternary Period were both drier and wetter than the present and resulted in changes in river flow patterns, sedimentation processes and vegetation variation (Tooth et al., 2004).

The Late Tertiary to Quaternary calcretes (T-Qc) may be stratigraphically comparable to the Pleistocene or Late Pliocene Mokalanen Formation of the Kalahari Group (Figure 7), while others may be younger (Partridge et al. 2006, Moen 2007). These sediments include layers of nodular or structureless calcretes overlying the Namaqua-Natal Province basement rocks.

The proposed Prospecting Right Application is located in the Transvaal Basin with the Black Reef Formation the oldest deposit in the study area. The Oaktree Formation (Malmani Subgroup) overlies the Black Reef Formation. This unit is an intermediate from siliciclastic sedimentation to platform carbonates and comprise of locally developed quartzites, 10–200 m of carbonaceous shales, and stromatolitic dolomites. Marin et al (1998) dated the tuff layer in the upper Oaktree Formation at 2585 Ma.

The Malmani Subgroup carbonates of the Transvaal Basin (Figure 7) comprise of an assortment of stromatolites (microbial laminates), ranging from supratidal mats to intertidal columns and large subtidal domes (Eriksson et al. 2006). Stromatolites are layered mounds, columns and sheet-like sedimentary rocks. These structures were originally formed by the growth of layer upon layer of cyanobacteria, a single-celled photosynthesizing microbe. Cyanobacteria are prokaryotic cells (simplest form of modern carbon-bases life). Stromatolites are first found in Precambrian rocks and are known as the earliest known fossils. These algae photosynthesised in the low oxygen atmosphere and deposited layer upon layer of calcium sulphate, magnesium sulphate and calcium carbonate as well as other compounds to form these domes. Researchers have examined and classified the stromatolite structures but seldomly find preserved algal cells. The oxygen atmosphere that we depend on today was generated by numerous cyanobacteria photosynthesizing during the Archaean and Proterozoic Era.

Stromatolites and oolites from the Transvaal Supergroup have been described by various authors (Eriksson and Altermann, 1998). Detailed descriptions of South African Archaean stromatolites are available in the literature (Altermann, 2001; Buick, 2001; and Schopf, 2006). The Malmani stromatolites literature includes articles by Truswell and Eriksson (1972, 1973, 1975), Eriksson and MacGregor (1981), Eriksson and Altermann (1998), Sumner (2000), Schopf (2006).

The Malmani Subgroup succession is about 2 km-thick and consists of a series of formations of oolitic and stromatolitic carbonates (limestones and dolomites), black carbonaceous shales and minor secondary cherts. The Malmani Dolomites also consist of historic lime mines, and palaeocave fossil deposits. Dolomite (limestone rock) forms in warm, shallow seas from slow gathering remainders of marine microorganisms and fine-grained sediment. Dolomites of the Malmani Subgroup has a higher magnesium content than other limestones. These materials contain high levels of calcium carbonate and are often referred to as carbonates.

Currently very few palaeontologists study stromatolites but geologists find the stromatolites interesting because they reveal the change from a reducing environment (that is an oxygen-poor) to an oxidizing environment (oxygen-rich). This transition is known as the Great Oxygen Event (Eroglu et al., 2017).

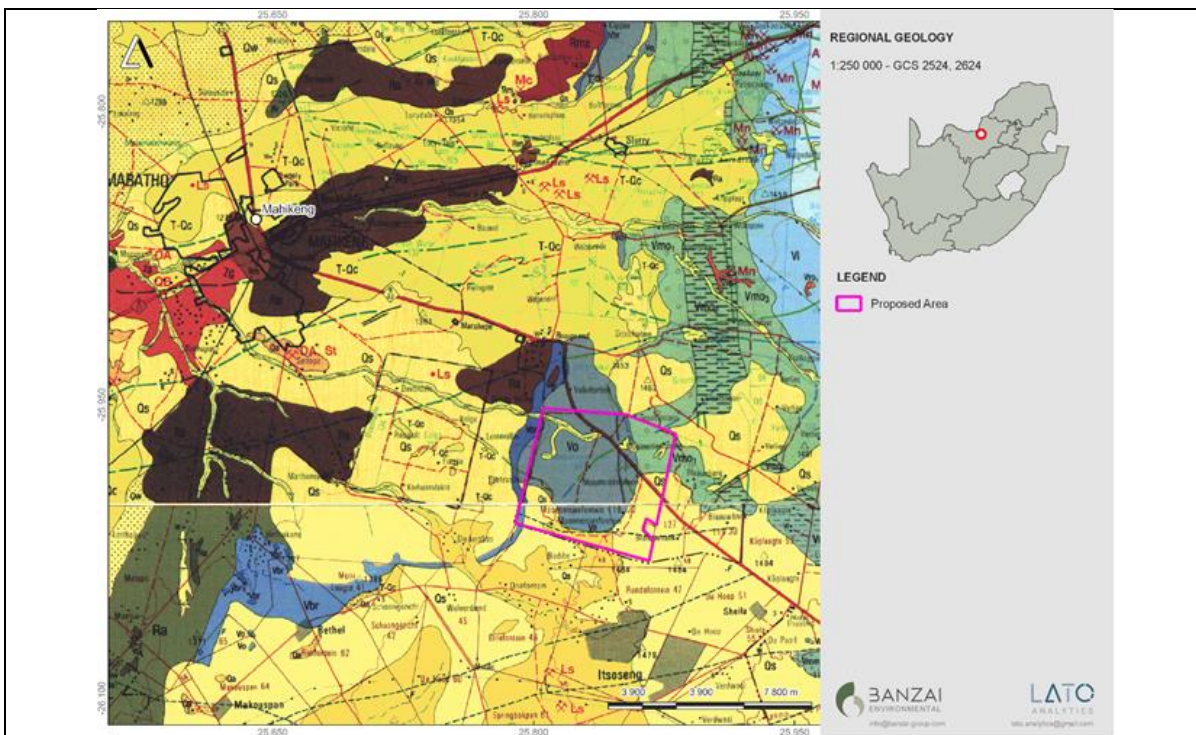


Figure 1: Extract of the 1:250 000 Prieska 2922 (1995) Geological map (Council of Geoscience, Pretoria) indicating the proposed development in pink.

The proposed development is underlain by a portion of Quaternary superficial deposits while the largest portion is underlain by the Transvaal Supergroup.

Table 2: Legend of the 1:250 000 Mafikeng 2524 (1991) Geological map (Council of Geoscience, Pretoria) Relevant lithology is indicated in red

GROEP GROUP	SUBGROEP SUBGROUP	FORMASIE FORMATION				
KWATERNÊR QUATERNARY	KALAHARI	Gordonia	~	Riviersand, alluvium River sand, alluvium		
			Qs	Oppervlaksettings Superficial deposits		
			Qw	Windgewaaide, deels herbewerkte sand; kolluvium Wind-blown, partially reworked sand; colluvium		
			Qg	Windgewaaide sand Wind-blown sand		
			Qsi	Silikaryke sandsteen, rolsteenkonglomeraat, grintsteen, silkrete Siliceous sandstone, pebble conglomerate, gritstone, silcrete		
			Qa	Rivierterrasgruis River terrace gravel		
			T-Oc	Kalkreëte Calcrete		
TERSIER TERTIARY	CHUNIESPOORT	Malmani	Frisko	Vf		
			Eccles	Ve		
			Lyttelton	Vi		
			Monte Christo	Vmo ₃		
				Vmo ₂		
				Vmo ₁		
				Vmo		
			Oaktree	Vo		
			Swartrif Black Reef	Vbr		
			CURUMAN	Kuruman Member	Vc	
					Vv	
Vw						
VRYBURG	Vryburg Formasie Vryburg Formation	Vb	Chertarm dolomiet; skalie (); chert (); Chert-poor dolomite; shale (); chert ()			
		Vbr	Kwartsiet, skalie; basale konglomeraat Quartzite, shale; basal conglomerate			
CAMPBELL GROEP CAMPBELL GROUP	CAMPBELL GROEP CAMPBELL GROUP	Vb	Chertarm dolomiet; skalie (); chert (); Chert-poor dolomite; shale (); chert ()			
		Vbr	Kwartsiet, skalie; basale konglomeraat Quartzite, shale; basal conglomerate			

Table 3: Legend of the 1:250 000 Vryburg 2624 (19931) Geological map (Council of Geoscience, Pretoria) Relevant lithology is indicated in red

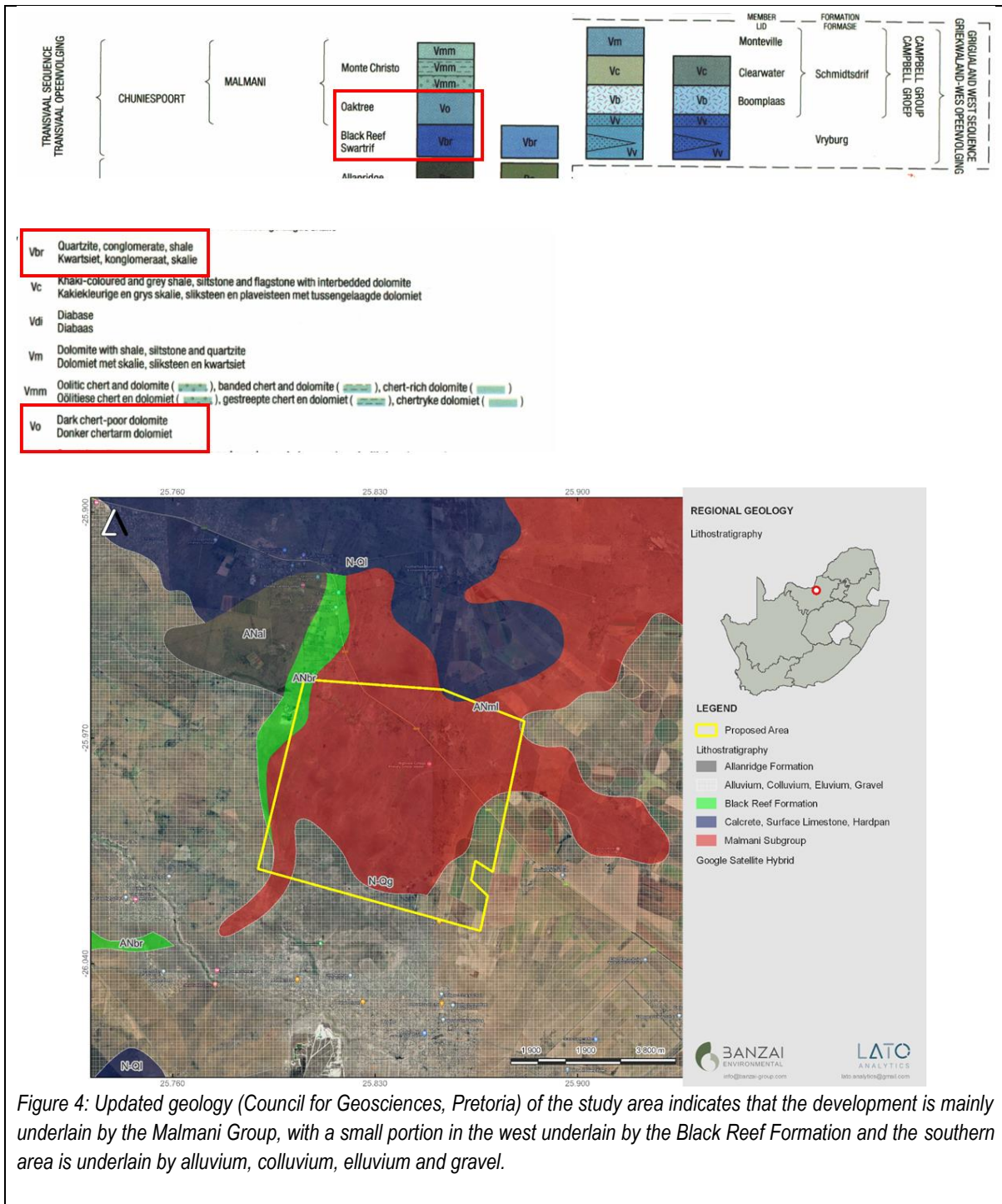


Figure 4: Updated geology (Council for Geosciences, Pretoria) of the study area indicates that the development is mainly underlain by the Malmani Group, with a small portion in the west underlain by the Black Reef Formation and the southern area is underlain by alluvium, colluvium, elluvium and gravel.

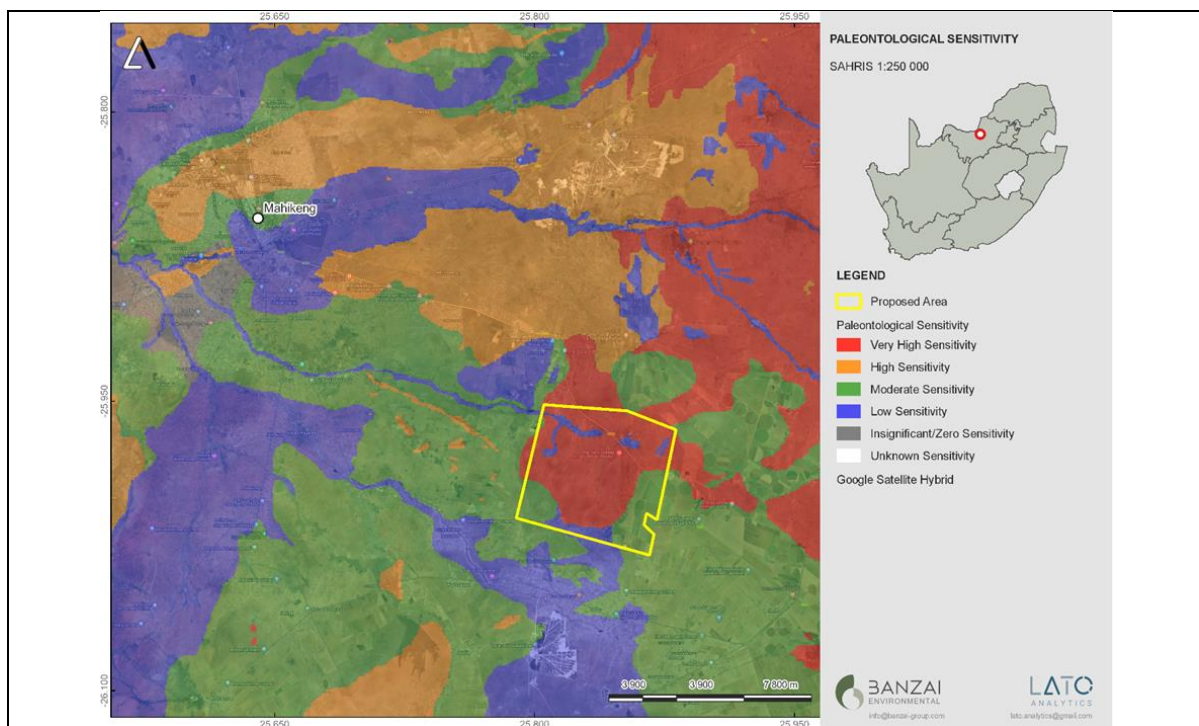


Figure 5: Extract of the 1 in 250 000 SAHRIS PalaeoMap (Council of Geosciences) indicating the Palaeontological Sensitivity of the proposed development.

According to the SAHRIS Palaeosensitivity map (Figure 5) the proposed development is underlain by sediments with a Very High (red), Moderate (green), and Low (blue) Palaeontological Significance.

Table 4: SAHRIS Palaeosensitivity ratings table.

The relevant sensitivities are highlighted

Colour	Sensitivity	Required Action
RED	VERY HIGH	Field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	Desktop study is required and based on the outcome of the desktop study; a field assessment is likely
GREEN	MODERATE	Desktop study is required
BLUE	LOW	No palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	No palaeontological studies are required
WHITE/CLEAR	UNKNOWN	These areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

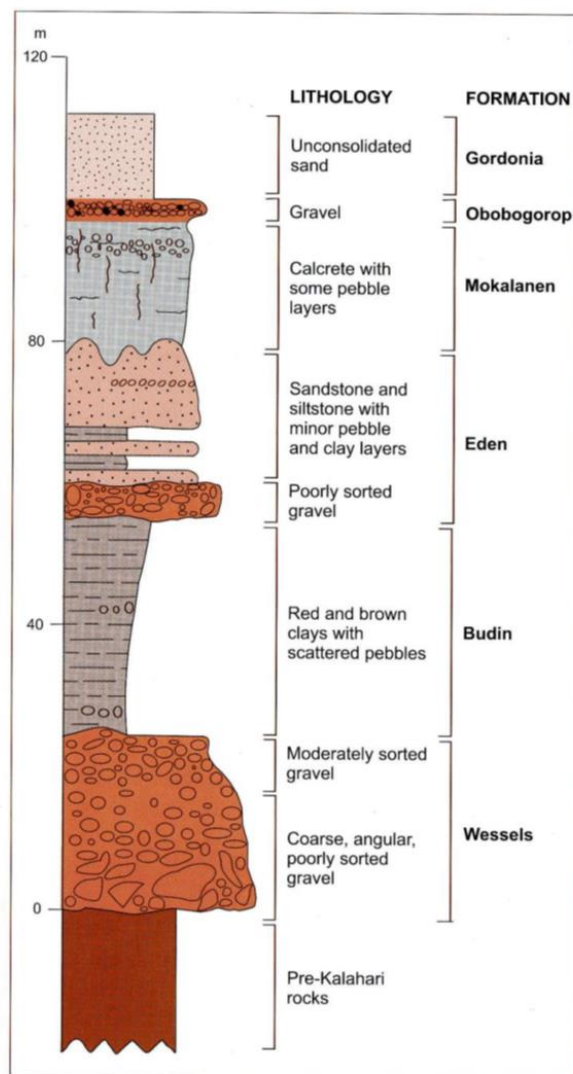


Figure 7: Stratigraphy of the Kalahari Group (Image taken from Partridge et al., 2006). Calcretes and aeolian sands of the Gordonia Formation possibly corresponds to the Mokalanen Formation

9 SITE VISIT

A site-specific field survey of the development footprint was conducted on foot on and vehicle on 27 April 2023. During the site investigation no fossiliferous outcrop was detected. However, numerous dolomite outcrops were identified.



Figure 8: General view of the proposed development indicates a low topography.



Figure 9: Dolomite outcrops are scattered throughout the study area.

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

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

From a local perspective, the prospecting of Limestone (Ls) & Manganese Ore (Mn) near Mahikeng on various portions of the farm Mooimeisjesfontein 118, Registration Division: JO, North-West Province is preferred because the geological formation supports the possibility that the minerals applied for could be found on the proposed area.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1) Draft environmental management programme.

A) DETAILS OF THE EAP

- i) The EAP who prepared the report
- ii) Expertise of the EAP

Name of Practitioner	Qualifications	Contact details
Ms. Lizanne Esterhuizen	Honours Degree in Environmental Science (refer to Appendix 1)	Tel No.: (018) 011 1925 Fax No. : (053) 963 2009 e-mail address: lizanne@milnex-sa.co.za
Mr. Christiaan Baron	Master's Degree in Environmental Management (M.ENV.MAN) (refer to Appendix 1)	Tel No.: (018) 011 1925 Fax No.: (053) 963 2009 e-mail address: christiaan@milnex-sa.co.za
Mr. Andile Grant Nxumalo	Honours Degree in Environmental Science (refer to Appendix 1)	Tel No.: (018) 011 1925 Fax No. : (053) 963 2009 e-mail address: andile.grant@milnex-sa.co.za

B) DESCRIPTION OF THE ASPECTS OF THE ACTIVITY (Confirm that the requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section (1)(h) herein as required).

It is hereby confirmed that the requirements to describe the aspects of the activity that are required by the EMP is already included in Part A, section 1(h).

C) COMPOSITE MAP

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

Refer to Locality Map, attached as **Appendix 3**.

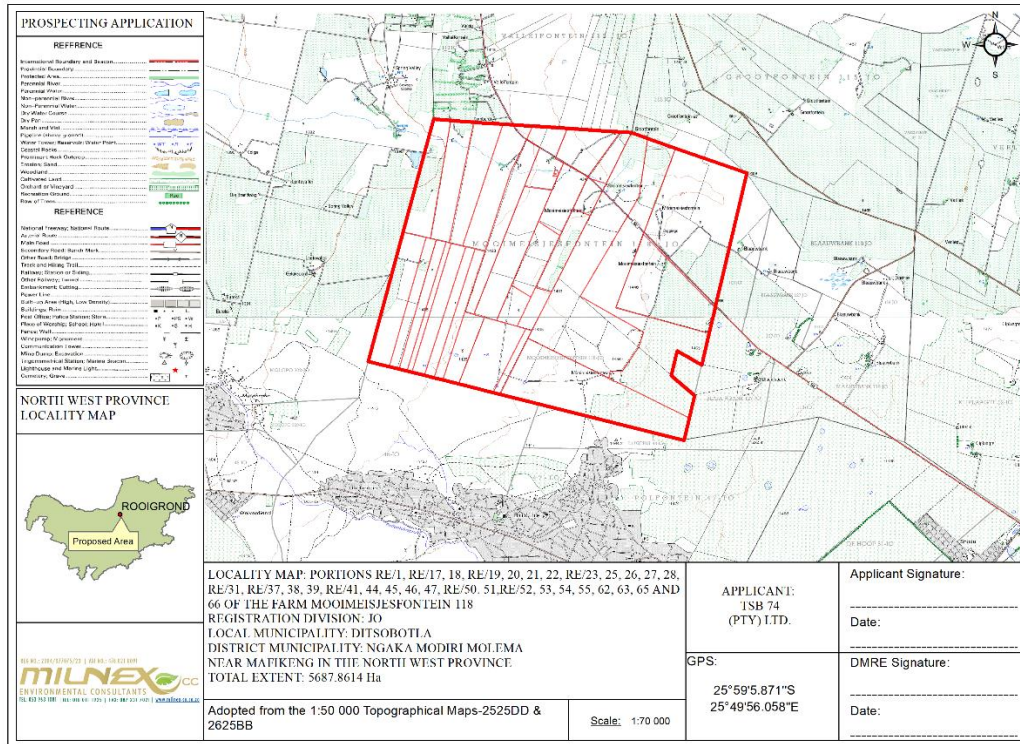


Figure 24: Locality Map

A Phase 1 Cultural Heritage Impact Assessment was conducted by Dr J A van Schalkwyk Please see the findings below:

Identified sites

During the survey the following sites, features or objects of cultural significance were identified.

- 7.3.1: An informal burial site with two or three graves marked only with stone cairns. The site is much overgrown with grass and trees.
- 7.3.2: A formal burial site with five graves with headstones, as well as a number that are only marked with stone cairns. The marked graves are all members of the Holder Family, and it is taken that they were former landowners.
- 7.3.3 – 7.3.9: Various structures, all either former houses or farming related features. Most of the structures have been stripped of all recyclable material and it is only the walls that remains. Based on the materials used for building of the structures it can be determined that they are not very old. This is confirmed by a study of old maps and aerial photographs which indicates that those structures that can be seen are not very old, dating to the last 30 to 40 years.
- 7.3.10: Remains of an old lime mining operation. A few ruined structures occur adjacent to a large and deep excavation. A number of smaller lime excavation sites occur all over the area. These are signified by shallow excavations and rock dumps.

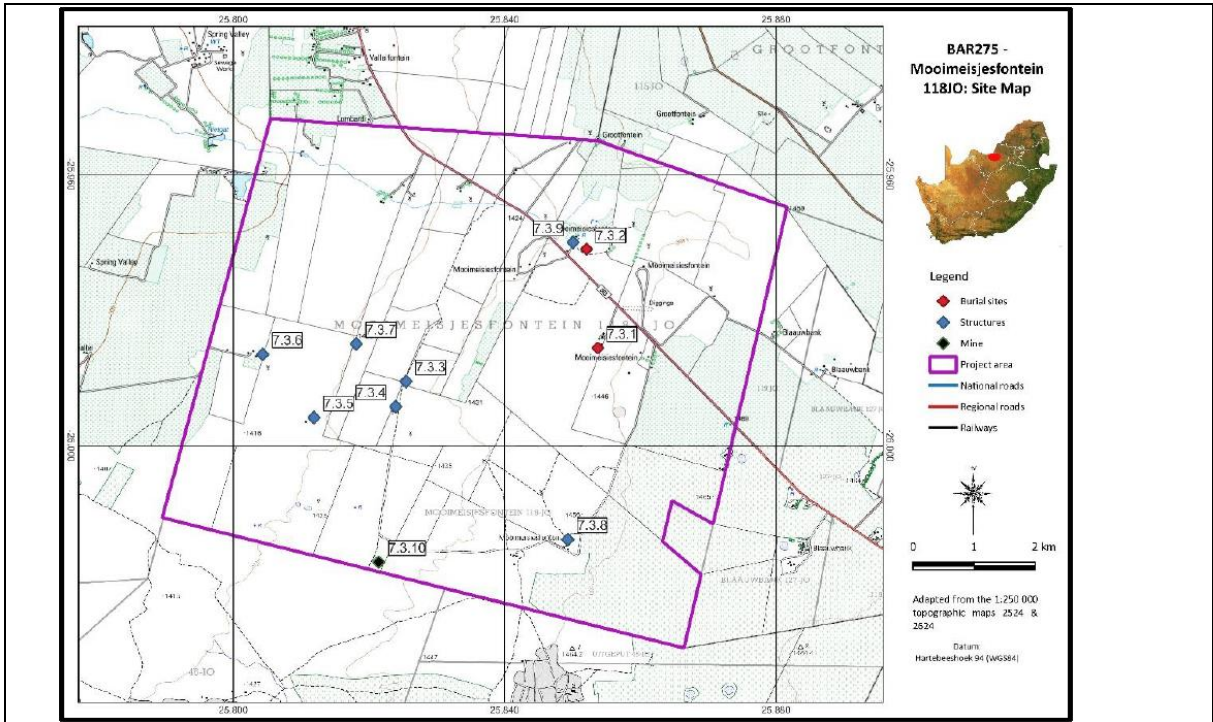


Figure 17. Location of heritage sites in the project area

Impact assessment and proposed mitigation measures

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

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

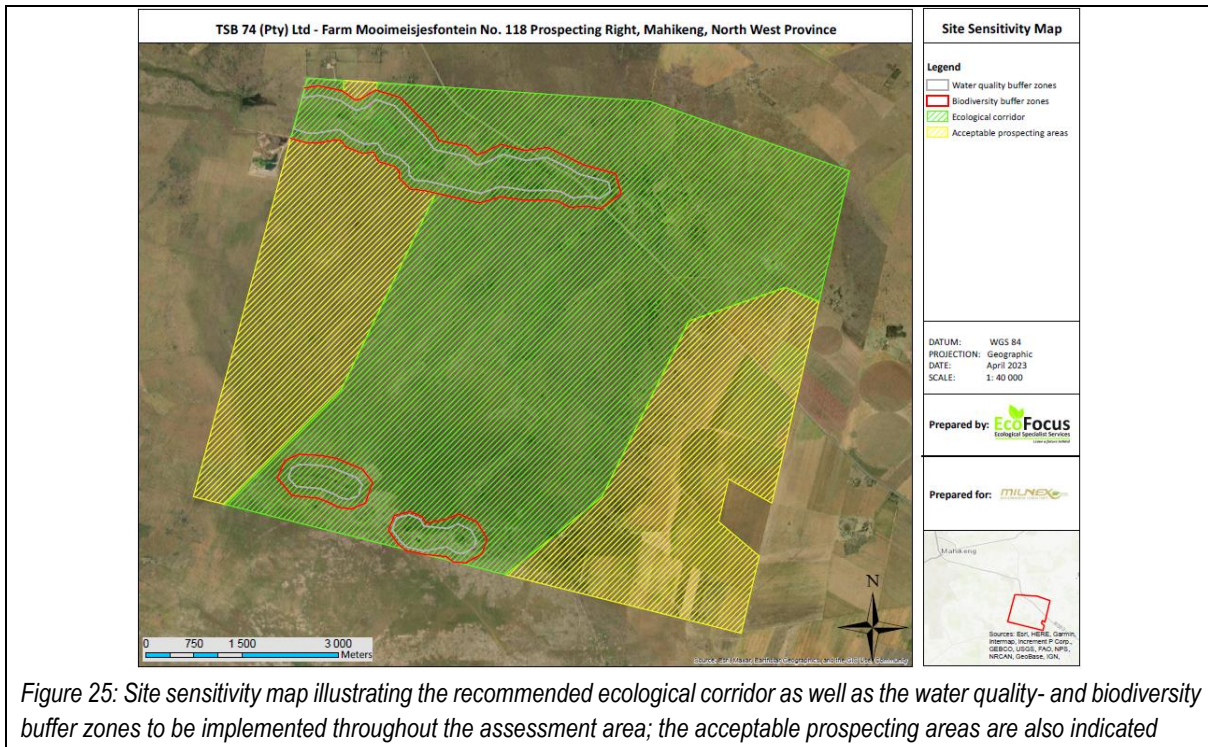
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.3.3 – 7.3.9	Structures older than 60 years	Section 34	Generally protected 4B: Medium significance	Low (14) Low (14)
Mitigation: 5) No further action required: This is applicable only where sites or features have been rated to be of such low significance that it does not warrant further documentation, as it is viewed to be fully documented after inclusion in this report.				

Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.3.10	Structures older than 60 years	Section 34	Generally protected 4B: Medium significance	Medium (40) Low (14)
Mitigation: (2) Archaeological investigation: This option should be implemented when it is impossible to avoid impacting on an identified site or feature.				

An Ecological Assessment specialist study was conducted by AJH Lamprecht from EcoFocus Consulting (Pty) Ltd. Please see the findings below:

8.9. Ecological Site Sensitivity Map

The site sensitivity map below (see A3 sized map in the Appendices) illustrates the recommended ecological corridor as well as the water quality- and biodiversity buffer zones to be implemented throughout the assessment area. The acceptable prospecting areas are also indicated.



D) DESCRIPTION OF IMPACT MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS

- i. **Determination of closure objectives.** (ensure that the closure objectives are informed by the type of environment described in 2.4 herein)

Closure objectives for the Prospecting Right will aim to ensure that the residual post-closure impacts be minimized and be acceptable to relevant parties. To achieve these closure objectives, the following will be implemented:

- All prospecting related infrastructure, foundations and concrete areas will be decommissioned, removed from the site and appropriately disposed of. Reclaimable structures such as metal, electrical installations or equipment will be sold for re-use or as scrap.
- All disturbed areas within the site not already vegetated will be re-vegetated with appropriate indigenous, ecologically adapted species appropriate to the area and the final land use as soon as possible after operation ceases. Progress of vegetation growth/establishment, stability and drainage/erosion will be monitored and, in the event of adverse trends being identified, corrective measures will be implemented.
- Vegetation monitoring will consider, inter alia, the establishment of perennial ground cover and infestation by alien invasive plant species. The encroachment of indigenous vegetation into the area will be used as an indication of a stable, self-sustaining vegetation cover with little risk of retrogressing to a situation where are and water pollution may occur.
 - Final landforms must be resilient to perturbation and also be self-sustaining to obviate/limit further/ongoing interventions and maintenance by **TSB 74 (Pty) Ltd**. The remaining impacts be of an acceptable nature with minimal deterioration over time.
 - The final outcome of the mine site rehabilitation would be productive systems, that will ensure the area will be returned to its natural state as far as possible.
 - Environmental and human quality of life, including health and safety requirements in general, would not be compromised; and
 - Closure is achieved in an efficient and cost-effective manner as possible and with minimum socioeconomic changes.

The above goal is underpinned by more specific objectives listed below.

1. Upfront planning/development

To provide overall guidance and direction to closure planning and/or the implementation of progressive closure measures over the remaining over the prospecting life.

2. Physical stability

To ensure that surface infrastructure and prospecting residue and/or disturbances that are present at processing plant decommissioning will be removed and/or stabilised in a manner that these will not compromise post-closure land use and be sustainable long-term landforms.

- Closure, removal and disposal of all surface infrastructure that has no beneficial post-closure use.
- Shaping and vegetating the remaining earth embankments, trenches, etc. to stabilise slopes and integrate with surrounding topography.

3. Environmental quality

To ensure that local environmental quality is not adversely affected by possible physical effects arising from prospecting operations and the prospecting site after closure. This will be achieved by:

- Avoiding and/or limiting the following during prospecting operations which could result in adverse effects that could not be readily addressed and/or mitigated at mine closure.
 - Dust fall-out areas surrounding the prospecting site.
 - Wash-off and/or mobilisation of chemically contaminated soils and sediments from the prospecting site that could have long term adverse effects on local aquatic health and/or other water uses.
 - Possible shallow groundwater contamination adversely affecting the quality of the local water resource and its beneficial use.
- Limiting the potential for dust generation on the rehabilitated prospecting site that could cause nuisance and/or health effects to surrounding landowners;
- Limiting the possible adverse water quality and quantity effects arising from the rehabilitated prospecting site to ensure that long term beneficial use of local resources is not compromised;
- Conducting soil clean-up/remediation to ensure that the planned land use could be implemented and maintained;

4. Health and safety

To limit the possible health and safety treats due to terrain hazards to humans and animals utilizing the rehabilitated prospecting site after closure by:

- Demonstrating through upfront soil testing that any resultant inorganic and organic pollution present on the site is acceptable;
- Removal of potential contaminants such as hydrocarbons and chemicals off site;
- Shaping of embankments and trenches to safe slopes and reintegrating of these into surrounding topography.
- Ensuring that the environmental quality as reflected above is achieved.

5. Land capability / land use

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

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

6. Aesthetic quality

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

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

7. Landscape viability

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

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

8. Biodiversity

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

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

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

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

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

XXX

Calculations

It is planned that 300 pits will be dug (it may be less depending on the results) at an extent of 3m (length) x 2m (wide) x 2m (depth) in 24 Months

300 pits / 2 =	150 pits	Pits that will be dug per year
150 pits x 3m (length) x 2m (wide) =	900m ²	Total area to be disturbed square meters per year
900m ² / 10 000 =	0.09ha	Total area disturbed in hectares per year
0.09ha x 2 years =	0.18ha	Total area disturbed in hectares

Concurrent backfilling will take place in order to rehabilitate.

- (a) **Confirm that the financial provision will be provided as determined.**

Financial Guarantee

The financial guarantee for the rehabilitation for land disturbed by **TSB 74 (Pty) Ltd** will be submitted

Rehabilitation Fund

TSB 74 (Pty) Ltd will also make provision for rehabilitation during closure by establishing a rehabilitation trust.

E) IMPACTS TO BE MITIGATED IN THEIR RESPECTIVE PHASES

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

ACTIVITIES (E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc E.g. For mining,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	PHASE (of operation in which activity will take place. State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	SIZE AND SCALE of disturbance (volumes, tonnages and hectares or m ²)	MITIGATION MEASURES (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:- Upon cessation of the individual activity Or. Upon the cessation of mining, bulk sampling or prospecting as the case may be.
Clearance of vegetation	- (construction and operation phase)	5687.8614 ha - 300 pits will be dug at an extent of 3m (length) x 2m (wide) x 2m (depth) Concurrent backfilling will take place in order to rehabilitate.	<ol style="list-style-type: none"> 1. Site clearing must take place in a phased manner, as and when required. 2. Areas which are not to be prospected within two months must not be cleared to reduce erosion risks. 3. The area to be cleared must be clearly demarcated and this footprint strictly maintained. 4. Spoil that is removed from the site must be removed to an approved spoil site or a licensed landfill site. 5. The necessary silt fences and erosion control measures must be implemented in areas where these risks are more prevalent. 	Compliance with Duty of Care as detailed within NEMA	
Construction of roads (if any)	Pitting - (construction and operation phase)	5687.8614 ha - 300 pits will be dug at an extent of 3m (length)	1. Planning of access routes to the site for construction/prospecting purposes shall be done in conjunction with the Contractor and the	Compliance with Duty of Care as detailed within NEMA	Duration of operations on the prospecting activities.

		<p>x 2m (wide) x 2m (depth)</p> <p>Concurrent backfilling will take place in order to rehabilitate.</p>	<p>Landowner. All agreements reached should be documented and no verbal agreements should be made. The Contractor shall clearly mark all access roads. Roads not to be used shall be marked with a "NO ENTRY for prospecting vehicles" sign.</p> <ol style="list-style-type: none"> 2. Construction routes and required access roads must be clearly defined. 3. Damping down of the un-surfaced roads must be implemented to reduce dust and nuisance. 4. Soils compacted by construction/prospecting activities shall be deep ripped to loosen compacted layers and re-graded to even running levels. 5. The contractor must ensure that damage caused by related traffic from a gravel road is repaired continuously. The costs associated with the repair must be borne by the contractor; 6. Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis and ensuring that vehicles used to transport the gravel are fitted with tarpaulins or covers; 7. All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits. 		
<p>Prospecting without bulk sampling for Limestone (Ls) & Manganese Ore (Mn) – Soils and geology</p>	<p>Pitting - (construction and operation phase)</p>	<p>5687.8614 ha - 300 pits will be dug at an extent of 3m (length) x 2m (wide) x 2m (depth)</p> <p>Concurrent backfilling will take</p>	<ol style="list-style-type: none"> 1. The Contractor should, prior to the commencement of earthworks determine the average depth of topsoil (If topsoil exists), and agree on this with the ECO. The full depth of topsoil should be stripped from areas affected by construction and related activities prior to the commencement of major earthworks. This should include the building footprints, working areas and storage areas. Topsoil must be 	<p>Compliance with Duty of Care as detailed within NEMA</p>	<p>Duration of operations on the mine</p>

		place in order to rehabilitate.	<p>reused where possible to rehabilitate disturbed areas.</p> <ol style="list-style-type: none"> 2. Care must be taken not to mix topsoil and subsoil or any other material, during stripping. 3. The topsoil must be conserved on site in and around the pit/trench area. 4. Subsoil and overburden in the prospecting area should be stockpiled separately to be returned for backfilling in the correct soil horizon order. 5. If stockpiles are exposed to windy conditions or heavy rain, they should be covered either by vegetation or geofabric, depending on the duration of the project. Stockpiles may further be protected by the construction of berms, trenches or low brick walls around their bases. 6. Stockpiles should be kept clear of weeds and alien vegetation growth by regular weeding. 7. Where contamination of soil is expected, analysis must be done prior to disposal of soil to determine the appropriate disposal route. Proof from an approved waste disposal site where contaminated soils are dumped if and when a spillage/leakage occurs should be attained and given to the project manager. 8. The impact on the geology will be permanent. There is no mitigation measure. 		
Prospecting without bulk sampling for Limestone (Ls) & Manganese Ore (Mn)	Pitting - (construction and operation phase)	<p>5687.8614 ha - 300 pits will be dug at an extent of 3m (length) x 2m (wide) x 2m (depth)</p> <p>Concurrent backfilling will take place in order to rehabilitate.</p>	<ol style="list-style-type: none"> 1. The prospecting activities must aim to adhere to the relevant noise regulations and limit noise to within standard working hours in order to reduce disturbance of dwellings in close proximity to the development. 2. Mine, pans, workshops and other noisy fixed facilities should be located well away from noise sensitive areas. Once the proposed final layouts are made available by the Contractor(s), the 	Compliance with Duty of Care as detailed within NEMA	Duration of operations on the prospecting area

			<p>sites must be evaluated in detail and specific measures designed in to the system.</p> <ol style="list-style-type: none"> 3. Truck traffic should be routed away from noise sensitive areas, where possible. 4. Noise levels must be kept within acceptable limits. 5. Noisy operations should be combined so that they occur where possible at the same time. 6. Mine workers to wear necessary ear protection gear. 7. Noisy activities to take place during allocated hours. 8. Noise from labourers must be controlled. 9. Noise suppression measures must be applied to all equipment. Equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. Should the vehicles or equipment not be in good working order, the Contractor may be instructed to remove the offending vehicle or machinery from the site. 10. The Contractor must take measures to discourage labourers from loitering in the area and causing noise disturbance. Where possible labour shall be transported to and from the site by the Contractor or his Sub-Contractors by the Contractors own transport. 11. Implementation of enclosure and cladding of processing plants. 12. Applying regular and thorough maintenance schedules to equipment and processes. An increase in noise emission levels very often is a sign of the imminent mechanical failure of a machine. 		
--	--	--	--	--	--

IMPACT MANAGEMENT OUTCOMES

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

<p>ACTIVITY (whether listed or not listed).</p> <p>(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.).</p>	<p>POTENTIAL IMPACT</p> <p>(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)</p>	<p>ASPECTS AFFECTED</p>	<p>PHASE In which impact is anticipated</p> <p>(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)</p>	<p>MITIGATION TYPE</p> <p>(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc)</p> <p>E.g.</p> <ul style="list-style-type: none"> • Modify through alternative method. • Control through noise control • Control through management and monitoring • Remedy through rehabilitation.. 	<p>STANDARD TO BE ACHIEVED</p> <p>(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.</p>
<p>Clearance of vegetation</p>	<p>Loss or fragmentation of habitats</p>	<p>Fauna & flora</p>	<p>(construction and operation phase)</p>	<p>Existing vegetation</p> <ol style="list-style-type: none"> 1. Vegetation removal must be limited to the prospecting area. 2. Vegetation to be removed as it becomes necessary rather than removal of all vegetation throughout the site in one step. 3. No vegetation to be used for firewood. 4. Exotic and invasive plant species should not be allowed to establish, if the development is approved. 5. There should be a preconstruction walk-through of the development footprint/project site in order to locate individuals of plant species of conservation concern. A search and rescue exercise must be done to locate and relocate any protected species to a suitable and similar habitat where these plants can grow without any disturbance; 	<p>Minimisation of impacts to acceptable limits</p>

				<p>6. In case Camel Thorn or Shepherd's trees are found permits must be obtained from DAFF to remove these individuals. The contractor must apply for these permits in a phased manner as prospecting proceeds.</p> <p>Rehabilitation</p> <p>7. All damaged areas shall be rehabilitated upon completion of the contract.</p> <p>8. Re-vegetation of the disturbed site is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to construction.</p> <p>9. All natural areas impacted during construction/prospecting must be rehabilitated with locally indigenous grasses typical of the representative botanical unit.</p> <p>10. Rehabilitation must take place in a phased approach as soon as possible.</p> <p>11. Rehabilitation process must make use of species indigenous to the area. Seeds from surrounding seed banks can be used for re-seeding.</p> <p>12. Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas.</p> <p>13. Planting of indigenous tree species in areas not to be cultivated or built on must be encouraged.</p> <p>Demarcation of prospecting area</p> <p>14. All plants not interfering with prospecting operations shall be left undisturbed clearly marked and indicated on the site plan.</p> <p>15. The prospecting area must be well demarcated and no construction/prospecting activities must be allowed outside of this demarcated footprint.</p> <p>16. Vegetation removal must be phased in order to reduce impact of construction/prospecting.</p>	
--	--	--	--	---	--

				<p>17. Site office and laydown areas must be clearly demarcated and no encroachment must occur beyond demarcated areas.</p> <p>18. Strict and regular auditing of the prospecting process to ensure containment of the prospecting and laydown areas.</p> <p>19. Soils must be kept free of petrochemical solutions that may be kept on site during construction/ prospecting. Spillage can result in a loss of soil functionality thus limiting the re-establishment of flora.</p> <p>Utilisation of resources</p> <p>20. Gathering of firewood, fruit, muti plants, or any other natural material onsite or in areas adjacent to the site is prohibited unless with prior approval of the ECO.</p> <p>Exotic vegetation</p> <p>21. Alien vegetation on the site will need to be controlled.</p> <p>22. The Contractor should be responsible for implementing a programme of weed control (particularly in areas where soil has been disturbed); and grassing of any remaining stockpiles to prevent weed invasion.</p> <p>23. The spread of exotic species occurring throughout the site should be controlled.</p> <p>24. Weed control measures must be applied to eradicate any noxious weeds (category 1a & 1b species) on disturbed areas.</p> <p>Herbicides</p> <p>25. Herbicide use shall only be allowed according to contract specifications. The application shall be according to set specifications and under supervision of a qualified technician. The possibility of leaching into the surrounding environment shall be properly investigated and only environmentally friendly herbicides shall be used.</p>	
--	--	--	--	---	--

				<p>26. The use of pesticides and herbicides on the site must be discouraged as these impact on important pollinator species of indigenous vegetation.</p> <p>Fauna</p> <p>27. Rehabilitation to be undertaken as soon as possible after the prospecting activities have been completed.</p> <p>28. No trapping or snaring to fauna on the construction/prospecting site should be allowed.</p> <p>29. No faunal species must be disturbed, trapped, hunted or killed by maintenance staff during any routine maintenance at the development.</p> <p>30. Any fauna threatened by the construction and operation activities should be removed to safety by the ECO or appropriately qualified environmental officer.</p> <p>31. All construction vehicles should adhere to a low speed limit (<30km/h) to avoid collisions with susceptible species such as snakes and tortoises.</p> <p>32. If trenches need to be dug for electrical cabling or other purposes, these should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench.</p> <p><u>Ecological Assessment specialist study</u> Prospecting activities must occur outside the identified Ecological corridor.</p> <p>The site sensitivity map illustrates the recommended ecological corridor as well as the water quality- and biodiversity buffer zones to be implemented throughout the assessment area. The acceptable prospecting areas are also indicated.</p>	
Prospecting without bulk sampling for Limestone (Ls) & Manganese Ore (Mn)	Loss of topsoil	Soil	(construction and operation phase)	<p>1. The Contractor should, prior to the commencement of earthworks determine the average depth of topsoil, and agree on this with the ECO. The full depth of topsoil</p>	Minimisation of impacts to acceptable limits

				<p>should be stripped from areas affected by construction and related activities prior to the commencement of major earthworks. This should include the building footprints, working areas and storage areas. Topsoil must be reused where possible to rehabilitate disturbed areas.</p> <ol style="list-style-type: none"> 2. Care must be taken not to mix topsoil and subsoil or any other material, during stripping. 3. The topsoil must be conserved on site in and around the pit/trench area. 4. Subsoil and overburden in the prospecting area should be stockpiled separately to be returned for backfilling in the correct soil horizon order. 5. If stockpiles are exposed to windy conditions or heavy rain, they should be covered either by vegetation or geofabric, depending on the duration of the project. Stockpiles may further be protected by the construction of berms or low brick walls around their bases. 6. Stockpiles should be kept clear of weeds and alien vegetation growth by regular weeding. 7. Where contamination of soil is expected, analysis must be done prior to disposal of soil to determine the appropriate disposal route. Proof from an approved waste disposal site where contaminated soils are dumped if and when a spillage/leakage occurs should be attained and given to the project manager. <p>Establish an effective record keeping system for each area where soil is disturbed for prospecting purposes. These records should be included in environmental performance reports, and should include all the records below.</p> <ul style="list-style-type: none"> • Record the GPS coordinates of each area. • Record the date of topsoil stripping. • Record the GPS coordinates of where the topsoil is stockpiled. 	
--	--	--	--	---	--

				<ul style="list-style-type: none"> • Record the date of cessation prospecting activities at the particular site. • Photograph the area on cessation of prospecting activities. • Record date and depth of re-spreading of topsoil. • Photograph the area on completion of rehabilitation and on an annual basis thereafter to show vegetation establishment and evaluate progress of restoration over time. 	
	Erosion	Soil Air Water	(construction and operation phase)	<ol style="list-style-type: none"> 1. An effective system of run-off control should be implemented, where it is required, that collects and safely disseminates run-off water from all hardened surfaces and prevents potential down slope erosion. 2. Periodical site inspection should be included in environmental performance reporting that inspects the effectiveness of the run-off control system and specifically records the occurrence of any erosion on site or downstream. 3. Implement an effective system of run-off control, where it is required, that collects and safely disseminates run-off water from all hardened surfaces and prevents potential down slope erosion. 4. Monitor the area regularly after larger rainfall events to determine where erosion may be initiated and then mitigate by modifying the soil micro-topography and revegetation or soil erosion control efforts accordingly 5. Wind screening and stormwater control should be undertaken to prevent soil loss from the site. 6. The use of silt fences and sand bags must be implemented in areas that are susceptible to erosion. 7. Other erosion control measures that can be implemented are as follows: <ul style="list-style-type: none"> ○ Brush packing with cleared vegetation ○ Mulch or chip packing ○ Planting of vegetation ○ Hydroseeding/hand sowing 	Minimisation of impacts to acceptable limits

				<ol style="list-style-type: none"> 8. Sensitive areas need to be identified prior to construction/prospecting so that the necessary precautions can be implemented. 9. All erosion control mechanisms need to be regularly maintained. 10. Seeding of topsoil and subsoil stockpiles to prevent wind and water erosion of soil surfaces. 11. Retention of vegetation where possible to avoid soil erosion. 12. Vegetation clearance should be phased to ensure that the minimum area of soil is exposed to potential erosion at any one time. 13. Re-vegetation of disturbed surfaces should occur immediately after construction/prospecting activities are completed. This should be done through seeding with indigenous grasses. 14. No impediment to the natural water flow other than approved erosion control works is permitted. 15. To prevent stormwater damage, the increase in stormwater run-off resulting from construction/prospecting activities must be estimated and the drainage system assessed accordingly. 16. Stockpiles not used in three (3) months after stripping must be seeded or backfilled to prevent dust and erosion. 	
	Air Pollution	Air	(construction and operation phase)	<p>Dust control</p> <ol style="list-style-type: none"> 1. Wheel washing and damping down of un-surfaced and un-vegetated areas. 2. Retention of vegetation where possible will reduce dust travel. 3. Clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas. 4. Damping down of all exposed soil surfaces with a water bowser or sprinklers when necessary to reduce dust. 	Minimisation of impacts to acceptable limits

				<p>5. The Contractor shall be responsible for dust control on site to ensure no nuisance is caused to the neighbouring communities.</p> <p>6. A speed limit of 30km/h must not be exceeded on site.</p> <p>7. Any complaints or claims emanating from the lack of dust control shall be attended to immediately by the Contractor.</p> <p>8. Any dirt roads that are utilised by the workers must be regularly maintained to ensure that dust levels are controlled.</p> <p>Odour control</p> <p>9. Regular servicing of vehicles in order to limit gaseous emissions.</p> <p>10. Regular servicing of onsite toilets to avoid potential odours.</p> <p>Rehabilitation</p> <p>11. The Contractor should commence rehabilitation of exposed soil surfaces as soon as practical after completion of earthworks.</p> <p>Fire prevention</p> <p>12. No open fires shall be allowed on site under any circumstance. All cooking shall be done in demarcated areas that are safe and cannot cause runaway fires.</p> <p>13. The Contractor shall have operational fire-fighting equipment available on site at all times. The level of firefighting equipment must be assessed and evaluated through a typical risk assessment process.</p>	
	Noise		(construction and operation phase)	<p>1. The prospecting activities must aim to adhere to the relevant noise regulations and limit noise to within standard working hours in order to reduce disturbance of dwellings in close proximity to the development.</p> <p>2. Workshops and other noisy fixed facilities should be located well away from noise sensitive areas. Once the</p>	Minimisation of impacts to acceptable limits

				<p>proposed final layouts are made available by the Contractor(s), the sites must be evaluated in detail and specific measures designed in to the system.</p> <ol style="list-style-type: none"> 3. Truck traffic should be routed away from noise sensitive areas, where possible. 4. Noise levels must be kept within acceptable limits. 5. Noisy operations should be combined so that they occur where possible at the same time. 6. Mine workers to wear necessary ear protection gear. 7. Noisy activities to take place during allocated hours. 8. Noise from labourers must be controlled. 9. Noise suppression measures must be applied to all equipment. Equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. Should the vehicles or equipment not be in good working order, the Contractor may be instructed to remove the offending vehicle or machinery from the site. 10. The Contractor must take measures to discourage labourers from loitering in the area and causing noise disturbance. Where possible labour shall be transported to and from the site by the Contractor or his Sub-Contractors by the Contractors own transport. 11. Implementation of enclosure and cladding of processing plants. 12. Applying regular and thorough maintenance schedules to equipment and processes. An increase in noise emission levels very often is a sign of the imminent mechanical failure of a machine. 	
	Impact on potential cultural, heritage artefacts and fossils.	Heritage and Palaeontology	(construction and operation phase)	<ol style="list-style-type: none"> 1. Any finds must be reported to the nearest National Monuments office to comply with the National Heritage Resources Act (Act No 25 of 1999) and to DEA. 2. Local museums as well as the South African Heritage Resource Agency (SAHRA) should be informed if any artefacts/ fossils are uncovered in the affected area. 	Minimisation of impacts to acceptable limits

				<ol style="list-style-type: none"> 3. The Contractor must ensure that his workforce is aware of the necessity of reporting any possible historical, archaeological or palaeontological finds to the ECO so that appropriate action can be taken. 4. Known sites should be clearly marked in order that they can be avoided. The work force should also be informed that fenced-off areas are no-go areas. 5. The ECO must also survey for heritage and palaeontological artefacts during ground breaking and digging or drilling. He/she should familiarise themselves with formations and its fossils or a palaeontologist should be appointed during the digging and excavation phase of the development. 6. All digging, excavating, drilling or blasting activities must be stopped if heritage and/or palaeontological artefacts are uncovered and a specialist should be called in to determine proper management, mitigation, excavation and/or collecting measures. 7. Any discovered artefacts or fossils shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits shall be obtained from SAHRA should the proposed site affect any world heritage/palaeontology sites or if any heritage/palaeontology sites are to be destroyed or altered. 8. Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the NHRA (Act No. 25 of 1999), Section 51. (1). 9. If anything of Archaeological and/or paleontological significance is found during the construction and operational phase of the mine the following applies: 	
--	--	--	--	---	--

				<ul style="list-style-type: none"> • NHRA 38(4)c(i) – If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (021 462 5402) must be alerted as per section 35(3) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule; • NHRA 38(4)c(ii) – If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule; • NHRA 38(4)e – The following conditions apply with regards to the appointment of specialists: i) If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA; <p><u>Phase 1 Cultural Heritage Impact Assessment finding:</u> <u>Identified sites</u> During the survey the following sites, features or objects of cultural significance were identified.</p> <ul style="list-style-type: none"> • 7.3.1: An informal burial site with two or three graves marked only with stone cairns. The site is much overgrown with grass and trees. 	
--	--	--	--	---	--

				<ul style="list-style-type: none"> • 7.3.2: A formal burial site with five graves with headstones, as well as a number that are only marked with stone cairns. The marked graves are all members of the Holder Family, and it is taken that they were former landowners. • 7.3.3 – 7.3.9: Various structures, all either former houses or farming related features. Most of the structures have been stripped of all recyclable material and it is only the walls that remains. Based on the materials used for building of the structures it can be determined that they are not very old. This is confirmed by a study of old maps and aerial photographs which indicates that those structures that can be seen are not very old, dating to the last 30 to 40 years. • 7.3.10: Remains of an old lime mining operation. A few ruined structures occur adjacent to a large and deep excavation. A number of smaller lime excavation sites occur all over the area. These are signified by shallow excavations and rock dumps. <p><u>Mitigation measures:</u></p> <ul style="list-style-type: none"> • A minimum buffer of 100m must be established around the burial sites for the duration of the prospecting operations. • The appropriate steps to take are indicated in Section 9 of the report, as well as in the Management Plan: Burial Grounds and Graves, with reference to general heritage sites, in the Addendum, Section 12.5. <p><u>Palaeontological Impact Assessment:</u> No fossiliferous outcrop was detected.</p> <p>CHANCE FIND PROTOCOL The following procedure will only be followed if fossils are uncovered during excavation.</p>	
--	--	--	--	---	--

				<p>Legislation</p> <p>Cultural Heritage in South Africa (includes all heritage resources) is protected by the National Heritage Resources Act (Act No 25 of 1999) (NHRA). According to Section 3 of the Act, all Heritage resources include “all objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens”.</p> <p>Palaeontological heritage is unique and non-renewable and is protected by the NHRA and are the property of the State. It is thus the responsibility of the State to manage and conserve fossils on behalf of the citizens of South Africa. Palaeontological resources may not be excavated, broken, moved, or destroyed by any development without prior assessment and without a permit from the relevant heritage resources authority as per section 35 of the NHRA.</p> <p>A fossil is the naturally preserved remains (or traces thereof) of plants or animals embedded in rock. These organisms lived millions of years ago. Fossils are extremely rare and irreplaceable. By studying fossils, it is possible to determine environmental conditions that existed in a specific geographical area, millions of years ago.</p> <p>This informational document is intended for workmen and foremen on construction sites. It describes the actions to be taken when construction activities accidentally uncover fossil material.</p> <p>It is the responsibility of the Environmental Site Officer (ESO) or site manager of the project to train the workmen and foremen in the procedure to follow when a fossil is accidentally uncovered. In the absence of the ESO, a member of the staff must be appointed to be responsible for</p>	
--	--	--	--	--	--

				<p>the proper implementation of the chance find protocol as not to compromise the conservation of fossil material.</p> <p>Chance Find Procedure</p> <ul style="list-style-type: none"> • If a chance find is made the person responsible for the find must immediately stop working and all work that could impact that finding must cease in the immediate vicinity of the find. • The person who made the find must immediately report the find to his/her direct supervisor which in turn must report the find to his/her manager and the ESO or site manager. The ESO or site manager must report the find to the relevant Heritage Agency (South African Heritage Research Agency, SAHRA). (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za). The information to the Heritage Agency must include photographs of the find, from various angles, as well as the GPS co-ordinates. • A preliminary report must be submitted to the Heritage Agency within 24 hours of the find and must include the following: 1) date of the find; 2) a description of the discovery and a 3) description of the fossil and its context (depth and position of the fossil), GPS co-ordinates. • Photographs (the more the better) of the discovery must be of high quality, in focus, accompanied by a scale. It is also important to have photographs of the vertical section (side) where the fossil was found. • Upon receipt of the preliminary report, the Heritage Agency will inform the ESO (or site manager) whether a rescue excavation or rescue collection by a palaeontologist is necessary. • The site must be secured to protect it from any further damage. No attempt should be made to remove 	
--	--	--	--	---	--

				<p>material from their environment. The exposed finds must be stabilized and covered by a plastic sheet or sand bags. The Heritage agency will also be able to advise on the most suitable method of protection of the find.</p> <ul style="list-style-type: none"> • If the fossil cannot be stabilized the fossil may be collected with extreme care by the ESO. Fossils finds must be stored in tissue paper and in an appropriate box while due care must be taken to remove all fossil material from the rescue site. • Once the Heritage Agency has issued the written authorization, the developer may continue with the development on the affected area. 	
Waste management		Pollution	(construction and operation phase)	<p>Litter management</p> <ol style="list-style-type: none"> 1. Refuse bins must be placed at strategic positions to ensure that litter does not accumulate within the construction site. 2. The Contractor shall supply waste collection bins where such is not available and all solid waste collected shall be disposed of at registered/licensed landfill. 3. Good housekeeping practices should be implemented to regularly maintain the litter and rubble situation on the construction site. 4. If possible and feasible, all waste generated on site must be separated into glass, plastic, paper, metal and wood and recycled. An independent contractor can be appointed to conduct this recycling. 5. Littering by the employees of the Contractor shall not be allowed under any circumstances. The ECO shall monitor the neatness of the work sites as well as the Contractor campsite. 6. Skip waste containers should be maintained on site. These should be kept covered and arrangements made for them to be collected regularly. 	Minimisation of impacts to acceptable limits

				<p>7. All waste must be removed from the site and transported to a landfill site promptly to ensure that it does not attract vermin or produce odours.</p> <p>8. Where a registered waste site is not available close to the construction site, the Contractor shall provide a method statement with regard to waste management.</p> <p>9. A certificate of disposal shall be obtained by the Contractor and kept on file, if relevant.</p> <p>10. Under no circumstances may solid waste be burnt on site.</p> <p>11. All waste must be removed promptly to ensure that it does not attract vermin or produce odours.</p> <p>Hazardous waste</p> <p>12. All waste hazardous materials must be carefully stored as advised by the ECO, and then disposed of offsite at a licensed landfill site, where practical. Incineration may be used where relevant.</p> <p>13. Contaminants to be stored safely to avoid spillage.</p> <p>14. Machinery must be properly maintained to keep oil leaks in check.</p> <p>15. All necessary precaution measures shall be taken to prevent soil or surface water pollution from hazardous materials used during construction and any spills shall immediately be cleaned up and all affected areas rehabilitated.</p> <p>Sanitation</p> <p>16. The Contractor shall install mobile chemical toilets on the site.</p> <p>17. Staff shall be sensitised to the fact that they should use these facilities at all times. No indiscriminate sanitary activities on site shall be allowed.</p> <p>18. Toilets shall be serviced regularly and the ECO shall inspect toilets regularly.</p>	
--	--	--	--	--	--

				<p>19. Toilets should be no closer than 50m or above the 1:100 year flood line from any natural or manmade water bodies or drainage lines or alternatively located in a place approved of by the Engineer.</p> <p>20. Under no circumstances may open areas, neighbours fences or the surrounding bush be used as a toilet facility.</p> <p>21. The construction of “Long Drop” toilets is forbidden, but rather toilets connected to the sewage treatment plant.</p> <p>22. Potable water must be provided for all construction staff.</p> <p>Remedial actions</p> <p>23. Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-site.</p> <p>24. Excavation of contaminated soil must involve careful removal of soil using appropriate tools/machinery to storage containers until treated or disposed of at a licensed hazardous landfill site.</p> <p>25. The ECO must determine the precise method of treatment for polluted soil. This could involve the application of soil absorbent materials as well as oil-digestive powders to the contaminated soil.</p> <p>26. If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent material.</p> <p>27. If necessary, oil absorbent sheets or pads must be attached to leaky machinery or infrastructure.</p> <p>28. Materials used for the remediation of petrochemical spills must be used according to product specifications and guidance for use.</p> <p>29. Contaminated remediation materials must be carefully removed from the area of the spill so as to prevent further release of petrochemicals to the environment, and stored in adequate containers until appropriate disposal.</p>	
--	--	--	--	---	--

Water Use and Quality	Water pollution	Water	(construction and operation phase)	<p>Water Use</p> <ol style="list-style-type: none"> 1. Develop a sustainable water supply management plan to minimise the impact to natural systems by managing water use, avoiding depletion of aquifers and minimising impacts to water users. 2. Water must be reused, recycled or treated where possible. <p>Water Quality</p> <ol style="list-style-type: none"> 3. The quality and quantity of effluent streams discharged to the environment including stormwater should be managed and treated to meet applicable effluent discharge guidelines. 4. Discharge to surface water should not result in contaminant concentrations in excess of local ambient water quality criteria outside a scientifically established mixing zone. 5. Efficient oil and grease traps or sumps should be installed and maintained at refueling facilities, workshops, fuel storage depots, and containment areas and spill kits should be available with emergency response plans. <p>Stormwater</p> <ol style="list-style-type: none"> 6. The site must be managed in order to prevent pollution of drains, downstream watercourses or groundwater, due to suspended solids and silt or chemical pollutants. 7. Silt fences should be used to prevent any soil entering the stormwater drains. 8. Temporary cut off drains and berms may be required to capture stormwater and promote infiltration. 9. Promote a water saving mind set with construction/ prospecting workers in order to Contractor ensure less water wastage. 10. Hazardous substances must be stored at least 40m from any water bodies on site to avoid pollution. 	
-----------------------	-----------------	-------	------------------------------------	--	--

				<p>11. The installation of the stormwater system must take place as soon as possible to attenuate stormwater from the construction phase as well as the operation phase.</p> <p>12. Earth, stone and rubble is to be properly disposed of, or utilized on site so as not to obstruct natural water path ways over the site. i.e. these materials must not be placed in stormwater channels, drainage lines or rivers.</p> <p>13. There should be a periodic checking of the site's drainage system to ensure that the water flow is unobstructed.</p> <p>14. If a batching plant is necessary, run-off should be managed effectively to avoid contamination of other areas of the site. Untreated runoff from the batch plant must not be allowed to get into the storm water system or nearby streams, rivers or erosion channels or dongas.</p> <p>Groundwater resource protection</p> <p>15. Process solution storage ponds and other impoundments designed to hold non fresh water or non-treated process effluents should be lined and be equipped with sufficient wells to enable monitoring of water levels and quality.</p> <p>Sanitation</p> <p>16. Adequate sanitary facilities and ablutions must be provided for construction workers (1 toilet per every 15 workers).</p> <p>17. The facilities must be regularly serviced to reduce the risk of surface or groundwater pollution.</p> <p>Concrete mixing</p> <p>18. Concrete contaminated water must not enter soil or any natural drainage system as this disturbs the natural acidity of the soil and affects plant growth.</p>	
--	--	--	--	--	--

				<p>Public areas</p> <p>19. Food preparation areas should be provided with adequate washing facilities and food refuse should be stored in sealed refuse bins which should be removed from site on a regular basis.</p> <p>20. The Contractor should take steps to ensure that littering by construction/ prospecting workers does not occur and persons should be employed on site to collect litter from the site and immediate surroundings, including litter accumulating at fence lines.</p> <p>21. No washing or servicing of vehicles on site.</p>	
--	--	--	--	---	--

F) IMPACT MANAGEMENT ACTIONS

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

<p>ACTIVITY Whether listed or not listed. (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.).</p>	<p>POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)</p>	<p>MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. <ul style="list-style-type: none"> • Modify through alternative method. • Control through noise control • Control through management and monitoring Remedy through rehabilitation..</p>	<p>TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:-.. Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or prospecting as the case may be.</p>	<p>COMPLIANCE WITH STANDARDS (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)</p>
<p>Clearance of vegetation</p>	<p>Loss or fragmentation of habitats</p>	<p>Existing vegetation</p> <ol style="list-style-type: none"> 1. Vegetation removal must be limited to the prospecting site. 2. Vegetation to be removed as it becomes necessary rather than removal of all vegetation throughout the site in one step. 3. No vegetation to be used for firewood. 4. Exotic and invasive plant species should not be allowed to establish, if the development is approved. 5. There should be a preconstruction walk-through of the development footprint/project site in order to locate individuals of plant species of conservation concern. A search and rescue exercise must be done to locate and relocate any protected species to a suitable and similar habitat where these plants can grow without any disturbance; 6. In case Camel Thorn or Shepherd's trees are found permits must be obtained from DAFF to remove these individuals. The contractor must apply for these permits in a phased manner as prospecting proceeds. 	<p>Duration of operation</p>	<p>The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.</p>

		<p>Rehabilitation</p> <ol style="list-style-type: none"> 7. All damaged areas shall be rehabilitated upon completion of the contract. 8. Re-vegetation of the disturbed site is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to construction. 9. All natural areas impacted during construction/prospecting must be rehabilitated with locally indigenous grasses typical of the representative botanical unit. 10. Rehabilitation must take place in a phased approach as soon as possible. 11. Rehabilitation process must make use of species indigenous to the area. Seeds from surrounding seed banks can be used for re-seeding. 12. Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas. 13. Planting of indigenous tree species in areas not to be cultivated or built on must be encouraged. <p>Demarcation of prospecting area</p> <ol style="list-style-type: none"> 14. All plants not interfering with prospecting operations shall be left undisturbed clearly marked and indicated on the site plan. 15. The prospecting area must be well demarcated and no construction activities must be allowed outside of this demarcated footprint. 16. Vegetation removal must be phased in order to reduce impact of construction prospecting. 17. Site office and laydown areas must be clearly demarcated and no encroachment must occur beyond demarcated areas. 18. Strict and regular auditing of the prospecting process to ensure containment of the prospecting and laydown areas. 19. Soils must be kept free of petrochemical solutions that may be kept on site during construction/prospecting. Spillage can result in a loss of soil functionality thus limiting the re-establishment of flora. 		
--	--	--	--	--

		<p>Utilisation of resources</p> <p>20. Gathering of firewood, fruit, muti plants, or any other natural material onsite or in areas adjacent to the site is prohibited unless with prior approval of the ECO.</p> <p>Exotic vegetation</p> <p>21. Alien vegetation on the site will need to be controlled.</p> <p>22. The Contractor should be responsible for implementing a programme of weed control (particularly in areas where soil has been disturbed); and grassing of any remaining stockpiles to prevent weed invasion.</p> <p>23. The spread of exotic species occurring throughout the site should be controlled.</p> <p>24. Weed control measures must be applied to eradicate any noxious weeds (category 1a & 1b species) on disturbed areas.</p> <p>Herbicides</p> <p>25. Herbicide use shall only be allowed according to contract specifications. The application shall be according to set specifications and under supervision of a qualified technician. The possibility of leaching into the surrounding environment shall be properly investigated and only environmentally friendly herbicides shall be used.</p> <p>26. The use of pesticides and herbicides on the site must be discouraged as these impact on important pollinator species of indigenous vegetation.</p> <p>Fauna</p> <p>27. Rehabilitation to be undertaken as soon as possible after prospecting has been completed.</p> <p>28. No trapping or snaring to fauna on the construction/v prospecting site should be allowed.</p> <p>29. No faunal species must be disturbed, trapped, hunted or killed by maintenance staff during any routine maintenance at the development.</p>		
--	--	---	--	--

		<p>30. Any fauna threatened by the construction and operation activities should be removed to safety by the ECO or appropriately qualified environmental officer.</p> <p>31. All construction vehicles should adhere to a low speed limit (<30km/h) to avoid collisions with susceptible species such as snakes and tortoises.</p> <p>32. If trenches need to be dug for electrical cabling or other purposes, these should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench.</p> <p><u>Ecological Assessment specialist study</u> Prospecting activities must occur outside the identified Ecological corridor.</p> <p>The site sensitivity map illustrates the recommended ecological corridor as well as the water quality- and biodiversity buffer zones to be implemented throughout the assessment area. The acceptable prospecting areas are also indicated.</p>		
<p>Prospecting without bulk sampling for Limestone (Ls) & Manganese Ore (Mn)</p>	<p>Loss of topsoil</p>	<ol style="list-style-type: none"> 1. The Contractor should, prior to the commencement of earthworks determine the average depth of topsoil, and agree on this with the ECO. The full depth of topsoil should be stripped from areas affected by construction/prospecting and related activities prior to the commencement of major earthworks. This should include the building footprints, working areas and storage areas. Topsoil must be reused where possible to rehabilitate disturbed areas. 2. Care must be taken not to mix topsoil and subsoil or any other material, during stripping. 3. The topsoil must be conserved on site in and around the pit/trench area. 4. Subsoil and overburden in the prospecting area should be stockpiled separately to be returned for backfilling in the correct soil horizon order. 5. If stockpiles are exposed to windy conditions or heavy rain, they should be covered either by vegetation or geofabric, depending 	<p>Duration of operation</p>	<p>The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.</p>

		<p>on the duration of the project. Stockpiles may further be protected by the construction of berms or low brick walls around their bases.</p> <p>6. Stockpiles should be kept clear of weeds and alien vegetation growth by regular weeding.</p> <p>7. Where contamination of soil is expected, analysis must be done prior to disposal of soil to determine the appropriate disposal route. Proof from an approved waste disposal site where contaminated soils are dumped if and when a spillage/leakage occurs should be attained and given to the project manager.</p> <p>Establish an effective record keeping system for each area where soil is disturbed for prospecting purposes. These records should be included in environmental performance reports, and should include all the records below.</p> <ul style="list-style-type: none"> • Record the GPS coordinates of each area. • Record the date of topsoil stripping. • Record the GPS coordinates of where the topsoil is stockpiled. • Record the date of cessation prospecting activities at the particular site. • Photograph the area on cessation of prospecting activities. • Record date and depth of re-spreading of topsoil. • Photograph the area on completion of rehabilitation and on an annual basis thereafter to show vegetation establishment and evaluate progress of restoration over time. 		
	Erosion	<ol style="list-style-type: none"> 1. An effective system of run-off control should be implemented, where it is required, that collects and safely disseminates run-off water from all hardened surfaces and prevents potential down slope erosion. 2. Periodical site inspection should be included in environmental performance reporting that inspects the effectiveness of the run-off control system and specifically records the occurrence of any erosion on site or downstream. 3. Implement an effective system of run-off control, where it is required, that collects and safely disseminates run-off water from all hardened surfaces and prevents potential down slope erosion. 	Duration of operation	The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.

		<ol style="list-style-type: none"> 4. Monitor the area regularly after larger rainfall events to determine where erosion may be initiated and then mitigate by modifying the soil micro-topography and revegetation or soil erosion control efforts accordingly 5. Wind screening and stormwater control should be undertaken to prevent soil loss from the site. 6. The use of silt fences and sand bags must be implemented in areas that are susceptible to erosion. 7. Other erosion control measures that can be implemented are as follows: <ul style="list-style-type: none"> o Brush packing with cleared vegetation o Mulch or chip packing o Planting of vegetation o Hydroseeding/hand sowing 8. Sensitive areas need to be identified prior to construction/prospecting so that the necessary precautions can be implemented. 9. All erosion control mechanisms need to be regularly maintained. 10. Seeding of topsoil and subsoil stockpiles to prevent wind and water erosion of soil surfaces. 11. Retention of vegetation where possible to avoid soil erosion. 12. Vegetation clearance should be phased to ensure that the minimum area of soil is exposed to potential erosion at any one time. 13. Re-vegetation of disturbed surfaces should occur immediately after construction/prospecting activities are completed. This should be done through seeding with indigenous grasses. 14. No impediment to the natural water flow other than approved erosion control works is permitted. 15. To prevent stormwater damage, the increase in stormwater run-off resulting from construction/prospecting activities must be estimated and the drainage system assessed accordingly. A drainage plan must be submitted to the Engineer for approval and must include the location and design criteria of any temporary stream crossings. 		
--	--	---	--	--

		<p>16. Stockpiles not used in three (3) months after stripping must be seeded/backfilled to prevent dust and erosion.</p>		
	<p>Air Pollution</p>	<p>Dust control</p> <ol style="list-style-type: none"> 1. Wheel washing and damping down of un-surfaced and un-vegetated areas. 2. Retention of vegetation where possible will reduce dust travel. 3. Clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas. 4. Damping down of all exposed soil surfaces with a water bowser or sprinklers when necessary to reduce dust. 5. The Contractor shall be responsible for dust control on site to ensure no nuisance is caused to the neighbouring communities. 6. A speed limit of 30km/h must not be exceeded on site. 7. Any complaints or claims emanating from the lack of dust control shall be attended to immediately by the Contractor. 8. Any dirt roads that are utilised by the workers must be regularly maintained to ensure that dust levels are controlled. <p>Odour control</p> <ol style="list-style-type: none"> 9. Regular servicing of vehicles in order to limit gaseous emissions. 10. Regular servicing of onsite toilets to avoid potential odours. <p>Rehabilitation</p> <ol style="list-style-type: none"> 11. The Contractor should commence rehabilitation of exposed soil surfaces as soon as practical after completion of earthworks. <p>Fire prevention</p> <ol style="list-style-type: none"> 12. No open fires shall be allowed on site under any circumstance. All cooking shall be done in demarcated areas that are safe and cannot cause runaway fires. 13. The Contractor shall have operational fire-fighting equipment available on site at all times. The level of firefighting equipment must be assessed and evaluated through a typical risk assessment process. 	<p>Duration of operation</p>	<p>The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.</p>

	Noise	<ol style="list-style-type: none"> 1. The prospecting activities must aim to adhere to the relevant noise regulations and limit noise to within standard working hours in order to reduce disturbance of dwellings in close proximity to the development. 2. Pans, power plants, crushers, workshops and other noisy fixed facilities should be located well away from noise sensitive areas. Once the proposed final layouts are made available by the Contractor(s), the sites must be evaluated in detail and specific measures designed in to the system. 3. Truck traffic should be routed away from noise sensitive areas, where possible. 4. Noise levels must be kept within acceptable limits. 5. Noisy operations should be combined so that they occur where possible at the same time. 6. Mine workers to wear necessary ear protection gear. 7. Noisy activities to take place during allocated hours. 8. Noise from labourers must be controlled. 9. Noise suppression measures must be applied to all equipment. Equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. Should the vehicles or equipment not be in good working order, the Contractor may be instructed to remove the offending vehicle or machinery from the site. 10. The Contractor must take measures to discourage labourers from loitering in the area and causing noise disturbance. Where possible labour shall be transported to and from the site by the Contractor or his Sub-Contractors by the Contractors own transport. 11. Implementation of enclosure and cladding of processing plants. 12. Applying regular and thorough maintenance schedules to equipment and processes. An increase in noise emission levels very often is a sign of the imminent mechanical failure of a machine. 	Duration of operation	The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.
--	-------	---	-----------------------	---

	<p>Impact on potential cultural, heritage artefacts and fossils.</p>	<ol style="list-style-type: none"> 1. Any finds must be reported to the nearest National Monuments office to comply with the National Heritage Resources Act (Act No 25 of 1999) and to DEA. 2. Local museums as well as the South African Heritage Resource Agency (SAHRA) should be informed if any artefacts/ fossils are uncovered in the affected area. 3. The Contractor must ensure that his workforce is aware of the necessity of reporting any possible historical, archaeological or palaeontological finds to the ECO so that appropriate action can be taken. 4. Known sites should be clearly marked in order that they can be avoided. The workforce should also be informed that fenced-off areas are no-go areas. 5. The ECO must also survey for heritage and palaeontological artefacts during ground breaking and digging or drilling. He/she should familiarise themselves with formations and its fossils or a palaeontologist should be appointed during the digging and excavation phase of the development. 6. All digging, excavating, drilling or blasting activities must be stopped if heritage and/or palaeontological artefacts are uncovered and a specialist should be called in to determine proper management, mitigation, excavation and/or collecting measures. 7. Any discovered artefacts or fossils shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits shall be obtained from SAHRA should the proposed site affect any world heritage/palaeontology sites or if any heritage/palaeontology sites are to be destroyed or altered. 8. Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the NHRA (Act No. 25 of 1999), Section 51. (1). 	<p>Duration of operation</p>	<p>The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with NEMA and Duty of Care as prescribed by NEMA.</p>
--	--	--	------------------------------	--

		<p>9. If anything of Archaeological and/or paleontological significance is found during the construction and operational phase of the mine the following applies:</p> <ul style="list-style-type: none"> • NHRA 38(4)c(i) – If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (021 462 5402) must be alerted as per section 35(3) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule; • NHRA 38(4)c(ii) – If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule; • NHRA 38(4)e – The following conditions apply with regards to the appointment of specialists: i) If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA; <p><u>Phase 1 Cultural Heritage Impact Assessment finding:</u> <u>Identified sites</u> During the survey the following sites, features or objects of cultural significance were identified.</p> <ul style="list-style-type: none"> • 7.3.1: An informal burial site with two or three graves marked only with stone cairns. The site is much overgrown with grass and trees. • 7.3.2: A formal burial site with five graves with headstones, as well as a number that are only marked with stone cairns. The 		
--	--	--	--	--

		<p>marked graves are all members of the Holder Family, and it is taken that they were former landowners.</p> <ul style="list-style-type: none"> • 7.3.3 – 7.3.9: Various structures, all either former houses or farming related features. Most of the structures have been stripped of all recyclable material and it is only the walls that remains. Based on the materials used for building of the structures it can be determined that they are not very old. This is confirmed by a study of old maps and aerial photographs which indicates that those structures that can be seen are not very old, dating to the last 30 to 40 years. • 7.3.10: Remains of an old lime mining operation. A few ruined structures occur adjacent to a large and deep excavation. A number of smaller lime excavation sites occur all over the area. These are signified by shallow excavations and rock dumps. <p><u>Mitigation measures:</u></p> <ul style="list-style-type: none"> • A minimum buffer of 100m must be established around the burial sites for the duration of the prospecting operations. • The appropriate steps to take are indicated in Section 9 of the report, as well as in the Management Plan: Burial Grounds and Graves, with reference to general heritage sites, in the Addendum, Section 12.5. <p><u>Palaeontological Impact Assessment:</u> No fossiliferous outcrop was detected.</p> <p>CHANCE FIND PROTOCOL The following procedure will only be followed if fossils are uncovered during excavation.</p> <p>Legislation Cultural Heritage in South Africa (includes all heritage resources) is protected by the National Heritage Resources Act (Act No 25 of 1999) (NHRA). According to Section 3 of the Act, all Heritage resources include “all objects recovered from the soil or waters</p>		
--	--	--	--	--

		<p>of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens”.</p> <p>Palaeontological heritage is unique and non-renewable and is protected by the NHRA and are the property of the State. It is thus the responsibility of the State to manage and conserve fossils on behalf of the citizens of South Africa. Palaeontological resources may not be excavated, broken, moved, or destroyed by any development without prior assessment and without a permit from the relevant heritage resources authority as per section 35 of the NHRA.</p> <p>A fossil is the naturally preserved remains (or traces thereof) of plants or animals embedded in rock. These organisms lived millions of years ago. Fossils are extremely rare and irreplaceable. By studying fossils, it is possible to determine environmental conditions that existed in a specific geographical area, millions of years ago.</p> <p>This informational document is intended for workmen and foremen on construction sites. It describes the actions to be taken when construction activities accidentally uncover fossil material.</p> <p>It is the responsibility of the Environmental Site Officer (ESO) or site manager of the project to train the workmen and foremen in the procedure to follow when a fossil is accidentally uncovered. In the absence of the ESO, a member of the staff must be appointed to be responsible for the proper implementation of the chance find protocol as not to compromise the conservation of fossil material.</p> <p>Chance Find Procedure</p> <ul style="list-style-type: none"> • If a chance find is made the person responsible for the find must immediately stop working and all work that could impact that finding must cease in the immediate vicinity of the find. • The person who made the find must immediately report the find to his/her direct supervisor which in turn must report the find to his/her manager and the ESO or site manager. The ESO or site manager must report the find to the relevant Heritage Agency 		
--	--	---	--	--

		<p>(South African Heritage Research Agency, SAHRA). (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za). The information to the Heritage Agency must include photographs of the find, from various angles, as well as the GPS co-ordinates.</p> <ul style="list-style-type: none"> • A preliminary report must be submitted to the Heritage Agency within 24 hours of the find and must include the following: 1) date of the find; 2) a description of the discovery and a 3) description of the fossil and its context (depth and position of the fossil), GPS co-ordinates. • Photographs (the more the better) of the discovery must be of high quality, in focus, accompanied by a scale. It is also important to have photographs of the vertical section (side) where the fossil was found. • Upon receipt of the preliminary report, the Heritage Agency will inform the ESO (or site manager) whether a rescue excavation or rescue collection by a palaeontologist is necessary. • The site must be secured to protect it from any further damage. No attempt should be made to remove material from their environment. The exposed finds must be stabilized and covered by a plastic sheet or sand bags. The Heritage agency will also be able to advise on the most suitable method of protection of the find. • If the fossil cannot be stabilized the fossil may be collected with extreme care by the ESO. Fossils finds must be stored in tissue paper and in an appropriate box while due care must be taken to remove all fossil material from the rescue site. • Once the Heritage Agency has issued the written authorization, the developer may continue with the development on the affected area. 		
Waste Management		<p>Litter management</p> <ol style="list-style-type: none"> 1. Refuse bins must be placed at strategic positions to ensure that litter does not accumulate within the construction/prospecting site. 	Duration of operation	The implementation of the recommended mitigation measures will result in the minimisation of impacts to acceptable standards, thereby ensuring compliance with

		<ol style="list-style-type: none"> 2. The Contractor shall supply waste collection bins where such is not available and all solid waste collected shall be disposed of at registered/licensed landfill. 3. Good housekeeping practices should be implemented to regularly maintain the litter and rubble situation on the construction prospecting site. 4. If possible and feasible, all waste generated on site must be separated into glass, plastic, paper, metal and wood and recycled. An independent contractor can be appointed to conduct this recycling. 5. Littering by the employees of the Contractor shall not be allowed under any circumstances. The ECO shall monitor the neatness of the work sites as well as the Contractor campsite. 6. Skip waste containers should be maintained on site. These should be kept covered and arrangements made for them to be collected regularly. 7. All waste must be removed from the site and transported to a landfill site promptly to ensure that it does not attract vermin or produce odours. 8. Where a registered waste site is not available close to the construction/prospecting site, the Contractor shall provide a method statement with regard to waste management. 9. A certificate of disposal shall be obtained by the Contractor and kept on file, if relevant. 10. Under no circumstances may solid waste be burnt on site. 11. All waste must be removed promptly to ensure that it does not attract vermin or produce odours. <p>Hazardous waste</p> <ol style="list-style-type: none"> 12. All waste hazardous materials must be carefully stored as advised by the ECO, and then disposed of offsite at a licensed landfill site, where practical. Incineration may be used where relevant. 13. Contaminants to be stored safely to avoid spillage. 14. Machinery must be properly maintained to keep oil leaks in check. 15. All necessary precaution measures shall be taken to prevent soil or surface water pollution from hazardous materials used during 		<p>NEMA and Duty of Care as prescribed by NEMA.</p>
--	--	---	--	---

		<p>construction/prospecting and any spills shall immediately be cleaned up and all affected areas rehabilitated.</p> <p>Sanitation</p> <p>16. The Contractor shall install mobile chemical toilets on the site.</p> <p>17. Staff shall be sensitised to the fact that they should use these facilities at all times. No indiscriminate sanitary activities on site shall be allowed.</p> <p>18. Toilets shall be serviced regularly and the ECO shall inspect toilets regularly.</p> <p>19. Toilets should be no closer than 50m or above the 1:100 year flood line from any natural or manmade water bodies or drainage lines or alternatively located in a place approved of by the Engineer.</p> <p>20. Under no circumstances may open areas, neighbours fences or the surrounding bush be used as a toilet facility.</p> <p>21. The construction of “Long Drop” toilets is forbidden, but rather toilets connected to the sewage treatment plant.</p> <p>22. Potable water must be provided for all construction staff.</p> <p>Remedial actions</p> <p>23. Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-site.</p> <p>24. Excavation of contaminated soil must involve careful removal of soil using appropriate tools/machinery to storage containers until treated or disposed of at a licensed hazardous landfill site.</p> <p>25. The ECO must determine the precise method of treatment for polluted soil. This could involve the application of soil absorbent materials as well as oil-digestive powders to the contaminated soil.</p> <p>26. If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent material.</p> <p>27. If necessary, oil absorbent sheets or pads must be attached to leaky machinery or infrastructure.</p>		
--	--	--	--	--

		<p>28. Materials used for the remediation of petrochemical spills must be used according to product specifications and guidance for use.</p> <p>29. Contaminated remediation materials must be carefully removed from the area of the spill so as to prevent further release of petrochemicals to the environment, and stored in adequate containers until appropriate disposal.</p>		
Water Use and Quality	Water pollution	<p>Water Use</p> <p>1. Develop a sustainable water supply management plan to minimise the impact to natural systems by managing water use, avoiding depletion of aquifers and minimising impacts to water users.</p> <p>2. Water must be reused, recycled or treated where possible.</p> <p>Water Quality</p> <p>3. The quality and quantity of effluent streams discharged to the environment including stormwater should be managed and treated to meet applicable effluent discharge guidelines.</p> <p>4. Discharge to surface water should not result in contaminant concentrations in excess of local ambient water quality criteria outside a scientifically established mixing zone.</p> <p>5. Efficient oil and grease traps or sumps should be installed and maintained at refueling facilities, workshops, fuel storage depots, and containment areas and spill kits should be available with emergency response plans.</p> <p>Stormwater</p> <p>6. The site must be managed in order to prevent pollution of drains, downstream watercourses or groundwater, due to suspended solids and silt or chemical pollutants.</p> <p>7. Silt fences should be used to prevent any soil entering the stormwater drains.</p> <p>8. Temporary cut off drains and berms may be required to capture stormwater and promote infiltration.</p> <p>9. Promote a water saving mind set with construction/prospecting workers in order to Contractor ensure less water wastage.</p>		

		<p>10. New stormwater construction must be developed strictly according to specifications from engineers in order to ensure efficiency.</p> <p>11. Hazardous substances must be stored at least 20m from any water bodies on site to avoid pollution.</p> <p>12. The installation of the stormwater system must take place as soon as possible to attenuate stormwater from the construction phase as well as the operation phase.</p> <p>13. Earth, stone and rubble is to be properly disposed of, or utilized on site so as not to obstruct natural water path ways over the site. i.e. these materials must not be placed in stormwater channels, drainage lines or rivers.</p> <p>14. There should be a periodic checking of the site's drainage system to ensure that the water flow is unobstructed.</p> <p>15. If a batching plant is necessary, run-off should be managed effectively to avoid contamination of other areas of the site. Untreated runoff from the batch plant must not be allowed to get into the storm water system or nearby streams, rivers or erosion channels or dongas.</p> <p>Groundwater resource protection</p> <p>16. Process solution storage ponds and other impoundments designed to hold non fresh water or un-treated process effluents should be lined and be equipped with sufficient wells to enable monitoring of water levels and quality.</p> <p>Sanitation</p> <p>17. Adequate sanitary facilities and ablutions must be provided for construction workers (1 toilet per every 15 workers).</p> <p>18. The facilities must be regularly serviced to reduce the risk of surface or groundwater pollution.</p> <p>Concrete mixing</p> <p>19. Concrete contaminated water must not enter soil or any natural drainage system as this disturbs the natural acidity of the soil and affects plant growth.</p>		
--	--	---	--	--

		<p>Public areas</p> <p>20. Food preparation areas should be provided with adequate washing facilities and food refuse should be stored in sealed refuse bins which should be removed from site on a regular basis.</p> <p>21. The Contractor should take steps to ensure that littering by construction workers does not occur and persons should be employed on site to collect litter from the site and immediate surroundings, including litter accumulating at fence lines.</p> <p>22. No washing or servicing of vehicles on site.</p>		
--	--	--	--	--

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

G) MONITORING OF IMPACT MANAGEMENT ACTIONS

H) MONITORING AND REPORTING FREQUENCY

I) RESPONSIBLE PERSONS

J) TIME PERIOD FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS

K) MECHANISM FOR MONITORING COMPLIANCE

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Clearance of vegetation	Loss or fragmentation of habitats	<ul style="list-style-type: none"> Conduct regular internal audits Conduct regular external audits 	<ul style="list-style-type: none"> Environmental Manager Suitable qualified environmental auditor 	Monitoring should be undertaken for duration of operations. Internal audits should be undertaken at least every 6 months. External audits should be undertaken by a suitably qualified auditor on an annual basis. Reports should be made available to the competent authority if required.
Prospecting without bulk sampling of the applied for minerals	Loss of topsoil Erosion Air Pollution Noise Impact on potential cultural, heritage artefacts and fossils	<ul style="list-style-type: none"> Conduct regular internal audits Conduct regular external audits 	<ul style="list-style-type: none"> Environmental Manager Suitable qualified environmental auditor 	Monitoring should be undertaken for duration of operations. Internal audits should be undertaken at least every 6 months. External audits should be undertaken by a suitably qualified auditor on an annual basis. Reports should be made available to the competent authority if required.
Waste management	Pollution	<ul style="list-style-type: none"> Conduct regular internal audits Conduct regular external audits 	<ul style="list-style-type: none"> Environmental Manager Suitable qualified environmental auditor 	Monitoring should be undertaken for duration of operations. Internal audits should be undertaken at least every 6 months. External audits should be undertaken by a suitably qualified auditor on an annual basis. Reports should be made available to the competent authority if required.

Water Use and Quality	Water pollution	<ul style="list-style-type: none"> • Conduct regular internal audits • Conduct regular external audits 	<ul style="list-style-type: none"> • Environmental Manager • Suitable qualified environmental auditor 	Monitoring should be undertaken for duration of operations. Internal audits should be undertaken at least every 6 months. External audits should be undertaken by a suitably qualified auditor on an annual basis. Reports should be made available to the competent authority if required.
-----------------------	-----------------	--	---	---

Management Measures for Heritage Impacts

A Phase 1 Cultural Heritage Impact Assessment was conducted by Dr J A van Schalkwyk. Please see the findings below:

<p><u>9. MANAGEMENT MEASURES</u></p> <p><i>Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. Those resources that cannot be avoided and are directly impacted by the proposed development can be excavated/recorded and a management plan can be developed for future action. Those sites that are not impacted on can be written into the management plan, whence they can be avoided or cared for in the future.</i></p> <p><i>Sources of risk were considered with regards to development activities defined in Section 2(viii) of the NHRA that may be triggered and are summarised in Table 3A and 3B below. These issues formed the basis of the impact assessment described. The potential risks are discussed according to the various phases of the project below.</i></p> <p>9.1 Objectives</p> <ul style="list-style-type: none"> • Protection of archaeological, historical and any other site or land considered being of cultural value within the Project Area against vandalism, destruction and theft. • The preservation and appropriate management of new discoveries in accordance with the NHRA, should these be discovered during construction activities. <p>The following shall apply:</p> <ul style="list-style-type: none"> • Known sites should be clearly marked, so that they can be avoided during construction activities; • The contractors and workers should be notified that archaeological sites might be exposed during the construction activities; • Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer (ECO) shall be notified as soon as possible; • All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the ECO will advise the necessary actions to be taken; • Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and • Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the NHRA, Section 51(1).
--

9.2 Control

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

- A person or entity, e.g. the ECO, should be tasked to take responsibility for the maintenance heritage sites.
- In areas where the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, but only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.

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

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

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

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

9.3 Legal requirements

The legal requirements related to heritage specifically are specified in Section 3 of this report. For this proposed project, the assessment has determined that sites, features or objects of cultural heritage significance occur in the project area, and therefore relevant permits would be required from SAHRA or the PHRA if there are any impacts on them.

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

L) CATE THE FREQUENCY OF THE SUBMISSION OF THE PERFORMANCE ASSESSMENT REPORT.

External audits should be undertaken by a suitably qualified auditor on an annual basis. Reports should be made available to the Competent Authority if required.

M) ENVIRONMENTAL AWARENESS PLAN

- 1. Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work.**

TSB 74 (Pty) Ltd will implement an Environmental Awareness Plan which will include various mechanisms for informing employees of environmental risks resulting from their work, including:

- Induction training for full –time staff and contractors;
- In-house training sessions to be held with relevant employees;
- On the job training regarding environmental issues
- Training and skills development

The above measures will be implemented through an Environmental Communication Strategy to be implemented.

See the attached **Appendix 11** for the Awareness plan

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

TSB 74 (Pty) Ltd will implement an incident reporting and reporting procedure in order to identify risks timeously and implement actions to avoid or minimise environmental impacts.

N) SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

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

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

-END-