



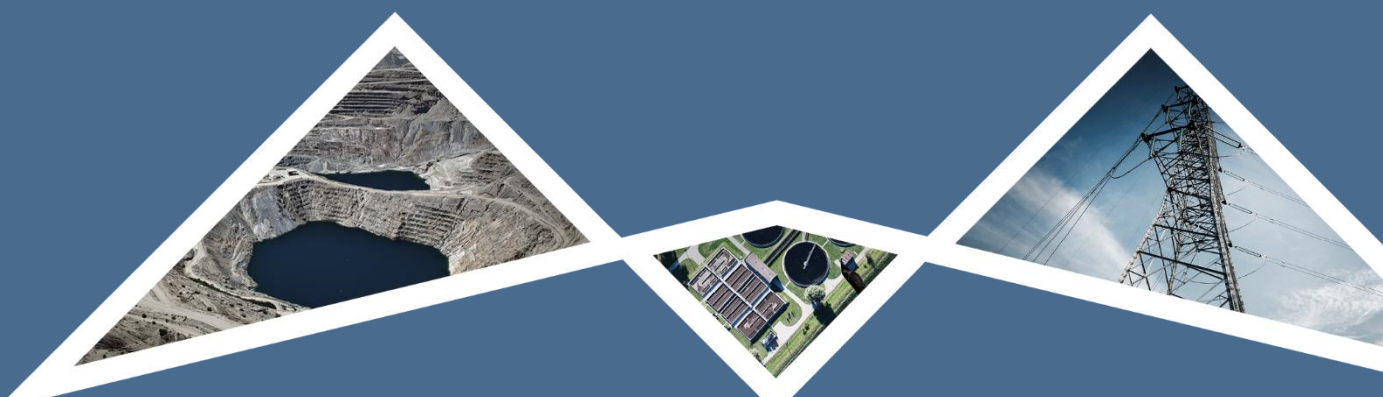
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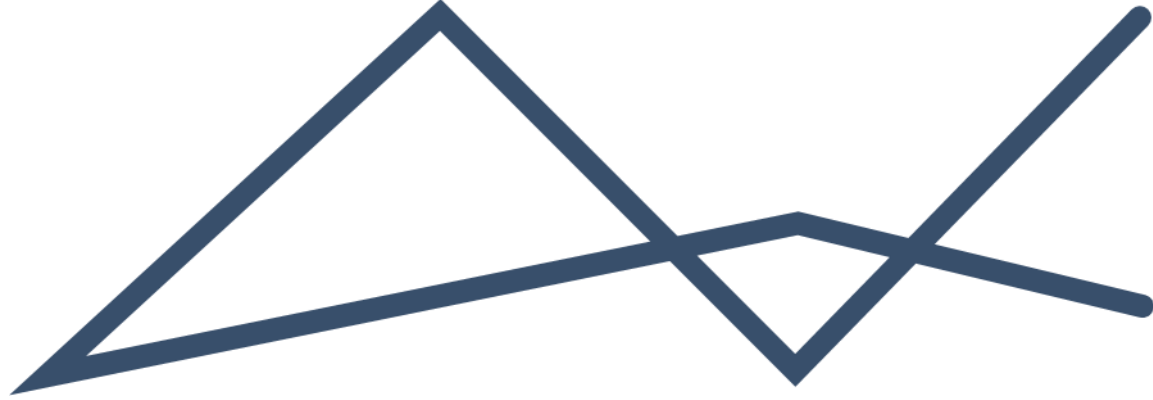
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BASIC ASSESSMENT REPORT

BLACK MOUNTAIN MINING – SANDGAT PROSPECTING RIGHT PROJECT
REF: 30/5/1/1/3/2/1 (14410) PR

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REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT

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

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FILE REFERENCE NUMBER SAMRAD: (NC) 30/5/1/1/3/2/1 (14410) PR



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 to instructions or guidance provided by the Competent Authority to the submission of applications.

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

It is furthermore an instruction that the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information requested 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 order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

- a) Determine the policy and legislative context within which the activity is located and document how the proposed 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 the technology alternatives on these aspects to determine:
 - i. The nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
 - ii. The degree to which these impacts-
 - aa) Can be reversed;
 - bb) May cause irreplaceable loss of resources; and
 - cc) Can be managed, avoided or mitigated;
- e) Through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to –
 - i. Identify and motivate a preferred site, activity and technology alternative;
 - ii. Identify suitable measures to manage, avoid or mitigate identified impacts; and
 - iii. Identify residual risks that need to be managed and monitored.



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Appendices

APPENDIX A: EAP CV

APPENDIX B: SCREENING TOOL REPORT AND SITE SENSITIVITY VERIFICATION REPORT

APPENDIX C: SITE LAYOUT AND MAPS

APPENDIX D: PUBLIC PARTICIPATION REPORT

APPENDIX E: SPECIALIST REPORTS

APPENDIX F: ENVIRONMENTAL MANAGEMENT PROGRAMME



Acronyms and Abbreviations

AEL	Atmospheric Emissions License
BA	Basic Assessment
BAR	Basic Assessment Report
BLSA	Bird Life South Africa
BMM	Black Mountain Mining (Pty) Ltd
CBA	Critical Biodiversity Area
DD	Diamond Drill
DFFE	Department of Forestry, Fisheries and the Environment
DMPR	Department of Mineral and Petroleum Resources
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIMS	Environmental Impact Management Services (Pty) Ltd
EMPr	Environmental Management Programme
GN	Government Notice
I&APs	Interested and Affected Parties
IEM	Integrated Environmental Management
KBA	Key Biodiversity Area
MPRDA	Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NCBSP	Northern Cape Biodiversity Spatial Plan
NCDENC	Northern Cape Department of Environment and Nature Conservation
PAOI	Project Area of Influence
PPP	Public Participation Process
PR	Prospecting Right
PWP	Prospecting Work Programme
S&EIA	Scoping and Environmental Impact Assessment
WML	Waste Management License
WUL	Water Use License
WWW	World Wide Web



1 INTRODUCTION

Black Mountain Mining (Pty) Ltd (BMM) (the Applicant) has submitted an application for a Prospecting Right (PR) in terms of Section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) (MPRDA) and an Application for Environmental Authorisation in terms of Chapter 4 of GNR 982 promulgated under the National Environmental Management Act (Act 107 of 1998) (NEMA) to prospect for ferrous and base metals (Copper Ore, Iron Ore, Lead Ore, Zinc Ore, Manganese Ore, Nickel and Molybdenum), precious metals (Gold Ore, Silver Ore), and all associated metals and minerals.

The proposed project will aim to ascertain if economically viable mineral deposits exist within the application area. In order to undertake prospecting activities, Black Mountain Mining will require a Prospecting Right in terms of the Mineral and Petroleum Resources Development Act (MPRDA, Act No.28 of 2002). The Applicant is also required to obtain an Environmental Authorisation (EA) in terms of the National Environmental Management Act (NEMA, Act No. 107 of 1998) which involves the submission of a Basic Assessment Report (BAR). Environmental Impact Management Services (Pty) Ltd (EIMS) have been appointed by Black Mountain Mining to compile the BAR (this report) in support of the Prospecting Right application submitted by EIMS on behalf of Black Mountain Mining, which in turn will be submitted to the Department of Mineral and Petroleum Resources (DMPR) for adjudication.

This BAR has been developed to meet the requirements for a BAR and Environmental Management Programme (EMPr) as stipulated in the 2014 Environmental Impact Assessment (EIA) Regulations promulgated under the NEMA. The adjudicating authority for this Application will be the DMPR and this report has been compiled in accordance with the applicable DMPR guidelines and reporting template.

The area is located approximately 75 to 138 km east of Aggeneys and 31 to 85 km south-east of Pofadder, Namaqualand District, Northern Cape Province. The associated farms of the PR area are located across the Kai !Garib Local Municipality of the ZF Mgcawu District Municipality, as well as the Khâi-ma Local Municipality of the Namakwa District Municipality, in the Northern Cape Province. The area is ~ 46 940.02 hectares). The prospecting area cover twelve (12) farm portions namely:

- Remaining Extent of farm Lovedale 201;
- Remaining Extent of farm Quagga- Maag 200;
- Remaining Extent of farm Haartebeest-vlei 199;
- Remaining Extent of farm Vaal-kop 225;
- Portion 1 of the Farm Vaal-kop 225;
- Remaining Extent of farm Adjoining Geelvloer 197;
- Portion 8 of farm Adjoining Geelvloer 197;
- Portion 1 of farm Adjoining Geelvloer 197;
- Portion 2 of farm Adjoining Geelvloer 197;
- Portion 4 of farm Adjoining Geelvloer 197;
- Portion 3 of farm Adjoining Geelvloer 197; and
- Portion 6 of farm Adjoining Geelvloer 197.

A Prospecting Work Programme (PWP) has been developed by the applicant to include both non-invasive and invasive prospecting activities. The Prospecting Right Application and Application for Environmental Authorisation was submitted to the DMPR via the South African Mineral Resources Administration (SAMRAD)



on 10 February 2025. The DMPR subsequently accepted the associated EA Application on 27 November 2025 and the Prospecting Right Application on 27 November 2025¹.

The BAR (this report) will be made available to Interested and Affected Parties (I&AP's) for comment for a 30 days public participation review period. All comments received during this period will be included in the BAR submitted to the DMPR for adjudication.

¹ An extension to submit the Final Basic Assessment Report (BAR) was requested on 14 January 2026 and subsequently granted on 21 January 2026, with a new deadline of 1 June 2026. Owing to continued challenges related to specialist availability and seasonal constraints, a further extension was requested and approved by the DMPR on 12 March 2026, extending the submission deadline for the Final BAR to 17 July 2026.



1.1 REPORT STRUCTURE

This report has been compiled in accordance with the NEMA EIA Regulations, 2014, as amended. A summary of the report structure, and the specific sections that correspond to the applicable regulations, is provided in Table 1 below.

Table 1: Report structure

Environmental Regulation	Description	Section in Report
NEMA EIA Regulations, 2014		
Appendix 1(3)(1)(a):	details of- <ul style="list-style-type: none"> (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae; 	Section 1.2
Appendix 1(3)(1)(b):	the location of the activity, including: <ul style="list-style-type: none"> (i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties; 	Section 1.3
Appendix 1(3)(1)(c):	a plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale; or, if it is- <ul style="list-style-type: none"> (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken; 	Section 1.3
Appendix 1(3)(1)(d):	a description of the scope of the proposed activity, including-	Section 2



Environmental Regulation	Description	Section in Report
NEMA EIA Regulations, 2014		
	<ul style="list-style-type: none"> (i) all listed and specified activities triggered and being applied for; and (ii) a description of the activities to be undertaken including associated structures and infrastructure- 	
Appendix 1(3)(1)(e):	<p>a description of the policy and legislative context within which the development is proposed including-</p> <ul style="list-style-type: none"> (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments; 	Section 3
Appendix 1(3)(1)(f):	a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Section 4
Appendix 1(3)(1)(g):	a motivation for the preferred site, activity and technology alternative;	Section 5
Appendix 1(3)(1)(h):	<p>a full description of the process followed to reach the proposed preferred alternative within the site, including-</p> <ul style="list-style-type: none"> (i) details of all the alternatives considered; (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage, and cultural aspects; 	<p>Section 5</p> <p>Section 6</p> <p>Section 7</p>



Environmental Regulation	Description	Section in Report
NEMA EIA Regulations, 2014	<ul style="list-style-type: none"> (v) the impacts and risks identified for each alternative including the nature, significance, consequence, extent, duration, and probability of the impacts, including the degree to which these impacts – <ul style="list-style-type: none"> aa) can be reversed; bb) may cause irreplaceable loss of resources; and cc) can be avoided, managed, or mitigated; (vi) the methodology used in determining and ranking the nature, significance, consequences, extent duration and probability of potential environmental impacts and risks associated with the alternatives; (vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological social, economic, heritage and cultural aspects; (viii) the possible mitigation measures that could be applied and level of residual risk; (ix) the outcome of the site selection matrix; (x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and (xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity; 	Section 8
Appendix 1(3)(1)(i):	<p>a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including-</p> <ul style="list-style-type: none"> (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and 	Section 8



Environmental Regulation	Description	Section in Report
NEMA EIA Regulations, 2014		
	(ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	
Appendix 1(3)(1)(j):	an assessment of each identified potentially significant impact and risk, including- <ul style="list-style-type: none"> (i) cumulative impacts; (ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be avoided, managed or mitigated; 	Section 8
Appendix 1(3)(1)(k):	where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report;	Section 8 Section 9
Appendix 1(3)(1)(l):	an environmental impact statement which contains- <ul style="list-style-type: none"> (i) a summary of the key findings of the environmental impact assessment; (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives; 	Section 9 Section 9.4



Environmental Regulation	Description	Section in Report
NEMA EIA Regulations, 2014		
Appendix 1(3)(1)(m):	based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management outcomes for the development for inclusion in the EMPr;	Section 8
Appendix 1(3)(1)(n):	any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;	Section 9.5
Appendix 1(3)(1)(o):	a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Section 10
Appendix 1(3)(1)(p):	a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	Section 9.4 Section 9.5
Appendix 1(3)(1)(q):	where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised;	N/A
Appendix 1(3)(1)(r):	an undertaking under oath or affirmation by the EAP in relation to- <ul style="list-style-type: none"> (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties; and 	Section 11
Appendix 1(3)(1)(t):	any specific information that may be required by the competent authority; and	None
Appendix 1(3)(1)(u):	any other matters required in terms of section 24(4)(a) and (b) of the Act.	None



1.2 DETAILS OF THE EAP

EIMS has been appointed by BMM as the independent Environmental Assessment Practitioner (EAP) to prepare and submit the EA application, Basic Assessment Report, and undertaking a Public Participation Process (PPP). The contact details of the EIMS consultants and EAP who compiled this Report are as follows:

- Name: Monica Niehof (Registered EAP)
- Tel No.: +27 11 789 7170
- Fax No.: +27 86 571 9047
- E-mail address: 1675bmm@eims.co.za

In terms of Regulation 13 of the EIA Regulations, 2014, as amended, an independent EAP, must be appointed by the applicant to manage the application. EIMS is compliant with the definition of an EAP as defined in Regulations 1 and 13 of the EIA Regulations, as well as Section 1 of the NEMA. This includes, *inter alia*, the requirement that EIMS is:

- Objective and independent;
- Has expertise in conducting EIAs;
- Comply with the NEMA, the environmental regulations and all other applicable legislation;
- Considers all relevant factors relating to the application; and
- Provides full disclosure to the applicant and the relevant environmental authority.

EIMS is a private and independent environmental management-consulting firm that was founded in 1993. EIMS has in excess of 30 years experience in conducting EIAs. Please refer to the EIMS website (www.eims.co.za) for further details of expertise and experience.

Monica Niehof has 15 years working experience in the environmental field and 25 years work experience overall in a variety of fields including the tourism industry. Key experience in the environmental field include Environmental Impact Assessments, Water Use Licence (WUL) Applications, Waste Management Licence (WML) Applications, Atmospheric Emissions Licence (AEL) Applications, Environmental Management Programmes, Public Participation Processes, Environmental Authorisation, AEL and WML Auditing, Environmental Control and Monitoring for a variety of development projects including, residential, retail, mixed-use, commercial, infrastructure, industrial and mining projects. She is registered with the Environmental Assessment Practitioners Association of South Africa (EAPASA) Environmental Practitioner (2024/8835).

The Curriculum Vitae of the EAP responsible for the compilation of this Report is included in APPENDIX A.

1.3 LOCATION OF THE OVERALL ACTIVITY

Table 2 indicates the details of the project area for the proposed project including details on the project location as well as the distance from the proposed project area to the nearest towns. Refer to Table 2 and Table 3 for locality details, and Figure 1 below for a map depicting the location of the proposed Prospecting Right area.

Table 2: Locality details

Farm Names:	Please refer to Table 3 below
Application Area (ha)	The area is approximately 46 940.02083 hectares in extent.
Magisterial District/s	Kenhardt



Distance and direction from the nearest town	The area is located approximately 75 to 138 kilometers east of Aggeneys town and 31 to 85 kilometers south-east of Pofadder town.
21 digit Surveyor General Code for each farm portion	Please refer to Table 3 below

Table 3: Properties within the Application Area²

Nr.	Registered Description	Land	Magister ial District	Extent (Ha)	Title Deed/Diagram Deed	SG Code
1	Lovedale (Remaining Extent)	201	Kenhardt	8455.939081	KEQ8-14/1918	C0360000000020100000
2	Quagga- Maag (Remaining Extent)	200	Kenhardt	7648.161839	G233/1952	C0360000000020000000
3	Haartebeest-Vlei (Remaining Extent)	199	Kenhardt	7416.713163	G244/1949	C0360000000019900000
4	Adjoining Geelvloer 197 (Remaining Extent)		Kenhardt	3058.217982	KEQ4-9/1903	C0360000000019700000
5	Adjoining Geelvloer 197 (Portion 8)		Kenhardt	1515.757637	T8709/1943	C0360000000019700008
6	Adjoining Geelvloer 197 (Portion 1)		Kenhardt	3009.284506	T11186/1937	C0360000000019700001
7	Adjoining Geelvloer 197 (Portion 2)		Kenhardt	1527.340039	T11189/1937	C0360000000019700002
8	Adjoining Geelvloer 197 (Portion 4)		Kenhardt	1475.362198	T11191/1937	C0360000000019700004
9	Adjoining Geelvloer 197 (Portion 3)		Kenhardt	3035.423072	T11190/1937	C0360000000019700003
10	Adjoining Geelvloer 197 (Portion 6)		Kenhardt	1574.911537	T2013/1942	C0360000000019700006
11	Vaal-Kop (Remaining Extent)	225	Kenhardt	8222.909774	G62/1950	C0360000000022500000
12	Vaal-Kop 225 (Portion 1)		Kenhardt	900.0000000	T53769/1984	C0360000000022500001
TOTAL AREA (HA)				46 940.02083		

² It should be noted that the initial area applied included several other farms/properties, however, as per the acceptance letter from the DMP, those properties already had mining rights and or prospecting rights and / or applications submitted and had to be excluded from this application. The table only include properties that have been accepted as part of the application.



The PR/EA application boundary is described by the coordinates on Table 4 . Refer to Figure 2 for the Regulation 2.2 Plan depicting the land on which the proposed Prospecting Right is to be exercised on.

Table 4: Application Area Boundary Coordinates (Projected Coordinate System: WGS_1984_UTM Zone_34S)³

Point	Latitude	Longitude
0	-29.398260	20.199646
1	-29.388994	20.224534
2	-29.283340	20.133845
3	-29.381712	20.043922
4	-29.312258	20.039195
5	-29.269380	19.991219
6	-29.288790	19.875686
7	-29.272294	19.697904
8	-29.272299	19.685429
9	-29.300219	19.696396
10	-29.325942	19.710682
11	-29.365772	19.760775
12	-29.356909	19.840975
13	-29.361885	19.866612
14	-29.344728	19.927584
15	-29.428206	19.995880
16	-29.417777	20.010888
17	-29.445665	20.045726
18	-29.413357	20.092308
19	-29.391691	20.155961

The locality of the proposed project is shown in Figure 1 and the properties in Figure 2.

³It should be noted that the initial area applied included several other farms/properties, however, as per the acceptance letter from the DMP, those properties already had mining rights and or prospecting rights and / or applications submitted and had to be excluded from this application. The table and figures in this report only include properties that have been accepted as part of the application.

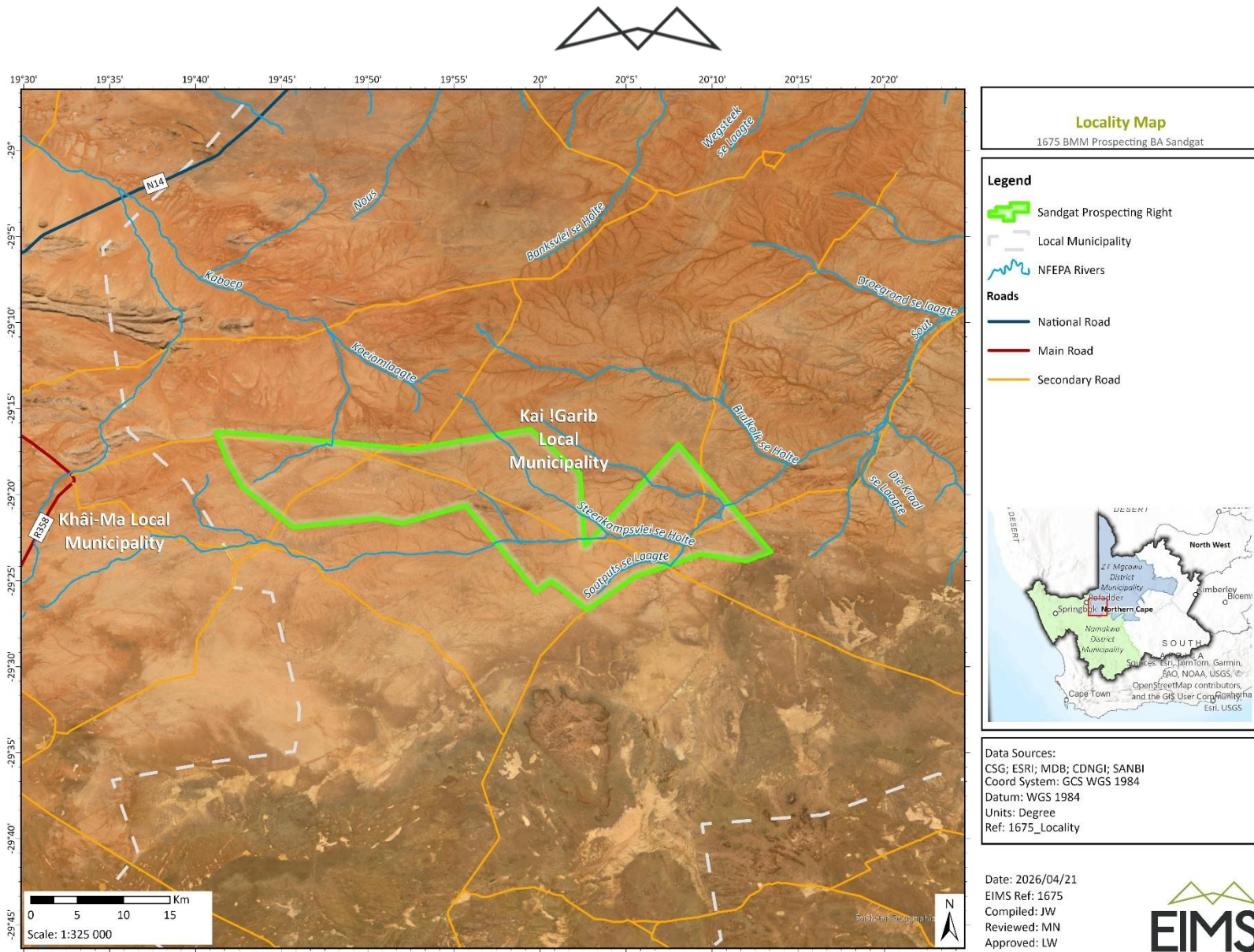
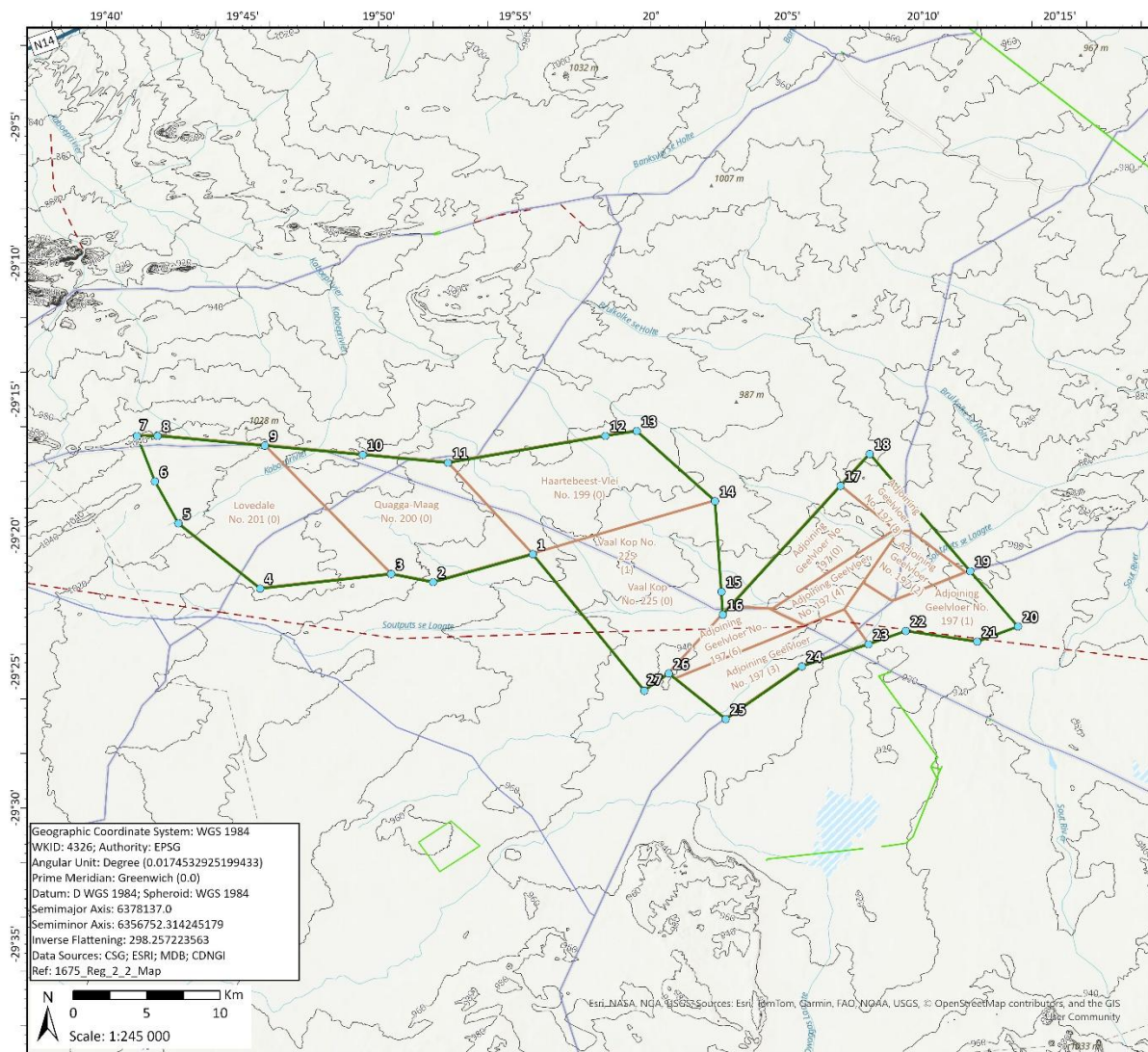


Figure 1: Locality Map



Geographic Coordinate System: WGS 1984
 WKID: 4326; Authority: EPSG
 Angular Unit: Degree (0.0174532925199433)
 Prime Meridian: Greenwich (0.0)
 Datum: D WGS 1984; Spheroid: WGS 1984
 Semimajor Axis: 6378137.0
 Semiminor Axis: 6356752.314245179
 Inverse Flattening: 298.257223563
 Data Sources: CS; ESRI; MDB; CDNGI
 Ref: 1675_Reg_2_2_Map



Esri, NASA, NOAA, USGS, Esri, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

MPRDA Regulation 2.2 Plan

1675 BMM Prospecting BA Sandgat

Plan prepared in accordance with Regulation 2(2) of the Regulations promulgated in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) for which application is made for a prospecting right for minerals, in terms of Section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), from information supplied by the Chief Surveyor-General.

- Legend**
- Sandgat Prospecting Right (46 980.249 ha)
 - Points
 - Directly Affected Farm Portions
 - Contours (20m)
 - Servitude Line
 - Servitude Area
 - Roads
 - National Road
 - Secondary Road



Date: 2026/05/25
 EIMS Ref: 1675
 Compiled: JW
 Reviewed: MN
 Approved: LW





Point	Latitude	Longitude	Point	Latitude	Longitude
1	-29.34472899	19.92758106	15	-29.36764599	20.04306307
2	-29.36188599	19.86660906	16	-29.38170999	20.04392307
3	-29.356906	19.84097207	17	-29.30293799	20.11595507
4	-29.36576799	19.76077307	18	-29.28334399	20.13384907
5	-29.325942	19.71068207	19	-29.35512199	20.19527407
6	-29.30021599	19.69639706	20	-29.3889936	20.2245316
7	-29.27229899	19.68542407	21	-29.39826199	20.19965106
8	-29.27229799	19.69790507	22	-29.391693	20.1559633
9	-29.27834699	19.76366007	23	-29.39983499	20.13309307
10	-29.28382099	19.82347607	24	-29.41335999	20.09231306
11	-29.28878699	19.87568306	25	-29.44566899	20.04572707
12	-29.27233199	19.97208106	26	-29.41777699	20.01089207
13	-29.26937799	19.99121806	27	-29.42820399	19.99588406
14	-29.31225799	20.03919606			

Nr#	Farm Name	Farm No#	Portion No#	District Municipality
1	Lovedale 201	201	RE	ZF Mgcau
2	Quagga- Maag 200	200	RE	ZF Mgcau
3	Haartebeest- Vlei 199	199	RE	ZF Mgcau
4	Adjoining Geelvloer 197	197	RE	ZF Mgcau
5	Adjoining Geelvloer 197	197	8	ZF Mgcau
6	Adjoining Geelvloer 197	197	1	ZF Mgcau
7	Adjoining Geelvloer 197	197	2	ZF Mgcau
8	Adjoining Geelvloer 197	197	4	ZF Mgcau
9	Adjoining Geelvloer 197	197	3	ZF Mgcau
10	Adjoining Geelvloer 197	197	6	ZF Mgcau
11	Vaal- Kop 225	225	RE and Portion 1	ZF Mgcau

MPRDA Regulation 2.2 Plan

1675 BMM Prospecting BA Sandgat

Plan prepared in accordance with Regulation 2(2) of the Regulations promulgated in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) for which application is made for a prospecting right for minerals, in terms of Section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), from information supplied by the Chief Surveyor-General.

Sheet 2 of 2

Applicant: Black Mountain Mining (Pty) Ltd

Signature:



Date: 2026/05/25
 EIMS Ref: 1675
 Compiled: JW
 Reviewed: MN
 Approved: LW



Figure 2: Regulation 2.2 Plan



2 DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY

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

Figure 1 above depicts the proposed prospecting area, the proposed areas of interest within the application area will be defined within the course of prospecting activities. This application employs a phased approach, where the work program is divided into several sequential sections. At the end of each section there will be a period of compiling, evaluating and reporting results. These results will not only determine whether the project proceeds, but also the manner in which it will go forward. Essentially, BMM will only action the next phase once satisfied with the results obtained. It is not possible to give details of the drilling program before the surveys and surface work phase 1 is completed. In the event that more information becomes available or that an ore body is located at an earlier stage, then an amended program will be put forward for the DMPR's approval.

It is anticipated that the invasive program will consist of a number of boreholes / drill sites with a footprint of approximately 300 m² each. Vegetation will be cleared at the borehole locations within the application area. Minor access tracks will be created to access the proposed borehole sites where there are no existing roads. The total length of the access routes is anticipated to be 5 000 m and the approximate width is 3m. The targeting of all drilling activities will be dependent on the results obtained during the preceding phases of prospecting, namely the geological mapping and geophysical surveying and as such it is currently not possible to include a finalised surface plan showing the intended location, extent and depth of boreholes to be completed.

No bulk sampling work is to be carried out during this prospecting program. Initial prospecting will be carried out by BMM itself, utilising its own in-house geologists to conduct and oversee the work. Drilling will be outsourced to a local drilling company, which is yet to be determined through an established procurement process. The methods detailed below will be used to investigate the prospecting area.

It is hereby noted that the different phases and timeframes of the prospecting herein envisaged are, by their nature, dependent on the results obtained during the preceding phases of such prospecting. The proposals set out in this Prospecting Work Programme are therefore made on the basis that results obtained during the preceding phases may necessitate reasonable changes and adaptations to such proposals, which will be reported as prescribed.

2.1 SUMMARY OF ACTIVITIES

- **Non-invasive phases (Phases 1–3 & 6):** Information gathering with minimal land impact.
- **Invasive phases (Phases 4, 7 and 8):** Drilling and sampling to physically test mineralization.
- **Pre-/feasibility phases (Phases 5 and 9):** Data integration and economic evaluation to decide if mining is viable.

This sequence shows how prospecting progresses step by step—from **low-impact reconnaissance** to **advanced drilling and resource modelling**—ensuring that each stage builds on the results of the previous one. Refer to Table 5 for the sequencing and timeline of the various phases.

2.1.1 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, field mapping and sampling, etc..

2.1.1.1 PHASE 1: DESKTOP STUDIES

- Collect and compile historical exploration data.
- Analyze existing maps and geological records.



- Identify and rank areas with potential mineralization.

2.1.1.2 PHASE 2: GEOLOGICAL FIELD MAPPING

- On-the-ground mapping of key rock formations (e.g., Bushmanland Group).
- Improve understanding of geological structures.
- Collect soil and rock samples for analysis (XRF or laboratory assays).

2.1.1.3 PHASE 3: GROUND-BASED GEOPHYSICS

- Conduct semi-regional surveys using advanced tools like time-domain electromagnetics (TDEM) with SQUID sensors.
- Supplement with techniques such as CSAMT or resistivity/IP surveys.
- Use airborne survey data to guide ground follow-up.

2.1.1.4 PHASE 6: DETAILED GROUND GEOPHYSICAL SURVEY

- Detailed Ground Geophysical Survey on individual positively mineralized targets to define possible extent.
- Survey report detailing individual targets. Plans for drill hole intersections supported by cross sections.

2.1.2 INVASIVE ACTIVITIES

These activities involve physical disturbance of the land, such as drilling and sampling, to directly test mineral targets.

- Drilling

The targeting of all drilling activities will be dependent on the results obtained during the preceding phases of prospecting, namely the geological mapping and geophysical surveying and as such it is currently not possible to include a finalized surface plan showing the intended location, extent and depth of boreholes to be completed.

Diamond drilling will be of the standard PQ, HQ or NQ size. Down hole surveys will be done every 50m in each hole. Core will be marked, logged, photographed and sampled according to the standard of the applicant's logging and sampling procedures.

Percussion Rotary Air Blast (RAB) or Reverse Circulation (RC) drilling may be carried out for pre-collaring of diamond drill boreholes or for obtaining samples if significant depth of cover is encountered over particular targets.

- Assaying

Rock chip / soil samples will be sent to a laboratory of the applicant's choice to be crushed, split, pulverized and assayed. Samples from core will be split using a core cutter before being sent to the laboratory for analysis.

- Metallurgical Test Work

Metallurgical test work would start during phase 7 of the prospecting work programme. These tests will be done by and in consultation with a preferred and accredited Laboratory of the applicant's choice.

2.1.2.1 PHASE 4: INITIAL BOREHOLES

- Prepare drill sites and access roads.
- Drill diamond core boreholes to test anomalies identified in earlier phases.
- Log, photograph, and sample cores.



- Conduct down-hole geophysics and ground EM surveys.
- Rehabilitate drill sites after completion.

2.1.2.2 **PHASE 7: RESOURCE CONTINUITY DRILLING**

- Drill widely spaced boreholes to test the size and continuity of mineralization.
- Perform sampling, assaying, and metallurgical test work.
- Apply quality assurance and control protocols.
- Rehabilitate sites and integrate data.

2.1.2.3 **PHASE 8: INFILL DRILLING FOR RESOURCE DEFINITION**

- Drill closer-spaced boreholes to refine grade and tonnage estimates.
- Conduct geotechnical drilling for mine design considerations.
- Continue sampling, assaying, and metallurgical test work.
- Rehabilitate sites and integrate results into resource models.

2.1.3 **PRE-/FEASIBILITY STUDIES**

These phases evaluate whether the identified resource has economic potential and justify moving toward mine development.

2.1.3.1 **PHASE 5: DATA COMPILATION & MODELLING**

- Integrate geological, geophysical, and drilling data.
- Build 3D models of mineralized zones.
- Rank targets based on mineralization potential.

2.1.3.2 **PHASE 9: DESKTOP PRE-FEASIBILITY STUDY**

- Use inferred resource data to estimate tonnage and grade.
- Conduct detailed 3D modelling of ore bodies.
- Perform risk assessments to determine if a full feasibility study is warranted.
- Consider funding models and project economics



Table 5: Proposed duration of prospecting phases and associated activities.

Phase	Activity (what are the activities that are planned to achieve optimal prospecting)	Skill(s) required (refers to the competent personnel that will be employed to achieve the required results)	Timeframe (in months) for the activity)	Outcome (What is the expected deliverable, e.g. Geological report, analytical results, feasibility study, etc.)	Timeframe for outcome (deadline for the expected outcome to be delivered)	What technical expert will sign off on the outcome? (e.g. geologist, mining engineer, surveyor, economist, etc.)
1	Non-Invasive Prospecting Desktop Study: Literature Survey / Review	Geologist	Month 1-12	Initial geological targeting report supported by historical records and existing data.	Month 12	Geologist
2	Non-Invasive Prospecting Geological Field Mapping	Geologist & field crew	Month 6-12	Detailed geological targeting report accompanied by maps & plans of ground truthing of initial geological targeting.	Month 12	Geologist
3	Non-Invasive Prospecting Semi-regional Ground Geophysical Survey	Geophysicist / Geologist / field crew	Month 12-24	Survey report detailing possible targets for further exploration, report supported by maps, plans & cross sections.	Month 24	Geophysicist
4	Invasive Prospecting Exploration Boreholes (16 RAB holes – 2400m; 4 Diamond Drill (DD) holes – 2000m)	Geologist / drill rig team / field crew / laboratory technicians	Month 24-34	Borehole cored data & RAB data: lithological logs, geophysical down hole surveys, assay results for mineralized intercepts.	Month 34	Geologist



Phase	Activity (what are the activities that are planned to achieve optimal prospecting)	Skill(s) required (refers to the competent personnel that will be employed to achieve the required results)	Timeframe (in months) for the activity)	Outcome (What is the expected deliverable, e.g. Geological report, analytical results, feasibility study, etc.)	Timeframe for outcome (deadline for the expected outcome to be delivered)	What technical expert will sign off on the outcome? (e.g. geologist, mining engineer, surveyor, economist, etc.)
5	Non-Invasive Prospecting Compilation, interpretation and modeling of data	Geologist / Geophysicist	Month 34-36	Modelling of data. Interpretation and 3D modeling of potential deposit. Generation & ranking of mineralized targets for further exploration work.	Month 36	Geologist
6	Non-Invasive Prospecting Detailed Ground Geophysical Survey on individual positively mineralized targets to define possible extent	Geophysicist / Geologist / field crew	Month 36-42	Survey report detailing individual targets. Plans for drill hole intersections supported by cross sections.	Month 42	Geophysicist
7	Invasive Prospecting Boreholes to confirm continuity of mineralization & potential deposit size (20 DD holes – 8000m)	Geologist / drill rig team / field crew / laboratory technicians	Month 42-48	Widely spaced borehole cored data: lithological logs, geophysical down hole surveys, assay results for mineralized intercepts, metallurgical test work. Risk assessment study to advance to next phase.	Month 48	Geologist



Phase	Activity (what are the activities that are planned to achieve optimal prospecting)	Skill(s) required (refers to the competent personnel that will be employed to achieve the required results)	Timeframe (in months) for the activity)	Outcome (What is the expected deliverable, e.g. Geological report, analytical results, feasibility study, etc.)	Timeframe for outcome (deadline for the expected outcome to be delivered)	What technical expert will sign off on the outcome? (e.g. geologist, mining engineer, surveyor, economist, etc.)
8	Invasive Prospecting Resource definition drilling (40 DD holes – 16000m)	Geologist / drill rig team / field crew / laboratory technicians	Month 48-60	Closely spaced borehole cored data: lithological logs, geophysical down hole surveys, assay results for mineralized intercepts, metallurgical test work. Resource estimation work producing an Inferred Mineral Resource.	Month 60	Geologist
9	Non-Invasive Prospecting Analytical Desktop Pre-Feasibility Study	Economic Geologist / Mining Geologist	Month 54-60	Geological & Pre-feasibility reports, maps & plans. Risk assessment study to determine if a full feasibility is warranted.	Month 60	Geologist or other professionally qualified persons.



3 POLICY AND LEGISLATIVE CONTEXT

This section provides an overview of the governing legislation identified which relates to the proposed project.

3.1 NATIONAL LEGISLATION

3.1.1 CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA

The constitution of any country is the supreme law of that country. The Bill of Rights in chapter 2 section 24 of the Constitution of South Africa Act (Act No. 108 of 1996) makes provisions for environmental issues and declares that: *“Everyone has the right -*

- a) to an environment that is not harmful to their health or well-being; and*
- b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:
 - i. prevent pollution and ecological degradation;*
 - ii. promote conservation; and*
 - iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development”.**

The Basic Assessment and associated impact mitigation actions are conducted to fulfil the requirement of the Bill of Rights.

3.1.2 MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT (MPRDA)

The aim of the MPRDA is to *“make provision for equitable access to and sustainable development of the nation’s mineral and petroleum resources”*. The MPRDA outlines the procedural requirements that need to be met to acquire mining rights in South Africa. The MPRDA also requires adherence with related legislation, chief amongst them is the National Environmental Management Act (Act No. 107 of 1998, NEMA) and the National Water Act (Act No. 36 of 1998, NWA).

Several amendments have been made to the MPRDA. These include, but are not limited to, the amendment of Section 102, concerning amendment of rights, permits, programmes and plans, to requiring the written permission of the Minister for any amendment or alteration; and the Section 5A(c) requirement that landowners or land occupiers receive twenty-one (21) days’ written notice prior to any activities taking place on their properties. One of the most important amendments requires all mining and production related activities to follow the full NEMA process as per the EIA Regulations which came into effect on 4 December 2014 for any new applications.

In support of the prospecting right application submitted for the Sandgat prospecting project, the applicant is required to also apply for environmental authorisation and as such to follow due process as contemplated in NEMA. This report has been compiled to meet the requirements of the MPRDA, Section 23 and Appendix 1 of the EIA Regulations (2014, as amended) in order to satisfy the requirements for a Basic Assessment Report.

3.1.3 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA)

The main aim of the National Environmental Management Act, 1998 (Act 107 of 1998 – NEMA) is to provide for co-operative governance by establishing decision-making principles on matters affecting the environment. In terms of the NEMA EIA Regulations, the applicant is required to appoint an EAP to undertake the EIA process, as well as conduct the public participation process towards an application for EA. In South Africa, EIA’s became a legal requirement in 1997 with the promulgation of regulations under the Environment Conservation Act (ECA). Subsequently, NEMA was passed in 1998. Section 24(2) of NEMA empowers the Minister and any MEC, with the concurrence of the Minister, to identify activities which must be considered, investigated, assessed and reported on to the competent authority responsible for granting the relevant EA. On 21 April 2006, the Minister of Environmental Affairs and Tourism (now Department of Forestry, Fisheries and the Environment – DFFE) promulgated regulations in terms of Chapter 5 of the NEMA. These regulations, in terms of the NEMA, were



amended a number of times between 2010 and 2022. The NEMA EIA Regulations, 2014, as amended, are applicable to this project. Exploration/Prospecting and Production activities officially became governable under the NEMA EIA Regulations in December 2014 with the competent authority identified as the DMRE.

The objective of the EIA Regulations is to establish the procedures that must be followed in the consideration, investigation, assessment and reporting of the listed activities that are triggered by the proposed project. The purpose of these procedures is to provide the competent authority with adequate information to make informed decisions which ensure that activities which may impact negatively on the environment to an unacceptable degree are not authorised, and that activities which are authorised are undertaken in such a manner that the environmental impacts are managed to acceptable levels.

NEMA sets out the general objectives of IEM in South Africa, including to (section 23(2)), of which the following two are of relevance for this report:

- Identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities. This is to be done with a view to minimising negative impacts, maximising benefits and promoting compliance with the principles of environmental management set out in section 2 (of NEMA).
- Ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them.

3.1.3.1 LISTED ACTIVITIES

In accordance with the provisions of Sections 24(5) and Section 44 of the NEMA the Minister has published Regulations (GN R. 982) pertaining to the required process for conducting EIA's in order to apply for, and be considered for, the issuing of an EA. These EIA Regulations provide a detailed description of the process to be followed when applying for EA for any listed activity.

In terms of these regulations a Basic Assessment process is required for the proposed project. Table 6 below identifies the listed activities the proposed project triggers and consequently requires authorisation prior to commencement.

Table 6: NEMA listed activities to be authorised

Activity	Activity Description	Applicability
NEMA GNR 983 Activity 20	Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the prospecting right.	As required by Section 16 of the MPRDA, the application for a Prospecting Right requires that an application for Environmental Authorisation is also lodged. The Applicant wishes to obtain a Prospecting Right to prospect for ferrous & base metals (Copper Ore, Iron Ore, Lead Ore, Zinc Ore, Manganese Ore, Nickel and Molybdenum) and associated metals and minerals, precious metals (Gold Ore, Silver Ore), and nuclear fuels (Uranium ore) and all associated metals and minerals. All impacts and/or activities related to the project description as described in Sections 2.1 to 2.3 of this report have been assessed.



Activity	Activity Description	Applicability
<p>NEMA GNR 984 Activity 27</p>	<p>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for</p> <ul style="list-style-type: none"> (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan. 	<p>The prospecting may involve clearance of over 1 Ha of indigenous vegetation.</p>
<p>NEMA GNR 985 Activity 12</p>	<p>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <ul style="list-style-type: none"> g. Northern Cape <ul style="list-style-type: none"> i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within critical biodiversity areas identified in bioregional plans. iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning. 	<p>The site falls within Critical Biodiversity Area (CBA) 1 and 2 areas in terms of the Northern Cape Provincial Conservation Plan (Bioregional plan). The prospecting will involve clearance of over 300 square meters of indigenous vegetation.</p>
<p>NEMA GNR 985 Activity 14</p>	<p>The development of-</p> <ul style="list-style-type: none"> (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs- <ul style="list-style-type: none"> (a) within a watercourse; (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse. g. Northern Cape <ul style="list-style-type: none"> ii. Outside urban areas: <ul style="list-style-type: none"> (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; (dd) Sensitive areas as identified in an environmental management framework as 	<p>Drill sites may be located near watercourses. The site falls within Critical Biodiversity Area (CBA) 1 and 2 areas in terms of the Northern Cape Provincial Conservation Plan (Bioregional plan). The prospecting will involve clearance of over 300 square meters of indigenous vegetation.</p>



Activity	Activity Description	Applicability
	<p>contemplated in chapter 5 of the Act and as adopted by the competent authority;</p> <p>(ee) Sites or areas identified in terms of an international convention;</p> <p>(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p>	

The DFFE have published a number of guidelines and protocols which have been considered in the compilation of this report and include but not limited to:

- Public Participation Guideline in terms of NEMA EIA Regulations (2017).
- Need and desirability Guideline in terms of NEMA (2012).
- National guideline on minimum information requirements for preparing Environmental Impact Assessments for mining act activities that require environmental authorisation (2018).
- 2004 Information Series covering various aspects of the EIA process.
- Procedures for assessment and minimum criteria for specialist studies.

3.1.3.2 SCREENING TOOL

A Screening Tool Report was generated from the DFFE Screening tool as per the requirements of Regulation 16 (1)(b)(v) of the EIA Regulations 2014, as amended, and was included in the Application for EA. The screening Tool provided a list of specialist studies for consideration and inclusion in the process. The Screening Tool identified environmental sensitivities are presented in Table 7.

Table 7: Screening Tool environmental sensitivities.

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



In this regard, as Site Sensitivity Verification Report (SSVR) has been compiled to consider the recommendations of the DFFE Screening Tool Report and to provide a rationale for the selection of specialist studies included in the assessment report. Please refer to Table 8 for a summary of the verification process. Please refer to APPENDIX B for the SSVR.



Table 8: SSVR findings and motivation.

Screening Specialist Required:	Tool Study	Level of Sensitivity:	Suggested Sensitivity:	Required level of Assessment	Motivation
Agriculture Impact Assessment		Medium	Medium	Compliance Statement	The only agricultural activities noted within the area was small-scale isolated livestock farming. The area's arid, sandy soils and lack of grass cover makes it difficult to undertake agricultural activities especially considering that there are no perennial rivers within proximity of the site. Considering the nature of the proposed activity (prospecting activities), there will be minimal impact to none on agricultural activities. Based on the Protocol for The Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Agricultural Resources (GN 320, 2020), site verification by a specialist is required and a Compliance Statement to be compiled. A Soils Compliance Statement was undertaken for the project and is included in APPENDIX E.
Archaeological and Cultural Heritage Impact Assessment		Low	Low	Compliance Statement	Based on the DFFE Screening Tool, no heritage features occur on the study area. Field assessment of the known Heritage Sites found that there are no heritage features within the known areas (based on areas transacted during the sensitivity verification). However, old building ruins likely older than 60 years were noted on site next to one of the homesteads. Although it is assumed that drilling sites can easily avoid the heritage features, the final drilling activities may fall within proximity of the potential heritage feature based on the outcome of the non-invasive prospecting activities. Therefore, a Heritage Compliance Assessment should be undertaken and align with the Minimum Standards for Heritage Specialist Studies in terms of Section 38 of the National Heritage Resources Act (No. 25 of 1999). Refer to APPENDIX E for a copy of the Heritage Compliance Statement.
Palaeontology Impact Assessment		Medium	Low	Desktop Assessment	According to the SAHRIS palaeo sensitivity map, the site falls within the Medium to Low and Insignificant/Zero palaeo sensitivity. In addition, no fossiliferous outcrops were noted within the site. Considering that for the Insignificant/Zero palaeo sensitivity, no palaeontological studies are required while for Low-Medium palaeo sensitivity, a desktop palaeontological study need to be conducted by a qualified palaeontologist. Refer to APPENDIX E for a copy of the



Screening Specialist Required:	Tool Study	Level of Sensitivity:	Suggested Sensitivity:	Required level of Assessment	Motivation
					Heritage Compliance Statement which includes the palaeontology desktop assessment.
Terrestrial Biodiversity Impact Assessment		Very High	Very High	Full Study	The DFFE Screening Tool found that the Relative Terrestrial Biodiversity Sensitivity Theme is Very High-Sensitive. Based on desktop datasets and site sensitivity verification, the site is located within Critical Biodiversity Areas 1 and 2 and Ecological Support Area. Although there have been disturbances on site, the vegetation is indigenous and there are areas which are pristine. Therefore, a Terrestrial Biodiversity Impact Assessment must be undertaken in line with the Protocol for The Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity (GN 320, 2020 as amended) to confirm presence of Flora or Fauna, Avifauna, SCC, or protected species within the development site, verify site terrestrial biodiversity sensitivity and provide necessary mitigation measures. Refer to APPENDIX E for a copy of the Terrestrial Biodiversity Assessment.
Aquatic Biodiversity Impact Assessment		Very High	Very High	Full Study	Based on the DFFE Screening Tool, the site overlaps very-high sensitive Freshwater Ecosystem Priority Areas (FEPA), rivers and wetlands. Based on the site sensitivity verification, there are several natural and artificial watercourses, wetlands, non-perennial river (Kaboep and Soutputs Se Laagte) and drainage lines occurring within the site. Subsequently, an Aquatic Biodiversity Impact Assessment be undertaken in line with the Protocol for The Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Aquatic Biodiversity (GN 320, 2020 as amended) to amongst others, provide a description of the aquatic biodiversity and ecosystems on the site, the threat status of the ecosystem and species as identified by the screening tool, an indication of the national and provincial priority status of the aquatic ecosystem, a description of the ecological importance and sensitivity of the aquatic ecosystem and a detailed assessment of the potential impacts of the proposed development and buffer requirements. Refer to APPENDIX E for a copy of the Aquatics Assessment.



Screening Specialist Required:	Tool Study	Level of Sensitivity:	Suggested Sensitivity:	Required level of Assessment	Motivation
Noise Assessment	Impact	Low	Low	None	The screening tool flagged a noise assessment to be undertaken. Although the drilling of boreholes may cause vibration and noise impacts, this will be limited and temporary. Several noise mitigation measures will be included in the EMPr and noise impacts on fauna and flora will be assessed by specialists, who will also recommend mitigation measures for inclusion in the EMPr.
Radioactivity Impact Assessment		Low	Low	None	The screening tool flagged that a radioactivity assessment will be required. However, radioactivity specialists normally only recommend generic guidelines for certain radiation protection measures to be in place for the prospecting itself, to ensure that the drilling crew do not get doses that are above the public dose limits. Generic guidelines or measures that should be applied to the workers/drilling crew should be developed which will include an outline of the relevant legislation and the safety standards that apply to radiation protection, upon approval of the EA and PR applications. This will be included as a mitigation measure in the EMPr to be developed prior to drilling only.
Plant Assessment	Species	Medium	High	Full Study	Based on the DFFE Screening Tool, there are sensitive plants species in the area including Sensitive species 1209, 545 and 317 (name withheld to protect the species from illegal harvesting, plant must be protected). Sensitive species, in an ecological context, refers to species that are vulnerable to environmental changes or human impacts and are therefore given special protection or management considerations. Considering that there are areas on indigenous vegetation, intact vegetation (i.e., ridge, there is a likelihood of these species and other sensitive plants being present. Plant species assessment is therefore required as per the Protocol for The Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Plant Species (GN 1150, 2020). This assessment must be covered by the Terrestrial Biodiversity Impact Assessment. This assessment is covered by the Terrestrial Biodiversity Impact Assessment.



Screening Specialist Required:	Tool Study	Level of Sensitivity:	Suggested Sensitivity:	Required level of Assessment	Motivation
Animal Species Assessment		High	High	Full Study	Based on the DFFE Screening Tool, several high-sensitive animal species are likely to occur on site including the <i>Aves-Falco biarmicus</i> (Lanner Falcon), Vulnerable <i>Aves-Cursorius rufus</i> (Burchell's Courser), Endangered <i>Aves-Neotis ludwigii</i> (Ludwig's bustard) and the medium sensitive for the <i>Aves-Sagittarius serpentarius</i> (Secretarybird) bird species. Although bird species are likely to be minimally impacted due to their adaptation of temporary relocation and returning to an area after activities, other animal species were also noted on site including antelope and rodents which may be more affected by the prospecting activities. Considering the minimal human activities on site and areas of indigenous vegetation, there is a likelihood of these species and other sensitive animal species being present as there is a habitat likely suitable to support these animal species. Animal species assessment is therefore required as per the Protocol for The Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species (GN 1150, 2020). This assessment must be covered by the Terrestrial Biodiversity Impact Assessment. This assessment is covered by the Terrestrial Biodiversity Impact Assessment.
Civil Theme	Aviation	Low	Low	None	Based on the DFFE Screening Tool, there are no nearby civil aviation facilities to the site. Based on the site sensitivity verification, there were no civil aviation infrastructure or facilities within or near the site. Based on the project description, the project will not transect nor reflect light which may have an impact on civil aviation. The proposed activities will not interfere with surface and/or air transmission and therefore, there are no anticipated impacts on civil aviation emanating from the project. The proposed development does not entail the establishment of high-rise structures, use of aboveground high frequency electromagnetic radiation nor reflecting infrastructure. In addition, the area has low air traffic. Therefore, the proposed activities are assessed to have a low impact on Civil Aviation and no study is required.



Screening Specialist Required:	Tool Study	Level of Sensitivity:	Suggested Sensitivity:	Required level of Assessment	Motivation
Defence Theme		Low	Choose an item.	None	There are no known military bases / facilities present within the vicinity of the project site. The nearest military facilities to the site are located in Uppington. There are no anticipated impacts on defence theme emanating from the proposed activities, subsequently, there is no requirement or justification to undertake a Defence Assessment for the project. In addition, the DFFE Screening Tool Report does not indicate Defence Assessment as part of the identified specialists' assessments.



3.1.4 NATIONAL ENVIRONMENTAL MANAGEMENT: PROTECTED AREAS ACT

The National Environmental Management Protected Areas Act (Act No. 57 of 2003 – NEMPAA) is intended to “provide for the protection and conservation of ecologically viable areas representative of South Africa’s biological diversity and its natural landscapes and seascapes” and creating a “national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity”.

The NEMPAA defines various kinds of protected areas, namely: “special nature reserves, national parks, nature reserves (including wilderness areas) and protected environments; world heritage sites; marine protected areas; specially protected forest areas, forest nature reserves and forest wilderness areas declared in terms of the National Forests Act, 1998 (Act 84 of 1998); and mountain catchment areas declared in terms of the Mountain Catchment Areas Act, 1970 (Act 63 of 1970)”.

A portion of the study area overlaps with the buffer zone of the Augrabies National Park. The Basic Assessment Report has taken full cognisance of the requirements of the NEMPAA and other environmental legislation in this regard. An application for Environmental Authorisation has been submitted, and independent specialist studies have been conducted to assess potential impacts on biodiversity and heritage. Formal consultations are undertaken with South African National Parks (SANParks) to ensure alignment with conservation objectives. Importantly, the only invasive activity will be diamond drilling, that may be carried out within the buffer zone, subject to strict environmental management and rehabilitation measures.

According to the South Africa Protected Areas Database (SAPAD) and South Africa Conservation Areas Database (SACAD), no SAPAD or SACAD sites occur within 5 km of the PAOI. The PAOI does not overlap with any National Protected Areas Expansion Strategy (NPAES) Priority Focus Areas (NPAES, 2018).

3.1.5 NATIONAL ENVIRONMENTAL MANAGEMENT BIODIVERSITY ACT (NEMBA)

The National Environmental Management Biodiversity Act (Act No. 10 of 2004 – NEMBA) provides for the management and conservation of South Africa’s biodiversity within the framework of the NEMA as well as the protection of species and ecosystems that warrant national protection. Within the framework of this act, various regulations are promulgated which provide specific requirements and management measures relating to protecting threatened ecosystems, threatened or protected species as well as the control of alien and invasive species. A summary of these regulations is presented below.

The National List of Ecosystems that are Threatened and Need of Protection (GN 1002 of 2011) are promulgated under the NEMBA and these Regulations provide for listing of threatened or protected ecosystems in one of the following categories:

- a) Critically Endangered (CR) ecosystems, being ecosystems that have undergone severe degradation of ecological structure, function or composition as a result of human intervention and are subject to an extremely high risk of irreversible transformation;
- b) Endangered (EN) ecosystems, being ecosystems that have undergone degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems;
- c) Vulnerable (VU) ecosystems, being ecosystems that have a high risk of undergoing significant degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems or endangered ecosystems; and
- d) Protected ecosystems, being ecosystems that are of high conservation value or of high national or provincial importance, although they are not listed as critically endangered, endangered or vulnerable.

Further regulations published under the NEMBA are the threatened or protected Species Regulations (GN R 152 OF 2007) which aims to:

- (a) further regulate the permit system set out in Chapter 7 of the Biodiversity Act insofar as that system applies to restricted activities involving specimens of listed threatened or protected species;



- (b) provide for the registration of captive breeding operations, commercial exhibition facilities, game farms, nurseries, scientific institutions, sanctuaries and rehabilitation facilities and wildlife traders;
- (c) provide for the regulation of the carrying out of a specific restricted activity, namely hunting;
- (d) provide for the prohibition of specific restricted activities involving specific listed threatened or protected species;
- (e) provide for the protection of wild populations of listed threatened species; and
- (f) provide for the composition and operating procedure of the Scientific Authority.

The Alien and Invasive Species Lists are promulgated under the NEMBA with the aim of protecting the quality and quantity of arable land in South Africa. Loss of arable land should be avoided and declared Weeds and Invaders in South Africa are categorised according to one of the following categories, and require control or removal:

- a) Category 1a Listed Invasive Species: Category 1a Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the Act as species which must be combated or eradicated;
- b) Category 1b Listed Invasive Species: Category 1b Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the Act as species which must be controlled;
- c) Category 2 Listed Invasive Species: Category 2 Listed Invasive Species are those species listed by notice in terms of section 70(1)(a) of the Act as species which require a permit to carry out a restricted activity within an area specified in the Notice or an area specified in the permit, as the case may be; and
- d) Category 3 Listed Invasive Species: Category 3 Listed Invasive Species are species that are listed by notice in terms of section 70(1)(a) of the Act, as species which are subject to exemptions in terms of section 71(3) and prohibitions in terms of section 71A of Act, as specified in the Notice.

In giving effect to the above, the Alien and Invasive Species Regulations (GNR 1020 of 2020) provide for amongst others, the prevention of the spread or allowing the spread of, any specimen of a listed invasive species.

Based on desktop datasets and site sensitivity verification as well as the biodiversity assessment conducted, the site is located within Critical Biodiversity Area 1 and 2, Ecological Support Area. Although there have been disturbances on site, there vegetation is indigenous and there are areas which are pristine. The study area overlaps with the 5 km buffer of the Aggenys-Pella-Pofadder Key Biodiversity Area (KBA).

The vegetation assessment was conducted throughout the extent of the study area. The vegetation assessment was conducted throughout the extent of the study area. A total of 83 indigenous plant species were recorded in the study area during the field assessment. Notably, this is not a complete list of indigenous flora recorded within the study area, but only species that were able to be recorded within the study area within the time and accessibility constraints.

The list of plant species recorded is by no means comprehensive, and repeated surveys during different phenological periods not covered, may likely yield additional flora species for the study area. However, floristic analysis conducted to date is regarded as a sound representation of the local flora for the PAOI. A total of 83 tree, shrub and herbaceous plant species were recorded in the study area during the field assessment. This includes seven (22) provincially protected species, one (1) nationally protected species, and three (3) Species of Conservation Concern of which one (1) is Sensitive Species 545, as well as three (4) NEMBA listed exotics. Permits would be required for removal of these species. Once specific drilling sites have been determined by non-invasive prospecting, a site walk down survey prior to drilling will be recommended and is included as a mitigation measure in the EMP, to determine if any protected tree species will be affected, for which removal or relocation permits need to be applied for.

3.1.6 THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT (NEMWA)

On 2 June 2014, the NEMWA came into force. The objectives of this Act are:



- a) to protect health, well-being and the environment by providing reasonable measures for-
 - i. minimising the consumption of natural resources;
 - ii. avoiding and minimising the generation of waste;
 - iii. reducing, re-using, recycling and recovering waste;
 - iv. treating and safely disposing of waste as a last resort;
 - v. preventing pollution and ecological degradation;
 - vi. securing ecologically sustainable development while promoting justifiable economic and social development;
 - vii. promoting and ensuring the effective delivery of waste services;
 - viii. remediating land where contamination presents, or may present, a significant risk of harm to health or the environment; and
 - ix. achieving integrated waste management reporting and planning;
- b) to ensure that people are aware of the impact of waste on their health, well-being and the environment;
- c) to provide for compliance with the measures set out in paragraph (a); and
- d) generally, to give effect to section 24 of the Constitution in order to secure an environment that is not harmful to health and well-being.

Section 16 of the NEMWA states:

1. A holder of waste must, within the holder's power, take all reasonable measures to-
 - a) *“Avoid the generation of waste and where such generation cannot be avoided, to minimise the toxicity and amounts of waste that are generated;*
 - b) *Reduce, re-use, recycle and recover waste;*
 - c) *Where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner;*
 - d) *Manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through noise, odour, or visual impacts;*
 - e) *Prevent any employee or any person under his or her supervision from contravening the Act; and*
 - f) *Prevent the waste from being used for unauthorised purposes.”*

The NEMWA provides for specific waste management measures to be implemented, as well as providing for the licensing and control of waste management activities.

3.1.6.1 WASTE CLASSIFICATION AND MANAGEMENT REGULATIONS

The Waste Classification and Management Regulations (GNR 634) are published under the NEMWA. The purpose of these Regulations is to –

- Regulate the classification and management of waste in a manner which supports and implements the provisions of the Act;
- Establish a mechanism and procedure for the listing of waste management activities that do not require a Waste Management Licence;
- Prescribe requirements for the disposal of waste to landfill;



- Prescribe requirements and timeframes for the management of certain wastes; and
- Prescribe general duties of waste generators, transporters and managers.

Waste classification, as presented in Chapter 4 of these regulations, entails the following:

- Wastes listed in Annexure 1 of these Regulations do not require classification in terms of SANS 10234;
- Subject to sub regulation (1), all waste generators must ensure that the waste they generate is classified in accordance with SANS 10234 within one hundred and eighty (180) days of generation;
- Waste must be kept separate for the purposes of classification in terms of sub regulation (2), and must not be mixed prior to classification;
- Waste-must be re-classified in terms of sub regulation (2) every five (5) years, or within 30 days of modification to the process or activity that generated the waste, changes in raw materials or other inputs, or any other variation of relevant factors;
- Waste that has been subjected to any form of treatment must be re-classified in terms of sub regulation (2), including any waste from the treatment process; and
- If the Minister reasonably believes that a waste has not been classified correctly in terms of sub regulation (2), he or she may require the waste generator to have the classification peer reviewed to confirm the classification.

Furthermore, Chapter 8 of the Regulations stipulates that unless otherwise directed by the Minister to ensure a better environmental outcome, or in response to an emergency so as to protect human health, property or the environment –

- Waste generators must ensure that their waste is assessed in accordance with the Norms and Standards for Assessment of Waste for Landfill Disposal set in terms of section 7(1) of the Act prior to the disposal of the waste to landfill;
- Waste generators must ensure that the disposal of their waste to landfill is done in accordance with the Norms and Standards for Disposal of Waste to Landfill set in terms of section 7(1) of the Act; and
- Waste managers disposing of waste to landfill must only do so in accordance with the Norms and Standards for Disposal of Waste to Landfill set in terms of section 7 (1) of the Act.

3.1.6.2 **NEMWA NATIONAL NORMS AND STANDARDS FOR THE ASSESSMENT OF WASTE FOR LANDFILL DISPOSAL, 2013 (GN R. 635)**

These Norms and Standards prescribe the requirements for the assessment of waste prior to storage or disposal to landfill. The aim of the waste assessment tests is to characterise the material to be deposited or stored in terms of the above-mentioned waste assessment guidelines set by the DFFE. The waste generated at the proposed project which is not listed under Annexure 1 of the Waste Classification and Management Regulations, must be assessed in accordance to these Norms and Standards to determine the waste type. In terms of Regulation 12(1) of GN R 634 with regards to the classification of waste, the potential level of risk associated with disposal or downstream use of waste must be determined by following the prescribed and appropriate analysis protocol as detailed in these Norms and Standards. The assessment of the waste should:

- Identify the chemical substances present in the waste;
- Sampling and analysis to determine the total concentration (TC) and leachable concentration (LC) of the elements and chemical substances that have been identified within the waste according to section 6 of this regulation;



- Based on the TC and LC limits of the identified elements and chemical substances in the analysed waste exceeding the corresponding TC and LC thresholds respectively, the waste type will be determined (Type 0 Waste to Type 4 Waste); and
- The waste type will then be used to determine to which landfill class site the waste must be disposed and / or the suitable containment barrier design for storage.

In the context of the Sandgat prospecting right project, drill muds, formation water (if encountered), etc. would constitute waste and must be classified and ranked as specified above for correct disposal.

3.1.6.3 NEMWA NATIONAL NORMS AND STANDARDS FOR THE DISPOSAL OF WASTE TO LANDFILL, 2013 (GN R. 636)

Once the waste has been assessed and waste type determined, these Norms and Standards can be used to determine the minimum requirements for the landfill and containment barrier design. This will distinguish between Class A, Class B, Class C, or Class D landfills and the associated containment barrier requirements. Although these Norms and Standards prescribe the containment barrier or liner design for each determined waste type, the recent amendments in chapter 3 of the regulations to the planning and management of residue stockpiles and residue deposits, a competent person must recommend the pollution control measures suitable for a specific residue stockpile or residue deposit on the basis of a risk analysis as contemplated in regulations 4 and 5 of the regulations. The recommendation should be founded on a risk analysis based on the characteristics and classification in regulation 4 and 5 of these Regulations, towards determining the appropriate mitigation and management measures.

3.1.6.4 THE REGULATIONS REGARDING THE PLANNING AND MANAGEMENT OF RESIDUE STOCKPILES AND RESIDUE DEPOSITS AND ASSOCIATED AMENDMENT

These Regulations pertain to the planning and management of residue stockpiles and residue deposits from a prospecting, mining, exploration or production operation were published in 2015 and were amended in 2018. The Regulations and associated amendment relate to the assessment of impacts and the analyses of risks relating to the management of residue stockpiles and residue deposits, and involve the following:

- The identification and assessment of environmental impacts arising from the establishment of residue stockpiles and residue deposits must be done as part of the environmental impact assessment conducted in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998);
- A risk analysis based on the characteristics and the classification set out in regulation 4 (characterisation of residue stockpiles and residue deposits) and 5 (classification of residue stockpiles and residue deposits) of these regulations must be used to determine the appropriate mitigation and management measures; and
- A competent person must recommend the pollution control measures suitable for a specific residue stockpile or residue deposit on the basis of a risk analysis as contemplated in regulations 4 and 5 of these Regulations.

BMM should undertake a waste classification study of the drill waste in order to determine the waste class (general or hazardous). This is to confirm the correct disposal method for drill waste disposal.

3.1.7 THE NATIONAL WATER ACT (NWA)

The purpose of the NWA is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways which take into account amongst other factors:

- a) meeting the basic human needs of present and future generations;
- b) promoting equitable access to water;
- c) redressing the results of past racial and gender discrimination;
- d) promoting the efficient, sustainable and beneficial use of water in the public interest;



- e) facilitating social and economic development;
- f) providing for growing demand for water use;
- g) protecting aquatic and associated ecosystems and their biological diversity;
- h) reducing and preventing pollution and degradation of water resources;
- i) meeting international obligations;
- j) promoting dam safety;
- k) managing floods and droughts,

and for achieving this purpose, to establish suitable institutions and to ensure that they have appropriate community, racial and gender representation.

The NWA makes provision for two types of applications for water use licences, namely individual applications and compulsory applications. The NWA also provides that the responsible authority may require an assessment by the applicant of the likely effect of the proposed licence on the resource quality, and that such assessment be subject to the NEMA EIA Regulations. A person may use water if the use is –

- Permissible as a continuation of an existing lawful water use (ELWU);
- Permissible in terms of a general authorisation (GA);
- Permissible under Schedule 1; or
- Authorised by a licence.

The above water use processes are described in Figure 3.

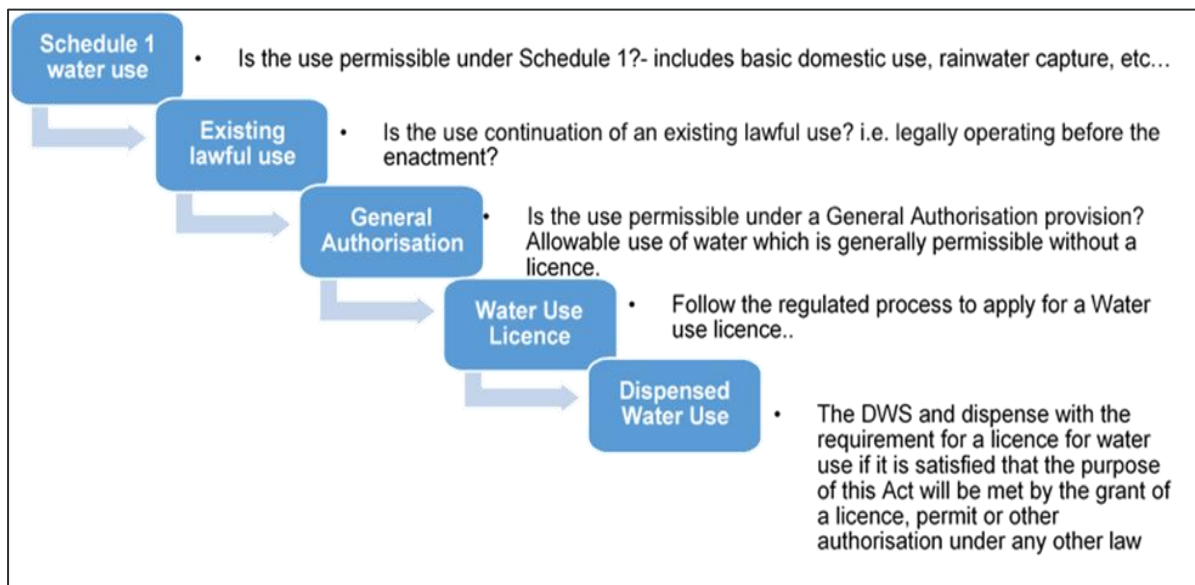


Figure 3: Authorisation processes for new water uses.

The NWA defines 11 water uses in Section 21 of the Act. A water use may only be undertaken if authorised by the DWS. The water uses for which an authorisation or licence can be issued include:

- a) Taking water from a water resource;
- b) Storing water;
- c) Impeding or diverting the flow of water in a watercourse;
- d) Engaging in a stream flow reduction activity contemplated in section 36;



- e) Engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);
- f) Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduits;
- g) Disposing of waste in a manner which may detrimentally impact on a water resource;
- h) Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;
- i) Altering the bed, banks, course or characteristics of a watercourse;
- j) Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and
- k) Using water for recreational purposes.

A watercourse is defined in terms of the Act as follows:

- a) a river or spring;
- b) a natural channel in which water flows regularly or intermittently;
- c) a wetland, lake or dam into which, or from which, water flows; and
- d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks;

The regulated area of a watercourse for section 21(c) or (i) of the Act water uses, is similarly defined in terms of the Act as follows:

- a) The outer edge of the 1 in 100-year flood line and/or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam;
- b) In the absence of a determined 1 in 100-year flood line or riparian area the area within 100m from the edge of a watercourse where the edge of the watercourse is the first identifiable annual bank fill flood bench (subject to compliance to section 144 of the Act); or
- c) A 500 m radius from the delineated boundary (extent) of any wetland or pan.

It is noted that the application area intersects various water courses, however, due to the fact that invasive prospecting will only be done at a later stage, the initial phases will not require a water use licence and thus the requirement of a water use licence will only be assessed and applied for (if required) once the invasive prospecting areas have been identified. The applicant must appoint an EAP to assess the applicability / requirement for a Water Use Authorisation as soon as final drilling locations are known.

3.1.8 NATIONAL HERITAGE RESOURCES ACT (NHRA)

The National Heritage Resources Act (Act 25 of 1999 – NHRA) stipulates that cultural heritage resources may not be disturbed without authorisation from the relevant heritage authority. Section 34(1) of the NHRA states that, *“no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority...”* The NHRA is utilised as the basis for the identification, evaluation and management of heritage resources and in the case of Cultural Resource Management (CRM) those resources specifically impacted on by development as stipulated in Section 38 of NHRA, and those developments administered through the NEMA, MPRDA and the Development Facilitation Act (FDA) legislation. In the latter cases the feedback from the relevant heritage resources authority is required by the State and Provincial Departments managing these Acts before any authorisations are granted for a development. The last few years have seen a significant change towards the inclusion of heritage assessments as a major component of Environmental Impact Processes required by the NEMA and MPRDA.



The NEMA 23(2)(b) gives effect to the NHRA and states that an integrated environmental management plan should, “...identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage”. A study of subsections (23)(2)(d), (29)(1)(d), (32)(2)(d) and (34)(b) and their requirements reveals the compulsory inclusion of the identification of cultural resources, the evaluation of the impacts of the proposed activity on these resources, the identification of alternatives and the management procedures for such cultural resources for each of the documents noted in the Environmental Regulations. A further important aspect to be taken into account of in the EIA Regulations under the NEMA relates to the Specialist Report requirements (Appendix 6 of EIA Regulations 2014, as amended) which apply to Heritage Impact Assessments.

The MPRDA also gives effect to the NHRA as this Act defines ‘environment’ as it is in the NEMA and, therefore, acknowledges cultural resources as part of the environment. Section 39(3)(b) of this Act specifically refers to the evaluation, assessment and identification of impacts on all heritage resources as identified in Section 3(2) of the NHRA that are to be impacted on by activities governed by the MPRDA. Section 40 of the MPRDA requires the consultation with any State Department administering any law that has relevance on such an application through Section 39 of the MPRDA. This implies the evaluation of Heritage Assessment Reports in Environmental Management Plans or Programmes by the relevant heritage authorities.

In accordance with the legislative requirements and EIA rating criteria, the regulations of the South African Heritage Resources Agency (SAHRA) and Association of Southern African Professional Archaeologists (ASAPA) have also been incorporated to ensure that a comprehensive and legally compatible Heritage Report is compiled. A desktop heritage report has been compiled and is presented in APPENDIX E.

3.1.9 ENVIRONMENT CONSERVATION ACT (ECA)

The ECA (Act 73 of 1989) was, prior to the promulgation of the NEMA, the backbone of environmental legislation in South Africa. To date the majority of the ECA has been repealed by various other Acts, however Section 25 of the Act and the Noise Regulations (GN R. 154 of 1992) promulgated under this section are still in effect. These Regulations serve to control noise and general prohibitions relating to noise impact and nuisance.

In terms of section 25 of the ECA, the National Noise Control Regulations (GN R. 154 – NCRs) published in Government Gazette No. 13717 dated 10 January 1992, were promulgated. The NCRs were revised under GN R. 55 of 14 January 1994 to make it obligatory for all authorities to apply the regulations. Provincial noise control regulations have been promulgated in Gauteng, Free State and Western Cape Provinces.

The NCRs will need to be considered in relation to the potential noise that may be generated mainly during the construction phase of the proposed project. The two key aspects of the NCRs relate to disturbing noise and noise nuisance.

Section 4 of the Regulations prohibits a person from making, producing or causing a disturbing noise, or allowing it to be made produced or caused by any person, machine, device or apparatus or any combination thereof. A disturbing noise is defined in the Regulations as “*a noise level which exceeds the zone sound level or if no zone sound level has been designated, a noise level which exceeds the ambient sound level at the same measuring point by 7 dBA or more.*”

Section 5 of the NCRs in essence prohibits the creation of a noise nuisance. A noise nuisance is defined as “*any sound which disturbs or impairs or may disturb or impair the convenience or peace of any person*”. The South African National Standard 10103 also applies to the measurement and consideration of environmental noise and should be considered in conjunction with these Regulations.

There are a few South African National Standards (SANS) relevant to noise from mines, industry and roads. They are:

- South African National Standard (SANS) 10103:2008 – ‘The measurement and rating of environmental noise with respect to annoyance and to speech communication’;
- SANS 10210:2004 – ‘Calculating and predicting road traffic noise’;



- SANS 10328:2008 – ‘Methods for environmental noise impact assessments’;
- SANS 10357:2004 – ‘The calculation of sound propagation by the Concave method’;
- SANS 10181:2003 – ‘The Measurement of Noise Emitted by Road Vehicles when Stationary’; and
- SANS 10205:2003 – ‘The Measurement of Noise Emitted by Motor Vehicles in Motion’.

The relevant standards use the equivalent continuous rating level as a basis for determining what is acceptable. The levels may take single event noise into account, but single event noise by itself does not determine whether noise levels are acceptable for land use purposes. With regards to SANS 10103:2008, the recommendations are likely to inform decisions by authorities, but non-compliance with the standard will not necessarily render an activity unlawful per se. Due to the remote nature of the project location and the temporary nature of the drilling / prospecting activities no noise assessment is considered necessary for this particular application.

3.1.10 THE CONSERVATION OF AGRICULTURAL RESOURCES ACT (CARA)

The law on Conservation of Agricultural Resources (Act 43 of 1983) aims 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. In order to achieve the objectives of this Act, control measures related to the following may be prescribed to land users to whom they apply:

- The cultivation of virgin soil;
- The utilisation and protection of land which is cultivated;
- The irrigation of land;
- The prevention or control of waterlogging or salination of land;
- The utilisation and protection of vleis, marshes, water sponges, water courses and water sources;
- The regulating of the flow pattern of run-off water;
- The utilisation and protection of the vegetation;
- The grazing capacity of veld, expressed as an area of veld per large stock unit;
- The maximum number and the kind of animals which may be kept on veld; The prevention and control of veld fires;
- The utilisation and protection of veld which has burned;
- The control of weeds and invader plants;
- The restoration or reclamation of eroded land or land which is otherwise disturbed or denuded;
- The protection of water sources against pollution on account of farming practices;
- The construction, maintenance, alteration or removal of soil conservation works or other structures on land; and
- Any other matter which the Minister may deem necessary or expedient in order that the objects of this Act may be achieved.

Further, different control measures may be prescribed in respect of different classes of land users or different areas or in such other respects as the Minister may determine. Impacts on the soil, biodiversity and water resources have been identified with regards to the proposed Project, and mitigation and management measures recommended.



3.1.11 THE NATIONAL FORESTS ACT (NFA)

According to this Act, the Minister may declare a tree, group of trees, woodland or a species of trees as protected. The prohibitions provide that “no person may cut, damage, disturb, destroy or remove any protected tree, or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister.”

The vegetation assessment was conducted throughout the extent of the study area. The vegetation assessment was conducted throughout the extent of the study area. A total of 83 indigenous plant species were recorded in the study area during the field assessment. Notably, this is not a complete list of indigenous flora recorded within the study area, but only species that were able to be recorded within the study area within the time and accessibility constraints.

The list of plant species recorded is by no means comprehensive, and repeated surveys during different phenological periods not covered, may likely yield additional flora species for the study area. However, floristic analysis conducted to date is regarded as a sound representation of the local flora for the PAOI. A total of 83 tree, shrub and herbaceous plant species were recorded in the study area during the field assessment. This includes seven (22) provincially protected species, one (1) nationally protected species, and three (3) Species of Conservation Concern of which one (1) is Sensitive Species 545, as well as three (4) NEMBA listed exotics. Permits would be required for removal of these species. Once specific drilling sites have been determined by non-invasive prospecting, a site walk down survey prior to drilling will be recommended and is included as a mitigation measure in the EMP, to determine if any protected tree species will be affected, for which removal or relocation permits need to be applied for.

3.1.12 THE SPATIAL PLANNING AND LAND USE MANAGEMENT ACT (SPLUMA)

The Spatial Planning and Land Use Management Act (Act 16 of 2013 – SPLUMA) is set to aid effective and efficient planning and land use management, as well as to promote optimal exploitation of minerals and mineral resources. The SPLUMA was developed to legislate for a single, integrated planning system for the entire country. Therefore, the Act provides a framework for a planning system for the country and introduces provisions to cater for development principles; norms and standards; inter-governmental support; Spatial Development Frameworks (SDFs) across national, provincial, regional and municipal areas; Land Use Schemes (LUS); and municipal planning tribunals.

3.1.13 OCCUPATIONAL HEALTH AND SAFETY ACT

The Occupational Health and Safety Act (Act 85 of 1993 - OHS) provides for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected therewith. Worker safety will form part of the contractor’s safety requirements and be guided by the OHS. This would entail a full health and safety file including but not limited to pre-mobilization medical assessments, work environment and task specific risk assessments and method statements etc. The project will be required to comply with the OHS and or Mine Health and Safety Act (dependent on the specific aspect of the production operations). Therefore, safety of all personnel will be guided by overarching South African legislation.

The Major Hazard Installation Regulations (GNR 692 of 30 July 2001) are promulgated under the OHS and apply to employers, self-employed persons and users, who have on their premises, either permanently or temporarily, a major hazard installation or a quantity of a substance which may pose a risk that could affect the health and safety of employees and the public.

A “major hazard installation” means an installation-

- a) where more than the prescribed quantity of any substance is or may be kept, whether permanently or temporarily; or



- b) where any substance is produced, processed, used, handled or stored in such a form and quantity that it has the potential to cause a major incident.

The project will not trigger the requirement for an MHI.

3.1.14 NATIONAL DUST CONTROL REGULATIONS

Dustfall is assessed for nuisance impact and not for inhalation health impact. The National Dust Control Regulations (Department of Environmental Affairs, March 2026) prescribes measures for the control of dust in residential and non-residential areas. Acceptable dust fall rates are measured (using American Standard Testing Methodology at and beyond the boundary of the premises where dust originates. In addition to the dust fall limits, the National Dust Control Regulations prescribe monitoring procedures and reporting requirements. Dust that may be created from the prospecting activities will be managed in accordance with these Regulations. In addition to the dustfall limits, the NDCR prescribe monitoring procedures and reporting requirements.

3.1.15 MINING AND BIODIVERSITY GUIDELINES

The Mining and Biodiversity Guidelines (2013) was developed by the Department of Mineral Resources, the Chamber of Mines, the SANBI and the South African Mining and Biodiversity Forum, with the intention to find a balance between economic growth and environmental sustainability. The Guideline is envisioned as a tool to “foster a strong relationship between biodiversity and mining, which will eventually translate into best practice within the mining sector. It provides a tool to facilitate the sustainable development of South Africa’s mineral resources, in a way that enables regulators, industry and practitioners to minimise the impact of mining on the country’s biodiversity and ecosystem services. It provides the mining sector with a practical, user- friendly manual for integrating biodiversity considerations into the planning processes and managing biodiversity during the operational phases of a mine, from exploration through to closure. The Guideline provides explicit direction in terms of where: mining-related impacts are legally prohibited; biodiversity priority areas may present high risks for mining projects; and biodiversity may limit the potential for mining.

In identifying biodiversity priority areas, which have different levels of risk against mining, the guideline categorises biodiversity priority areas into four categories of biodiversity priority areas in relation to their importance from a biodiversity and ecosystem service point of view as well as the implications for mining in these areas:

- A) Legally protected areas, where mining is prohibited;
- B) Areas of highest biodiversity importance, which are at the highest risk for mining;
- C) Areas of high biodiversity importance, which are at a high risk for mining; and
- D) Areas of moderate biodiversity importance, which are at a moderate risk for mining.

According to the Mining and Biodiversity Guidelines spatial dataset (2013), the PAOI overlaps with areas of Moderate and Highest Biodiversity Importance (BI) and there is, therefore, a correlating moderate and highest risk for mining, respectively, as per the Mining and Biodiversity Guidelines categories (Figure 22).

3.2 PROVINCIAL POLICY AND PLANNING CONTEXT

3.2.1 NORTHERN CAPE BIODIVERSITY SPATIAL PLAN

The Northern Cape Biodiversity Spatial Plan (NCBSP) serves as the province’s key biodiversity planning tool, providing a systematic framework for identifying Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) that are essential for maintaining ecological processes and conserving priority species and habitats. Its purpose is to guide land-use planning, environmental authorisations, and development decisions so that biodiversity-rich and environmentally sensitive areas are safeguarded while enabling sustainable development. In relation to the current project, the NCBSP informs the assessment by highlighting that the proposed powerline and substation upgrades intersect with Critical Biodiversity Area (CBA) 1, CBA 2 and Ecological Support Areas (ESAs), requiring avoidance, micro-siting, and mitigation measures to prevent unnecessary habitat loss and



ensure alignment with provincial conservation priorities. The Sandgat prospecting area overlaps CBA 1 and 2 and ESAs (Figure 4).

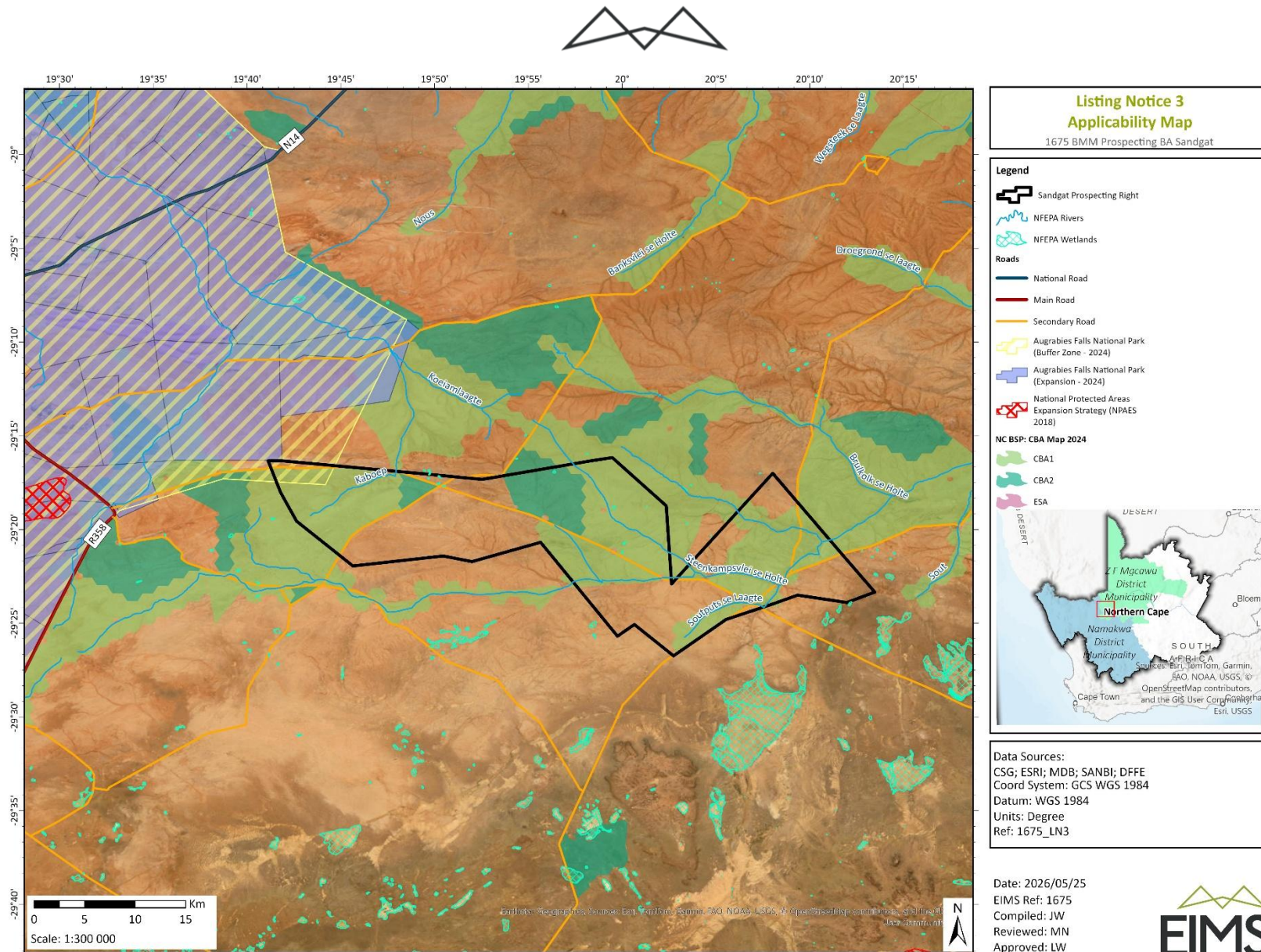


Figure 4: Project in relation to various protected areas and CBAs



3.2.2 NORTHERN CAPE SPATIAL DEVELOPMENT FRAMEWORK

The Northern Cape Spatial Development Framework (NC SDF) serves as the overarching strategic spatial plan for the Northern Cape Province, providing a long-term vision and a set of principles, objectives, and strategies to guide spatial planning and land use management within the province. Developed in accordance with the Spatial Planning and Land Use Management Act (SPLUMA), the NC SDF aims to promote sustainable and equitable development, optimize resource utilization, and address the unique spatial challenges and opportunities of the Northern Cape.

The framework commences with a detailed analysis of the province's existing spatial context, encompassing its biophysical environment, socio-economic conditions, and current patterns of development. This situational analysis identifies key spatial challenges, such as vast distances, dispersed settlements, limited water resources, the dominance of specific economic sectors (e.g., mining, agriculture), and the need for enhanced infrastructure connectivity. It also highlights the province's significant natural and cultural heritage assets and their potential for sustainable development.

Based on this comprehensive understanding of the provincial context, the NC SDF articulates a clear spatial vision for the Northern Cape, typically emphasizing principles of spatial justice, spatial sustainability, efficiency, resilience, and good governance. To achieve this vision, the framework outlines a series of strategic objectives that address key spatial development imperatives. These objectives often focus on:

- a) **Integrated Regional Development:** Promoting balanced development across the province's diverse regions, considering their specific characteristics and potential.
- b) **Sustainable Resource Management:** Guiding the utilization of the province's natural resources in a manner that ensures long-term sustainability and minimizes environmental impact, particularly concerning water scarcity and biodiversity conservation.
- c) **Strategic Infrastructure Development:** Identifying and prioritizing key infrastructure investments (transport, energy, communication, water) to support economic growth, improve accessibility, and enhance the quality of life for residents.
- d) **Human Settlement Development:** Promoting the development of sustainable and integrated human settlements that provide access to basic services, economic opportunities, and social amenities, while addressing historical spatial inequalities.
- e) **Economic Diversification and Growth:** Identifying and supporting opportunities for economic diversification beyond traditional sectors, including tourism, renewable energy, and value-added agriculture, while considering the spatial implications of these activities.
- f) **Environmental Conservation and Management:** Establishing guidelines for the protection and management of the province's significant biodiversity and natural heritage, ensuring ecological integrity and resilience.

To achieve these objectives, the NC SDF proposes a range of spatial strategies and interventions. These strategies often involve the identification of strategic development corridors, nodes, and areas of environmental sensitivity. The framework provides guidelines for land use planning and management, development control, and the coordination of spatial planning across different sectors and levels of government. It emphasizes the importance of aligning provincial spatial planning with municipal Integrated Development Plans (IDPs) and sector-specific plans.

Furthermore, the NC SDF typically outlines an implementation framework, which may include mechanisms for spatial targeting of investment, prioritization of projects, and the roles and responsibilities of various stakeholders. It also underscores the importance of monitoring and evaluating the effectiveness of the framework in achieving its stated objectives.



3.3 MUNICIPAL POLICY AND PLANNING CONTEXT

The study / application area is located within the Kai !Garieb Local Municipality which falls within the ZF Mgcawu District Municipality. However, it is also located close to the Khâi Ma Local Municipality within the Namakwa District Municipality. Figure 1 depicts the local administrative boundaries.

3.3.1 NAMAKWA DISTRICT AND KHÂI MA LOCAL MUNICIPALITY

According to the Khâi-Ma Municipality Integrated Development Plan (2022/23-2026/27) some sectors are prominent in area with regards to economic development, and mining is specifically identified as one of these key sectors. Mining is the largest economic sector in Khâi-Ma Municipality, dominated by Vedanta Zinc International (Black Mountain Complex & Gamsberg) along with other operations (salt mines, quarries, and emerging solar-linked energy projects). Mining plays a major role in employment, local economic activity, community development, and drives demand for infrastructure, services, and skills development.

Mining is the economic backbone of Khâi-Ma and drives both opportunity and pressure on services and the social fabric. The main challenges centre on unemployment, infrastructure deficits, environmental management, and municipal capacity. The goals aim to ensure inclusive, sustainable growth through better services, stronger governance, diversified development, and expanded local participation. Actions involve a mixture of municipal planning, infrastructure investment, and significant contributions through mining companies' Social and Labour Plans. Environmental degradation (alien vegetation, waste, mining footprint) is a key regulatory challenge in the municipality, as well as insufficient disaster management capacity. The IDP identifies the need for stronger land use planning, including for new mining expansions.

The Namakwa District Municipality IDP (2022-2027) identifies mining as **the single largest economic sector**, with strong comparative advantage and major strategic expansion potential. Mining makes up 40.4% of all economic activity in the district municipality with various social challenges due to

Mining has an extremely high Location Quotient (LQ 4.82) → over-concentration and vulnerability to commodity cycles.

The **Integrated Development Plan (IDP) of the Namakwa District Municipality** serves as the primary strategic planning instruments, guiding development, service delivery, and spatial transformation within the municipal jurisdiction. The Namakwa IDP emphasises sustainable socio-economic development, environmental stewardship, and spatial restructuring, highlighting key priorities such as basic service delivery, renewable energy integration, environmental management, and the protection of Critical Biodiversity Areas (CBAs). It frames development within a long-term vision of a “sustainable green energy, diverse, integrated socio-economy” and aligns municipal objectives with national and provincial directives.

The IDP provides essential guidance for ensuring that the proposed transmission infrastructure project aligns with district-level priorities, particularly those related to sustainable land-use, environmental protection, renewable energy expansion, and the enhancement of regional infrastructure networks. As statutory plans, the IDP ensures coordinated governance, spatial coherence, and the alignment of development initiatives across all spheres of government. The project aligns with these planning documents considering overarching development priorities, strategic objectives, and spatial transformation.

Overall, the project is not only consistent with the intentions of the Namakwa District IDP, but directly advances the municipalities' long-term development vision, particularly related to economic development and mining. Overdependence on mining was however also raised as a potential issue of concern in the IDP.

3.3.2 ZF MGCWU DISTRICT AND KAI !GARIB LOCAL MUNICIPALITY

According to the Khâi Ma Municipality Integrated Development Plan (2022/23-2026/27) some sectors are prominent in the area with regards to economic development, of which mining is not a key sector in terms of value added to the local economy. However, together with agriculture it makes up the Primary economic sectors. Between 2008 and 2018, the agriculture sector experienced the highest positive growth in 2008 with an average growth rate of 14.8%. The mining sector reached its highest point of growth of 7.6% in 2017. The agricultural



sector experienced the lowest growth for the period during 2011 at -13.1%, while the mining sector reaching its lowest point of growth in 2008 at -6.2%. Both the agriculture and mining sectors are generally characterised by volatility in growth over the period. The Kai !Garib Local Municipality has a comparative disadvantage when it comes to the manufacturing and mining sector which has a large comparative disadvantage. In general mining is a very concentrated economic sector. The Kai !Garib Local Municipality area does have some mining, but this is very limited and fairly unimportant. The mining sector employees ~500 (1.8%) people.

The Northern Cape Provincial Growth and Development Plan (PGDP) vision 2040 is a long-term economic development plan. The PGDP Conceptual Framework consists of the following elements:

- The drivers of change, with delivery envisaged as being staggered across the short, medium and long term. These drivers are intricately interrelated, with causality viewed as complex and situation-specific, rather than being linear in nature. The drivers of change represent the focal point of the Framework.
- The drivers of change spurred a diagnostic analysis, which shed light on the spatial realities and development issues facing the province.
- Based on the outcomes of the diagnostic analysis, the paths to prosperity was identified that will place the Northern Cape Province on a new sustainable development trajectory towards the 14 National Development Outcomes envisaged by government.

One of these drivers is : Driver 1 Economic Growth and prosperity, which include Mining and Mineral Beneficiation as part of this economic driver.

Mining can play a major role in employment, local economic activity, community development, and drives demand for infrastructure, services, and skills development.

Mining is the economic backbone of Khâi Ma and drives both opportunity and pressure on services and the social fabric. The main challenges centre on unemployment, infrastructure deficits, environmental management, and municipal capacity. The goals aim to ensure inclusive, sustainable growth through better services, stronger governance, diversified development, and expanded local participation. Actions involve a mixture of municipal planning, infrastructure investment, and significant contributions through mining companies' Social and Labour Plans. Environmental degradation (alien vegetation, waste, mining footprint) is a key regulatory challenge in the municipality, as well as insufficient disaster management capacity. The IDP identifies the need for stronger land use planning, including for new mining expansions.

The study area is located within the ZF Mgcauw District Environmental Management Framework Environmental Control Area Zone 7: Low control zone. This zone has relatively less sensitivity than the other zones and no special parameters, except those already implemented or required by law, are proposed for this zone.

3.4 INTERNATIONAL LEGISLATION

Although the project itself does not occur across international borders and does not require any form of international approval, it is influenced by several international conventions that South Africa is party to. These conventions are already embedded in the national legal framework (e.g., NEMA, NEMBA), and therefore indirectly govern how the project must be planned, assessed, and authorised.

Some examples include:

- Convention on Biological Diversity: South Africa is a signatory to the CBD, which requires the conservation of biological diversity and sustainable use of natural resources.
- United Nations Framework Convention on Climate Change (UNFCCC) and Paris Agreement: South Africa's climate commitments (e.g., NDCs) inform national energy policy such as the IRP 2025, which explicitly supports renewable energy integration.



- Ramsar Convention on Wetlands: While the project area does not intersect any Ramsar-listed wetlands, South Africa's commitments under the convention inform national protection of wetlands and regulation of activities within watercourses.
- World Heritage Convention: The project area does not intersect any declared World Heritage Sites or any of its buffer areas.

The proposed development does not directly trigger any international approvals, nor does it occur within any formally declared international heritage or Ramsar sites. However, it is indirectly governed by several international conventions to which South Africa is a signatory.



4 NEED AND DESIRABILITY OF THE PROPOSED ACTIVITY

In South Africa, an Environmental Impact Assessment (“EIA”) is required for various types of activities and projects to ensure that their potential environmental and social impacts are properly assessed and mitigated. The legal and other triggers for an EIA in South Africa are primarily outlined in the NEMA and associated regulations.

NEMA includes a list of activities that are classified as “listed activities” and if a project meets the criteria outlined in this list, it triggers the need for an EIA or Basic Assessment. In this regard BMM wishes to obtain a Prospecting Right in the Sandgat application area. The proposed project that will aim to ascertain if economically viable mineral deposits exist within the application area. In order to undertake prospecting activities, Black Mountain Mining requires a Prospecting Right in terms of the MPRDA (Act No.28 of 2002) and NEMA (Act No. 107 of 1998).

As the result of the need for an EIA/BA, a need and desirability assessment is also required. This is a critical assessment that ensures development projects are conducted in an environmentally responsible and sustainable manner. Specific factors that require consideration are listed in the Guideline on Need and Desirability published by DFFE and updated in 2017.

Generally, a need and desirability analysis establishes a well-defined framework for decision-making, facilitating the evaluation of whether a proposed project should proceed while considering its socio-economic and environmental desirability. Additionally, the need and desirability analysis encompass public engagement, delineating the involvement of stakeholders, including affected communities and environmental organisations, ensuring their perspectives are considered throughout the EIA process. Moreover, this assessment fosters transparency and accountability by elucidating the project's objectives, rationale, and potential impacts, thereby enabling both the public and authorities to hold project proponents accountable. Furthermore, it ensures alignment with South Africa's rigorous environmental laws and policies, verifying that projects conform to these frameworks and promoting compliance. The need and desirability analysis also initiates risk assessments and encourages the exploration of alternative project designs or locations, emphasising environmental and sustainability goals. Finally, it prompts the consideration of cumulative impacts, which is vital for assessing the long-term sustainability of development in each region.

The BMM Sandgat Prospecting Right project’s need and desirability is discussed in the subsequent sections.

4.1 NEED AND DESIRABILITY STATEMENT

The Northern Cape Province is a region with a rich history of mining operations, playing a pivotal role in South Africa’s economy. The Sandgat prospecting project aligns with the strategic vision of sustaining and enhancing mining activities in this resource-rich area, particularly in the zinc, lead and copper mining sectors.

Existing operations such as the Black Mountain Mine and Gamsberg Mine, managed by the Vedanta Zinc International, exemplify the region's mining potential and economic contributions. Black Mountain Mine, operational for over 30 years, remains a significant economic driver and employer in the Namaqualand and Bushmanland regions. Employing more than 1,500 individuals, with nearly 80% sourced locally, the mine demonstrates the vital role mining plays in job creation and economic stability. Its established infrastructure in Aggeneys, coupled with planned expansions, underscores its long-term viability and regional importance.

Similarly, the Gamsberg Mine represents a global benchmark for zinc production, with significant investment in its development and future expansion phases. As one of the largest undeveloped zinc deposits, Gamsberg promises long-term economic and environmental benefits while positioning Southern Africa as a leading zinc supplier.

The Sandgat prospecting project seeks to build on this legacy by exploring untapped mineral resources within the region. The project aims to uncover additional reserves of zinc, lead, copper and associated minerals, ensuring the sustained growth of the mining sector in the Northern Cape. Furthermore, it supports the broader socio-economic development of the area by fostering local employment, enhancing skills development, and bolstering municipal service delivery in mining-dependent communities.



As existing operations like Black Mountain Mine approaches the end of their projected life span, the Sandgat project is both a necessary and desirable initiative to secure the region's economic future, maintain employment levels, and expand South Africa's mining output. With robust environmental and socio-economic planning, the project aligns with the principles of sustainable development as mandated by the Mineral and Petroleum Resources Development Act (MPRDA) and the National Environmental Management Act (NEMA).

4.2 NEED AND DESIRABILITY ANALYSIS

The needs and desirability analysis component of the "Guideline on need and desirability in terms of the EIA Regulations (Notice 819 of 2014)" includes, but is not limited to, describing the linkages and dependencies between human well-being, livelihoods and ecosystem services applicable to the area in question, and how the proposed development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.). Table 9 presents the needs and desirability analysis undertaken.



Table 9: Needs and desirability analysis for the proposed project

Ref No.	Question	Response
1	Securing ecological sustainable development and use of natural resources	
1.1	How were the ecological integrity considerations taken into account in terms of: Threatened Ecosystems, Sensitive and vulnerable ecosystems, Critical Biodiversity Areas, Ecological Support Systems, Conservation Targets, Ecological drivers of the ecosystem, Environmental Management Framework, Spatial Development Framework (SDF) and global and international responsibilities.	<p>This report considers the ecological integrity in these factors in various sections of this report. Global and international responsibilities, SDF and EMFs and Critical Biodiversity Areas are discussed in Section 3 of this report. In addition, all the other factors listed here are also discussed in Section 7 and in the following specialist studies attached in APPENDIX E.</p> <p>A number of specialist studies informs this application and include:</p> <ul style="list-style-type: none"> • Geohydrology • Aquatic and Wetland • Terrestrial Biodiversity, including avifauna • Soils and Agriculture <p>The conclusions and recommendations of these studies are included in this report.</p>
1.2	How will this project disturb or enhance ecosystems and / or result in the loss or protection of biological diversity? What measures were explored to avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy the impacts? What measures were explored to enhance positive impacts?	<p>The proposed prospecting activities, to be conducted over a five-year period and divided into three distinct phases as per the PWP, will impact the environment through both non-invasive and invasive prospecting methods. To minimize the environmental footprint, initial phases will employ non-invasive techniques, which typically result in negligible or minimal evidence of exploration. Subsequent phases will involve invasive exploration, including drilling.</p>
1.3	How will this development pollute and / or degrade the biophysical environment? What measures were explored to either avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy the impacts? What measures were explored to enhance positive impacts?	<p>Given the limited scale and nature of the proposed prospecting activities, the potential for pollution is assessed to be of low significance after mitigation. The project is anticipated to have a negligible impact on the receiving environment, as prospecting will proceed through phased drilling of prospecting boreholes. Prior to the commencement of drilling in subsequent sites, each site will undergo rehabilitation, adhering to the mitigation</p>



Ref No.	Question	Response
		<p>measures outlined in this report and in consultation with the landowner(s), thereby minimizing environmental impacts.</p> <p>All the negative and positive impacts are assessed in Section 8 of this report and by the specialists.</p> <ul style="list-style-type: none"> • Geohydrology • Aquatic and Wetland • Terrestrial Biodiversity, including avifauna • Soils and Agriculture <p>This report also contain all the mitigation measures required to prevent any negative impacts and to enhance positive impacts. Refer to Section 8 for impact assessment and mitigation measures and APPENDIX F for the EMPr developed for the prospecting activities.</p>
1.4	<p>What waste will be generated by this development? What measures were explored to avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and / or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?</p>	<p>General waste produced by the prospecting activities primarily comprises domestic waste generated by drilling operators. This waste is contained within site vehicles and removed from the site daily. Hazardous waste, primarily resulting from accidental spillages or equipment breakdowns, is managed through immediate remediation. Contaminated areas are cleaned within one hour of occurrence, and the contaminated soil is contained in a designated hazardous waste container. When applicable, this container is removed daily and disposed of as hazardous waste at the nearest licensed hazardous waste disposal facility. Chemical toilet servicing is conducted by an accredited contractor. No waste disposal or treatment occurs on site. Drill waste, which may consist of residue or stockpile deposits, will be classified and disposed of at a licensed facility in accordance with relevant regulations.</p>
1.5	<p>How will this project disturb or enhance landscapes and / or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy the impacts? What measures were explored to enhance positive impacts?</p>	<p>A heritage compliance statement was conducted for the project. Altogether, 8 (apart from the noted farm dams or reservoirs) structures, buildings, or complexes as well as two grave sites were identified as having or potentially having heritage significance. The Lovedale grave site includes graves dating back to 1920. Therefore, the graves in question are protected by the NHRA,</p>



Ref No.	Question	Response
		<p>and have been provisionally graded as Grade III A or of High significance, corresponding with previous ratings as per previous studies (see Section 2.4). Similarly, the Lovedale farm complex has been graded as Grade III A given its connection with the grave site. Corresponding with this grading, the Bossiekom farm complex and associated grave site has similarly been provisionally graded as Grade III A. This suggests that the site must be retained as a heritage register site. In essence, this site must be avoided during the proposed activities. All other farm complexes have been provisionally graded as Grade IV A or of Medium significance. This suggests that mitigation must take place should proposed activities have the potential to disturb these features. Farm dams and associated infrastructure should also be avoided. Mitigation measures, as detailed in the report, are recommended to minimize potential impacts. The assessment concludes that with the implementation of these measures, the proposed prospecting activities are unlikely to have a significant negative impact on the identified heritage resources. In addition, a 30m buffer around all confirmed heritage structures must be implemented, within which no proposed activities are to take place, and a 50m buffer around all confirmed graves must be implemented within which no proposed activities are to take place.</p>
1.6	<p>How will this project use and / or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy the impacts? What measures were explored to enhance positive impacts?</p>	<p>The project's approach emphasizes responsible resource use through targeted prospecting, geological assessment, and rehabilitation planning. Mitigation measures focus on avoiding and minimizing impacts, including careful site selection, efficient drilling, and proper waste management. Remediation strategies encompass site rehabilitation and groundwater monitoring. To enhance positive impacts, the project will prioritize local economic benefits, knowledge contribution, and skills transfer, while adhering to best practice environmental and heritage management guidelines. The project acknowledges the finite nature of the resources and incorporates measures to responsibly address potential depletion and associated environmental consequences.</p>



Ref No.	Question	Response
1.7	How will this project use and / or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and / or impacts on the ecosystem jeopardise the integrity of the resource and / or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?	Refer to the impact assessment in Section 8 of this report. The project's approach emphasizes responsible resource use through targeted prospecting, geological assessment, and rehabilitation planning. Mitigation measures focus on avoiding and minimizing impacts, including careful site selection, efficient drilling, and proper waste management. Remediation strategies encompass site rehabilitation and groundwater monitoring. To enhance positive impacts, the project will prioritize local economic benefits, knowledge contribution, and skills transfer, while adhering to best practice environmental and heritage management guidelines.
1.7.1	Does the proposed project exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)?	Construction and operational water requirements will be sourced from either a commercial supplier or from landowner/s in close proximity to the study area. Power for the drill rig will be supplied by diesel-powered generators.
1.7.2	Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used?	
1.7.3	Do the proposed location, type and scale of development promote a reduced dependency on resources?	
1.8	How were a risk-averse and cautious approach applied in terms of ecological impacts:	
1.8.1	What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?	In order to prevent repetition, the reader is directed to the assumptions and limitations presented in Section 10.
1.8.2	What is the level of risk associated with the limits of current knowledge?	The level of risk associated with prospecting is influenced by geological uncertainties, technological limitations, potential environmental impacts, regulatory adequacy, and market volatility. A comprehensive risk assessment is essential to mitigate potential adverse consequences stemming from insufficient knowledge regarding subsurface conditions and resource potential.



Ref No.	Question	Response
1.8.3	Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	It is anticipated that ecological impacts will be fully mitigated through the implementation of the proposed mitigation measures and monitoring programs, as specified in this report and in the EMP (APPENDIX F).
1.9	How will the ecological impacts resulting from this development impact on people's environmental right in terms following?	
1.9.1	Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	The application and proposed development footprint occur on properties that is predominantly used for agricultural purposes. The drilling locations will be discussed and agreed with the affected landowners prior to commencement of drilling and where necessary, appropriate compensation negotiated. Furthermore, as mentioned above, this BA process has been undertaken at a more strategic level assessment of the receiving environment within proposed development corridors which allows input from specialist disciplines to identify highly sensitive or no-go areas which can then be excluded from development where necessary. The positive impact of job creation has been identified and the requirement for local upliftment in the form of employment creation or social programmes put forward.
1.9.2	Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?	
1.10	Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?	The impact on third party wellbeing, livelihoods and ecosystem services is not of a high negative significance as the predominant land use of the affected property is in a natural state, as mentioned above, and the site sensitivities from a socio-economic and biophysical point of view have been identified and / or mitigation measures put forward which must be considered prior to the final placement of infrastructure. Furthermore, landowner negotiations prior to drilling will additionally be undertaken to limit any negative impacts on human wellbeing, livelihoods and/or ecosystems.
1.11	Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives / targets / considerations of the area?	As described above, this project is anticipated to have a low overall impact on the ecological integrity objectives or targets as consideration of these aspects will be undertaken prior to drilling.



Ref No.	Question	Response
1.12	Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the “best practicable environmental option” in terms of ecological considerations?	Consultation with ecology and biodiversity experts has identified alternative locations and mitigation measures to establish the proposed sites as the most environmentally suitable option.
1.13	Describe the positive and negative cumulative ecological / biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?	Approximately 0,16% of natural habitat has been lost, and as discussed above the proposed development will result in a further loss of 6.92% (total loss of 3,80%) due to inclusion of the current proposed project. Please note, this assumes the entire area will be developed/impacted. This contribution will likely decrease with confirmation of the exact footprint. As such, the cumulative impact from the proposed development is rated as “moderate”. It is also clear that the area has not experienced many impacts, and as such the majority of the cumulative impact is due to the current proposed project. It is imperative that careful spatial management and planning of the entire region be a priority, and existing large infrastructure projects must be carefully monitored over the long term.
2	Promoting justifiable economic and social development	
2.1	What is the socio-economic context of the area, based on, amongst other considerations, the following:	
2.1.1	The IDP (and its sector plans’ vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks or policies applicable to the area	Details of the IDPs, SDFs and EMFs for the District Municipalities as well as for the Local Municipalities) are included Section 3.3 of the report.
2.1.2	Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.),	
2.1.3	Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and	



Ref No.	Question	Response
2.1.4	Municipal Economic Development Strategy (“LED Strategy”).	
2.2	Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?	Subject to the granting of the requested prospecting right, the applicant will undertake prospecting activities to assess potential resources of base metal and precious metal. This undertaking is anticipated to yield valuable data regarding mineral resource availability, create employment opportunities for local individuals, and contribute to the diversification of income sources for the property, employees, and associated clients.
2.2.1	Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?	
2.3	How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	Provided that the mitigation measures and monitoring programs outlined herein are implemented, the prospecting activities are anticipated to have no adverse effects on the community's physical, psychological, cultural, or social needs, nor on the socio-economic status of the area.
2.4	Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?	The proposed prospecting activities are designed to operate in a socially and economically sustainable manner, both in the short and long term.
2.5	In terms of location, describe how the placement of the proposed development will:	
2.5.1	Result in the creation of residential and employment opportunities in close proximity to or integrated with each other.	The proposed Prospecting project will promote further employment opportunities (to a limited extent) both locally and regionally. This project is not anticipated to have a material impact on the need for transport of people and goods or impact on access to public transport.
2.5.2	Reduce the need for transport of people and goods.	
2.5.3	Result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms of public transport),	
2.5.4	Compliment other uses in the area,	Refer to item 2.1.1 of this table.



Ref No.	Question	Response
2.5.5	Be in line with the planning for the area.	
2.5.6	For urban related development, make use of underutilised land available with the urban edge.	
2.5.7	Optimise the use of existing resources and infrastructure,	
2.5.8	Opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement),	
2.5.9	Discourage “urban sprawl” and contribute to compaction / densification.	
2.5.10	Contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs,	
2.5.11	Encourage environmentally sustainable land development practices and processes	
2.5.12	Take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.),	
2.5.13	The investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential).	
2.5.14	Impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and	



Ref No.	Question	Response
2.5.15	In terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?	
2.6	How was a risk-averse and cautious approach applied in terms of socio-economic impacts:	The reader is directed to the assumptions and limitations presented in Section 10.
2.6.1	What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?	
2.6.2	What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?	
2.6.3	Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	
2.7	How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following:	
2.7.1	Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	Refer to the impact assessment in Section 8 of this report. Both positive and negative socio-economic impacts have been identified and relevant mitigation measures put forward to reduce negative impacts and enhance positive impacts as far as practicable.
2.7.2	Positive impacts. What measures were taken to enhance positive impacts?	
2.8	Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socioeconomic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	



Ref No.	Question	Response
2.9	What measures were taken to pursue the selection of the “best practicable environmental option” in terms of socio-economic considerations?	
2.10	What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the “best practicable environmental option” to be selected, or is there a need for other alternatives to be considered?	
2.11	What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	
2.12	What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development’s life cycle?	
2.13	What measures were taken to:	
2.13.1	Ensure the participation of all interested and affected parties.	Notwithstanding the detailed description of the stakeholder consultation process included in Section 6 of this report, the consultation process has been undertaken in 2 languages, published in newspaper advertisements, erection of site notices, direct emails, faxes, SMSs and registered letters where contact information was available.
2.13.2	Provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation,	
2.13.3	Ensure participation by vulnerable and disadvantaged persons,	
2.13.4	Promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means,	



Ref No.	Question	Response
2.13.5	Ensure openness and transparency, and access to information in terms of the process,	
2.13.6	Ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge,	
2.13.7	Ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein will be promoted?	
2.14	Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	
2.15	What measures have been taken to ensure that current and / or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	
2.16	Describe how the development will impact on job creation in terms of, amongst other aspects:	The proposed project does not directly facilitate job-opportunities; however the associated prospecting activities will be an opportunity for temporary and to a lesser degree, permanent jobs. Should prospecting results be deemed feasible and consideration be put into applying for and potentially obtaining a mining right, it will contribute to the provide further employment opportunities. The exact number of workers to be appointed is not
2.16.1	The number of temporary versus permanent jobs that will be created.	
2.16.2	Whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area).	



Ref No.	Question	Response
2.16.3	The distance from where labourers will have to travel.	determined at this stage, however once prospecting activities commence the number will be included in the relevant applications.
2.16.4	The location of jobs opportunities versus the location of impacts.	
2.16.5	The opportunity costs in terms of job creation.	
2.17	What measures were taken to ensure:	The BA Process requires governmental departments to communicate regarding any application. In addition, all relevant departments are notified at various phases of the project by the EAP and any feedback received from government departments is considered where relevant.
2.17.1	That there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment.	
2.17.2	That actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures.	
2.18	What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?	Environmental attributes that may be impacted by this project have been identified and where relevant, specialist input has been solicited to ensure that a rigorous impact assessment process is undertaken. Where positive impacts on the interests of the public have been identified (e.g. job creation, impact on existing land use, etc.), mitigation measures are put forward to enhance positive impacts and/or reduce negative impacts.
2.19	Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	Mitigation measures have been put forward to strengthen measures and thereby reduce negative impacts. Mitigation measures have been derived from proven effective strategies employed in comparable prospecting projects and assessments, incorporating recognized best practices.
2.20	What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?	In accordance with Section 41 of the Mineral and Petroleum Resources Development Act (MPRDA), 2002, a prospecting right holder is required to submit a financial provision to the Department of Mineral and Petroleum Resources(DMPPR) sufficient to rehabilitate or manage the negative environmental impacts associated with the prospecting activity.



Ref No.	Question	Response
2.21	Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	Refer to Section 5 wherein a description of the process followed to reach the proposed preferred site.
2.22	Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?	Refer to the impact assessment and mitigation measures in Section 8 of this Report.



5 MOTIVATION FOR THE OVERALL PREFERRED SITE, ACTIVITIES AND TECHNOLOGY ALTERNATIVE

The application area has been selected as the preferred site based its proximity to existing mining activities and the geological formations in the area. The currently available historical geological information does not allow for the potential identification of economically viable resources, therefore invasive prospecting activities have been included in the PWP.

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

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

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



5.1 FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED ALTERNATIVES WITHIN THE SITE

The identification of alternatives is a key aspect of the success of the impact assessment process. All reasonable and feasible alternatives must be identified and screened to determine the most suitable alternatives to consider and assess. There are, however, some significant constraints that have to be taken into account when identifying alternatives for a project of this scope. Such constraints include social, financial and environmental issues, which will be discussed as part of the evaluation of the alternatives for this project. Alternatives can typically be identified according to:

- Location alternatives (including design and layout);
- Scheduling alternatives;
- Process alternatives;
- Technology alternatives; and
- Activity alternatives (including the No-Go option).

For any alternative to be considered feasible, such an alternative must meet the need and purpose of the development proposal without presenting significantly high associated impacts. Section 4 provides an overview of the project need and desirability.

This section describes the specific site area and the location of site features, having taken into consideration the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout.

5.1.1 DETAILS OF DEVELOPMENT FOOTPRINT ALTERNATIVES

5.1.1.1 DEVELOPMENT LOCATION ALTERNATIVES

The development footprint is expected to be a fraction of the application area size, which is estimated to be 46 940.02083 hectares. The area is located approximately 75 to 138 kilometers east of Aggeneys town, and the Aggeneys - Gamsberg base metal mines. The prospecting area applying for geologically lies at the south-eastern outcrop limit of the Bushmanland Sub-province of the Namaqua Provinces.

The geology is the primary driver in determining the location of prospecting and mining. The historic geological data obtained from previous prospecting work in the area and recent prospecting work conducted utilizing advanced geoscientific methods has helped to better refine the underlying geology of the area..

The area's stratigraphy and mineralisation potential make it a highly desirable prospecting target. No alternative development scenarios were considered, as the project is intrinsically tied to the specific geological formations of the area.

5.1.1.2 DESIGN OR LAYOUT ALTERNATIVES

Layout alternatives are applicable to the project as several no-go high sensitivity areas have been identified which must be avoided by the planned prospecting activities. Refer to sensitivity map Figure 29 in Section 9.4 for further details on no-go areas. Two layout alternatives are applicable:

- Layout Alternative L1 would involve prospecting over any areas within the identified properties.
- Layout Alternative L2 involves prospecting over any area within the identified properties, excluding identified **high sensitivity** and **no-go areas** identified in the biodiversity assessment and other specialist studies. Figure 29 superimposes the proposed activity and its associated structures and infrastructure on the combined environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers.



- Quartz Outcrops and Rocky Outcrops (High SEI) habitats, together with a 15 m buffer area, must be declared no-go areas. Existing roads transversing these areas may be used. No new roads to be developed within these areas. High SEI areas should be avoided.
- A conservative buffer zone of 30 m for all the NFEPA rivers, in-stream dams and temporary depression wetlands, and a 22 m conservative buffer for the drainage areas were assigned according to the buffer guidelines, the maximum required buffer should be applied to a system (Macfarlane, et al., 2014). Note that the drainage areas and 22 m conservation buffer is **not** no-go areas. These post-mitigation buffers considered the projects description (to avoid all sensitive areas), localised and minimal impacts of prospecting, ephemeral nature these systems. These buffer areas serve as No-go zones for any unauthorised activities. The site development plan should therefore be created accordingly. Ensuring buffers are intact increases the resilience of a watercourse to future disturbances. It should be noted that these conservation buffers only apply to the prospecting activities, not Mining activities.
- It is here proposed that buffers be placed around each of the identified heritage features, with proposed activities not taking place within 30 meters of the buildings or structures, and 50 meters of the grave sites.

Layout Alternative L2 is the preferred option from an environmental perspective as it reduces the potential environmental impact of the project on biodiversity to acceptable levels whilst still allowing the applicant to perform prospecting in identified suitable areas. Due to the limited extent of the very-high sensitivity and no-go areas identified the exclusion of these areas should not affect the overall goal and outcomes of the prospecting operations.

5.1.1.3 PROPERTY

The area hosts the Adjoining Geelvloer Volcanic Hosted Massive Sulphide (VHMS) deposit. The Adjoining Geelvloer deposit was discovered by Phelps Dodge in 1974 and mineralization on the adjacent farm Graafwater by Gold Fields of South Africa in 1984. Glencor developed the Adjoining Geelvloer deposit further and in 1981 calculated that the deposit contained 7.2million tonnes at a grade of 0.86 % Cu, 0.51 % Pb, 2.31% Zn, 24 g/t Ag and 0.64 g/t Au.

Subsequently Salt River Resources Ltd have conducted further drilling and have upgraded the resource as indicated in the table below. The Salt River Prospect, containing the Adjoining Geelvloer deposit, consists of three distinct, massive to disseminated “stacked” horizons dipping approximately 25-30° to the north east. The ore zones are on average 3m thick and the ore mineralogy consists of pyrite, sphalerite, chalcopyrite, galena, barite, magnetite and molybdenite.

Mineralization (Cu, Zn, Pb, Ag and Au) on the farms Graafwater 198 and Adjoining Geelvloer 197 occurs within the Soutputs Formation and is hosted in a succession of quartzo-feldspathic gneisses, schist, biotite gneiss, amphibolite and calc-silicate rocks. Along strike of the Adjoining Geelvloer deposit a thin magnetite quartzite layer is developed. Diamictite with a calc-silicate affinity is developed in the hanging wall to the deposit. The diamictite is considered by VHMS experts as meta-agglomerates or volcanic breccias (commonly found close to Kuroko Type VHMS deposits).

Mineralization was also intersected towards the east of the Adjoining Geelvloer deposit on the farm Soutputs and consists of lenticular massive and disseminated sulphide horizons which strike sub-parallel to the tectonic fabric created by the easterly trending Geelvloer shear zone, which forms part of the Pofadder Lineament. The sulphide mineralogy includes argentiferous galena, sphalerite and chalcopyrite.

The Graafwater and Adjoining Geelvloer deposits are of the VHMS type, are stratabound and occur in the same stratigraphic unit within the Soutputs Formation of the Bushmanland Subprovince. Mapping by the Council of Geoscience and airborne magnetic data suggest that the prospective Soutputs Formation continues eastwards onto the farms Sandkolkjes 194, Sandkolk 159 and Doornknie 193 where it is covered by younger rocks of the Dwyka Group of the Karoo Supergroup.



The development footprint is expected to be minimal compared to the overall application area, with the geology driving the precise locations for prospecting. The area's stratigraphy and mineralization potential make it a highly desirable prospecting target. No alternative development scenarios were considered, as the project is intrinsically tied to the specific geological formations of the area.

5.1.2 SCHEDULING ALTERNATIVES

Scheduling alternatives are sometimes known as sequencing or phasing alternatives. In this case an activity may comprise a number of components, which can be scheduled in a different order or at different times and as such produce different impacts. Sequencing or phasing alternatives, which involve adjusting the order or timing of project components to mitigate environmental impacts, have been considered. In this context, specific drilling activities can be scheduled to minimize adverse effects. For instance, noise-generating activities will be limited to daylight hours to reduce disturbance to especially nocturnal animals. Various temporal adjustments will be incorporated into the project's operational plan, thereby minimizing the need for separate alternative evaluations.

5.1.3 PROCESS ALTERNATIVES

Process alternatives imply the investigation of alternative processes or methods to achieve the same goal for the proposed Project. This includes using environmentally friendly designs or materials and re-using scarce resources like water and non-renewable energy sources. Process alternatives will be defined and implemented as incremental alternatives during the assessment and incorporated into the EMPr.

The technologies outlined in the Prospecting Work Programme (PWP), discussed in Section 2 have been selected based on their demonstrated effectiveness in assessing resource viability within the proposed prospecting area. Non-invasive prospecting techniques, including literature surveys, field reconnaissance/mapping, and geophysical surveys of geological features and outcrops, will be utilized. Invasive technology alternatives have also been evaluated. It is acknowledged that the sequential phases and timeframes of the prospecting activities, as detailed herein, are inherently dependent on the outcomes of preceding phases. Consequently, the proposals presented in the PWP are subject to reasonable adjustments and adaptations based on acquired data, with all modifications reported as per regulatory requirements.

5.1.4 TECHNOLOGY ALTERNATIVES

The selection of the technology alternatives or techniques to be adopted for the construction and operation of the Project are described in this section. No technology alternatives were identified for assessment in the BAR.

5.1.5 ACTIVITY ALTERNATIVES

Activity alternatives refer to project alternatives which requires a change in the nature of the proposed activity. Activity or project alternatives involve fundamentally changing the nature of a proposed action. These alternatives, which necessitate a shift in project scope, are most effectively considered at a strategic level, due to their substantial differences. As BMM's core business is exploration and mining, no alternative development activities are considered viable for the company related to this specific PR application.

The spatial extent of the planned prospecting activities is relatively small when considered within the broader project area and the prevailing land-use practices. As such, the exploration programme is unlikely to interfere with or displace existing land uses. Instead, the activities can reasonably be undertaken in parallel with ongoing land-use practices, allowing for effective co-existence between prospecting operations and current activities.

5.1.6 NO-GO ALTERNATIVE

The "No-Go" or "No Action" alternative refers to the alternative of not embarking on the proposed project at all. It assumes that the activity does not go ahead, implying a continuation of the current situation or the status quo. It is important to note that the No-Go alternative is the baseline against which all other alternatives and the development proposal are assessed. When considering the No-Go alternative, the impacts (both positive and negative) associated with any other specific alternative, or the current project proposal would not occur



and in effect, the impacts of the No-Go alternative are therefore inadvertently assessed by assessing the other alternatives. In addition to the direct implications of retaining the status quo, there are certain other indirect impacts, which may occur should the No-Go alternative be followed. The 'no-go' alternative provides the means to compare the impacts of project alternatives with the scenario of a project not going ahead. In evaluating the 'no-go' alternative it is important to take into account the implications of foregoing the benefits of the proposed project.

The denial of the requested prospecting right application would result in the forfeiture of the potential to identify and delineate viable mineral resources within the project area. Conversely, approval of the application would enable the applicant to determine the extent and quality of available mineral resources, while simultaneously generating employment opportunities for local residents. The "no-go" alternative would result in the irrevocable loss of these potential economic benefits for the applicant, potential employees, and the broader community. Furthermore, the applicant would be unable to diversify the property's income streams, limiting potential revenue generation and economic development. A decision not to proceed with the proposed prospecting operation would prevent the discovery and subsequent development of mineral resources that could contribute to the local and provincial socio-economic structures. This represents an opportunity cost, as the potential for economic diversification and regional development would be unrealized.

Under the "no-go" alternative, the current land use, characterized by a combination of agricultural activities and natural areas with future tourism development plans, would persist. While maintaining the status quo, this scenario would forego the potential economic stimulus and diversification associated with mineral resource development.

In summary, the "no-go" alternative would result in the loss of significant economic opportunities, including resource identification, job creation, and income diversification. It would also preclude potential contributions to local and provincial economic development, while maintaining the existing land use patterns.



6 STAKEHOLDER ENGAGEMENT

Public participation can be defined as...*"a process leading to a joint effort by stakeholders, technical specialists, the authorities and the proponent who work together to produce better decisions than if they had acted independently"*¹. From this definition, it can be seen that the input of the public is regarded as very important indeed.

The Public Participation Process (PPP) is designed to provide sufficient and accessible information to Interested and Affected Parties (I&APs) in an objective manner to assist them to:

During the Environmental Authorisation:

- g) Verify that their issues have been recorded;
- h) Comment on the findings of the environmental assessments; and
- i) Provide relevant local information and knowledge to the environmental assessment.

The PPP is a requirement of several pieces of South African Legislation and aims to ensure that all relevant I&APs are consulted, involved and their opinions are taken into account and a record included in the reports submitted to Authorities. The process ensures that all stakeholders are provided this opportunity as part of a transparent process which allows for a robust and comprehensive environmental study. The PPP for the necessary authorisation required for the project needs to be managed sensitively and according to best practises in order to ensure and promote:

- Compliance with international best practice options;
- Compliance with national legislation;
- Establishment and management of relationships with key stakeholder groups; and
- Encouragement of involvement and participation in the environmental study and authorisation/approval process.

As such, the purpose of the PPP and stakeholder engagement process is to:

- Introduce the proposed project and process for the authorisation project;
- Explain the environmental authorisation;
- Determine and record issues, concerns, suggestions, and objections to the project;
- Provide opportunity for input and gathering of local knowledge;
- Establish and formalise lines of communication between the I&APs and the project team;
- Identify all significant issues for the project; and
- Identify possible mitigation measures or environmental management plans to minimise and/or prevent negative environmental impacts and maximise and/or promote positive environmental impacts associated with the project.

6.1 IDENTIFICATION OF INTERESTED AND AFFECTED PARTIES (I&APs)

An initial I&AP database has been compiled from historic projects in the area, and Windeed searches were conducted to obtain the contact details of the surrounding landowners. The I&APs referred to in the PPR include:

- Pre-identified and registered landowners and surrounding landowners;



- Pre-identified and registered key stakeholders;
- Regulatory authorities;
- Specialist interest groups; and
- All I&APs who responded to the initial notifications and requested to be registered.

Efforts to pre-identify key I&APs involved various avenues such as consultation with the proponent and known landowners within the study area, review of related previously conducted studies, and identification of key interest groups and authorities within the vicinity of the study area and municipality. Refer to APPENDIX D for the Key Stakeholder/I&AP Database.

6.2 LIST OF ORGANS OF STATE IDENTIFIED AND NOTIFIED

The following key I&APs, but not limited to, were notified of the proposed project and invited to participate in the public participation process:

- Agri South Africa
- Agricultural Research Council (ARC)
- Augrabies Falls National Park
- Earth Life Africa
- Eskom / NTCSA
- Khâi-Ma Local Municipality
- Namakwa District Municipality
- Kai !Garib Local Municipality
- ZF Mgcau District Municipality
- National Department of Agriculture, Land Reform And Rural Development
- National Department of Agriculture, Land Reform, And Rural Development
- National Department of Co-operative Governance and Traditional Affairs
- National Department of Forestry, Fisheries, and the Environment
- National Department of Human Settlements
- National Department of Mineral and Petroleum Resources (DMPR)
- National Department of Rural Development and Land Affairs
- National Department of Science and Technology
- National Department of Tourism
- National Department of Transport
- National Department of Water and Sanitation (DWS)
- National Energy Regulator of South Africa (NERSA)
- National House of Traditional Leaders
- Northern Cape Department of Agriculture, Environmental Affairs, Land Reform and Rural Development
- Northern Cape Provincial Heritage Resource Agency
- Northern Cape Department of Agriculture, Land Reform, and Rural Development
- Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs (NC COGHSTA)
- Northern Cape Department of Economic Development and Tourism (NCDEDAT)
- Northern Cape Department of Environment and Nature Conservation (DENC)
- Northern Cape Department of Roads and Public Works (NC DR&PW)
- Northern Cape Department of Social Development (NCDSD)
- Northern Cape Department of Water and Sanitation
- Northern Cape Economic Development, Trade and Investment Promotion Agency (NCEDA)
- Northern Cape Heritage Resources Authority (NCHRA)



- Northern Cape Tourism Authority
- Northern Cape Wetland Forum
- South African Civil Aviation Authority (SACAA)
- South African Heritage Resources Agency (SAHRA)
- South African National Biodiversity Institute (SANBI)
- South African National Parks (SanParks)
- South African National Roads Agency Limited (SANRAL)
- Transnet SA SoC Limited

6.3 LIST OF OTHER KEY I&APS IDENTIFIED AND NOTIFIED

- Pre-identified and registered landowners and surrounding landowners.
- Agri-Northern Cape;
- BirdLife South Africa
- Boesmanland Boerevereniging
- Botanical Society South Africa
- Centre for Environmental Rights (CER)
- Conservation South Africa (CSA)
- Council for Geoscience
- Endangered Wildlife Trust (EWT)
- Federation for a Sustainable Environment (FSE)
- GroundWork South Africa
- Mainstream Renewable Power South Africa
- Pofadder Wind Energy Facility 1 (Pty) Ltd
- Pofadder Wind Energy Facility 2 (Pty) Ltd
- Pofadder Wind Energy Facility 3 (Pty) Ltd
- National Khoisan Council
- Natural Justice
- Northern Cape Protech and Agri Revolution (Pty) Ltd
- Protect the West Coast
- Protect the Wild Coast
- Wildlife and Environment Society of South Africa (WESSA)
- World Wildlife Fund



6.4 NOTIFICATION OF INTERESTED AND AFFECTED PARTIES

This section provides details on the notifications that were distributed as part of the consultation process to date.

6.4.1 INITIAL NOTIFICATION OF KEY I&APS

The PPP commenced on the 9th of April 2026 with an initial call to register notification. Notification during this initial consultation was given in the manner described below.

6.4.2 FAXES, REGISTERED MAIL AND EMAILS

Notification letters (in English and Afrikaans) were distributed to pre-identified I&APS through either faxes, SMSs, registered mail, and/or emails on the 30th of April 2026.

The notification documents included the following information:

- Authorisations required;
- Sufficient detail of the proposed development to enable I&APS to assess/surmise what impact the development will have on them or the use of their land;
- The purpose of the proposed project;
- Details of the application processes associated with proposed activities;
- Details of the affected properties;
- Details of the South African environmental legislation that must be adhered to;
- Relevant EIMS contact person for the project.

6.4.3 NEWSPAPER ADVERTISEMENTS

Advertisements (in English and Afrikaans) describing the proposed project and Environmental Impact Assessment (EIA) process were placed in the Gemsbok Newspaper with circulation in the vicinity of the study area on the 1st of May 2026. The newspaper adverts included the following information:

- Project name;
- Applicant name;
- Project location;
- Nature of the activity;
- Legislative requirements; and
- Relevant EIMS contact person for the project.

Please refer to APPENDIX C for proof of the advert notice placed.

6.4.4 SITE NOTICE PLACEMENT

Six (6) A1 Correx site notices (in English and Afrikaans) were placed at 6 locations around the proposed project study area on the 9th of April 2026. The on-site notices included the following information:

- Project name;
- Applicant name;
- Project location;
- Map of proposed project area;
- Project description;



- Legislative requirements; and
- Relevant EIMS contact person for the project.

Please refer to Section 6 and APPENDIX C for proof of site notice and site notice distribution.

6.5 SUMMARY OF PUBLIC PARTICIPATION OPPORTUNITIES

The table below provides a summary of the opportunities provided to I&APs for participation in the public participation process to date.

Table 10: Summary of Public Participation Opportunities

Action	Description	Publication/Place	Date
Initial Call to Register	Notification of landowners, occupiers, and other key I&APs.	Affected landowners and key I&APs were notified via email, fax, SMSs and/or post.	30 April 2026
	Placement of site notices.	Six (6) A1 Correx site notices (in English and Afrikaans) were placed at 6 locations along the proposed project study area.	9 April 2026
	Newspaper advertisement.	Advertisements (in English and Afrikaans) describing the proposed project and EA process were placed in the Gemsbok Newspaper.	1 st of May 2026

6.6 RECORD OF ISSUES RAISED

Comments on the proposed project were solicited from pre-identified and registered I&APs and key stakeholders. To date, the following comments have been received:



- I&AP registration.
- Eskom Soc has no objections to the proposed project.
- SANRAL enquired if the national road running through the study area will be affected by the prospecting.
- Request for project map files/layout.
- Request for project description.
- Two landowners requested that BMM met with them prior to starting with invasive prospecting and to sign a formal agreement.

All comments and/or queries received to date are included in this report and presented in APPENDIX D.

7 ENVIRONMENTAL ATTRIBUTES AND BASELINE ENVIRONMENT

This section of the BA Report provides a description of the environment that may be affected by the proposed project. Aspects of the biophysical, social and economic environment that could be directly or indirectly affected by, or could affect, the proposed development have been described. This information has been sourced from existing information available for the area and where relevant specialist assessments.

7.1 CLIMATE AND WEATHER

7.1.1 CURRENT AND HISTORIC CLIMATE

The area experiences late summer/early autumn rainfall and very variable year to year. The mean annual precipitation for the area ranges between 70 to 200 mm, west to east, respectively. The area also experiences frequent frost which ranges from around 10 days per year in the northwest to about 35 days in the east. The mean maximum and minimum monthly temperatures range from 40.6 °C and – 3.7 °C for January and July respectively (Mucina & Rutherford, 2006). See Figure 5 for details.

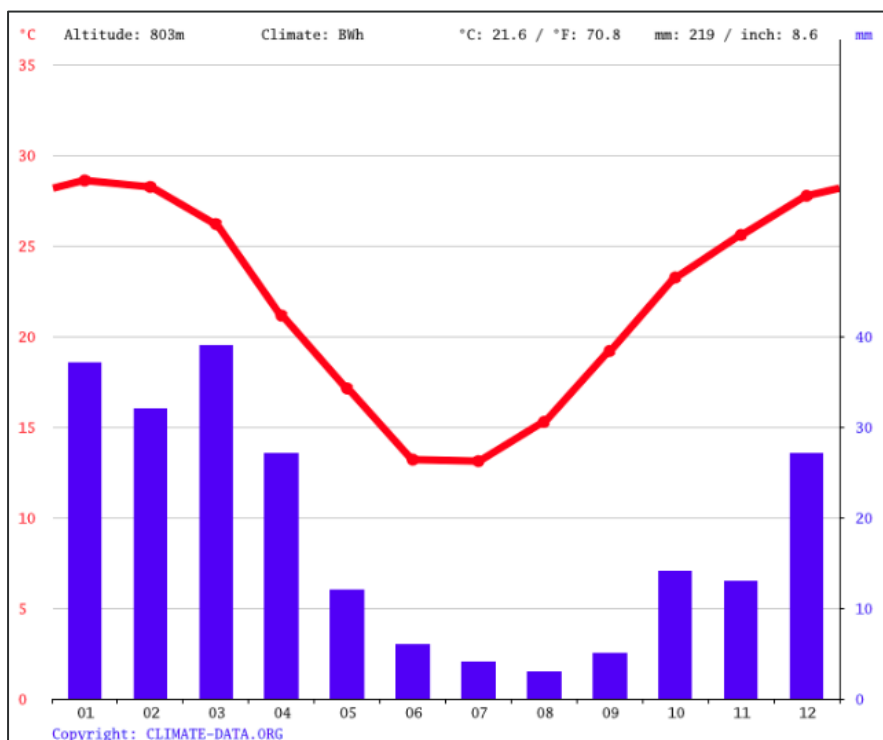


Figure 5: Annual Climatic conditions typical of the Northern Cape (considering data from Upington) (x-axis: 01=January, to 12=December).



7.2 GEOLOGY, SOILS, AND LAND CAPABILITY

7.2.1 GEOLOGY

The geology of the area includes recent (Quaternary) alluvium, calcrete, superficial deposits of the Kalahari group, extensive Palaeozoic diamictite of the Dwyka group, gneisses and metasediments of Mokolian age. The area is characterised by land type Ag and Ae, with red-yellow apedal soils forms. Refer to Figure 6.

7.2.2 LAND TYPES

According to the land type database (Land Type Survey Staff, 1972 - 2006) the assessment area to be focused on mainly falls within the Ag 3, Ag 61, Ag 25 and Ai 29 land types (Figure 7). The Ag 3, Ag 61, Ag 25 land types consist of Hutton and Mispah soil forms with the occurrence of other soils and rocky areas within the landscape. The Ai 29 land types consist of Clovelly and Oakleaf soil forms according to the Soil classification working group (1991), with the occurrence of other soils and rocky areas within the landscape. The Ag land types commonly have red and yellow apedal, freely drained soils. These soils are red, have high base status < 300 mm deep. The Ai land types are characterised with red- yellow apedal, freely drained, yellow , high base status usually < 15% clay.

7.2.3 BASELINE FINDINGS OF THE SOIL AND AGRICULTURAL STUDY

Three (3) representative soil forms identified within the proposed project area include the Clovelly, Oakleaf and Mispah soil forms (Figure 8). Based on the verified baseline findings, the proposed Sandgat Prospecting area was found to be dominated by shallow soil profiles. Such profiles are considered to have a low suitability, due to their depth restrictive for root penetration that extensively inhibits agricultural activities.

Furthermore, the proposed prospecting area is predominated with semi-impermeable to impermeable Mispah soil forms, with other areas characterised with Oakleaf and Clovelly soil forms. The Mispah soil form has an orthic topsoil on top of a hard rock layer below. The Oakleaf soil form consists of an orthic topsoil on top of a thick neocutanic subsoil horizon. The Clovelly soil form comprises of an orthic topsoil on top of a yellow brown apedal subsoil that is underlain by a lithic horizon. The Mispah soils are characterised by shallow restrictive depth, with an impermeable underlying parent material. Due to their restricted permeability, Mispah soils have limited root penetration and water movement, which inhibits crop production. Consequently, these soils have a low sensitivity and low productivity, suitable for grazing and supporting natural veld vegetation. The Oakleaf and Clovelly soil forms are characterised by apedal soils with freely drained upper horizons and restrictive underlying horizon. These soils are mostly suitable for shallow rooted crops and is considered to have a low to moderate agricultural use depending on the climatic limitations.

Land capability is defined as the combination of the slope class and soil morphological properties (i.e. topsoil texture, profile depth and permeability class of the upper soil layers). Accordingly, following Smith, (2006) which the national DAFF, (2017) land capabilities protocols were further expanded from, the above-mentioned identified soil forms are restricted to land capability classes IV (i.e. Clovelly and Oakleaf soil form) categorised by LC 6-7 (Low Moderate) and land capability VI (i.e. Mispah soil forms) categorised by LC 1-5 (Very low to Low). The baseline soil land capability was aligned and compared to the National Land Capability data (DAFF, 2017). A climate capability level 8 has been assigned to the area given the low Mean Annual Precipitation (MAP) and the high Mean Annual Potential Evapotranspiration (MAPE) rates.

Land potential is defined as the combination of the calculated land capability, the determined climate class of the area and the current land use activities. By using the determined land capability for the most sensitive soil (Clovelly and Oakleaf soil form) and the determined climate capability, a land potential of "L6" was calculated. Furthermore, the calculated land potential for less sensitive soils (i.e. Mispah soil forms) is land potential L7. According to Smith (2006), the "L6" land potential is characterised by very restricted potential with regular and or severe limitations due to soil, slope, temperature or rainfall. The "L7" land potential level is characterised by a low potential with a severe limitation due to soil, slope, temperatures, or rainfall. The areas associated with the "L6 and L7" land potentials are considered to be non-arable (Figure 9). Therefore, the proposed project area falls predominately on non-arable soils.



The following land potential levels have been determined:

- Land potential level 6 (this land potential is characterised by very restricted potential. Regular and/ or severe limitations due to soil, slope, temperatures or rainfall). Non-arable; and
- Land potential level 7 (this land potential is characterised by low potential. Severe limitations due to soil, slope, temperatures or rainfall). Non-arable.

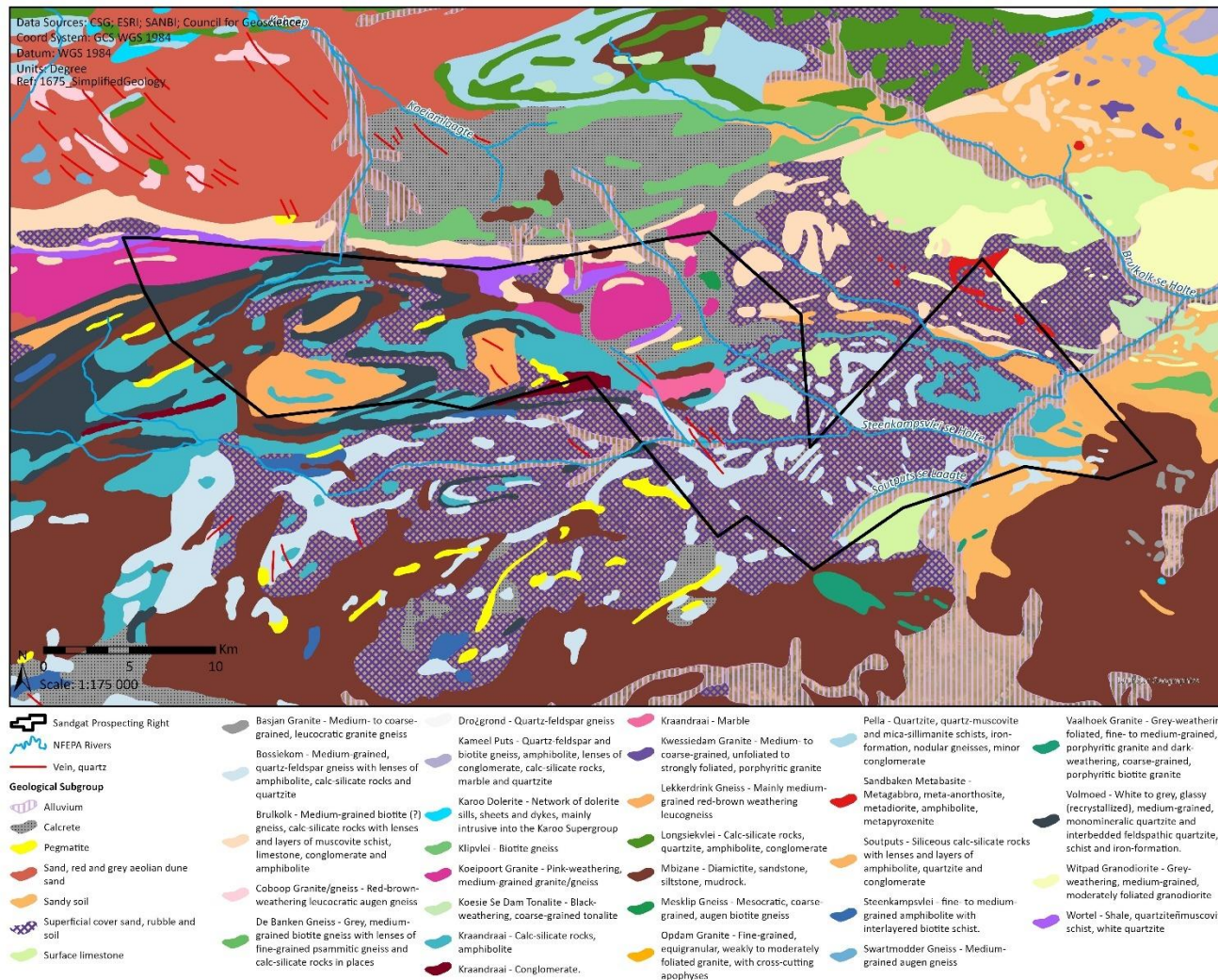


Figure 6: Simplified geology

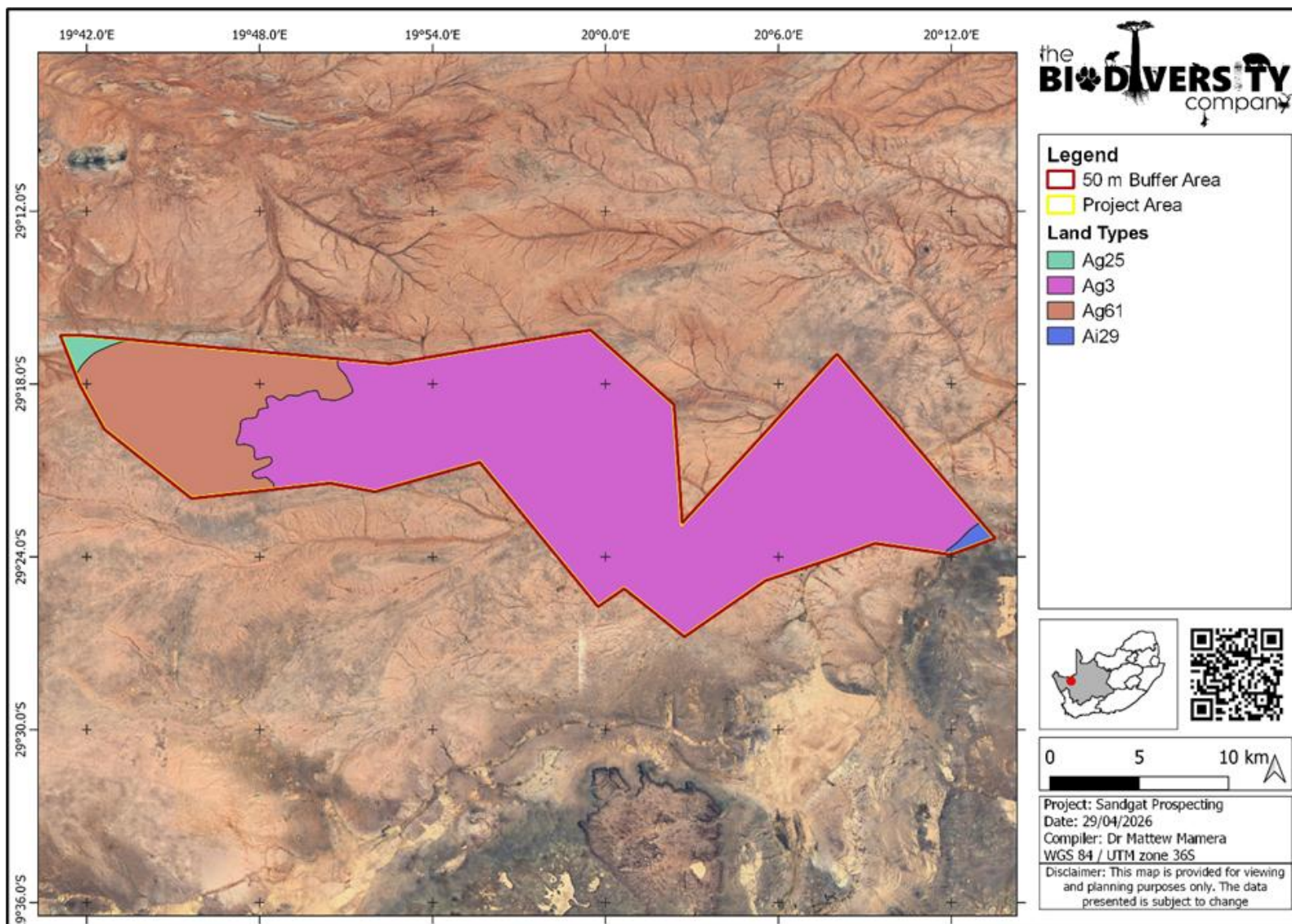


Figure 7: Land Types (The Biodiversity Company, 2026)

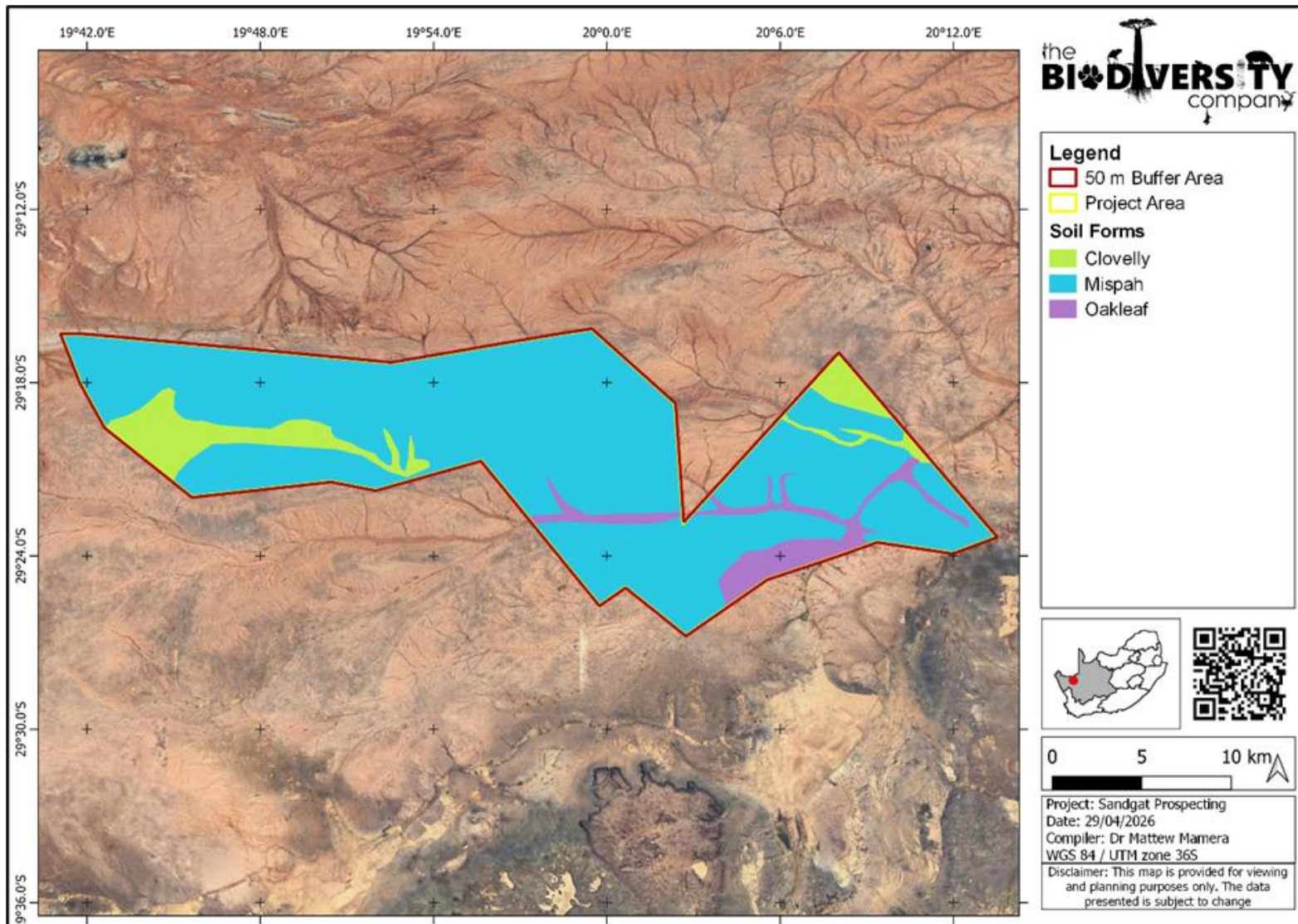


Figure 8: Soil Forms (The Biodiversity Company, 2026)

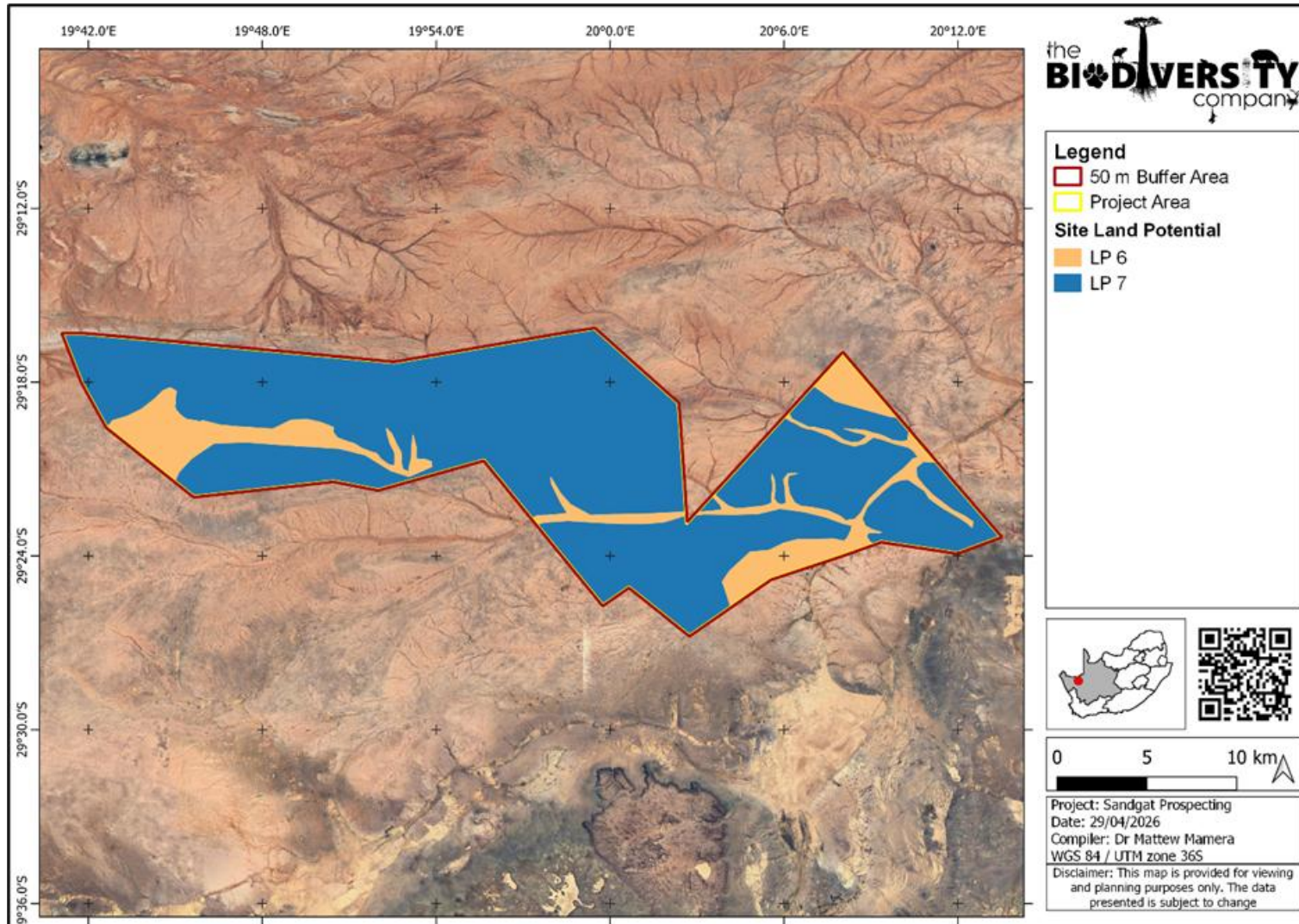


Figure 9: Land potential (The Biodiversity Company, 2026)



7.3 GROUNDWATER

From a hydrogeological perspective, the bedrock units within the study area are characterised by low primary porosity, with groundwater occurrence restricted to secondary features such as fractures, joints, foliation planes and shear zones (Viljoen et al., 2010). Groundwater movement is structurally controlled, with shear zones and well-developed fracture networks representing the most significant conduits due to their enhanced permeability and connectivity. In particular, groundwater is closely associated with fracturing and shearing within the metamorphic basement, as well as weathered zones within gneisses and schists.

The presence of major shear zones associated with the Pofadder Lineament is therefore considered to be the primary control on groundwater occurrence within the study area. These structurally weakened zones represent the most favourable targets for groundwater development, owing to increased fracturing and hydraulic connectivity. In contrast, the surrounding metamorphic and granitic units are expected to exhibit limited groundwater potential unless intersected by such structural features.

The overlying sediments of the Dwyka Group generally comprise low permeability diamictites and are not expected to constitute significant aquifers. Similarly, dolerite intrusions may locally influence groundwater flow, either acting as barriers to movement or, where sufficiently fractured, enhancing permeability.

7.3.1 AQUIFER YIELD

According to the 1:500 000 scale hydrogeological map (DWAF, 2000), the study area is predominantly underlain by metacalcareous rocks (calc-silicate gneisses). These rocks typically occur as banded units, often interlayered with quartzite and schist. Groundwater occurrence is largely dependent on secondary permeability, associated with fractures and shear zones. Figure 10 depicts the relative site position overlaid on the Springbok 2916 hydrogeological map. The study area is therefore characterised predominantly by a fractured aquifer system, with localised occurrences of intergranular and fractured aquifers toward the western extent of the site. Based on the 1:500 000 scale hydrogeological map, both aquifer types are associated with regional average borehole yield indications of 0.1 to 0.5 L/s. Figure 11 depicts the principal groundwater occurrence of the study area.

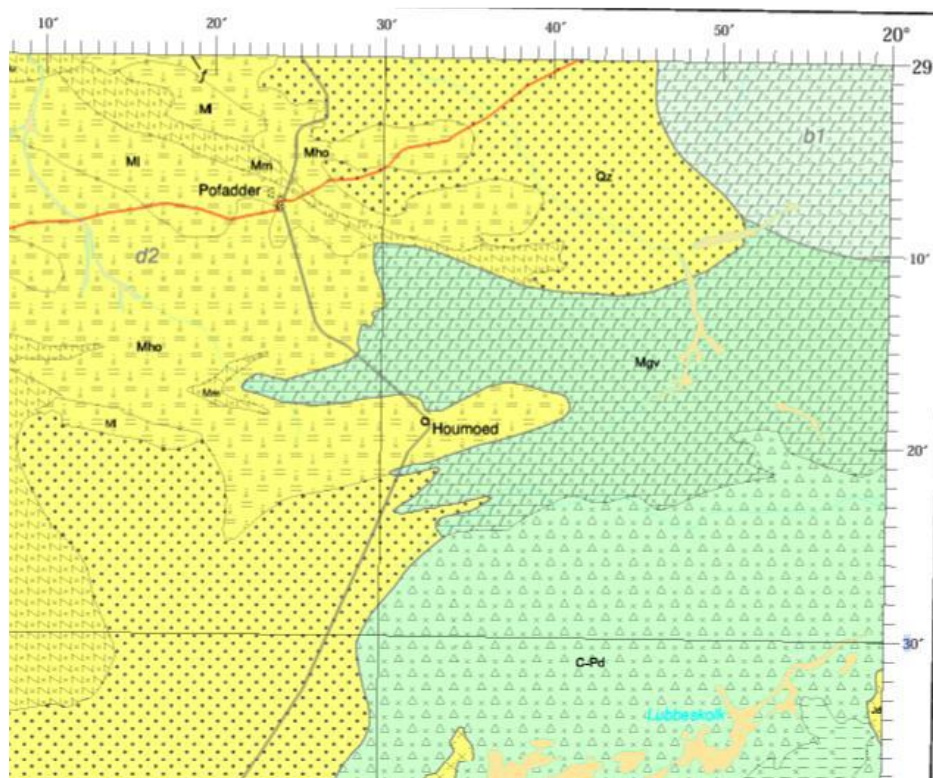


Figure 10: 1:500 000 scale hydrogeological map Springbok 2916 (DWAF, 2000)

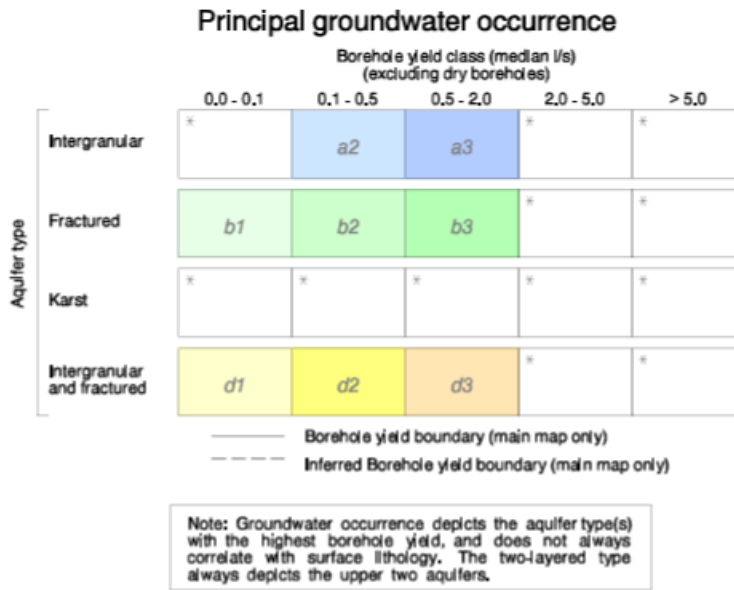


Figure 11: 1:500 000 scale hydrogeological map Springbok 2916, Principal Groundwater Occurrence (DWAf, 2000)

7.3.2 AQUIFER RECHARGE

As part of the desk study, the Vegter Groundwater Recharge Map (Vegter, 1995) provides a regional context of natural groundwater recharge potential. This map, developed for South Africa, uses long-term climatic, geological, and hydrological data to estimate average annual recharge rates across the country. Recharge values are expressed in mm/yr of mean annual precipitation (MAP) and are influenced by factors such as rainfall intensity, evapotranspiration, soil type, vegetation cover, and underlying geology.

Recharge estimates by Vegter indicate values in the order of 0.1 to 3 mm/a for the study area. Groundwater recharge estimates derived from the Groundwater Resource Assessment Phase 2 (GRA2) similarly indicate extremely low recharge, with values approaching negligible levels (0 mm/yr) within the area (DWS, 2005). Taking this into account, the recharge is estimated to range between approximately 0% and 3.6% of the average mean annual precipitation (84 mm/yr). Such low recharge values are considered typical for arid environments. In addition, high evaporation rates characteristic of the region further reduces the proportion of rainfall contributing to groundwater recharge.

While the Vegter recharge map is useful for broad-scale assessments and comparative analysis between regions, it is intended as a regional-scale tool. Study area-specific recharge rates may differ significantly due to localised conditions such as land use changes, aquifer properties, and artificial recharge or abstraction impacts. Consequently, the map is best used as a screening-level indicator during the scoping phase, with study area-specific measurements and modelling recommended for accurate recharge estimation. Figure 12 depicts the relative position of the study area relative to the estimated recharge.

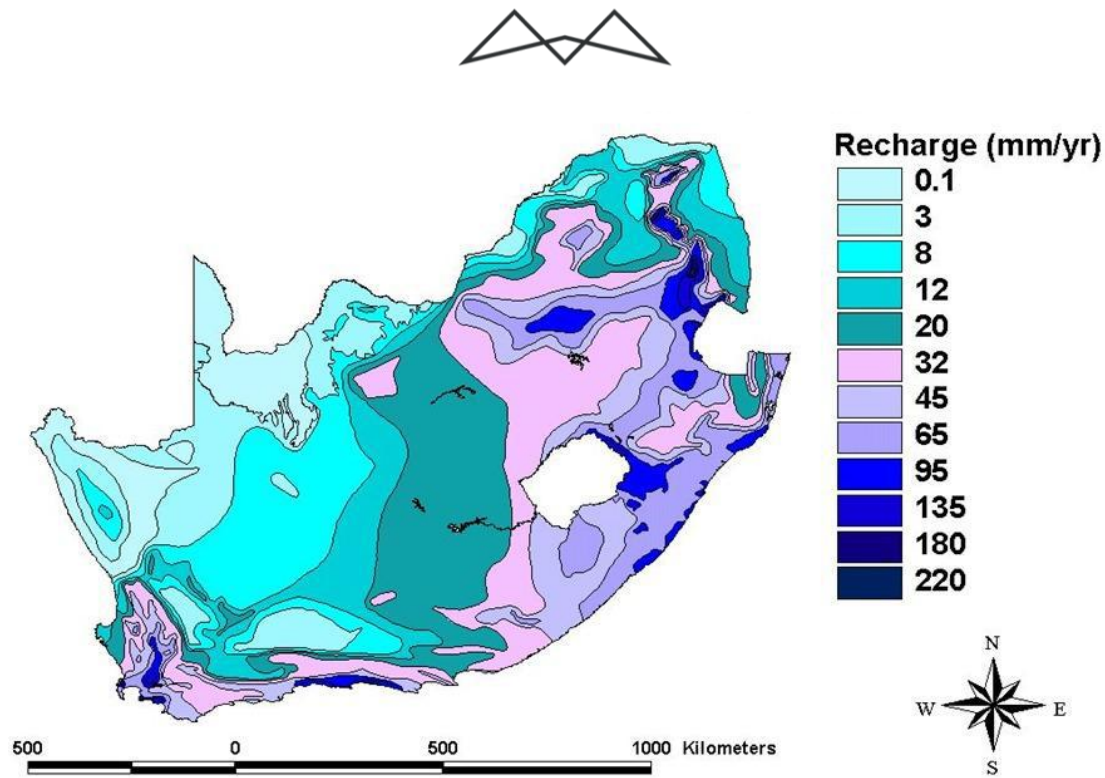


Figure 12: Vegter, 1995, Recharge Map

7.3.3 AQUIFER QUALITY

Electrical Conductivity (EC) reflects the groundwater's ability to conduct an electrical current and is directly proportional to the concentration of dissolved ions present in the water. It serves as a useful indicator of groundwater quality.

According to the 1:500 000 scale groundwater quality map (DWA, 2012), EC values range between 150 and 370 mS/m in the western extent of the study area, corresponding to 'acceptable' groundwater quality. These values increase to approximately 370 to 520 mS/m across the central and eastern portions, indicative of 'poor' (brackish) groundwater quality.

To more accurately characterise groundwater quality within the local area, groundwater samples should be collected from any available boreholes or water points within and around the Study area and submitted for laboratory analysis. If no boreholes are currently present, the installation of monitoring boreholes should be considered to enable representative sampling.

In addition, isotopic analysis may be considered to assess potential groundwater-surface water interactions, particularly in relation to the non-perennial drainage lines. Such analyses would assist in evaluating the degree of hydraulic connectivity and the potential impacts of activities such as dewatering on the local surface water system, and support any potential water use licensing process.

7.3.4 GROUNDWATER FLOW DIRECTIONS

In natural, undeveloped settings, groundwater flow generally follows the hydraulic gradient from areas of higher groundwater head toward areas of lower head, which often broadly reflects surface topography. In fractured hard-rock environments, however, groundwater flow may also be significantly influenced by geo-logical and structural controls such as fractures, faults, foliation planes, and shear zones. As a result, ground-water flow patterns do not necessarily mirror surface drainage or topographic gradients.

Within the study area, groundwater flow is therefore expected to be influenced by a combination of topography and structural features. Given the fractured nature of the underlying bedrock, structurally controlled flow along



preferential pathways such as fractures and shear zones associated with the regional west-east Pofadder Lineament is deemed likely. Local drainage features may also act as zones of focused recharge or discharge during and after rainfall events, particularly where these intersect with structurally weakened zones.

At this stage, however, the available desktop information is insufficient to determine site-specific groundwater flow directions with confidence. No representative set of static groundwater level measurements is available across the study area to define groundwater heads or hydraulic gradients, and the current interpretation should therefore be regarded as conceptual only. To improve accuracy in the inferred groundwater flow direction, static groundwater levels should be measured across the study area and surrounding area during any future field-based hydrogeological assessment

7.3.5 AQUIFER VULNERABILITY CLASSIFICATION

The underlying aquifer was classified in accordance with the South African Aquifer System Management Classification framework developed by Parsons (1995), which continues to serve as the national standard for assessing the significance of groundwater resources. This framework offers a strategic basis for the sustainable management and protection of aquifer systems by considering their hydrogeological properties, yield potential, and socio-economic value. Based on the available data, the aquifer beneath the study area is classified as a Minor Aquifer. Such aquifers generally exhibit moderate yields sufficient for localised water supply but are not regarded as significant on a regional scale. Nevertheless, they warrant protection in cases of local dependency or heightened environmental sensitivity.

According to the National Aquifer Vulnerability Map of South Africa (DWS, 2013), the aquifer system underlying the project area is classified as having Least Vulnerability. This rating indicates that the aquifer is only vulnerable to conservative pollutants in the long term when continuously discharged or leached.

As per the National Aquifer Susceptibility Map of South Africa (DWS, 2013), the aquifer underlying the project area is assigned a Low Susceptibility rating. This suggests a low potential for contamination from surface or near-surface sources, highlighting the importance of implementing appropriate management and mitigation measures to safeguard groundwater quality.

The Groundwater Quality Management (GQM) Index, developed by the Water Research Commission (WRC) and the former Department of Water Affairs and Forestry (DWAF) in 1995, forms part of South Africa's national framework for aquifer system management classification. Despite its name, the index does not assess water quality, but rather the management importance of groundwater resources based on aquifer characteristics, yield potential, and socio-economic reliance.

The GQM Index supports the strategic categorisation of aquifers and informs decisions related to groundwater protection, development, and monitoring priorities. It remains a key tool in implementing sustainable groundwater management under the National Water Act (Act 36 of 1998). Based on the GQM Index, the aquifer underlying the Study area requires Low Level Protection.

7.3.6 SITE SPECIFIC INFORMATION

To determine whether there are any groundwater users in the area that may be affected by activities within the study area, a database search was conducted around the property boundary by the geohydrologist. National databases, including the National Groundwater Archive (NGA) and the Water Use Authorisation and Registration Management System (WARMS) that contain groundwater information was reviewed and analysed. These resources provide data on borehole positions, groundwater chemistry and yield, when available.

The NGA database identified 84 boreholes in and around the study area and within a 1 km radius thereof, with only three (3) groundwater level measurements and one (1) discharge value recorded. The available data indicates groundwater levels ranging from approximately 15 to 45 metres below ground level (mbgl), recorded between 1990 and 1996. A single discharge value of approximately 2 L/s was recorded for borehole 2919BD00030.

Assessment of the WARMS Database showed no active WARMS registrations in proximity to the study area. The nearest WARMS point (registered water user) is situated 5 km north of the study area boundary.



7.4 SURFACE WATER AND DRAINAGE AND AQUATIC BIODIVERSITY

The project area falls within the Vaal-Orange Water Management Area (WMA) (previously the Orange WMA) (DWS, 2023), the Nama-Karoo Ecoregion. The PAOI overlaps three quaternary catchments: D81G, D81F and D53G (Figure 13). Desktop information for the Sub-Quaternary Reaches (SQRs) associated with the PAOI was obtained from the DWS (2014). The PAOI falls within the Kaboep River, Steenkampsvlei se Holte River and Soutputs River SQRs as well as the Steenkampsvlei se Holte River Tributary and Soutputs se Laagte River Tributary SQR which will from henceforth be referred to as SVH Tributary and SL Tributary respectively. No SQR information or catchment impacts is available for all the rivers. The Present Ecological State (PES), Ecological Importance (EI), and Ecological Sensitivity (ES) for the available SQRs are summarised in Table 11.

Table 11: PES of systems and the SQR associated with the project (DWS, 2014) (TBC, 2026).

Component/SQR	D81F-03929 (Kaboep River)	D53G- 03991,04142 (Steenkampsvlei se Holte River)	D53G-03997, 04085, 04180 (SVH Tributary)	D53G-04058, 04132, (Soutputs se Laagte River)	D53G-03992 (SL Tributary)
Length (km)	22.11	29.08	42.83	25.12	21.77
Default Ecological Category	N/A	N/A	N/A	N/A	N/A
Ecological Importance (EI)	Low	Low	Low	Low	Low
Ecological Sensitivity (ES)	N/A	N/A	N/A	N/A	N/A
Recommended Ecological Category (REC)	N/A	N/A	N/A	N/A	N/A

According to the Strategic Water Source Areas (SWSA) of South Africa, Lesotho and Swaziland, the PAOI is not located within any SWSAs for surface water or groundwater.

The Northern Cape Biodiversity Spatial Plan (NCBSP) (2024), developed by the Northern Cape Department of Environment and Nature Conservation (DENC) in collaboration with SANBI, provides the latest spatial framework for biodiversity conservation in the province. This plan updates and replaces the 2016 Northern Cape CBA Map, aiming to guide sustainable land use and inform environmental decision-making in line with national biodiversity legislation. The BSP defines the following categories: Protected Areas, Critical Biodiversity Areas (CBA), subdivided into CBA 1 and CBA 2, and Ecological Support Areas (ESA). The PAOI overlaps with Critical Biodiversity Areas 1 and 2 (Figure 4).

The National Biodiversity Assessment (NBA) was completed as a collaboration between the SANBI, the DEA and other stakeholders, including scientists and biodiversity management experts throughout the country over a three-year period (Van Deventer et al., 2019). The purpose of the NBA is to assess the state of South Africa's biodiversity to understand trends over time and inform policy and decision-making across a range of sectors (Van Deventer et al., 2019).

This spatial dataset is part of the South African Inventory of Inland Aquatic Ecosystems (SAIIAE) which was released as part of the NBA (2018). National Wetland Map 5 includes inland wetlands and estuaries, associated with river line data and many other data sets within the South African Inventory of Inland Aquatic Ecosystems



(SAIIAE) (2018). According to the NBA, the PAOI overlaps with the Kaboep River, the Steenkampsvlei se Holte River and Tributary, the Soutputs se Laagte River and Tributary, as well as depression wetlands (Figure 14).

According to the SAIIAE dataset, the rivers within the PAOI are classified as 'Endangered' and the wetlands as 'Critically Endangered'. The project area was also superimposed on the aquatic ecosystem protection level map to assess the protection status of aquatic ecosystems associated with the development. According to the SAIIAE dataset, The PAOI does not intersect with any protected rivers and wetlands (Figure 15).

According to the National Freshwater Ecosystem Priority Areas (NFEPA) dataset, the PAOI intersect five rivers (Kaboep River, Steenkampsvlei se Holte River and Tributary, and Soutputs se Laagte River and Tributary) which are classified as NFEPA rivers. Additionally, the PAOI overlaps with the FEPA area (Figure 16). Conserving the water quality, riverine and wetland habitat and associated ecological functioning within the project area and associated catchments, will aid in the protection of aquatic species occurring within the entire catchment and water quality for the aquatic and terrestrial biota downstream of the project area. The catchments in which human activities occur need to be managed to maintain water quality and prevent further degradation of local and downstream watercourses in order to contribute to national biodiversity goals and support the sustainable use of watercourses

The Department of Forestry, Fisheries and the Environment (DFFE) maintains a spatial database of Protected Areas and Conservation Areas. The Protected Areas and Conservation Areas (PACA) Database scheme is used for classifying protected areas (South Africa Protected Areas Database-SAPAD) and conservation areas (South Africa Conservation Areas Database-SACAD) into types and sub-types in South Africa. The definition of protected areas used in these documents follows the definition of a protected area as defined in the National Environmental Management: Protected Areas Act, (Act 57 of 2003). Chapter 2 of the National Environmental Management: Protected Areas Act, 2003 sets out the "System of Protected Areas", which consists of the following kinds of protected areas: Special nature reserves, National parks, Nature reserves, Protected environments (1-4 declared in terms of the National Environmental Management: Protected Areas Act, 2003), World heritage sites declared in terms of the World Heritage Convention Act, Marine protected areas declared in terms of the Marine Living Resources Act, Specially protected forest areas, forest nature reserves, and forest wilderness areas declared in terms of the National Forests Act, 1998 (Act No. 84 of 1998), and Mountain catchment areas declared in terms of the Mountain Catchment Areas Act, 1970 (Act No. 63 of 1970). The types of conservation areas that are currently included in the database include: Biosphere reserves, Ramsar sites, Stewardship agreements (other than nature reserves and protected environments), Botanical gardens, Transfrontier conservation areas, Transfrontier parks, Military conservation areas, and Conservancies.

According to the protected area spatial datasets from SAPAD (2025) and SACAD (2025), the PAOI does not overlap with any Protected or Conservation Areas. According to the protected area spatial datasets from SAPAD (2025, Q3) and SACAD (2025, Q3), at the nearest point, the PAOI is situated approximately 50 km east of the Gamsberg Nature Reserve.

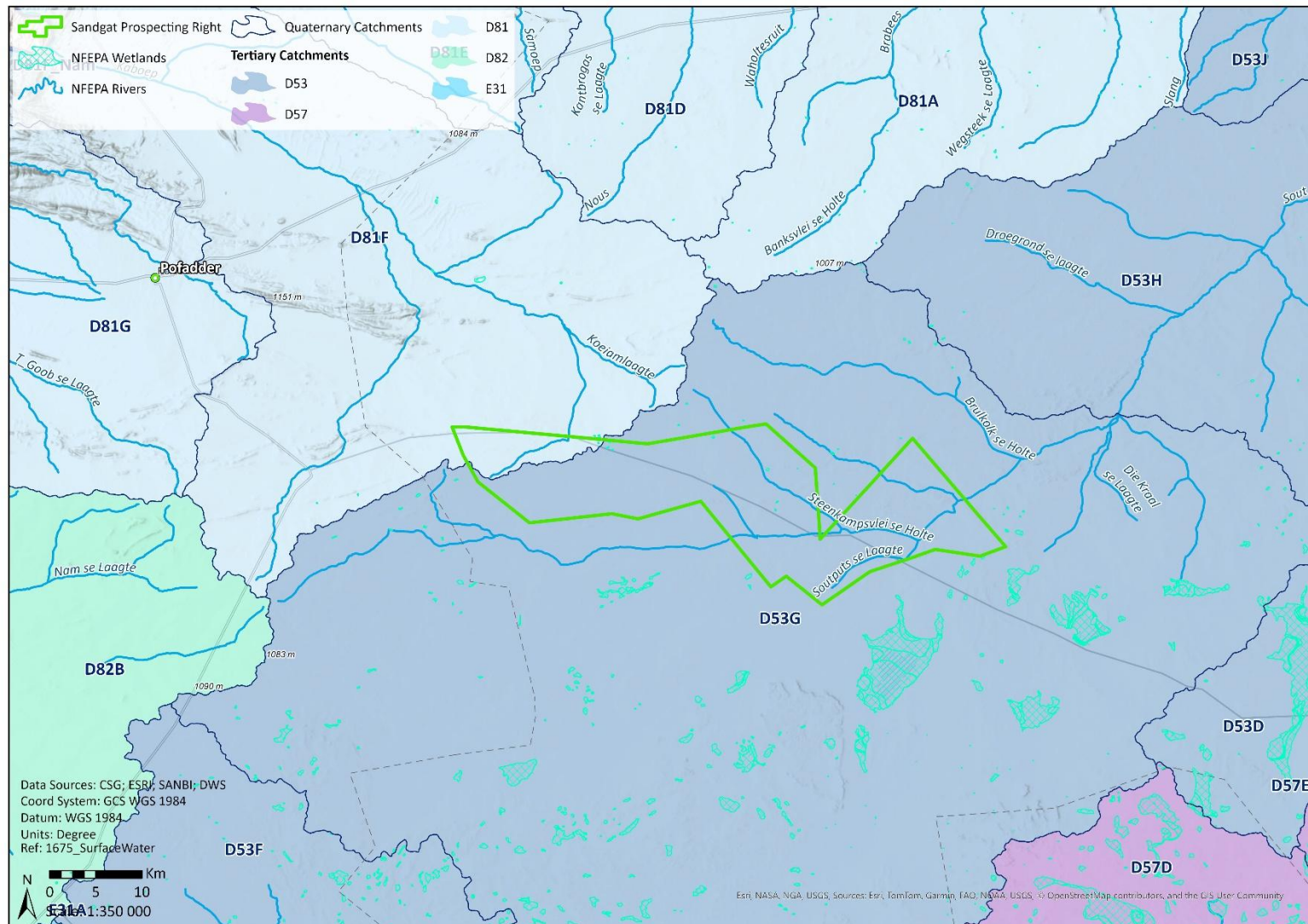


Figure 13: Surface Water Map

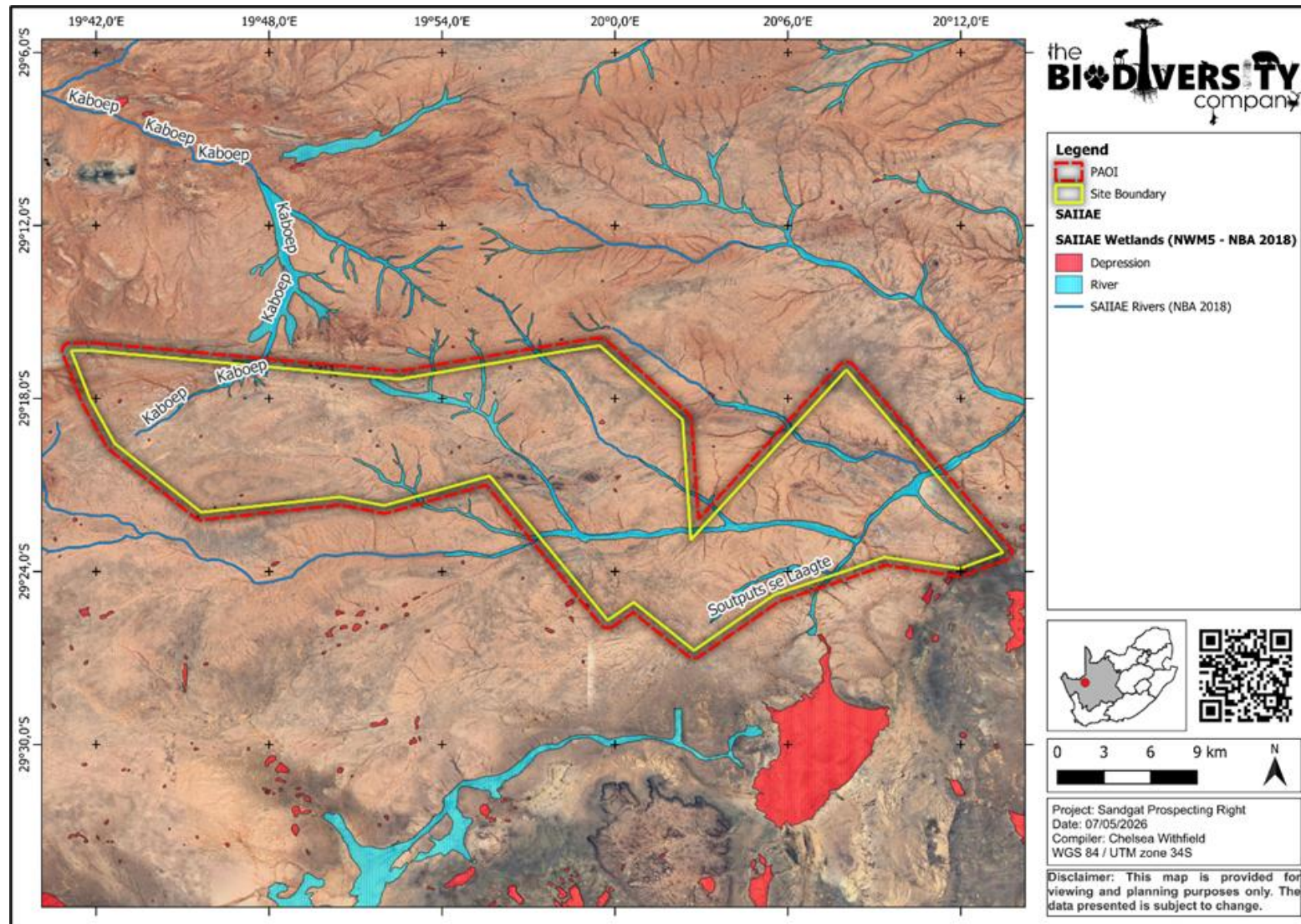


Figure 14: Illustration of NBA wetlands and/or rivers within the project area ((The Biodiversity Company, 2026))

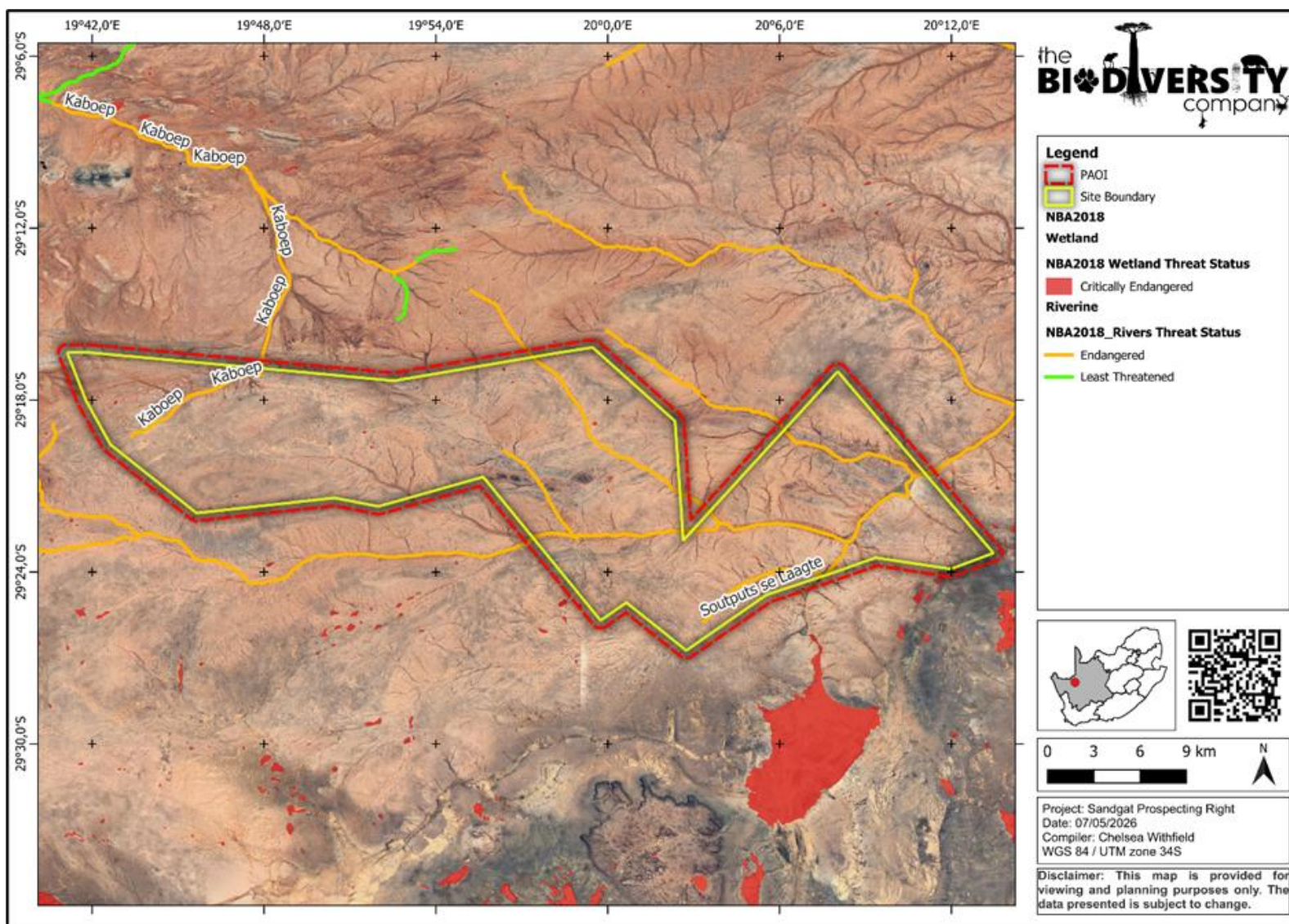


Figure 15: The project area showing the regional ecosystem threat status of the associated aquatic ecosystems ((The Biodiversity Company, 2026).



7.4.1 RESOURCE QUALITY OBJECTIVES

The NWA sets out to ensure that water resources are used, managed and controlled in such a way that they benefit all users. To achieve this, the Act has prescribed a series of measures such as Resource Quality Objectives (RQOs) to ensure comprehensive protection of water resources so that they can be used sustainably (DWA, 2011b). Results from the riverine assessment are ideally compared to the Resource Quality Objectives (RQOs) for the WMA and at a finer level for specific catchments (where available). RQOs provide numerical and/or descriptive statements about the biological, chemical, and physical attributes that characterise a resource for the level of protection defined by its class. “Resource Quality Objectives might describe, among other things, the quantity, pattern and timing of instream flow; water quality; the character and condition of riparian habitat, and the characteristics and condition of the aquatic biota”. The PAOI falls within the Vaal-Orange WMA (previously the Orange WMA). No RQO information is available for the PAOI as the rivers in the region are considered ephemeral watercourses and have not been assessed.

7.4.2 FIELD INVESTIGATION FINDINGS

A single high flow survey was conducted from the 14th to the 17th of April 2026. Sampling points were selected for the study to assess the current state of the associated watercourses and identify potential risks that may result from the project. Only watercourses at an appreciable level of risk in relation to the proposed project and related activities were considered for assessment.

The following watercourses were identified within the PAOI during the field survey:

- NFEPA Rivers:
 - Kaboep River, Soutputs se Laagte River, Steenkampsvlei se Holte River, SVH Tributary, SL Tributary
- Wetlands:
 - Temporary depression wetlands
- Non-perennial/ephemeral watercourses:
 - Drainage areas
 - NFEPA River tributaries
- In-stream dams

The on-site assessment of the watercourses presented dry conditions in all assessed sites except for the Depressions Wetlands and in-stream dams. Cumulatively these systems displayed ephemeral characteristics which is typical for watercourses in a semi-arid region such as where the project area is located. Portions of the watercourses intersect terrestrial habitat, highlighting their interdependence. Despite their ephemeral nature, the watercourses are sensitive to modification as these systems do provide drinking opportunities (following rainfall) and habitat for foraging, nesting and refugia for terrestrial biota and avifauna. Therefore, the watercourses in the project area are regarded as sensitive environments in relation to changes in habitat integrity, flow and water quality (ecological drivers) requiring avoidance from the project related disturbance activities and as well as maintenance of baseline conditions.

7.4.2.1 INDEX OF HABITAT INTEGRITY

The condition of the watercourse and associated aquatic biodiversity are largely dependent on the condition and degree of modification of the surrounding catchment. The more intact and natural the catchment is, the greater the watercourse condition and ecosystem functioning, and the more services there will be with an associated high aquatic and terrestrial biodiversity presence. An altered catchment compromises the watercourse condition, ecosystem functioning, and services offered, with deleterious effects depending on the degree and type of catchment modification. The more modified catchment will ultimately have a low ecological



value watercourse offering limited services with an absence of key services such as phytoremediation (cleaning of water by vegetation) with the cumulative loss of its original biodiversity with only the most tolerant biota remaining in the most negatively modified catchments. The Index of Habitat Integrity (IHI) was conducted to determine the Present Ecological Status (PES) of the watercourses.

The IHI assessment was conducted for each of the five NFEPA rivers (Kaboep River, Steenkampsvlei se Holte River, Soutputs se Laagte River, SVH Tributary, SL Tributary) within the project area. In addition, an overall IHI assessment was completed for the drainage areas within the project area. According to the IHI results, the instream and riparian habitat of the NFEPA rivers, NFEPA River tributaries were rated as Largely Natural (class B), slightly modified, largely natural habitats. Limited anthropogenic activities within the local area include agricultural activities (livestock and farm dams), erosion, and dirt road and fence crossings. These activities have led to limited flow, bed and channel modifications within the assessed habitats.

7.4.2.2 AQUATIC MACROINVERTEBRATES

7.4.2.2.1 VERNAL AQUATIC BIOTA

Invertebrates are keystone species in ephemeral pans globally, playing a crucial role in the food web as prey. They produce drought-resistant egg cysts, or resting eggs, which form an egg bank in the sediments and hatch following desiccation and inundation. Branchiopods, a class of extinct freshwater crustaceans, have evolved to survive in the transient conditions of ephemeral pans and marshes, including orders like Anostraca (fairy shrimp), Notostraca (tadpole shrimp), and Spinicaudata (clam shrimp). Their life cycles are adapted to intermittent water availability, involving rapid development and reproduction during rainy periods, followed by the formation of drought-resistant cysts that can survive for decades in dry sediments until favourable conditions return (Day *et al.*, 1999; Dube, T., *et al.*, 2020; Meyer-Milne, E., *et al.* 2022).

Branchiopods are essential to the ecology of transient wetland environments. They support higher trophic levels, such as birds and amphibians, by participating in energy flow and nutrient cycling as filter feeders and grazers. Furthermore, they can colonize new habitats and promote genetic exchange between populations because to the passive dispersal made possible by their latent eggs. Branches are important bioindicators for evaluating the health and integrity of transitory wetland habitats because of their ecological significance and sensitivity (Meyer-Milne, E., *et al.* 2022). The biodiversity and biological processes that these ecosystems support depend on conservation efforts to keep them intact.

It is expected that more of the temporary wetlands present within the project area will support vernal biota. Southern Africa has one of the richest Anostracan faunas in the world, of which 80% are endemic (Day *et al.*, 1999). The other Branchiopods are similarly endemic with some species only occurring from a single location in the country and nowhere else.

Due to the lack of research and baseline data on these temporary wetlands, the Present Ecological Status (PES) and importance and sensitivity were unable to be determined. Due to the limited information on how these systems function within the environment, it was not possible to quantify (assign numerical values to) the ecosystem services, ecological importance, and sensitivity for the project, specifically in relation to the collected branchiopods. Despite this, ephemeral pans are essential components of the Karoo ecosystem, sustaining biodiversity, aiding nutrient cycling, and some providing temporary water sources during dry seasons. Their importance is heightened by their vulnerability to environmental changes such as land-use shifts and climate variability. The list of Branchiopods collected within the project area is presented in Table 12.



Table 12: Branchiopods collected within the project area (April 2026) (TBC, 2026).

Common Name	Order	Family	Genus	IUC N Status (2026)	Assessed Sites							
					D 1	D 2	D 4	Kaboe p2	SH 4	TP 4	TP 5	TP 6
Fairy Shrimp	Anostraca	Branchinectidae	<i>Branchipodopsis</i>	LC	✓	✓	✓	✓	✓	✓	✓	✓
Tadpole Shrimp	Notostraca	Triopsidae	<i>Triops</i>	LC	✓	✓	✓	✓	✓	✓	✓	✓
Clam Shrimp	Laevicaudata / Spinicaudata	Limnadiidae / Cyzicidae	<i>Limnadia</i> / <i>Eulimnadia</i>	VU	✓	-	-	✓	✓	✓	-	✓

LC=Least concerned
VU= Vulnerable

7.4.2.3 FISH COMMUNITY STRUCTURE

Due to the ephemeral, dry nature of the rivers within the PAOI, fish community assessments could not be conducted, and no information is available regarding potential fish species that may occur within the region.

7.4.2.4 PRESENT ECOLOGICAL STATUS

The PES assessment for the sampled watercourses is based on the data collected during the April 2026 survey and the results are provided in Table 13. The PES assessment indicated that the assessed riverine features (All NFEPA rivers) are in a class B (Largely Natural) state, indicating slightly modified, largely natural habitats. It should be noted that the PES results represent a single survey conducted during April 2026 and is based only on the IHI results and the opinion of the specialist. These results should be interpreted accordingly.

The temporary depression wetlands located in the PAOI was classified and the PES determined. The temporary depression wetlands are currently classified as Category B systems (Largely Natural), a small change in natural habitats and biota may have taken place but the ecosystem functions are essentially unchanged. The primary impacts affecting the wetland include grazing by sheep, which can lead to trampling, soil compaction, and selective removal of vegetation, as well as the presence of dirt roads within its catchment. These disturbances have contributed to changes in vegetation structure and hydrological patterns, but the wetland continues to provide important ecosystem services such as water retention and habitat provision. Ongoing management of grazing intensity and careful planning of road placement are recommended to prevent further degradation and to maintain the wetland's ecological integrity in line with South African wetland assessment guidelines.

Table 13: Present Ecological Status of the aquatic ecosystems in the project area (TBC, 2026).

Aspect Assessed	Baboep River	Steenkampsvlei se Holte River	Soutputs se Laagte River	SVH Tributary	SL Tributary	Temporary depression wetlands
Present Ecological State	B (Largely Natural)	B (Largely Natural)	B (Largely Natural)	B (Largely Natural)	B (Largely Natural)	B (Largely Natural)



Aspect Assessed	Baboep River	Steenkampsvlei se Holte River	Soutpots se Laagte River	SVH Tributary	SL Tributary	Temporary depression wetlands
Recommended Ecological Condition	Not available	Not available	Not available	Not available	Not available	Not applicable
	Maintain	Maintain	Maintain	Maintain	Maintain	Not applicable

7.4.2.5 WATERCOURSE DELINEATIONS AND BUFFER REQUIREMENTS

The watercourses were delineated according to DWAF (2005), 5 m contour data, the SAIIE dataset (NBA National Wetland Map, 2018), and the latest Google Earth aerial imagery (2024) as well as a site visit and are presented in Figure 16 along with the required buffer areas. According to the buffer guidelines, the maximum required buffer should be applied to a system (Macfarlane, *et al.*, 2014). Riparian areas have high conservation value and can be considered the most important part of a watershed for a wide range of values and resources. They provide important habitat for a large volume of wildlife and often forage for domestic animals. The vegetation they contain is an important part of the water balance for the hydrological cycle through evapotranspiration. They are crucial for riverbank stability and in preventing erosion within the channel (Elmore and Beschta, 1987). The implementation of a buffer zone ensures the ecological requirements needed to maintain both the ecosystem functioning and services offered by the watercourses are maintained. Additionally, the watercourses potentially influenced by the project have sensitivity to further disturbance, requiring protection from the project activities. Therefore, they are considered as high priority areas and should be avoided at all costs.

A conservative buffer zone of **30 m** for all the NFEPA rivers, in-stream dams and temporary depression wetlands, and a **22 m** conservative buffer for the drainage areas were assigned according to the buffer guidelines, the maximum required buffer should be applied to a system (Macfarlane, *et al.*, 2014). These **post-mitigation** buffers considered the projects description (to avoid all sensitive areas), localised and minimal impacts of prospecting, ephemeral nature these systems. These buffer areas (except drainage areas and 22m buffer) serve as **No-go** zones for any unauthorised activities. Refer to Figure 16. The site development plan should therefore be created accordingly. Ensuring buffers are intact increases the resilience of a watercourse to future disturbances. **It should be noted that these conservation buffers only apply to the prospecting activities, not Mining activities.**

7.4.2.6 REGULATION ZONES

In accordance with General Notice (GN) 4167 of 2023 as it relates to the NWA (1998), a regulated area of a watercourse for Section 21 (c) and 21 (i) of the NWA, 1998 means the outer edge of the 1 in 100 year flood or where no flood line has been determined it means 100 m from the edge of a watercourse or a 500 m radius from the delineated boundary (extent) of any wetland or pan. Listed activities in terms of the NEMA (1998), (Act 107 of 1998) EIA Regulations as amended, must be taken into consideration if any infrastructure is to be placed within the applicable zone of regulation, which in this case is a 32 m zone of regulation (ZoR). The PAOI includes five NFEPA rivers, In-stream dams, drainage areas and several temporary depression wetlands and therefore the project falls within the NEMA Act 107 and DWS GN 4167 regulated zones. The regulated areas have been applied to the delineations within the PAOI and are presented in Figure 17.

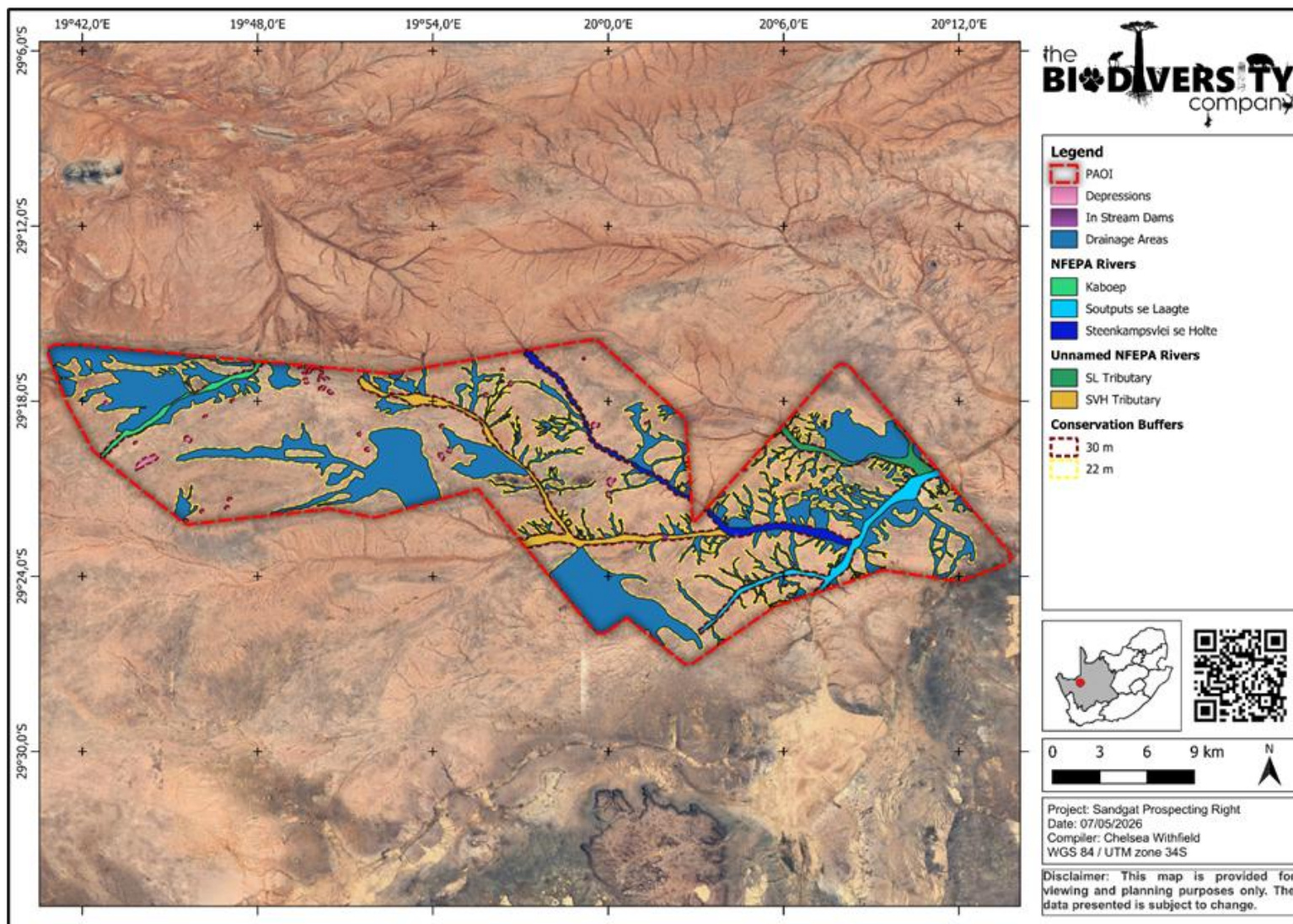


Figure 16: Delineations and buffer areas within the PAOI

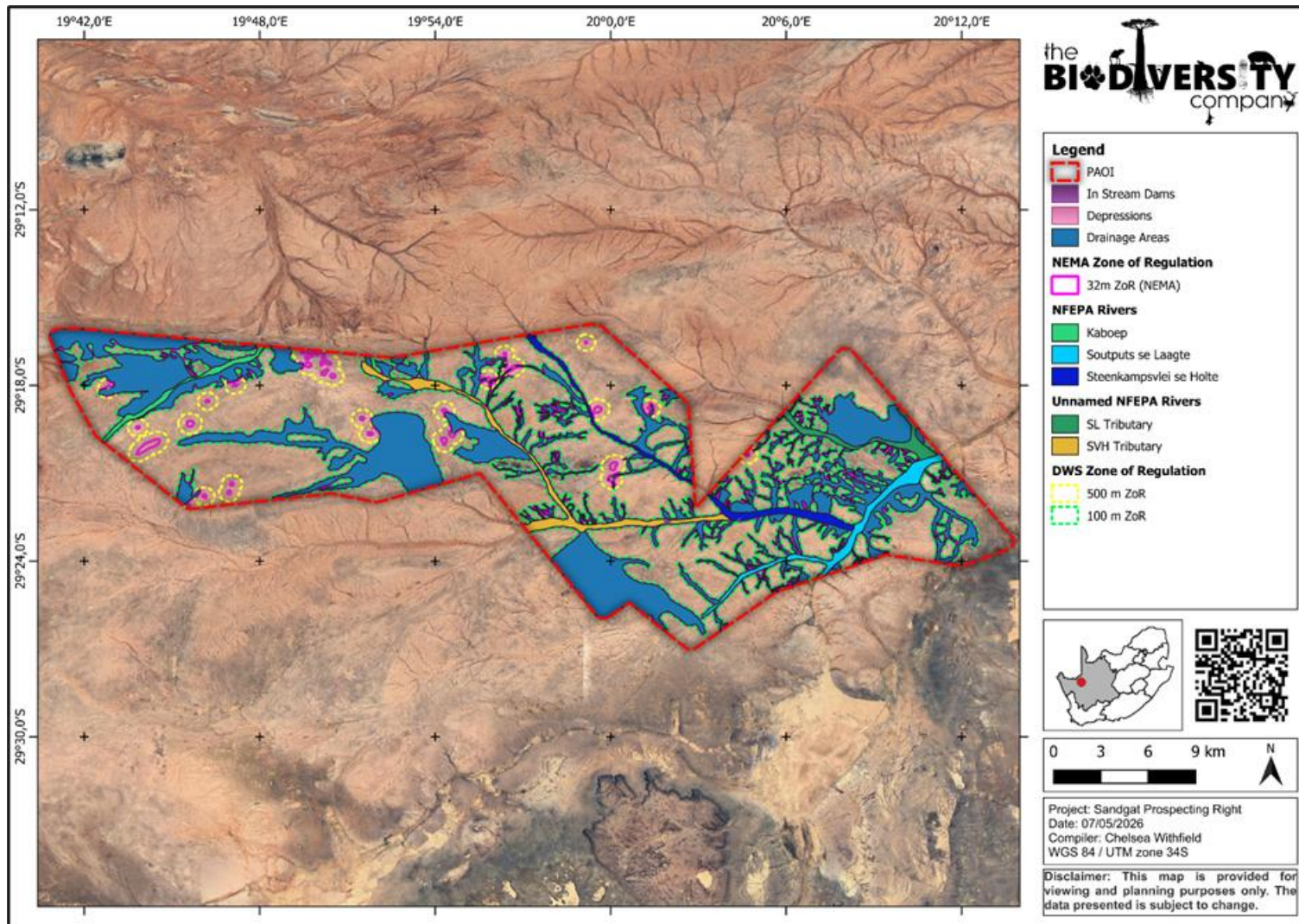


Figure 17: Riparian areas and Zones of Regulation (ZoR) within the PAOI (The Biodiversity Company, 2026)



7.5 TOPOGRAPHY

Figure 18 depicts an overview of the topography of the site and surrounding areas. Topographically, elevations across the study area range from approximately 705 to 1 129 metres above mean sea level (mamsl), with higher elevations located to the west and lower-lying areas to the north-west and south-east. The study area is situated along a local topographic divide, with surface runoff and near-surface runoff expected to move toward the northern and eastern portions of the study area, in line with the prevailing gradient.



7.6 LANDSCAPE QUALITY AND VISUAL

The site consists of a mixture of homesteads with livestock, farming community, low laying grassland, isolated shrubs, bare ground, non-perennial watercourses, rocky outcrops and gravel access roads. Several homesteads and a small farming community were noted on site. Farming activities noted on site largely limited to goat and sheep largely due to the climatic conditions and lack of grass-cover of other livestock farming. Some photos are included as Figure 19 below to provide context. Refer to the SSVR in APPENDIX B for further photos and site information.





Figure 19: Example of landscape characteristics within or close to the study area.

7.7 TERRESTRIAL BIODIVERSITY

The Northern Cape Biodiversity Spatial Plan (NCBSP) (2024), developed by the Northern Cape Department of Environment and Nature Conservation (DENC) in collaboration with SANBI, provides the latest spatial framework for biodiversity conservation in the province. This plan updates and replaces the 2016 Northern Cape CBA Map, aiming to guide sustainable land use and inform environmental decision-making in line with national biodiversity legislation.

The BSP defines the following categories: Protected Areas, Critical Biodiversity Areas (CBA), subdivided into CBA 1 and CBA 2, and Ecological Support Areas (ESA).

According to the Northern Cape BSP, the PAOI overlaps with CBA 1 and CBA 2 (Figure 20). The reasons include vegetation type target, threatened bird's habitat, threatened rivers, wetland river target, and other rivers target.

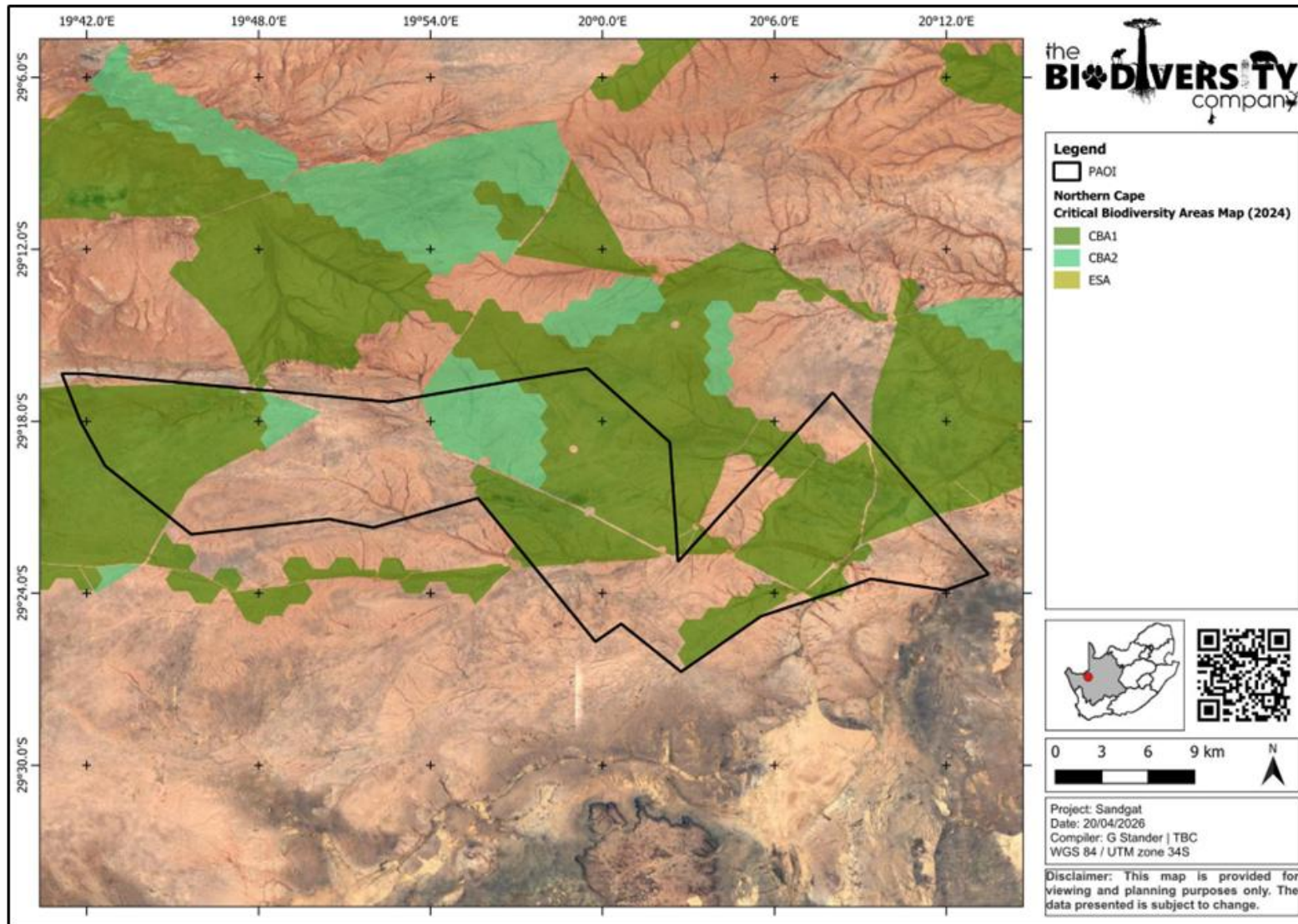


Figure 20: Map illustrating the PAOI in relation to the Northern Cape Biodiversity Sector Plan.



A new set of Key Biodiversity Areas (KBA) specific to South Africa has been identified using the Global Standard for the Identification of Key Biodiversity Areas version 1.2 (IUCN 2016), applied to South African species and ecosystems. KBAs are critical sites that play a vital role in maintaining global biodiversity by serving as essential habitats for species. The identification of KBAs enables governments and civil society to pinpoint key locations crucial for species and their habitats worldwide. This understanding facilitates collaborative efforts to manage and conserve these areas, thereby safeguarding global biological diversity and supporting international biodiversity objectives.

Unlike the Important Bird Areas (IBAs), which primarily focus on birds, the KBA framework encompasses a broader spectrum of biodiversity, including mammals, amphibians, plants, and other taxa. BirdLife South Africa (BLSA), in consultation with the KBA National Coordination Group, has opted to retire IBAs and integrate KBAs into its conservation strategy. This strategic shift acknowledges the necessity of investing resources effectively to protect avian and other macroecological elements at the site level within a comprehensive framework of biodiversity conservation (KBA NCG, 2024).

The PAOI is located within 5 km of the Aggenys-Pella-Pofadder KBA (Figure 21).

The **Aggenys–Pella–Pofadder** KBA is a large terrestrial site with limited protection in the Northern Cape, South Africa, characterised by extensive plateau plains of semidesert steppe dominated by *Stipagrostis* grasses, interspersed with *Salsola* shrubs and, in wetter years, rich displays of annual herbs. The landscape also features hills and mountains with bare rock outcrops and sparse shrubby vegetation, with habitats shaped by topography, climate, and geology. This KBA is internationally significant, meeting three criteria of the Global Standard for the Identification of KBAs: it supports significant proportions of the global populations of ten threatened species (criterion A1), contains the entire global populations of two Critically Endangered species, and regularly holds ten geographically restricted species (criterion B1). The site also meets criteria B2 and B3 for its assemblages of range-restricted Caryophyllales and endemic Namib Karoo drylands birds, and is 100% irreplaceable for the global persistence of six species (criterion E). KBA trigger species include both birds and plants, underscoring the site’s critical role in conserving unique and threatened biodiversity.

The species that triggers the KBA is shown in Table 14.

Table 14: Species that trigger the KBA (TBC, 2026).

Taxonomic group	Scientific name	Common name	IUCN Red List	Year	KBA criteria
Aves	<i>Calendulauda burra</i>	Red Lark	VU	2024	A1b, B3b
Aves	<i>Eremomela gregalis</i>	Karoo Eremomela	LC	2024	B3b
Aves	<i>Eremopterix australis</i>	Black-eared Sparrow-lark	LC	2024	B3b
Aves	<i>Spizocorys sclateri</i>	Sclater's Lark	NT	2024	B3b
Aves	<i>Euryptila subcinnamomea</i>	Cinnamon-breasted Warbler	LC	2024	B3b
Saxifragales	<i>Adromischus nanus</i>		LC	2024	B1



Taxonomic group	Scientific name	Common name	IUCN Red List	Year	KBA criteria
Caryophyllales	<i>Cephalophyllum fulleri</i>		LC	2024	B1, B2

According to the Mining and Biodiversity Guidelines spatial dataset (2013), the PAOI overlaps with areas of Moderate and Highest Biodiversity Importance (BI) and there is, therefore, a correlating moderate and highest risk for mining, respectively, as per the Mining and Biodiversity Guidelines categories (Figure 22).

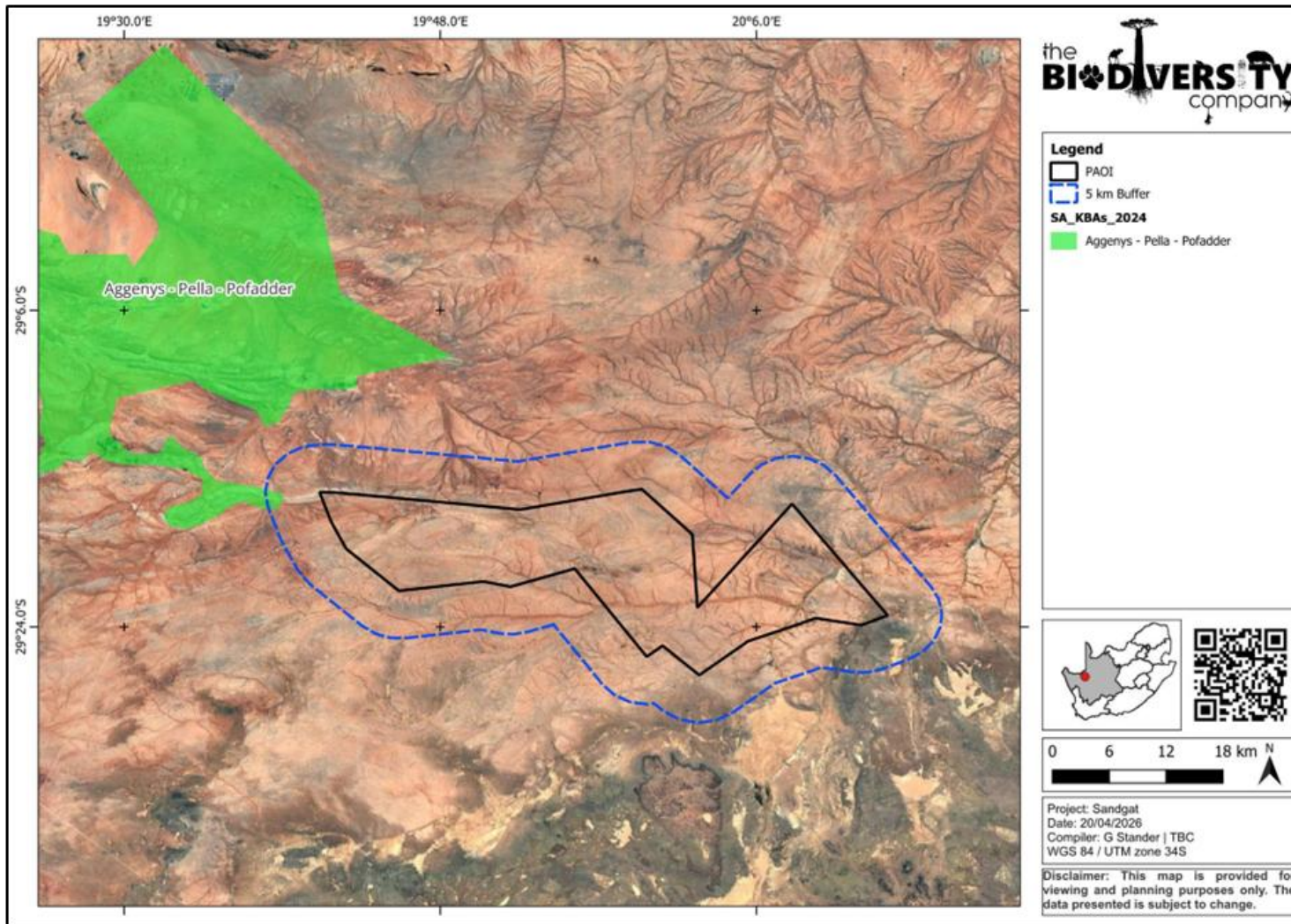


Figure 21: The PAOI in relation to the KBA dataset.

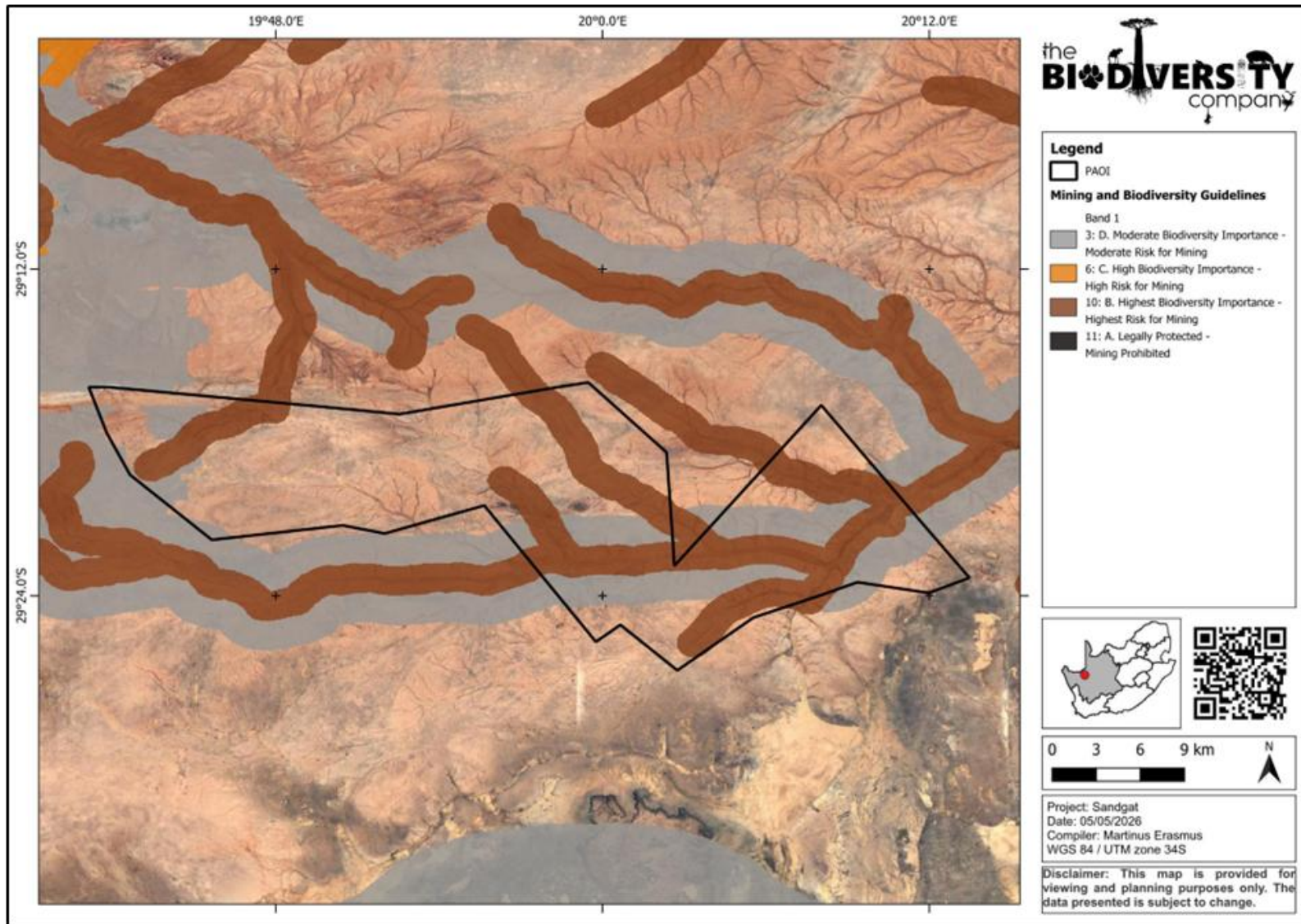


Figure 22: Map illustrating the PAOI and inferred reserves in relation to the Mining and Biodiversity Guidelines



7.7.1 FLORA

7.7.1.1 BIOMES AND VEGETATION TYPES

The Project Area is situated within the Nama Karoo and Succulent Karoo biomes.

The **Nama Karoo biome** is found in the central plateau of the western half of South Africa. The geology underlying the biome is varied, as the distribution of this biome is determined primarily by rainfall. The rain falls in summer and varies between 100 and 520 mm per year. This also determines the predominant soil type - over 80% of the area is covered by a lime-rich, weakly developed soil over rock. Although less than 5% of rain reaches the rivers, the high erodibility of soils poses a major problem where overgrazing occurs (SANBI, 2019). The dominant vegetation is a grassy, dwarf shrubland. Grasses tend to be more common in depressions and on sandy soils, and less abundant on clayey soils. Grazing rapidly increases the relative abundance of shrubs. Most of the grasses are of the C4 type and, like the shrubs, are deciduous in response to rainfall events (SANBI, 2019).

The **Bushmanland Arid Grassland vegetation type** within the Nama Karoo biome consists of extensive to irregular plains on a slightly sloping plateau. It is sparsely vegetated by grasslands, mainly dominated by white grasses (*Stipagrostis species*) giving this vegetation type the character of semidesert 'steppe'. In places, low shrubs of *Salsola* change the vegetation structure. In years of abundant rainfall rich displays of annual herbs can be expected. The conservation status of this vegetation type is classified as Least Concerned (RLE, 2022). The national target for conservation protection for this vegetation types is 21%, with only small patches statutorily conserved in Augrabies Falls National Park and Goegab Nature Reserve. Very little of the area has been transformed. The risk of erosion in this vegetation type is very low (60%) and low (33%).

Bushmanland Basin Shrubland vegetation type within the Nama Karoo biome consist of slightly irregular plains with dwarf shrubland dominated by a mixture of low sturdy and spiny (and sometimes also succulent) shrubs (*Rhigozum*, *Salsola*, *Pentzia*, *Erioccephalus*), 'white' grasses (*Stipagrostis*) and in years of high rainfall also by abundant annuals such as species of *Gazania* and *Leysera*. The conservation status of this vegetation type is classified as Least Concern (RLE, 2022). The national target for conservation protection for this vegetation types is 21%. None of the unit is conserved in statutory conservation areas. No signs of serious transformation, but scattered individuals of *Prosopis* sp. occur in some areas (e.g. in the vicinity of the Sak River drainage system), and some localised dense infestations form closed 'woodlands' along the eastern border of the unit with Northern Upper Karoo (east of Van Wyksvlei).

Most of the **Succulent Karoo biome** covers a flat to gently undulating plain, with some hilly and "broken" veld, mostly situated to the west and south of the escarpment, and north of the Cape Fold Belt. The altitude is mostly below 800 m, but in the east, it may reach 1 500 m (SANBI, 2019). The Succulent Karoo Biome is primarily determined by the presence of low winter rainfall and extreme summer aridity. Rainfall varies between 20 and 290 mm per year. Because the rains are cyclonic, and not due to thunderstorms, the erosive power is far less than that of the summer rainfall biomes. During summer, temperatures in excess of 40°C are common, while fog is common nearer to the coast (SANBI, 2019). The vegetation is dominated by dwarf, succulent shrubs, of which the Vygies (*Mesembryanthemaceae*) and Stonecrops (*Crassulaceae*) are particularly prominent. Mass flowering displays of annuals (mainly Daisies Asteraceae) occur in spring, often on degraded or fallow lands. Grasses are rare, except in some sandy areas, and are of the C3 type. The number of plant species, mostly succulents, is very high and unparalleled elsewhere in the world for an arid area of this size (SANBI, 2019).

The Bushmanland Inselberg Shrubland vegetation type within this biome consists of inselbergs and koppies in a surrounding flat, plains environment. The vegetation consists of succulent and non-succulent shrubland, with a sparse grass layer, on the steep slopes. Rainfall, occurring mostly from February to April, is very low, with MAP below 100 mm. The conservation status of this vegetation type is classified as Least Concern (RLE, 2022). It is currently threatened by mining nearby Aggenys. The conservation target is 34% and none is currently statutorily conserved.

Refer to Figure 23 for a map of the vegetation types in the project area.



7.7.1.2 EXPECTED FLORA SPECIES

The GBIF database indicates that 306 species of indigenous plants are expected to occur within the PAOI. Appendix B of the Specialist Report provides the list of species and their respective conservation status and endemism. (Appendix D). In total, 18 flora SCC may occur within the PAOI based on the GBIF database, Screening Tool and prior knowledge of the landscape which the PAOI overlaps (Table 15).

Please note that the Screening Tool report includes lists of bird, mammal, reptile, amphibian, butterfly and plant species of conservation concern known or expected to occur on the proposed development footprint. Some of these SCC are sensitive to illegal harvesting. Such species have had their names obscured and are listed as sensitive plant unique number/sensitive animal unique number. As per the best practise guideline that accompanies the protocol and screening tool, **the name of the sensitive species may not appear in the final EIA report nor any of the specialist reports released into the public domain**. It should be referred to as *sensitive plant* or *sensitive animal* and its threat status may be included, e.g. *critically endangered sensitive plant* or *endangered sensitive animal*.

Table 15: List of expected flora Species of Conservation Concern. NT = Near Threatened, VU = Vulnerable, EN = Endangered, CR = Critically Endangered and DDD = Data Deficient Insufficient Information (TBC, 2026).

Family Name	Scientific Name	Screening Tool Sensitivity	Conservation status (Regional)	Habitat	Likelihood of Occurrence	Reason
Anacampserotaceae	<i>Anacampseros quinaria</i>		EN	Rock outcrops	High	Recorded within PAOI
Amaryllidaceae	<i>Brunsvigia gariensis</i>		EN	Rocky quartzitic slopes and summits of Bushmanland inselbergs	High	Suitable habitat within PAOI
Asphodelaceae	<i>Bulbine striata</i>		CR	Amongst quartz pebbles and rocks in well-drained soil on the upper and middle slopes below sheer rock faces.	Low	No slopes of sheer rock faces within PAOI.
Colchicaceae	<i>Colchicum bellum</i>		DD	Its habitat is uncertain. It possibly occurs on sandy flats, sometimes with quartz gravel.	Medium	Suitable habitat within PAOI



Family Name	Scientific Name	Screening Tool Sensitivity	Conservation status (Regional)	Habitat	Likelihood of Occurrence	Reason
Aizoaceae	<i>Conophytum limpidum</i>		EN	The plants are associated with Bushmanland inselbergs where they generally prefer shaded niches, e.g., in vertical crevices.	High	Suitable habitat within PAOI
Aizoaceae	<i>Conophytum praesectum</i>		EN	It is typically found in partial shade (e.g., beneath larger shrubs) on low granite ridges and in rubble.	High	Suitable habitat within PAOI
Aizoaceae	<i>Dinteranthus pole-evansii</i>		VU	Well-drained, sandy soils associated with quartz stones and pebbles.	High	Suitable habitat within PAOI
Mesembryanthemaceae	<i>Dinteranthus wilmotianus</i>		NT	Plants grow on quartz slopes and alluvial gravel soils.	High	Suitable habitat within PAOI
Aizoaceae	<i>Lithops dorotheae</i>		EN	Plants occur on fine-grained, sheared, feldspathic quartzite.	High	Suitable habitat within PAOI
Aizoaceae	<i>Lithops olivacea</i>		VU	Quartzite gravel.	High	Suitable habitat within PAOI
Aizoaceae	<i>Drosanthemum calycinum</i>		NT	Lowland shale.	Medium	Suitable habitat within PAOI



Family Name	Scientific Name	Screening Tool Sensitivity	Conservation status (Regional)	Habitat	Likelihood of Occurrence	Reason
Crassulaceae	<i>Crassula garibina subsp. glabra</i>		Rare	Rock crevices in granite or quartzite outcrops.	High	Suitable habitat within PAOI
Crassulaceae	<i>Tylecodon sulphureus var. armianus</i>		Rare	Steep, often sheer, north-facing quartz cliffs, shaded for most of the day, 700-1100 m	Low	No cliffs within PAOI
Fabaceae	<i>Calobota lotononoides</i>		NT	Occurs on deep, well-drained sandy soils and is adapted to shifting dunes.	Medium	Suitable habitat within PAOI
Fabaceae	<i>Crotalaria pearsonii</i>		VU	Dry ravines, in granite and quartzite derived soils.	High	Suitable habitat within PAOI
	Sensitive Species 1209	Medium	EN		High	Suitable habitat within PAOI
	Sensitive Species 545	Medium	VU		High	Recorded within PAOI
	Sensitive Species 317	Medium	Rare		High	Suitable habitat within PAOI

The vegetation assessment was conducted throughout the extent of the PAOI. A total of 83 indigenous plant species were recorded in the PAOI during the field assessment (Table 3 6). Notably, this is not a complete list of indigenous flora recorded within the PAOI, but only species that were able to be recorded within the PAOI within the time and accessibility constraints.

The list of plant species recorded (Table 16) is by no means comprehensive, and repeated surveys during different phenological periods not covered, may likely yield additional flora species for the PAOI. However, floristic analysis conducted to date is regarded as a sound representation of the local flora for the PAOI.

Table 16: The flora species observed within the PAOI. VU = Vulnerable, EN = Endangered, LC = Least Concern and DDD = Data Deficient Insufficient Information (TBC, 2026).



Family Name	Scientific Name	RSA Status		Conservation status (Regional)	Notes
Acanthaceae	<i>Acanthopsis hoffmannseggiana</i>	Indigenous, endemic	not	DDD	
Aizoaceae	<i>Aizoon papulosum</i>	Indigenous, endemic	not	LC	Provincially protected
Aizoaceae	<i>Mesembryanthemum tetragonum</i>	Indigenous, endemic	not	LC	Provincially protected
Aizoaceae	<i>Conophytum friedrichiae</i>	Indigenous, endemic	not	VU	Provincially protected
Aizoaceae	<i>Mesembryanthemum guerichianum</i>	Indigenous, endemic	not	LC	Provincially protected
Aizoaceae	<i>Trichodiadema setuliferum</i>	Endemic		LC	Provincially protected
Aizoaceae	<i>Trianthera parvifolium</i>	Indigenous		LC	Provincially protected
Aizoaceae	<i>Ruschia spinosa</i>	Indigenous		LC	Provincially protected
Aizoaceae	<i>Drosanthemum hispidum</i>	Indigenous		LC	Provincially protected
Aizoaceae	<i>Mesembryanthemum junceum</i>	Endemic		LC	Provincially protected
Amaranthaceae	<i>Manocharisma albicans</i>	Indigenous		LC	
Amaranthaceae	<i>Caroxylon aphyllum</i>	Indigenous		LC	
Amaranthaceae	<i>Chenopodium berlandieri</i>	Likely not indigenous / naturalised		LC	
Amaranthaceae	<i>Amaranthus albus</i>	Not indigenous / naturalised		LC	
Amaranthaceae	<i>Chenopodium murale</i>	Not indigenous / naturalised		NE	
Amaranthaceae	<i>Atriplex lindleyi</i>	Not indigenous / naturalised		LC	
Anacampserotaceae	<i>Anacampseros papyracea</i>	Endemic		LC	Provincially protected



Family Name	Scientific Name	RSA Status	Conservation status (Regional)	Notes
Anacampserotaceae	<i>Anacampseros quinaria</i>	Endemic	EN	Provincially protected
Anacampserotaceae	<i>Anacampseros filamentosa</i>	Indigenous	LC	Provincially protected
Anacardiaceae	<i>Schinus molle</i>	Not indigenous / naturalised / invasive		
Apocynaceae	<i>Microlooma incanum</i>	Indigenous, not endemic	LC	Provincially protected
Apocynaceae	<i>Hoodia gordonii</i>	Indigenous	DDT	Nationally & Provisionally Protected
Apocynaceae	<i>Gomphocarpus filiformis</i>	Not endemic	LC	Provincially protected
Asparagaceae	<i>Asparagus capensis</i>	Indigenous	LC	
Asparagaceae	<i>Eriospermum</i>	Higher taxon / genus		
Asparagaceae	<i>Albuca</i>	Higher taxon / genus		
Asparagaceae	<i>Lachenalia carnosa</i>	Endemic	LC	
Asparagaceae	<i>Ledebouria apertiflora</i>	Not endemic	LC	
Asphodelaceae	<i>Haworthiopsis tessellata</i>	Indigenous, not endemic	LC	
Asteraceae	<i>Kleinia longiflora</i>	Indigenous	LC	
Asteraceae	<i>Pentzia incana</i>	Indigenous, not endemic	LC	
Asteraceae	<i>Pteronia mucronata</i>	Not endemic	LC	
Asteraceae	<i>Geigeria ornativa</i>	Not endemic	LC	
Asteraceae	<i>Arctotis leiocarpa</i>	Indigenous	LC	
Asteraceae	<i>Gazania lichtensteinii</i>	Indigenous	LC	
Asteraceae	<i>Berkheya spinosissima</i>	Indigenous	LC	



Family Name	Scientific Name	RSA Status	Conservation status (Regional)	Notes
Asteraceae	<i>Pegolettia retrofracta</i>	Indigenous	LC	
Bignoniaceae	<i>Rhigozum trichotomum</i>	Indigenous	LC	
Brassicaceae	<i>Heliophila seselifolia</i>	Endemic	LC	
Cactaceae	<i>Cactaceae sp.</i>			
Cactaceae	<i>Opuntia cespitosa</i>	Not indigenous / invasive		
Capparaceae	<i>Boscia foetida</i>	Indigenous / partly endemic at subspecies level	LC	Provincially protected
Cleomaceae	<i>Cleome gynandra</i>	Indigenous	LC	
Colchicaceae	<i>Ornithoglossum vulgare</i>	Indigenous	LC	
Cucurbitaceae	<i>Cucumis africanus</i>	Indigenous	LC	
Euphorbiaceae	<i>Euphorbia rhombifolia</i>	Indigenous, not endemic	LC	Provincially protected
Fabaceae	<i>Indigofera heterotricha</i>	Indigenous	LC	
Fabaceae	<i>Melolobium candicans</i>	Endemic	LC	
Fabaceae	<i>Neltuma velutina</i>	Not indigenous		
Fabaceae	<i>Neltuma odorata</i>	Not indigenous		
Geraniaceae	<i>Monsonia crassicaulis</i>	Indigenous	LC	
Geraniaceae	<i>Monsonia umbellata</i>	Indigenous, not endemic		
Geraniaceae	<i>Monsonia salmoniflora</i>	Not endemic	LC	
Iridaceae	<i>Moraea venenata</i>	Indigenous	LC	Provincially protected



Family Name	Scientific Name	RSA Status		Conservation status (Regional)	Notes
Kewaceae	<i>Kewa salsoloides</i>	Indigenous, endemic	not	LC	
Lamiaceae	<i>Salvia verbenaca</i>	Indigenous, endemic	not	LC	
Limeaceae	<i>Limeum aethiopicum</i>	Endemic		LC	
Loranthaceae	<i>Septulina glauca</i>	Endemic		LC	
Malvaceae	<i>Hermannia stricta</i>	Indigenous		LC	
Malvaceae	<i>Radyera urens</i>	Indigenous		LC	
Oxalidaceae	<i>Oxalis annae</i>	Endemic		LC	Provincially protected
Papaveraceae	<i>Argemone ochroleuca</i>	Not indigenous / naturalised / invasive		LC	
Pedaliaceae	<i>Sesamum triphyllum</i>	Indigenous		LC	
Plumbaginaceae	<i>Dyerophytum africanum</i>	Indigenous		LC	
Poaceae	<i>Enneapogon scaber</i>	Indigenous, endemic	not	LC	
Poaceae	<i>Eragrostis nindensis</i>	Indigenous		LC	
Poaceae	<i>Stipagrostis ciliata</i>	Indigenous		LC	
Poaceae	<i>Schmidtia kalahariensis</i>	Indigenous		LC	
Poaceae	<i>Aristida congesta</i>	Indigenous, endemic	not	LC	
Poaceae	<i>Chloris virgata</i>	Indigenous		LC	
Poaceae	<i>Eragrostis lehmanniana</i>	Indigenous, endemic	not	LC	
Poaceae	<i>Enneapogon desvauxii</i>	Indigenous, endemic	not	LC	
Poaceae	<i>Cenchrus ciliaris</i>	Indigenous, endemic	not	LC	
Polygalaceae	<i>Polygalaceae sp.</i>				



Family Name	Scientific Name	RSA Status	Conservation status (Regional)	Notes
Portulacaceae	<i>Portulaca oleracea</i>	Not indigenous / naturalised / invasive	LC	
Rubiaceae	<i>Nenax sp.</i>			
Rubiaceae	<i>Kohautias p.</i>			
Scrophulariaceae	<i>Aptosimum spinescens</i>	Indigenous	LC	
Scrophulariaceae	<i>Peliostomum leucorrhizum</i>	Indigenous	LC	
Scrophulariaceae	<i>Aptosimum indivisum</i>	Indigenous	LC	
Scrophulariaceae	<i>Zaluzianskya benthamiana</i>	Indigenous	LC	
Solanaceae	<i>Lycium horridum</i>	Indigenous, not endemic	LC	
Solanaceae	<i>Solanum humile</i>	Indigenous, not endemic	LC	
Solanaceae	<i>Lycium cinereum</i>	Indigenous, not endemic	LC	
Solanaceae	<i>Lycium bosciifolium</i>	Indigenous	LC	
Solanaceae	<i>Solanum burchellii</i>	Indigenous	LC	
Verbenaceae	<i>Chascanum pinnatifidum</i>	Indigenous	LC	
Zygophyllaceae	<i>Augea capensis</i>	Indigenous, not endemic	LC	
Zygophyllaceae	<i>Tribulus terrestris</i>	Indigenous, not endemic	LC	
Zygophyllaceae	<i>Tetraena retrofracta</i>	Not endemic	LC	
Zygophyllaceae	<i>Tetraena simplex</i>	Not endemic	LC	
Zygophyllaceae	<i>Roepera lichtensteiniana</i>	Endemic	LC	

In terms of Protected Species and Species of Conservation Concern (SCC) Three (3) flora SCC were observed of which one (1) is Sensitive Species 545. Two (2) of the flora SCC species (*Anacamperos quinaria* and Sensitive



Species 545) were found within the Quartz Outcrops habitat type and were relatively abundant. Some scattered *Aloidendron dichotomum* individuals were observed within the Arid Grassland, Arid Grassland Shrubland Mosaic and Quartz Outcrops habitat types. More individuals are expected within the PAOI. In addition to this, twenty-two (22) provincially protected flora species were recorded. It is likely that more provincially protected species occur within the PAOI. *Hoodia gordonii* was also observed within the PAOI and is Nationally Protected according to the NEMBA (Act 10 of 2004) critically endangered species list (Government Notice R151 in Government Gazette 29657 of 23 February 2007).

Refer to Table 17. The SCC and protected species may not be cut, disturbed or destroyed without procuring the appropriate permits to do so. *Aloidendron dichotomum* listed as VU, requires a 200 m no-go buffer. A 15 m no-go buffer has been allocated to the Quartz Outcrop habitat types. This is deemed sufficient to protect *Anacampseros quinaria* and Sensitive Species 545 which were recorded within the Quartz Outcrop habitat type. However, a terrestrial biodiversity walkdown, to allow for micro-siting, and a flora search and rescue plan of the development footprint, for the identification and location of SCC and protected species, is recommended prior to the onset of the development.

Table 17: Provincially Protected Species and Species of Conservation Concern recorded within the PAOI. VU = Vulnerable, EN = Endangered, LC = Least Concerned and DDD = Data Deficient Insufficient Information (TBC, 2026).

Family Name	Scientific Name	RSA Status	Regional Conservation Status (SANBI)	Notes
	<i>Sensitive Species 545</i>		VU	Provincially protected
Aizoaceae	<i>Aizoon papulosum</i>	Indigenous, not endemic	LC	Provincially protected
Asphodelaceae	<i>Aloidendron dichotomum</i>	Indigenous	VU	Provincially protected
Anacampserotaceae	<i>Anacampseros filamentosa</i>	Endemic	LC	Provincially protected
Anacampserotaceae	<i>Anacampseros papyracea</i>	Endemic	LC	Provincially protected
Anacampserotaceae	<i>Anacampseros quinaria</i>	Indigenous	EN	Provincially protected
Capparaceae	<i>Boscia foetida</i>	Indigenous / partly endemic at subspecies level	LC	Provincially protected
Aizoaceae	<i>Drosantheum hispidum</i>	Indigenous	LC	Provincially protected
Euphorbiaceae	<i>Euphorbia rhombifolia</i>	Indigenous, not endemic	LC	Provincially protected



Family Name	Scientific Name	RSA Status	Regional Conservation Status (SANBI)	Notes
Apocynaceae	<i>Gomphocarpus filiformis</i>	Indigenous	LC	Provincially protected
Apocynaceae	<i>Gomphocarpus filiformis</i>	Not endemic	LC	Provincially protected
Apocynaceae	<i>Hoodia gordonii</i>	Indigenous	DDD	Nationally & Provisionally Protected
Aizoaceae	<i>Mesembryanthemum guerichianum</i>	Indigenous, not endemic	LC	Provincially protected
Aizoaceae	<i>Mesembryanthemum junceum</i>	Endemic	LC	Provincially protected
Aizoaceae	<i>Mesembryanthemum tetragonum</i>	Indigenous, not endemic	LC	Provincially protected
Apocynaceae	<i>Microloma incanum</i>	Indigenous, not endemic	LC	Provincially protected
Iridaceae	<i>Moraea venenata</i>	Indigenous	LC	Provincially protected
Oxalidaceae	<i>Oxalis annae</i>	Endemic	LC	Provincially protected
Aizoaceae	<i>Ruschia spinosa</i>	Indigenous	LC	Provincially protected
Aizoaceae	<i>Trianthera parvifolium</i>	Indigenous	LC	Provincially protected
Aizoaceae	<i>Trichodiadema setuliferum</i>	Endemic	LC	Provincially protected

Eleven (11) AIP species were recorded within the PAOI. Two (2) species are considered as Category 3 in the Northern Cape according to NEMBA Table 18. Two (2) species are considered as Category 1b according to NEMBA (Table 18) and must be controlled by implementing an AIP Management Programme, in compliance of section 75 of the NEMBA. These AIP species were mostly concentrated around the modified areas, with *Neltuma* spp. being common along water resources.

Table 18: Summary of AIP recorded within the PAOI during the field survey period (TBC, 2026).

Family Name	Scientific Name	Common Name	Alien Status
Amaranthaceae	<i>Chenopodium berlandieri</i>	Pitseed Goosefoot	Naturalised exotic



Family Name	Scientific Name	Common Name	Alien Status
Amaranthaceae	<i>Amaranthus albus</i>	Prostrate Pigweed	Naturalised exotic
Amaranthaceae	<i>Chenopodium murale</i>	Nettle-leaved Goosefoot	Naturalised exotic
Amaranthaceae	<i>Atriplex lindleyi</i>	Lindley's Saltbush	Naturalised exotic
Anacardiaceae	<i>Schinus molle</i>	Peruvian Pepper Tree	Naturalised exotic
Cactaceae	<i>Opuntia cespitosa</i>	Eastern Pricklypear	NEMBA Category 1b
Fabaceae	<i>Neltuma velutina</i>	Velvet Mesquite	NEMBA Category 3 in NC
Fabaceae	<i>Neltuma odorata</i>	Western Honey Mesquite	NEMBA Category 3 in NC
Papaveraceae	<i>Argemone ochroleuca</i>	Mexican Poppy	NEMBA Category 1b
Portulacaceae	<i>Portulaca oleracea</i>	Common Purslane	Naturalised / invasive
Lamiaceae	<i>Salvia verbenaca</i>	Wild Clary	Naturalised exotic

7.7.2 FAUNA AND AVIFAUNA

Non-volant mammal, avifauna and herpetofauna observations and recordings all under this section.

7.7.2.1 MAMMALS

The GBIF database lists eight (8) mammal species that are expected to occur within the PAOI (Expected Mammal Species). None of these are SCC and none are listed by the Screening Tool.

Ten (10) mammal species were recorded from the PAOI (Table 19). Extensive sampling would be required to yield a higher number of observations; however, common mammal species are expected for the area. Five (5) of these species are protected provincially.

Table 19: The mammal species observed within the PAOI (TBC, 2026).

Family	Scientific Name	Common Name	Regional Conservation Status (SANBI)	Global Conservation Status (IUCN)	Notes
Bovidae	<i>Antidorcas marsupialis</i>	Springbok	LC	LC	Provincially Protected
Bovidae	<i>Raphicerus campestris</i>	Steenbok	LC	LC	Provincially Protected
Canidae	<i>Otocyon megalotis</i>	Bat-eared Fox	LC	LC	
Herpestidae	<i>Suricata suricatta</i>	Meerkat	LC	LC	Provincially Protected



Family	Scientific Name	Common Name	Regional Conservation Status (SANBI)	Global Conservation Status (IUCN)	Notes
Herpestidae	<i>Cynictis penicillata</i>	Yellow Mongoose	LC	LC	Provincially Protected
Hyaenidae	<i>Proteles cristata</i>	Aardwolf	LC	LC	
Leporidae	<i>Lepus saxatilis</i>	Scrub Hare	LC	LC	Provincially Protected
Muridae	<i>Micaelamys namaquensis</i>	Namaqua Rock Rat	LC	LC	
Orycteropodidae	<i>Orycteropus afer</i>	Aardvark	LC	LC	
Sciuridae	<i>Xerus inauris</i>	Ground Squirrel	LC	LC	

7.7.2.2 HERPETOFAUNA

The GBIF database lists no amphibian species and thirteen (13) reptile species as likely to occur within the PAOI. One (1) reptile SCC is expected (Table 20). The Screening Tool does not list any herpetofauna.

Table 20: List of expected herpetofauna Species of Conservation Concern. NT = Near Threatened (TBC, 2026).

Family	Scientific Name	Common Name	Regional (SANBI)	Global (IUCN)	Habitat	Likelihood of Occurrence	Reason
Testudinidae	<i>Psammobates tentorius verroxii</i>	Tent Tortoise	NT	NT	Arid regions under varying temperature regimes. Inland plateau above 900 m.	High	Recorded within PAOI

Six (6) reptile species were observed of which the Northern Tent Tortoise (*Psammobates tentorius verroxii*) is considered SCC (Table 21). One (1) amphibian species was recorded within the PAOI (Table 21). The Giant Bullfrog (*Pyxicephalus adspersus*) was observed within a depression wetland within the PAOI and is Nationally Protected according to the NEMBA (Act 10 of 2004) critically endangered species list (Government Notice R151 in Government Gazette 29657 of 23 February 2007). Extensive sampling would be required to yield a higher number of observations; however, more common reptile and amphibian species are expected for the PAOI.



Table 21: Herpetofauna observed within the PAOI (TBC, 2026).

Family	Scientific Name	Common Name	Regional Conservation Status (SANBI)	Global Conservation Status (IUCN)	Notes
Reptile					
Gekkonidae	<i>Chondrodactylus bibronii</i>	Bibron's Thick-toed Gecko	LC	LC	
Lacertidae	<i>Pedioplanis lineoocellata</i>	Spotted Sand Lizard	LC	LC	
Psammophiidae	<i>Psammophylax rhombeatus</i>	Spotted Skaapsteker	LC	LC	
Scincidae	<i>Trachylepis occidentalis</i>	Western Three-striped Skink	LC	LC	
Scincidae	<i>Trachylepis sulcata</i>	Western Rock Skink	LC	LC	
Testudinidae	<i>Psammobates tentorius verroxii</i>	Northern Tent Tortoise	NT	NT	Provincially Protected
Amphibian					
Pyxicephalidae	<i>Pyxicephalus adpersus</i>	Giant Bullfrog	LC	LC	Nationally and Provincially Protected

7.7.2.3 AVIFAUNA

The SABAP2 database lists 74 avifauna species that could be expected to occur within the area (Appendix D of the Specialist Report). Nine (9) additional SCC have been observed close to or within the PAOI and the Secretarybird (*Sagittarius serpentarius*) was listed in the Screening Tool, totalling to 84 species. Of these, 18 SCC are expected for the PAOI (Table 22).

Table 22: List of avifauna Species of Conservation Concern that may occur in the PAOI. CR = Critically Endangered, EN = Endangered, VU = Vulnerable, NT = Near Threatened, LC = Least Concern (TBC, 2026).

Common Name	Scientific Name	Regional	Global	Likelihood of Occurrences
Black Harrier	<i>Circus maurus</i>	EN	EN	Confirmed
Burchell's Courser	<i>Cursorius rufus</i>	VU	LC	High
Cape Shoveler	<i>Spatula smithii</i>	NT	LC	Low
Hamerkop	<i>Scopus umbretta</i>	NT	LC	Moderate
Karoo Korhaan	<i>Eupodotis vigorsii</i>	NT	LC	Confirmed



Common Name	Scientific Name	Regional	Global	Likelihood of Occurrences
Kori Bustard	<i>Ardeotis kori</i>	NT	NT	High
Lanner Falcon	<i>Falco biarmicus</i>	NT	LC	Confirmed
Lappet-faced Vulture	<i>Torgos tracheliotos</i>	CR	EN	Confirmed
Ludwig's Bustard	<i>Neotis ludwigii</i>	EN	EN	Confirmed
Martial Eagle	<i>Polemaetus bellicosus</i>	EN	EN	High
Red-billed Teal	<i>Anas erythrorhyncha</i>	NT	LC	Confirmed
Red Lark	<i>Calendulauda burra</i>	VU	VU	Low
Sclater's Lark	<i>Spizocorys sclateri</i>	NT	NT	High
Secretarybird	<i>Sagittarius serpentarius</i>	VU	EN	High
Southern Black Korhaan	<i>Afrotis afra</i>	VU	VU	Moderate
Verreaux's Eagle	<i>Aquila verreauxii</i>	VU	VU	High
White-backed Vulture	<i>Gyps africanus</i>	CR	CR	Confirmed

(Lee *et. al* 2025, IUCN 2021)

Seven (7) avifauna SCC were recorded within or close to the PAOI during this assessment. Due to suitable habitat and existing occurrence data, many SCC are expected. Access was also restricted at certain points bordering the PAOI. Therefore, an avifauna walkdown by an appropriately qualified avifauna specialist is recommended prior to commencement of development activities. Avifauna species were recorded from the PAOI and can be seen presented in Table 23.

Table 23: Table presenting the main avifauna species recorded from the PAOI (TBC, 2026).

Common Name	Scientific Name	Family Name	Relative abundance	Frequency occurrence (%)	of
Lark-like Bunting	<i>Emberiza impetuani</i>	Emberizidae	0,266	75,000	
Namaqua Sandgrouse	<i>Pterocles namaqua</i>	Pteroclididae	0,249	37,500	
Black-eared Sparrow-lark	<i>Eremopterix australis</i>	Alaudidae	0,148	33,333	
Namaqua Dove	<i>Oena capensis</i>	Columbidae	0,033	12,500	
Spike-heeled Lark	<i>Chersomanes albofasciata</i>	Alaudidae	0,033	16,667	
Karoo Prinia	<i>Prinia maculosa</i>	Cisticolidae	0,027	25,000	
Rufous-eared Warbler	<i>Malcorus pectoralis</i>	Cisticolidae	0,027	33,333	



Common Name	Scientific Name	Family Name	Relative abundance	Frequency occurrence (%)	of
Karoo Korhaan	<i>Eupodotis vigorsii</i>	Otididae	0,024	12,500	
Karoo Long-billed Lark	<i>Certhilauda subcoronata</i>	Alaudidae	0,024	29,167	
Red-billed Teal	<i>Anas erythrorhyncha</i>	Anatidae	0,024	4,167	
Dusky Sunbird	<i>Cinnyris fuscus</i>	Nectariniidae	0,015	12,500	
Pied Crow	<i>Corvus albus</i>	Corvidae	0,012	8,333	
Three-banded Plover	<i>Charadrius tricollaris</i>	Charadriidae	0,012	8,333	
Grey-backed Sparrow-lark	<i>Eremopterix verticalis</i>	Alaudidae	0,012	8,333	
Cape Teal	<i>Anas capensis</i>	Anatidae	0,012	4,167	
Ring-necked Dove	<i>Streptopelia capicola</i>	Columbidae	0,009	12,500	
Mountain Wheatear	<i>Myrmecocichla monticola</i>	Muscicapidae	0,009	8,333	
Pirit Batis	<i>Batis pririt</i>	Platysteiridae	0,006	8,333	
Ludwig's Bustard	<i>Neotis ludwigii</i>	Otididae	0,006	4,167	
Double-banded Courser	<i>Rhinoptilus africanus</i>	Glareolidae	0,006	8,333	
Northern Black Korhaan	<i>Afrotis afraoides</i>	Otididae	0,006	8,333	
Eastern Clapper Lark	<i>Mirafraga fasciolata</i>	Alaudidae	0,006	4,167	
Speckled Pigeon	<i>Columba guinea</i>	Columbidae	0,006	4,167	
Southern Masked Weaver	<i>Ploceus velatus</i>	Ploceidae	0,006	4,167	
Acacia Pied Barbet	<i>Tricholaema leucomelas</i>	Lybiidae	0,003	4,167	
Bokmakierie	<i>Telophorus zeylonus</i>	Malaconotidae	0,003	4,167	
Southern Fiscal	<i>Lanius collaris</i>	Laniidae	0,003	4,167	



Common Name	Scientific Name	Family Name	Relative abundance	Frequency occurrence (%)	of
Black-headed Heron	<i>Ardea melanocephala</i>	Ardeidae	0,003	4,167	
Sabota Lark	<i>Calendulauda sabota</i>	Alaudidae	0,003	4,167	
Large Rock Martin	<i>Ptyonoprogne fuligula</i>	Hirundinidae	0,003	4,167	
Kalahari Scrub Robin	<i>Cercotrichas paena</i>	Muscicapidae	0,003	4,167	
Karoo Scrub Robin	<i>Cercotrichas coryphoeus</i>	Muscicapidae	0,003	4,167	
Cape Sparrow	<i>Passer melanurus</i>	Passeridae	0,003	4,167	

The following risk species are species that would be affected by disturbance and habitat loss (Table 24).

Table 24: Risk species observed in the PAOI for the prospecting (TBC, 2026).

Common Name	Scientific Name	Family Name	Regional	Global
Black Harrier	<i>Circus maurus</i>	Accipitridae	EN	EN
Karoo Korhaan	<i>Eupodotis vigorsii</i>	Otididae	NT	LC
Lanner Falcon	<i>Falco biarmicus</i>	Falconidae	NT	LC
Lappet-faced Vulture	<i>Torgos tracheliotos</i>	Accipitridae	CR	EN
Greater Kestrel	<i>Falco rupicoloides</i>	Falconidae	LC	LC
Kori Bustard	<i>Ardeotis kori</i>	Otididae	NT	NT
Ludwig's Bustard	<i>Neotis ludwigii</i>	Otididae	EN	EN
Northern Black Korhaan	<i>Afrotis afraoides</i>	Otididae	LC	LC
Red-billed Teal	<i>Anas erythrorhyncha</i>	Anatidae	NT	LC
White-backed Vulture	<i>Gyps africanus</i>	Accipitridae	CR	CR

Trophic guilds are defined as a group of species that exploit the same class of environmental resources in a similar way (González-Salazar *et al*, 2014). The guild classification used in this assessment is as per González-Salazar *et al* (2014); they divided avifauna into major groups based on their diet, habitat, and main area of activity. Although species tend to exhibit varied diets, with invertivores consuming fruit and frugivores consuming insects, for example, the dominant composition of the diet was considered.

The analysis of the major avifaunal guilds reveals that the species composition during the survey was dominated by Invertivore Ground Diurnal (IGD) birds, followed by Granivore Ground Diurnal (GGD), Carnivore Ground Diurnal (CGD) and Omnivore Ground Diurnal (OGD).



Three nests were recorded, that of three Pied Crows. None of these species is SCCs; however, based on the high number of SCC recorded and known to occur in the area, a nest walkdown would be required before site clearance.

Flight paths were recorded, but due to the nature of this project and no specific flight path corridors being noted during the field survey, the impact is low.

7.7.3 HABITATS

Six (6) major terrestrial habitats, and a set of Water Resources (three habitats, as defined by the Freshwater Specialist), were identified across the PAOI. The majority of the PAOI consists of Arid Grassland Shrubland Mosaic habitat type. The condition of this habitat varied across the PAOI due to different levels of grazing impacts, possible rotation grazing as well as possible differences in rain received across the PAOI. Other terrestrial habitats identified include Arid Grassland, Rocky Arid Grassland Shrubland Mosaic, Quartz Outcrops, Rocky Outcrops and Modified. Arid Grassland;

The habitat units for the PAOI can be seen delineated in Figure 24. Site Ecological Importance of the PAOI for terrestrial is included in Figure 25. Avoidance mitigation is required for the areas of Very High sensitivity in Figure 25. The black areas in this map should be avoided by the planned prospecting activities.

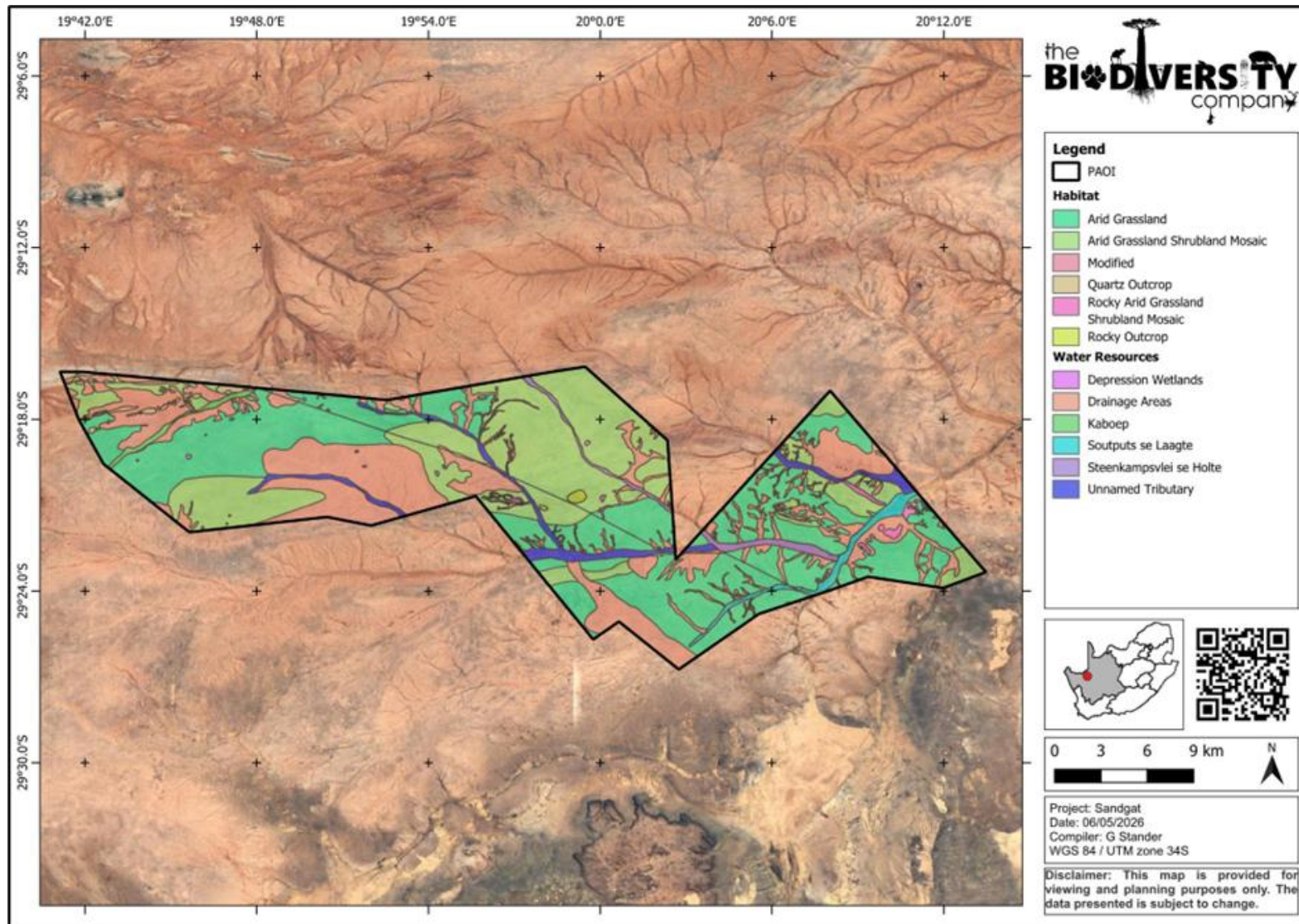


Figure 24: Habitat types (The Biodiversity Company, 2026)

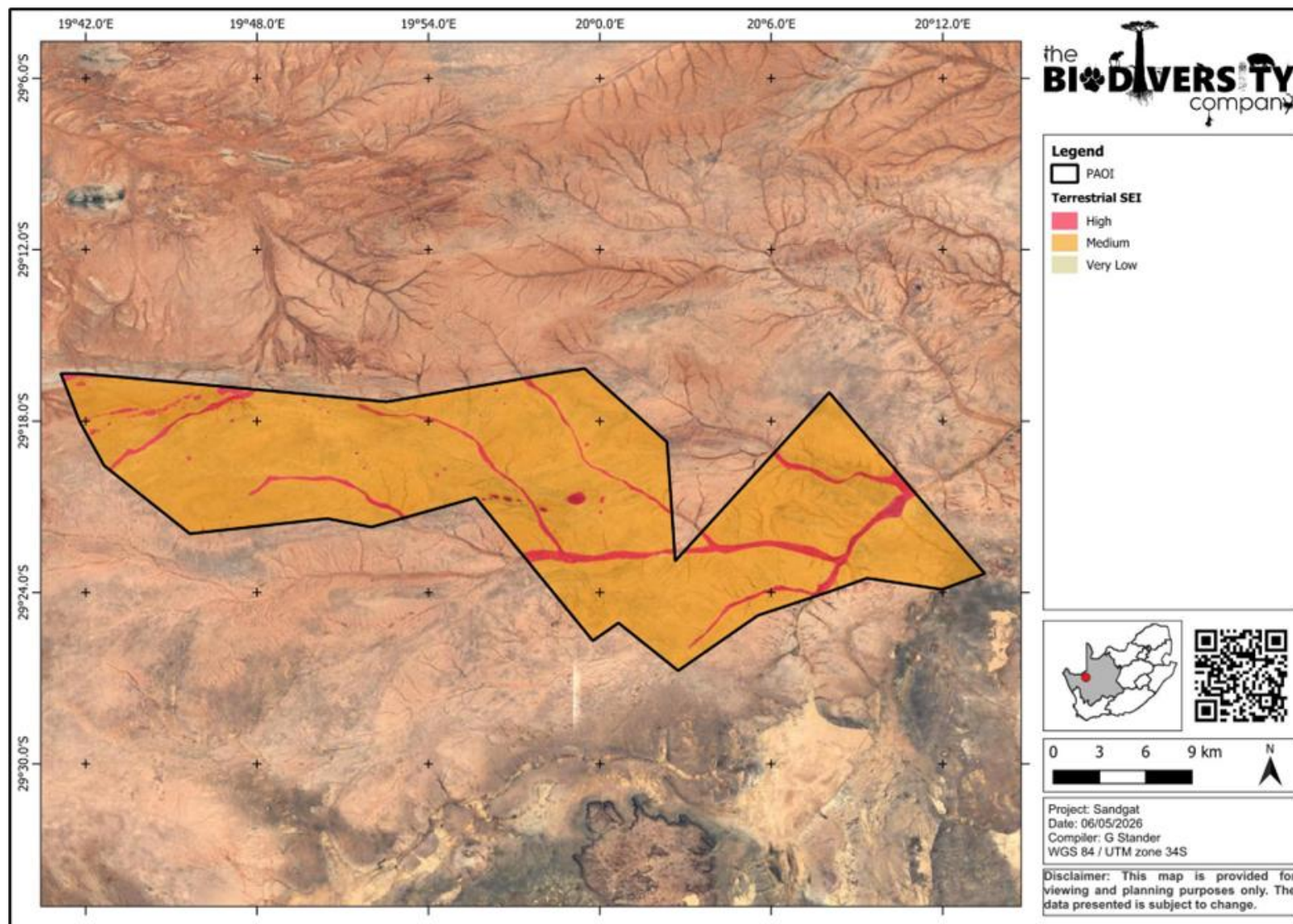


Figure 25: Site Ecological Importance of the PAOI for terrestrial (The Biodiversity Company, 2026)



A description of the habitat types is provided in Table 25 below.

Table 25: Table providing descriptions of the habitat types delineated for the PAOI (TBC, 2026).

Habitat	Description and condition	Condition	Ecosystem Processes and Services
Arid Grassland 18065.236 ha	<p>This habitat consists of extensive arid plains, dominated by grasses. Shrubs occur in the ecotone between the Arid Grassland habitat and the Arid Grassland Shrubland Mosaic habitat. This habitat unit has a gravelly substrate mostly being quartz. Dominant grass and herb species recorded included <i>Stipagrostis ciliata</i>, <i>Aristida congesta</i>, <i>Enneapogon scaber</i>, <i>Acanthopsis hoffmannseggiana</i> and <i>Schmidtia kalahariensis</i>.</p> <p>This habitat unit is mostly natural however condition varied throughout the PAOI due to differences in grazing pressure and most likely difference in rain received throughout the PAOI. Disturbances observed include grazing by livestock and the edge effects associated with roads and kraals.</p> <p>This habitat supports indigenous fauna and flora. Scattered <i>Aloidendron dichotomum</i> (VU) (flora SCC) individuals were observed within this habitat. The reptile SCC <i>Psammobates tentorius veroxii</i> (classified as NT regionally and globally) is expected to occur in this habitat</p> <p>Avifauna species expected to occur here include: Black Harrier, Burchell's Courser, Karoo Korhaan, Lappet-faced Vulture (possibly), White-backed Vulture (possibly), Ludwig's Bustard, Red Lark and Secretarybird,</p>	Natural	<p>Contributes to conservation targets and provides important habitat, refuge, grazing, and foraging for indigenous fauna and livestock. It supports water filtration, erosion control, pollination, and seed dispersal, while also serving as a movement corridor and key nesting and foraging habitat for fauna across multiple life stages. This habitat provides breeding and foraging resources for Avifauna, with vultures possibly occurring here in the event of livestock mortalities.</p>
Arid Grassland Shrubland Mosaic 13216.861 ha	<p>This habitat consists of extensive arid plains, dominated by grasses and shrubs. Shrub density varies across the habitat with some areas having scattered shrubs compared to other areas where shrubs are denser. The difference is shrub density could be due to grazing pressure difference throughout the PAOI. In addition to this, ecotone areas between the Arid Grassland Shrubland Mosaic and Water Resources proved to have a higher density of shrubs. This habitat unit has a gravelly substrate mostly being quartz. Dominant grass and herb species recorded</p>	Natural	<p>Provides grazing and foraging resources for indigenous fauna and livestock. Aids in the filtration of water permeating through the soil into the drainage areas. May act as a movement corridor for fauna within the landscape. Provides habitat for fauna SCC and flora SCC. Vultures could possibly occur here in the event of livestock mortalities.</p>



Habitat	Description and condition	Condition	Ecosystem Processes and Services
	<p>included <i>Stipagrostis ciliata</i>, <i>Aristida congesta</i>, <i>Enneapogon scaber</i>, <i>Acanthopsis hoffmannseggiana</i> and <i>Schmidtia kalahariensis</i>. Dominant shrubs observed included <i>Lycium spp.</i>, <i>Roepera lichtensteiniana</i> and <i>Rhigozum trichotomum</i>.</p> <p>This habitat unit is mostly natural however condition varied throughout the PAOI due to differences in grazing pressure and most likely difference in rain received throughout the PAOI. Disturbances observed include grazing by livestock and the edge effects associated with roads and kraals.</p> <p>This habitat supports indigenous fauna and flora. Scattered <i>Aloidendron dichotomum</i> (VU) (flora SCC) individuals were observed within this habitat. The reptile SCC <i>Psammobates tentorius veroxii</i> (classified as NT regionally and globally) was observed within this habitat.</p> <p>Avifauna species expected to occur here include Black Harrier, Burchell’s Courser, Karoo Korhaan, Lappet-faced Vulture, White-backed Vulture, Ludwig’s Bustard, Martial Eagle and Secretarybird,</p>		
<p>Rocky Arid Grassland Shrubland Mosaic</p> <p>282.365 ha</p>	<p>The habitat is rockier than the Arid Grassland Shrubland Mosaic consisting of larger scattered rocks and dense gravel – like soil. It is mostly found adjacent the Quartz Outcrop and Rocky Outcrop habitat types and is slightly more elevated than the Arid Grassland Shrubland Mosaic with bare open patches being common.</p> <p>Dominant shrubs recorded included <i>Lycium spp.</i> and <i>Rhigozum trichotomum</i>. Dominant grasses recorded include <i>Schmidtia kalahariensis</i>, <i>Enneapogon scaber</i> and <i>Stipagrostis ciliata</i>.</p> <p>This habitat unit is mostly natural however condition varied throughout the PAOI due to differences in grazing pressure and most likely difference in rain received throughout the area. Disturbances observed include grazing by livestock, human ingress and the edge effects associated with roads and kraals.</p>	<p>Natural</p>	<p>Provides grazing and foraging resources for indigenous fauna and livestock. Aids in the filtration of water permeating through the soil into the drainage areas. May act as a movement corridor for fauna within the landscape. Provides habitat for fauna SCC and potential flora SCC. The Sclater’s Lark possibly occurs here but prefers a rock with a darker surface (refer to the third image). There are adequate open spaces for larger birds to forage and breed.</p>



Habitat	Description and condition	Condition	Ecosystem Processes and Services
	<p>This habitat supports indigenous fauna and flora and flora SCCs are expected. The reptile SCC <i>Psammobates tentorius veroxii</i> (classified as NT regionally and globally) was observed within this habitat.</p> <p>Avifauna species expected to occur here include: Black Harrier, Burchell's Courser, Karoo Korhaan, Kori Bustard, Lanner Falcon, Lappet-faced Vulture, Ludwig's Bustard, Sclater's Lark, Secretarybird and White-backed Vulture.</p>		
<p>Quartz Outcrop</p> <p>278.912 ha</p>	<p>This habitat consists of elevated quartz areas and is considered to have low resilience to impacts.</p> <p>Indigenous species include <i>Microloma incanum</i>, <i>Aloe claviflora</i>, <i>Crassula sericea</i>, <i>Anacampseros papyracea</i>, <i>Kleinia longiflora</i>, <i>Aloe gariensis</i>, <i>Bulbine spp.</i>, and <i>Hoodia gordonii</i>.</p> <p>Indigenous flora and fauna species are supported by this habitat. Scattered <i>Aloidendron dichotomum</i> (VU) (flora SCC) individuals were observed within this habitat. <i>Anacampseros quinaria</i> (EN) and Sensitive Species 545 (VU) were abundant within this habitat. Fauna SCCs are expected to make use of this habitat.</p> <p>Avifauna species likely to occur here: Lanner Falcon and Verreaux's Eagle (will only forage here).</p>	<p>Natural</p>	<p>This habitat provides suitable habitat, microhabitats, unique quartz habitat and niche environments capable of supporting fauna and flora SCC, especially succulents, and cryptic species, specifically reptile species. Provides refuge from extreme environmental factors, such as heat and drought. Aids in soil stabilisation, water regulation, nutrient cycling, and seed bank protection. Serve as movement corridors and 'stepping stones' for species moving between larger habitat patches. Lanner Falcon could utilise the scattered <i>Aloidendron dichotomum</i> and rocks for perching and as a vantage point for when it hunts.</p>
<p>Modified</p> <p>61.709 ha</p>	<p>This habitat unit includes all areas that maintain little to no native vegetation and/or where anthropogenic activity has substantially modified an area's primary ecological functions and species composition. This habitat unit no longer maintains its functional integrity and does not contribute significantly to ecosystem services. This habitat consists of major roads, houses and associated infrastructure.</p> <p>Fauna and flora SCC are unlikely to occur in this habitat unit. Some fauna SCC could potentially move through these areas or utilise the water provided for livestock occasionally.</p> <p>Avifauna species expected to occur here include Lanner Falcon.</p>	<p>Modified</p>	<p>The ecological services provided by this habitat are limited due to the extent of land transformation and the large amount of bare ground. May function as a movement corridor for some fauna species. Smaller raptors will perch on fences, but the habitat is otherwise unsuitable for other avifauna SCC.</p>



All habitats within the PAOI were assigned a sensitivity category, i.e., a Site Ecological Importance (SEI) category. The PAOI was categorised as possessing habitats with areas ranging from Very Low to High SEI.

Please note that the Water Resource habitat is a non-terrestrial habitat and was assessed from a terrestrial perspective only. Refer to Section 7.4 for Water Resource sensitivities and buffers. It is important to note these sensitivities are based solely on prospecting and does not reflect the sensitivities of mining.

7.8 SOCIO-ECONOMIC ENVIRONMENT

Land use is predominantly grazing and open natural veld, with large farm portions forming the primary spatial units. These farms support low-intensity livestock grazing, mainly sheep and goats, due to the limited carrying capacity of the land. Overall, land use remains largely rural and agricultural.

7.8.1 DEMOGRAPHICS

The Northern Cape has a small population of 1 355 629 people while being the largest province of South Africa. Afrikaans is the most spoken language in the province, followed by Setswana and isiXhosa. The province's population has slightly increased between 2011 and 2022. Approximately 66% of the population is of working age, i.e. between 15 and 64 years old, with 28% of the population being young children, and 6% being the elderly.

7.8.2 ECONOMY

Considering available data, the main economic activity of the Northern Cape is mining, followed by agriculture. Agricultural activities of the province relate to irrigation-based agriculture linked to the Orange River in the north. The economic structure of the Namaqua District Municipality underpinning jobs is mining-led, with Mining contributing 39.8% to the district's total industry output. The agricultural sector employs the most people in the ZF Mgcau District Municipality followed closely by Community Services and Trade Sectors. While mining generates the highest Gross Domestic Product (GDP) value for the eastern parts of the district (like Postmasburg and Lime Acres), it is highly mechanized and employs a smaller overall percentage of the total workforce compared to agriculture and services.

7.8.3 EMPLOYMENT

Employment within the Namaqua District is concentrated in Nama Khoi (42.25%) and Khâi-Ma (28.69%). As of 2022, the unemployment rate of the District Municipality was 28%.

Employment in the ZF Mgcau District (Northern Cape) is heavily concentrated in the Dawid Kruiper and Kai !Garib local municipalities. This concentration is primarily driven by Upington (the district's administrative, financial, and commercial hub), thriving agricultural sectors along the Orange River, and extensive mining and renewable energy operations. Dawid Kruiper, which includes towns Upington (the district capital), Keimoes, and Rietfontein dominates the district in terms of population and job opportunities. Employment is heavily concentrated in wholesale and retail trade, government and administrative services, financial services, tourism, and intensive agriculture (table grapes and raisins along the Orange River). Kai !Garib Local Municipality centres of employment include Kakamas, Kenhardt, and Brandboom, and is the largest agricultural employer in the district. Jobs are concentrated in agriculture (viticulture, fruit production, and horticulture) and massive renewable energy projects (solar farms near Kenhardt and Kakamas). As of 2022, the unemployment rate of the District Municipality was 26.8 %.

7.8.4 INFRASTRUCTURE AND PUBLIC SERVICES

Public services in the surrounding area are limited due to its rural nature and low population density. Basic infrastructure such as water supply and sanitation is primarily managed at the farm level, with boreholes and windmills supporting livestock farming.

7.8.5 EDUCATION

Education statistics were accessible through census data of 2022 (StatsSA, 2022) relating to the two Local Municipalities intersected, i.e., Kai !Garib, and Khâi-Ma Local Municipalities. These data are presented as such.



Education in Khâi-Ma reflects similar trends to other rural areas in the Northern Cape. Among youth aged 5-24, approximately 61% attend an educational institution, while about 39% do not, indicating notable challenges with school access and retention. For adults (20+ years), the largest proportion, 48,4% has some secondary education but did not complete matric. 30,6% have matric (Grade 12), and only 4,6% achieved higher education. Smaller segments have only primary schooling (9%) or no schooling at all (0,6%).

Education in Kai !Garib reflects similar trends to other rural areas in the Northern Cape. Among youth aged 5-24, approximately 65.7% attend an educational institution, while about 34.3% do not, indicating notable challenges with school access and retention. For adults (20+ years), the largest proportion, 49% has some secondary education but did not complete matric. Only 23,8% have matric (Grade 12), and only 3,5% achieved higher education. Smaller segments have only primary schooling (7%) or no schooling at all (4,4%).

Overall, this suggests that while basic education access is relatively strong, dropout rates during secondary school remain high, matric completion is moderate, and tertiary education attainment is very low. These patterns highlight the need for interventions to improve secondary school retention, matric pass rates, and access to post-school training and higher education opportunities.

7.8.6 HEALTH

Namaqua District's health profile is shaped by its demographic trends and rural context. The population pyramid indicates a shrinking elderly population and a growing younger population, which has implications for healthcare planning. While the IDP does not provide detailed facility counts in the excerpt, it emphasises the need for age-specific health services, including senior care and maternal/child health programs. The district faces challenges typical of remote areas, such as limited access to specialized healthcare, reliance on small clinics, and the need for improved social services. Future planning must consider resource allocation for both aging residents and young families, ensuring adequate healthcare infrastructure and preventive programs.

The ZF Mgcawu District's health profile is shaped by its demographic trends, vast geographic layout, and rural context (CoGTA, 2020). The district's population pyramid highlights a prominent working-age cohort alongside a large youth population, which creates significant long-term implications for healthcare infrastructure and workforce planning (National Treasury, 2021). To service the population, the district relies on a network of roughly 52 primary healthcare facilities, including two district hospitals and one regional hospital in Upington, but rural areas and agricultural settlements along the Orange River face severe geographic barriers to care (CoGTA, 2020). Consequently, local integrated planning emphasizes the urgent need for age-specific health services, including maternal and child health programs, robust HIV and Tuberculosis interventions, and chronic disease management for non-communicable illnesses (ZF Mgcawu District Municipality, 2022). Future strategic planning must focus on equitable resource allocation, expanding mobile clinic outreach to remote farming communities, and recruiting specialized medical personnel to ensure sustainable healthcare infrastructure and adequate preventive health programs across all municipalities (ZF Mgcawu District Municipality, 2022).

7.9 CULTURAL HERITAGE

The Northern Cape is associated with a long archaeological record that spans across pre-colonial and colonial periods. Most notable is the region's significant role in terms of Hunter-gatherer activity. The closest town to the site in question is Pofadder, which itself embodies rich heritage in relation to the colonial history and modern economic development of South Africa. Stone Age artefacts or finds and sites form a key component of the archaeological record of the Northern Cape. This is related to the extensive hunter-gatherer activity in the area. The Northern Cape Stone Age is defined by its lithic collection which includes examples of Early Stone Age (ESA), Middle Stone Age (MSA), and Late Stone Age (LSA).

Altogether, eight (8) (apart from the noted farm dams or reservoirs) structures, buildings, or complexes as well as two grave sites were identified as having or potentially having heritage significance. The Lovedale grave site includes graves dating back to 1920. Therefore, the graves in question are protected by the NHRA, and have been provisionally graded as Grade III A or of High significance, corresponding with previous ratings as per previous studies. Similarly, the Lovedale farm complex has been graded as Grade III A given its connection with the grave site. Corresponding with this grading, the Bossiekom farm complex and associated grave site has



similarly been provisionally graded as Grade III A. This suggests that the site must be retained as a heritage register site. In essence, this site must be avoided during the proposed activities. All other farm complexes have been provisionally graded as Grade IV A or of Medium significance. This suggests that mitigation must take place should proposed activities have the potential to disturb these features. Figure 26 presents a visual summary of the main findings and their locations. Table 26 provides a summary of the different features identified, a description of the feature, as well as the coordinates of a relative central point associated with the find. Note that this list does not include the many farm dams and associated infrastructure.

Table 26: Summary of different finds identified.

Feature No.	Description	Ratings and Significance	Coordinate
SG001	Farm Complex – Lovedale. Farm complex may include structures dating 60 years or older.	Grade III A High	29°16'38.01"S, 19°42'21.45"E
SG002	Grave site – Associated with the Lovedale farm complex.	Grade III A High	29°16'48.51"S, 19°42'28.52"E
SG003	Farm Complex – Nuwedam. Farm complex may include structures dating 60 years or older.	Grade IV A Medium	29°16'47.61"S, 19°47'41.00"E
SG004	Farm Complex – Quaggamaag. Farm complex may include structures dating 60 years or older.	Grade IV A Medium	29°16'53.61"S, 19°47'32.71"E
SG005	Farm Complex – Hartbeesvlei. Farm complex may include structures dating 60 years or older.	Grade IV A Medium	29°18'50.49"S, 19°54'9.39"E
SG006	Farm Complex – Soutputs. Farm complex may include structures dating 60 years or older.	Grade IV A Medium	29°22'21.81"S, 20°9'2.13"E
SG007	Grave site – Associated with the Bossiekom farm complex.	Grade III A High	29°24'12.57"S, 20°6'25.62"E
SG008	Farm Complex – Bossiekom. Farm complex may include structures dating 60 years or older.	Grade III A High	29°24'8.36"S, 20°6'34.03"E
SG009	Farm Complex – Vaalkop. Farm complex may include structures dating 60 years or older.	Grade IV A Medium	29°22'43.11"S, 20°2'9.39"E
SG010	Farm Complex – Kraandraai. Farm complex may include structures dating 60 years or older.	Grade IV A Medium	29°22'40.23"S, 20°4'23.38"E

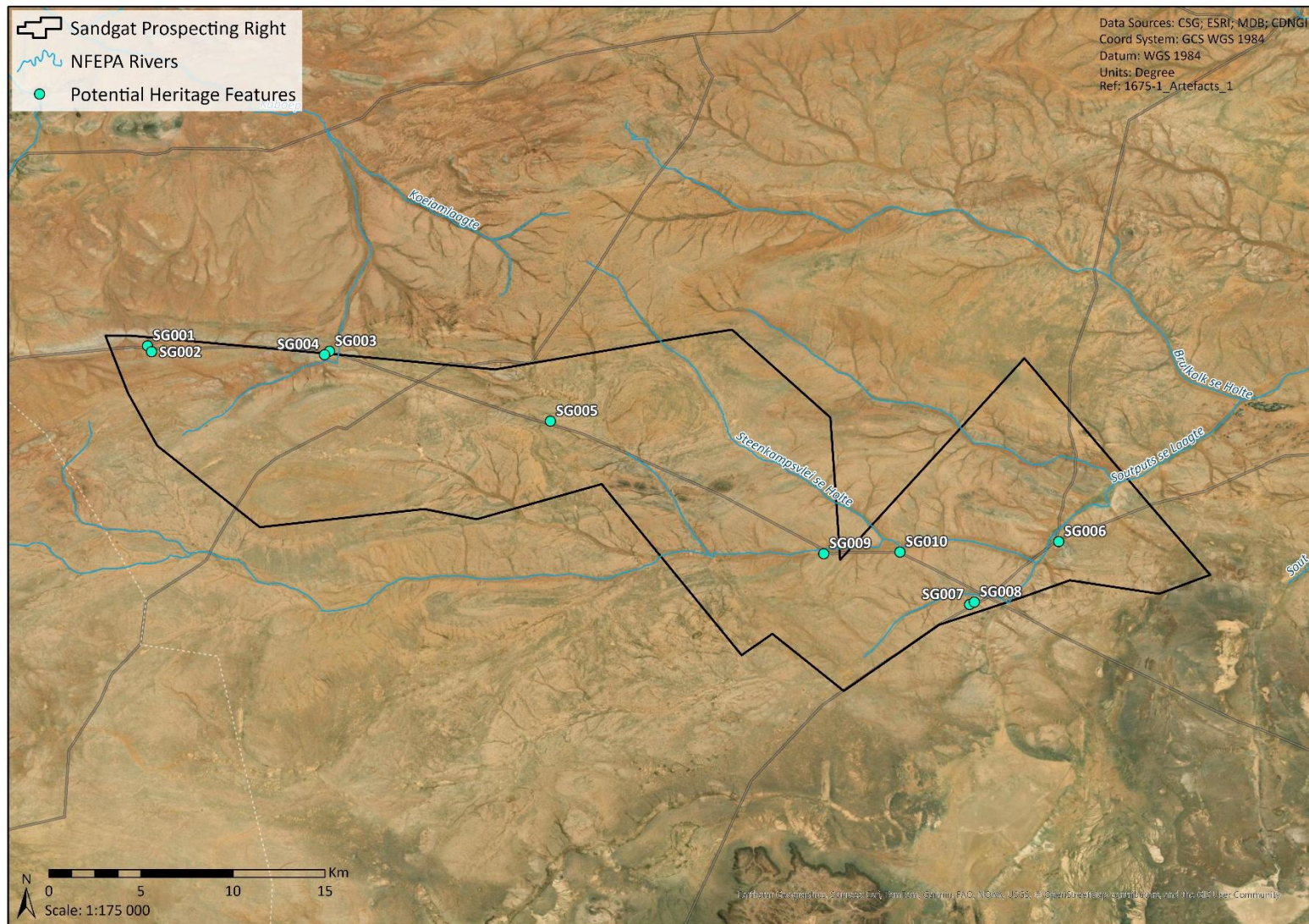


Figure 26: Map of potential heritage features across the PR area



7.10 PALAEOLOGY

The study area is underlain by the potentially fossiliferous Late Cenozoic surface layers of the Kalahari Group, as well as the Dwyka Group (Karoo Supergroup). At depth, the area is underlain by a diversity of unfossiliferous Precambrian basement rocks (c. 2 billion years old) of the Namaqua-Natal Province. The PalaeoMap on the South African Heritage Resources Information System (SAHRIS) database indicates that the Palaeontological Sensitivity of the study area is Moderate, Low and Zero (Almond et al, 2013; SAHRIS website) (Figure 27) while the National Environmental Web-based Screening Tool indicates that the development has a Medium, Low and Unknown Palaeontological Sensitivity (Figure 28).

The fossil assemblages of the Kalahari Group are generally very low in diversity and occur over a wide range, the Dwyka Group has a Moderate Palaeontological Sensitivity while the Namaqua-Natal Province is unfossiliferous and thus have a Zero Palaeontological Sensitivity. It is therefore recommended that no further palaeontological heritage studies, ground truthing and/or specialist mitigation are required pending the discovery of newly discovered fossils.

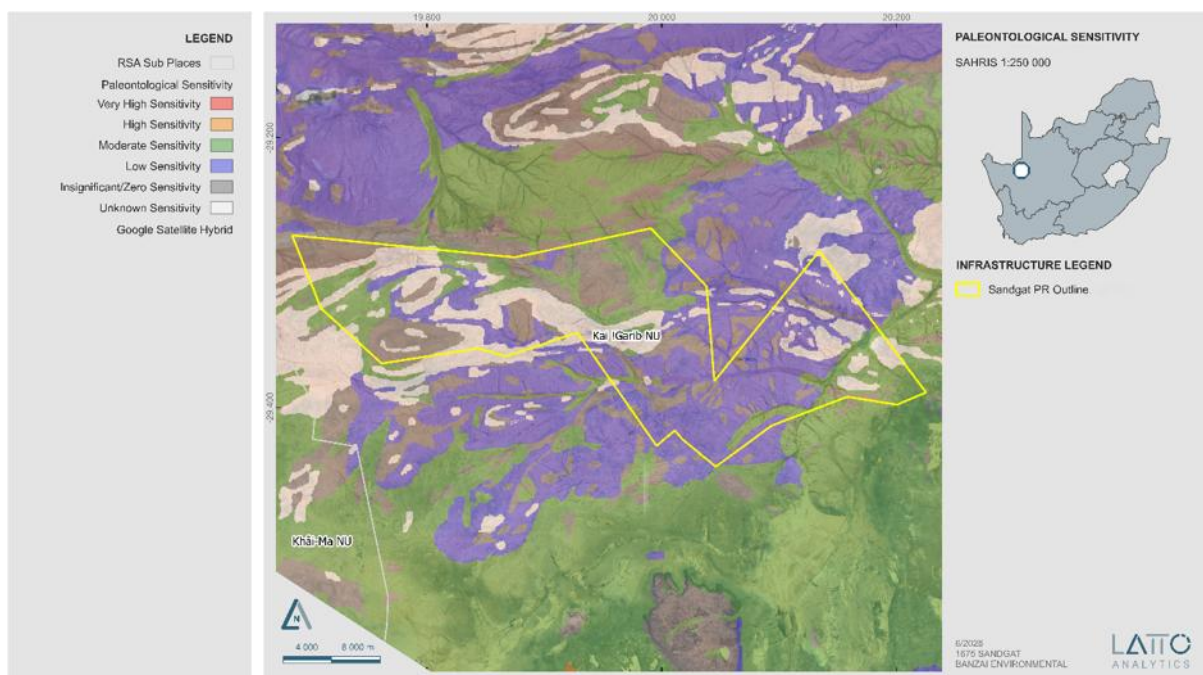


Figure 27: Extract of the SAHRIS PalaeoMap map (Council of Geosciences) indicates that the development is underlain by sediments with a Moderate (green), Low (blue) and Zero (grey) Palaeontological Sensitivity.(Benzai, 2026)



8 ENVIRONMENTAL IMPACT ASSESSMENT

8.1 IMPACTS IDENTIFIED

This Section presents the impacts that have been identified and assessed for the BA. Potential environmental impacts were identified by the EAI, the appointed specialists (where applicable), as well as the preliminary input from the public. The impacts are included in Table 28.

When considering cumulative impacts, it is important to bear in mind the scale at which different impacts occur. The identification of impacts is an objective iterative process of considering the project components and activities and how these may interact with the different environmental components. An activity/ environmental component matrix is presented in Table 27 below. The matrix represents which environmental components are likely to be impacted upon by the project activities. Table 28 provides a list of the identified impacts associated with each environmental component.

The proposed prospecting activities to be undertaken include the use of both invasive and non-invasive prospecting techniques. There will therefore be physical disturbance to the application area although this disturbance will be limited to the identified drill sites and not the entire application area. Another negative impact of the proposed activity would be the interference with landowners or communities and the existing land uses. The actual invasive work only covers a limited area within the application area itself and therefore the disturbance due to invasive work will be minimal.

The positive impact of the proposed activity is the discovery of an economically viable mineral resource within the Thembelihle LM and the potential employment opportunities for the local workforce.

It should be noted that this report will be made available to I&AP's for review and comment and their comments and concerns will be taken into account in this BAR. Furthermore, it should be noted that the impact scores themselves will include the results of the public response and comment. Please refer to Section 8.2 for the Methodology used in determining and ranking the nature, significance, consequence, extent, duration and probability of potential environmental impacts and risks.



Table 27: Impact identification matrix.

Phase	Activity	Environmental Component													
		Climate and Air Quality (AQ)	Geology and soils (G)	Palaeontology (P)	Groundwater (GW)	Surface water/ wetlands (W)	Noise (N)	Topography (T)	Visual/ Landscape (V)	Flora (FL)	Fauna (FA)	Ecosystems/ habitats (EH)	Social (S)	Cultural Heritage (C)	Economic (E)
Planning and Design	Geological field mapping and environmental screening												X		X
	Regional ground geophysical surveys and detailed ground geophysical surveys												X		X
	Planning of drilling/trenching programme												X		X
Construction (including preconstruction and post construction rehab)	Site clearance and establishment	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Ablutions -chemical toilets		X		X	X			X	X	X	X			
	Temporary fuel storage		X		X	X				X	X	X			
	Temporary storage of hazardous substances		X		X	X				X	X	X			
	Creation of access roads	X	X	X	X	X	X	X	X	X	X	X		X	X
	Site access	X	X							X	X	X	X	X	
	Storage of construction vehicles		X		X	X				X	X	X	X		



Phase	Activity	Environmental Component													
		Climate and Air Quality (AQ)	Geology and soils (G)	Palaeontology (P)	Groundwater (GW)	Surface water/ wetlands (W)	Noise (N)	Topography (T)	Visual/ Landscape (V)	Flora (FL)	Fauna (FA)	Ecosystems/ habitats (EH)	Social (S)	Cultural Heritage (C)	Economic (E)
	Waste management	X	X		X	X			X	X	X	X			
	Refuelling		X		X	X				X	X	X			
	Maintenance and repair		X		X	X				X	X	X	X		
Operations	Target prospecting boreholes and widely spaced boreholes	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Ablutions -chemical toilets				X	X			X	X	X				
	Temporary fuel storage	X	X		X	X				X	X	X		X	
	Temporary storage of hazardous substances	X	X		X	X				X	X	X		X	
	Site access	X	X							X	X	X	X	X	
	Storage of vehicles, equipment and machinery		X		X	X			X	X	X	X			
	Waste management	X	X		X	X			X	X	X	X			
	Refuelling		X		X	X				X	X	X			



Phase	Activity	Environmental Component													
		Climate and Air Quality (AQ)	Geology and soils (G)	Palaeontology (P)	Groundwater (GW)	Surface water/ wetlands (W)	Noise (N)	Topography (T)	Visual/ Landscape (V)	Flora (FL)	Fauna (FA)	Ecosystems/ habitats (EH)	Social (S)	Cultural Heritage (C)	Economic (E)
	Maintenance and repair		X		X	X				X	X	X			
Decommissioning, Rehabilitation and Closure	Undertake closure and rehabilitation as per the annual and final rehabilitation plan		X		X	X		X	X	X	X	X			
	Monitoring of rehabilitation efforts		X		X	X			X	X	X	X			
	Borehole closure		X		X	X									
	Removal of surface infrastructure		X												
	Removal of waste		X		X	X									



Table 28: Impacts Identified and Assessed during the Basic Assessment(BA).

Impact	Activity	Phase
Job creation during construction and operation phases of project	Drilling Site clearance Development of access roads	Planning, Construction, Operation
Temporary disturbance of wildlife due to increased human presence and possible use of machinery and/or vehicles	Drilling Site clearance Development of access roads	Construction and Operation
Destruction of, and fragmentation of, portions of the vegetation community	Site clearance Development of access roads	Construction and Operation
Loss of CBA1, CBA2 and ESA and sections of area classed as moderate and highest biodiversity importance	Site clearance Development of access roads	Construction and Operation
Displacement of faunal community (including possible threatened or protected species) due to habitat loss, disturbance (noise, dust and vibration) and/or direct mortalities	Drilling Site clearance Development of access roads	Construction and Operation
Continued disturbance of vegetation communities (including portions of a CBA1, CBA2 and ESA and a section classed as moderate and highest biodiversity importance)	Undertake closure and rehabilitation as per the annual and final rehabilitation plan Monitoring of rehabilitation efforts Borehole closure Removal of surface infrastructure Removal of waste	Decommissioning, Rehabilitation and Closure
Spreading of potentially dangerous diseases due to invasive and pest species	Site access Site clearance	Construction and Operation
Alteration of fauna assemblages due to habitat modification	Site clearance Development of access roads	Construction
Reduced plant seed dispersal	Site clearance Development of access roads Drilling	Construction and Operation
Encroachment by alien invasive plant species	Site clearance Development of access roads	Construction and Operation



Impact	Activity	Phase
Disturbance and mortalities of herpetofauna due to assaying (Rock chips and Soil sampling)	Drilling Site clearance Development of access roads	Construction and Operation
Ongoing displacement, direct mortalities and disturbance of faunal community (including multiple threatened species) due to habitat loss and disturbances because of the drilling and access roads	Undertake closure and rehabilitation as per the annual and final rehabilitation plan Monitoring of rehabilitation efforts Borehole closure Removal of surface infrastructure Removal of waste	Decommissioning, Rehabilitation and Closure
Further impacts due to the spread and/or establishment of alien and/or invasive species	Undertake closure and rehabilitation as per the annual and final rehabilitation plan Monitoring of rehabilitation efforts Borehole closure Removal of surface infrastructure Removal of waste	Decommissioning, Rehabilitation and Closure
Contamination of groundwater from onsite storage of hazardous materials and tools as well as storage, handling and disposal of waste	Drilling Site clearance Waste management Storage of fuel and hazardous substances Storage of vehicles, equipment and machinery Refuelling Ablutions	Construction and Operation
Contamination of groundwater from the planned drilling activities (i.e. lubricants, hydraulic oils);	Drilling Site clearance Waste management Storage of fuel and hazardous substances Storage of vehicles, equipment and machinery Refuelling Ablutions	Construction and Operation
Surface soil and/or groundwater contamination from any associated spillages from construction vehicles/machinery.	Drilling Site clearance Waste management	Construction and Operation



Impact	Activity	Phase
	Storage of fuel and hazardous substances Storage of vehicles, equipment and machinery Refuelling Ablutions	
Impact on sense of place by introducing noise	Drilling Site clearance	Construction and Operation
Pollution of Soils from drilling equipment and chemicals.	Waste management Storage of fuel and hazardous substances Storage of vehicles, equipment and machinery Refuelling Ablutions	Construction and Operation
Dust and vehicle/generator emissions on the air quality	Drilling Site clearance Development of access roads Site access	Construction and Operation
Deterioration and damage to existing access roads and tracks from vehicles	Site access	Construction and Operation
Safety and security risks to landowners and lawful occupiers	Site access	Construction and Operation
Interference with existing land uses	Site clearance Drilling	Construction and Operation
Generation and disposal of waste	Waste management Ablutions	Construction and Operation
Erosion due to improper rehabilitation	Drilling Site clearance Development of access roads Monitoring of rehabilitation efforts	Decommissioning, Rehabilitation and Closure
Disturbance to archaeological resources	Drilling Site clearance Development of access roads	Construction and Operation



Impact	Activity	Phase
Loss of fossil heritage	Drilling Site clearance Development of access roads	Construction
Disturbance to natural vegetation and increase in pioneer and weedy species	Drilling Site clearance Development of access roads	Construction and Operation
Altered hydrology from creation of preferential flow paths and hardened surfaces with increased risk of erosion	Drilling Site clearance Development of access roads	Construction and Operation
Contamination from spills and leaks of hydrocarbons (i.e. oil, grease etc.), use of cement on site, disposal of waste generated on site, temporary toilets used on site	Waste management Storage of fuel and hazardous substances Storage of vehicles, equipment and machinery Refuelling Ablutions	Construction and Operation
Uncontrolled/unmanaged fire that spreads to the surrounding natural grassland and wetlands	Drilling Site clearance Development of access roads	Construction and Operation

8.2 IMPACT ASSESSMENT METHODOLOGY

The broad approach to the significance rating methodology is to determine the significance (S) of an environmental risk or impact by considering the consequence (C) of each impact (comprising Nature, Extent, Duration, Magnitude, and Reversibility) and relating this to the probability/ likelihood (P) of the impact occurring. The S is determined for the pre- and post-mitigation scenario. In addition, other factors, including cumulative impacts and potential for irreplaceable loss of resources, are used to determine a prioritisation factor (PF) which is applied to the S to determine the overall final significance rating (FS).

8.2.1 DETERMINATION OF SIGNIFICANCE

The final significance (FS) of an impact or risk is determined by applying a prioritisation factor (PF) to the post-mitigation environmental significance. The significance is dependent on the consequence (C) of the particular impact and the probability (P) of the impact occurring. Consequence is determined through the consideration of the Nature (N), Extent (E), Duration (D), Magnitude (M), and Reversibility (R) applicable to the specific impact.

For the purpose of this methodology the consequence of the impact is represented by:

$$C = \frac{(E + D + M + R) * N}{4}$$

Each individual aspect in the determination of the consequence is represented by a rating scale as defined in Table 29 below.

Table 29: Criteria for Determining Impact Consequence



Aspect	Score	Definition
Nature	- 1	Likely to result in a negative/ detrimental impact
	+1	Likely to result in a positive/ beneficial impact
Extent	1	Activity (i.e. Highly localised, limited to the area applicable to the specific activity)
	2	Site (i.e. within the development property or site boundary, or the area within a few hundred meters of the site)
	3	Local (i.e. beyond the site boundary within the Local administrative boundary (e.g. Local Municipality) or within consistent local geographical features, or the area within 5 km of the site)
	4	Regional (i.e. Far beyond the site boundary, beyond the Local administrative boundaries within the Regional administrative boundaries (e.g. District Municipality), or extends into different distinct geographical features, or extends between 5 and 50 km from the site).
	5	Provincial / National / International (i.e. extends into numerous distinct geographical features, or extends beyond 50 km from the site).
Duration	1	Immediate (<1 year, quickly reversible)
	2	Short term (1-5 years, less than project lifespan)
	3	Medium term (6-15 years)
	4	Long term (15-65 years, the impact will cease after the operational life span of the project)
	5	Permanent (>65 years, no mitigation measure of natural process will reduce the impact after construction/ operation/ decommissioning).
Magnitude/ Intensity	1	Minor (where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected)
	2	Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected, or affected environmental components are already degraded)
	3	Moderate (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way; moderate improvement for +ve impacts; or where change affects area of potential conservation or other value, or use of resources).
	4	High (where natural, cultural or social functions or processes are altered to the extent that it will temporarily cease; high improvement for +ve impacts; or where change affects high conservation value areas or species of conservation concern)
	5	Very high / don't know (where natural, cultural or social functions or processes are altered to the extent that it will permanently cease, substantial improvement for +ve



Aspect	Score	Definition
		impacts; or disturbance to pristine areas of critical conservation value or critically endangered species)
Reversibility	1	Impact is reversible without any time and cost.
	2	Impact is reversible without incurring significant time and cost.
	3	Impact is reversible only by incurring significant time and cost.
	4	Impact is reversible only by incurring very high time and cost.
	5	Irreversible Impact.

Once the C has been determined, the significance is determined in accordance with the standard risk assessment relationship by multiplying the C and the P. Probability is rated/ scored as per Table 30.

It is noted that both environmental risks as well as environmental impacts should be identified and assessed. Environmental Risk can be regarded as the potential for something harmful to happen to the environment, and in many instances is not regarded as something that is expected to occur during normal operations or events (e.g. unplanned fuel or oil spills at a construction site). Probability and likelihood are key determinants or variables of environmental risk. Environmental Impact can be regarded as the actual effect or change that happens to the environment because of an activity and is typically an effect that is expected from normal operations or events (e.g. vegetation clearance from site development results in loss of species of concern). Typically, the probability of an unmitigated environmental impact is regarded as highly likely or certain (management and mitigation measures would ideally aim to reduce this likelihood where possible). In summary, environmental risk is about what could happen, while environmental impact is about what does happen.

Table 30: Probability/ Likelihood Scoring

Probability	1	Improbable (Rare, the event may occur only in exceptional circumstances, the possibility of the impact materialising is very low as a result of design, historic experience, or implementation of adequate corrective actions; <5% chance).
	2	Low probability (Unlikely, impact could occur but not realistically expected; >5% and <20% chance).
	3	Medium probability (Possible, the impact may occur; >20% and <50% chance).
	4	High probability (Likely, it is most probable that the impact will occur - > 50 and <90% chance).
	5	Definite (Almost certain, the impact is expected to, or will, occur, >90% chance).

The result is a qualitative representation of relative significance associated with the impact. Significance is therefore calculated as follows:

$$S = C \times P$$



Table 31: Determination of Significance

Consequence	5- Very High ^d	5	10	15	20	25
	4- High	4	8	12	16	20
	3- Medium	3	6	9	12	15
	2- Low	2	4	6	8	10
	1- Very low	1	2	3	4	5
		1- Improbable	2- Low	3- Medium/ Possible	4- High/ Probable	5- Highly likely/ Definite
Probability						

The outcome of the significance assessment will result in a range of scores, ranging from 1 through to 25. These significance scores are then grouped into respective classes as described in Table 32.

Table 32: Significance Scores

S Score	Description
≤4.25	Low (i.e. where this impact is unlikely to be a significant environmental risk/ reward).
>4.25, ≤8.5	Low-Medium (i.e. where the impact could have a significant environmental risk/ reward).
>8.5, ≤13.75	High-Medium (i.e. where the impact could have a significant environmental risk/ reward).
>13.75	High (i.e. where the impact will have a significant environmental risk/ reward).

The impact significance will be determined for each impact without relevant management and mitigation measures (pre-mitigation significance), as well as post implementation of relevant management and mitigation measures (post-mitigation significance). This allows for a prediction in the degree to which the impact can be managed/mitigated.

8.2.2 IMPACT PRIORITIZATION

Further to the assessment criteria presented in the section above, it is necessary to consider each potentially significant impact in terms of:

1. Cumulative impacts; and
2. The degree to which the impact may cause irreplaceable loss of resources.

To ensure that these factors are considered, an impact prioritisation factor (PF) will be applied to each impacts' post-mitigation significance (post-mitigation). This prioritisation factor does not aim to detract from the significance ratings but rather to focus the attention of the decision-making authority on the higher

^d In the event that an impact or risk has very high or catastrophic consequences, but the likelihood/ probability is low, then the resultant significance would be Low-medium. This does in certain instances detract from the relative important of this impact or risk and must consequently be flagged for further specific consideration, management, mitigation, or contingency planning.



priority/significance issues and impacts. The PF will be applied to the post-mitigation significance based on the assumption that relevant suggested management/mitigation impacts are implemented.

Table 33: Criteria for Determining Prioritisation

Cumulative Impact (CI)	Medium (2)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.
	High (3)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/ definite that the impact will result in spatial and temporal cumulative change.
Irreplaceable Loss of Resources (LR)	Low (1)	Where the impact is unlikely to result in irreplaceable loss of resources.
	Medium (2)	Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.
	High (3)	Where the impact may result in the irreplaceable loss of resources of high value (services and/or functions).

The value for the final impact priority is represented as a single consolidated priority, determined as the sum of each individual criteria represented in Table 33. The impact priority is therefore determined as follows:

$$\text{Priority} = CI + LR$$

The result is a priority score which ranges from 2 to 6 and a consequent PF ranging from 1 to 1.5 (Refer to Table 34).

Table 34: Determination of Prioritisation Factor

Priority	Prioritisation Factor
2	1
3	1.125
4	1.25
5	1.375
6	1.5

In order to determine the final impact significance (FS), the PF is multiplied by the post-mitigation significance scoring. The ultimate aim of the PF is an attempt to increase the post mitigation environmental risk rating by a factor of 0.5, if all the priority attributes are high (i.e. if an impact comes out with a high medium environmental risk after the conventional impact rating, but there is significant cumulative impact potential and significant potential for irreplaceable loss of resources, then the net result would be to upscale the impact to a higher significance).



Table 35: Final Environmental Significance Rating

Significance Rating	Description
<-25	Very High (Impacts in this class are extremely significant and pose a very high environmental risk. In certain instances these may represent a fatal flaw. They are likely to have a major influence on the decision and may be difficult or impossible to mitigate. Offset's may be necessary.
<-13.75 to -25	High negative (These impacts are significant and must be carefully considered in the decision-making process. They have a high environmental risk or impact and require extensive mitigation measures).
-8.5 to -13.75	Medium-High negative (i.e. Impacts in this class are more substantial and could have a significant environmental risk. They may influence the decision to develop in the area and require more robust mitigation measures).
<-4.25 to <-8.5	Medium- Low negative (i.e. These impacts are slightly more significant than low impacts but still do not pose a major environmental risk. They might require some mitigation measures but are generally manageable).
-1 to -4.25	Low negative (i.e. Impacts in this class are minor and unlikely to have a significant environmental risk. They do not influence the decision to develop in the area and are typically easily mitigated).
0	No impact
1 to 4.25	Low positive
>4.25 to <8.5	Medium-Low positive
8.5 to 13.75	Medium-High positive
>13.75	High positive

The significance ratings and additional considerations applied to each impact will be used to provide a quantitative comparative assessment of the alternatives being considered. In addition, professional expertise and opinion of the specialists and the environmental consultants will be applied to provide a qualitative comparison of the alternatives under consideration. This process will identify the best alternative for the proposed project.

8.3 DESCRIPTION AND ASSESSMENT OF IMPACTS

This section describes each identified environmental impact in the context of the activity and associated aspect and provides reasons why specific ranking/ rating of the component attributes of the impact assessment are given.

8.3.1 AIR QUALITY

8.3.1.1 REDUCED AMBIENT AIR QUALITY- CONSTRUCTION (AQ)

During the construction phase, the main sources of emissions are:

- Heavy machinery and vehicles: front loaders, trucks, compactors and pickups used for construction activities such as civil works and construction works and for the transport of materials and workers;



- Engine driven equipment and energy generators used to supply electricity during construction activities.

Motorized vehicles and equipment (like trucks and generators) used during construction will emit pollutants like carbon monoxide (CO), nitrogen oxides (NO_x), and sulphur dioxide (SO₂) into the atmosphere. Equipment at the accommodation camp may also produce exhaust emissions.

Dust emissions will primarily result from excavation and wind causing dust resuspension on exposed areas and vehicle movement on unpaved surfaces. These emissions vary significantly during construction and operation. The impact of dust depends largely on soil type, the activities involved, weather conditions, wind speed, and the wind's capacity to carry dust to sensitive areas.

Thus, construction is expected to produce low emissions, mostly confined to the project site and occurring intermittently over approximately a 3 year period from vehicles and generators. Despite its duration, the impact magnitude remains small.

Even if receptors in the vicinity of the Project are sensitive to air quality issues, there are few receptors in the vicinity (with the exception of site workers), therefore, receptor sensitivity is considered to be medium given the baseline PM concentration observed in the project area. As such, the overall impact significance is low.

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Reduced ambient air quality- construction (AQ1)	Construction	Low (-)	Low (-)	Low (-)
Potential cumulative/confounding effects	Cumulative air quality impacts would be related to the in-combination effects of the project's air emissions with existing emission sources and planned emissions in the immediate area around the project site, which could result in an elevation of ground level concentrations of pollutants and have an impact on the health of workers and local communities. Cumulative impacts on air quality are expected to be of minor priority. As such, no additional measures are proposed to manage cumulative effects.			
Mitigation Measures				
<ul style="list-style-type: none"> • Limit construction during extreme weather conditions (e.g., high wind and dust storms) that can intensify dust generated from construction activity. • Construction activities associated with high dust (and other air emissions) generation (e.g., grading and excavation) must be avoided as far as possible at night, when it is difficult to visibly assess air emissions. If construction activities are unavoidable during these periods, sufficient lighting and/or monitoring must be implemented to ensure air emissions are not elevated above normal visible working conditions. • Use of suitable dust suppression measures such as water spraying; All stockpiles of fine material must be covered. • Construction vehicles must be well serviced, in roadworthy condition and comply with speed limits. • Avoid or reduce (as far as practicable) project vehicle traffic near communities and ensure vehicles follow journey management plans with designated routes. 				



8.3.2 GEOLOGY AND SOILS (G)

This section discusses the potential impacts of the proposed prospecting activities on the geology and soil resources within the project area. The activities under consideration include:

- Site clearance and establishment;
- Creation of access roads;
- Site access on private land;
- Waste management;
- Drilling of target and widely spaced boreholes;
- Temporary fuel storage; and
- Temporary storage of hazardous substances.

The stripping and stockpiling of topsoil, if not managed correctly, can lead to the loss of this valuable resource through wind and water erosion. Improper stockpiling can also degrade the biological and chemical properties of the topsoil, hindering successful rehabilitation efforts. While the primary aim of site clearance is vegetation removal, deeper excavation for site levelling or the establishment of temporary infrastructure could inadvertently disturb shallow geological formations or expose underlying bedrock.

While designed to be contained, chemical toilets pose a risk of soil contamination if leaks occur due to damage, improper maintenance, or overturning. The contents can contain chemicals and pathogens that can negatively impact soil quality. Inappropriate disposal of chemical toilet waste, if not handled by a licensed service provider, can lead to direct soil contamination and potential health hazards.

The construction of access roads, involving the removal of vegetation, grading, and the placement of road base materials, will inevitably lead to soil compaction and increased susceptibility to erosion along the road corridor and adjacent areas. Access roads can fragment existing habitats and act as barriers to wildlife movement. They can also alter natural drainage patterns, leading to increased runoff, localized flooding, or the diversion of water flow, potentially causing erosion and sedimentation in downstream areas. Road construction may require excavation and the removal or modification of underlying geological materials. This could expose different rock types or geological features. Disturbed road verges can provide pathways for the establishment and spread of invasive plant species.

Improper storage, handling, and disposal of various waste streams (e.g., drilling fluids, cuttings, general waste, sewage) can lead to soil contamination by hydrocarbons, heavy metals, chemicals, and pathogens. This contamination can render the soil unsuitable for plant growth and potentially impact groundwater quality. Poor waste management practices can result in unsightly litter and negatively impact the aesthetic value of the area. Failure to remove all waste materials from the site can lead to long-term soil contamination and visual impacts.

The drilling of prospecting boreholes will result in localized disturbance and compaction of the soil at the drill site due to the footprint of the drilling rig and associated equipment. Improper handling and disposal of drilling fluids and cuttings can lead to soil contamination. Drilling fluids may contain chemicals that can negatively impact soil properties, and cuttings may contain elevated levels of naturally occurring substances that could be harmful if not managed correctly. Although, unlikely with standard prospecting boreholes, there is a remote potential for subsurface contamination if boreholes are not properly sealed and abandoned, potentially creating pathways for the migration of fluids between geological layers.

The temporary on-site storage of fuel and hazardous substances, such as lubricants and chemicals, presents a significant risk of soil contamination due to potential accidental spills or leaks during storage, handling, and refuelling. Hydrocarbon contamination can be persistent and necessitate costly remediation, while the severity of impacts from hazardous substance releases is contingent upon the specific type and quantity of the material involved. In addition, refuelling activities pose a high risk of significant soil contamination from accidental spills of fuel. Maintenance and repair activities on site can generate various waste streams (e.g., used oil, filters, rags)



and pose a risk of spills of lubricants, coolants, and other fluids, leading to soil contamination. Parked vehicles and machinery can occasionally leak small amounts of fluids (oil, lubricants, coolant) onto the soil surface, leading to localized contamination. The static and occasional movement of parked construction vehicles, equipment and machinery can cause localized soil compaction, reducing permeability and potentially affecting vegetation regrowth in these areas.

Failure to implement the rehabilitation plan effectively can result in long-term soil degradation, erosion, and the inability of the land to return to a stable and productive state. This can include poor topsoil replacement, inadequate erosion control, and unsuccessful revegetation. Inadequate monitoring can lead to the failure to identify and address problems with rehabilitation efforts (e.g., poor vegetation establishment, erosion), potentially resulting in long-term environmental damage. Improper prospecting borehole closure can create pathways for the migration of fluids between different geological layers, potentially leading to subsurface contamination of groundwater resources. Poorly sealed boreholes can become points of weakness in the ground, potentially leading to instability or subsidence over time. The removal of temporary infrastructure (e.g., buildings, storage areas, access roads) can cause further soil disturbance and compaction if not conducted carefully. Dismantling infrastructure may inadvertently release residual contaminants (e.g., spills under storage areas) if thorough cleanup has not occurred.

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Loss of Land Capability	Construction	Medium – Low (-)	Low (-)	Low (-)
Loss of Land Capability	Operation	Medium - Low (-)	Low (-)	Low (-)
Loss of Land Capability	Decommissioning	Low (-)	Low (-)	Medium - Low (-)
Loss of Land Capability	Rehab and Closure	Low (-)	Low (-)	Low (-)
Loss of Land Grazing Potential	Construction	Medium - Low (-)	Low (-)	Low (-)
Loss of Land Grazing Potential	Operation	Medium - Low (-)	Low (-)	Medium - Low (-)
Loss of Land Grazing Potential	Decommissioning	Low (-)	Low (-)	Low (-)
Loss of Land Grazing Potential	Rehab and Closure	Low (-)	Low (-)	Low (-)
Potential cumulative/ confounding effects	Cumulative impacts for soils relate specifically to loss of land with agricultural potential and loss of grazing land. Cumulative impacts are expected to be of moderate to low significance.			
Mitigation Measures				
<ul style="list-style-type: none"> Minimise project footprint as far as possible. Manage location of topsoil stripping stockpiling, demarcation of topsoil stockpiles and prevention of stockpile erosion and contamination for the drilling sites or boreholes. This can protect the topsoil stockpiles to keep it viable for rehabilitation purposes. Make use of existing roads or upgrades tracks before new roads are constructed. The number and width of internal access routes must be kept to a minimum. Usually, areas with sandy soils are 				



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
		<p>avoided as far as possible for heavy vehicles, areas dominated with sandy soils, dust suppressions methods should be implemented to reduce wind erosion during this phase;</p> <ul style="list-style-type: none"> • Implementation of embedded controls such as geotextiles, mulching to effectively control soil erosion on-site. Maintain erosion and sediment controls until vegetation is re-established. • Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and bare (unvegetated) areas. • Reduce the dust generated by operational vehicles and earth moving machinery, through wetting the soil surface (with “dirty water”) and putting up signs to enforce speed limits to enforce reduced speeds. • No non-environmentally friendly suppressants may be used as this could result in pollution of water sources. • Rehabilitation of the area must be initiated from the onset of the project. • An Alien Invasive Plant (AIP) Management Plan for the prospecting sites and access routes must be compiled and implemented during any on-site activities. • Any materials may not be stored for extended periods of time and must be removed from the PAOI once the construction/closure phase has been concluded. • Remove hazardous materials (batteries, oils, chemicals) for proper disposal. • Decompact soils in areas affected by heavy machinery or vehicles (use subsoiling or deep ripping). • Document and report restoration outcomes to relevant authorities. 		

8.3.3 PALAEOLOGY (P)

As the development footprint is not considered highly sensitive in terms of palaeontological resources, prospecting may thus be approved in its entirety. It is thus suggested that no additional palaeontological heritage research, ground truthing, or specialised mitigation be undertaken until new fossils are identified. If well-preserved fossil remains are discovered during any phase of construction, whether on the surface or revealed through excavations, the Environmental Control Officer (ECO) in charge of these activities is required to follow the Chance Find Protocol. These discoveries should be preserved (if feasible, in situ), and the ECO should notify SAHRA in order for a palaeontologist to do effective mitigation (recording and collection).

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Loss of resources with paleontological significance (fossil heritage)	Construction	Low - Medium (-)	Low (-)	Low (-)
Potential cumulative/confounding effects	Cumulative impacts on fossil resources are expected to be negligible – low.			
Mitigation Measures				
<ul style="list-style-type: none"> • A Chance Find Protocol must be implemented. 				



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
				<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 in the immediate vicinity of the find must stop as well. A qualified palaeontologist must be consulted to, firstly, record the find and evaluate its significance. The palaeontologist should provide recommendations on how to approach the finds moving forward. This may include recommendations for the mitigation of impacts on the heritage resources in question. Should the palaeontologist recommend, development can resume following the application of recommendations and mitigation measures.

8.3.4 GROUNDWATER (GW)

The assessment included a desktop sensitivity assessment of the study area in relation to the proposed prospecting activities and associated infrastructure, specifically limited to the drilling of approximately 16 prospecting boreholes for sampling and exploration purposes during the construction/prospecting phase. The assessment considered the geological and hydrogeological setting, aquifer vulnerability, groundwater re-source significance, surface water features, drainage characteristics, potential environmentally sensitive areas, and existing land-use activities within and surrounding the application area.

Areas considered environmentally sensitive, including drainage features, wetlands, watercourses, steep slopes, and areas with elevated groundwater vulnerability, were identified as areas to be avoided where reasonably possible during the planning and positioning of prospecting boreholes and associated temporary access routes. The findings of the desktop assessment indicate that the proposed prospecting activities are localised, temporary in nature, and of relatively limited hydrogeological impact, provided that appropriate management and mitigation measures are implemented.

Potential impacts associated with the prospecting drilling activities during the construction/prospecting phase may include:

- Localised disturbance of surface soils including contamination, erosion, compaction etc.;
- Potential contamination of groundwater through poor drilling practices;
- Hydrocarbon spillages;
- Improper handling of drilling fluids and cuttings; and
- Limited temporary disturbance to shallow groundwater flow conditions.

The possible receptors include groundwater as well as private groundwater users.

Inadequate closure and rehabilitation (decommissioning) can leave behind residual contamination in the soil, which can continue to leach into groundwater over time. Improper rehabilitation of disturbed areas can result in compacted soils and reduced infiltration, potentially affecting local groundwater recharge. Failure to properly close and seal boreholes can leave pathways for contamination of aquifers. Insufficient or ineffective monitoring of rehabilitation efforts may fail to identify ongoing or new sources of groundwater contamination from residual activities or inadequate rehabilitation. Improper borehole closure can create preferential flow paths for contaminated surface water or shallow groundwater to enter deeper aquifers. Failure to properly seal boreholes can allow for the migration of water and contaminants between different aquifers.

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Localised disturbance of surface soils including	Construction Operation	Low (-)	Low (-)	Low (-)



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
contamination, erosion, compaction etc.	Decommissioning and Closure			
Potential contamination of groundwater through poor drilling practices.	Construction Operation Decommissioning and Closure	Low (-)	Low (-)	Low (-)
Hydrocarbon spillages impacting on soils and groundwater.	Construction Operation Decommissioning and Closure	Low (-)	Low (-)	Low (-)
Improper handling of drilling fluids and cuttings, leading to potential contamination of soil and groundwater.	Construction Operation Decommissioning and Closure	Low (-)	Low (-)	Low (-)
Limited temporary disturbance to shallow groundwater flow conditions	Construction Operation Decommissioning and Closure	Low (-)	Low (-)	Low (-)
Potential cumulative/confounding effects	<p>The cumulative impacts are anticipated to be localised, temporary, and of low significance following the implementation of appropriate mitigation measures. Potential cumulative impacts include minor disturbance of surface soils and vegetation, temporary alteration of shallow groundwater flow conditions, and a low risk of groundwater contamination associated with drilling activities, hydrocarbon spillages, and improper handling of drilling fluids and cuttings. Due to the limited number, small footprint, and temporary nature of the proposed boreholes, significant cumulative impacts on groundwater resources or surrounding environmental features are not expected. With adherence to recognised drilling standards, spill prevention measures, and appropriate rehabilitation and sealing of boreholes after completion, the overall cumulative impact is of low negative significance.</p>			
<p>Mitigation Measures</p> <ul style="list-style-type: none"> • Boreholes should be positioned outside of sensitive drainage features, wetlands, and watercourses where reasonably possible. • All drilling activities should be undertaken using appropriate drilling and environmental management practices to prevent groundwater contamination. • Hydrocarbon fuels, oils, and hazardous substances should be stored in designated bunded areas away from drainage lines and boreholes. 				



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
				<ul style="list-style-type: none"> • Spill prevention and spill response measures should be implemented on site at all times. • Drill sites should be kept clean, and all waste materials and drilling-related waste should be removed and disposed of at approved facilities. • Disturbed areas should be rehabilitated following completion of drilling activities. • Boreholes not required for future monitoring or exploration purposes should be appropriately sealed and decommissioned in accordance with recognised standards. • No uncontrolled discharge of contaminated water or drilling fluids should be permitted to the surrounding environment.

8.3.5 AQUATIC IMPACTS (A)

This section assesses the potential impacts, as described by the wetland specialist of the proposed prospecting activities on the surface water resources within the project area. The activities associated with the drilling of prospecting boreholes, encompassing access to drill sites (potentially intersecting drainage features), the operation of drilling rigs and associated equipment, the drilling of boreholes within the drainage feature buffer, drilling within riparian areas, drilling within 500 meters of drainage features, and the subsequent removal of the rig and capping of the boreholes, are anticipated to result in the following environmental impacts:

- Disturbance to Natural Vegetation and Proliferation of Pioneer and Weedy Species: The physical access and operational footprint of the drilling activities will lead to the direct removal and disturbance of existing natural vegetation. This disturbance will create opportunities for the establishment and spread of pioneer and weedy plant species, potentially altering the ecological composition and structure of the affected areas.
- Alteration of Hydrology and Increased Erosion Risk: The creation of access routes and the presence of hardened surfaces associated with the drill sites may modify local hydrological regimes. This can occur through the creation of preferential flow paths for surface water and a reduction in infiltration rates due to soil compaction. Consequently, the risk of soil erosion in the vicinity of the boreholes and access routes is anticipated to increase.
- Potential for Contamination: The presence and operation of drilling rigs and associated machinery introduce the risk of contamination from spills and leaks of hydrocarbons, including oil and grease. Furthermore, the use of cement on-site, the disposal of waste generated during drilling activities, and the utilization of temporary toilet facilities present potential sources of soil and water contamination if not managed appropriately.

The potential direct and indirect impacts are expected to threaten the integrity of sensitive receptors during the project activities if unmitigated. The post-mitigation significance ratings have been calculated considering various parameters for watercourses within the DWS zone of regulation only. The summative results are presented in the subsequent table.

Table 36: Anticipated impacts to watercourses

Activity	Project activities that can cause	Impacts to freshwater ecology loss/impacts to watercourse
Construction and Operation Phase	<ul style="list-style-type: none"> • Clearing of vegetation • Stripping and stockpiling of topsoil • Establish working area 	<ul style="list-style-type: none"> • Impeding hydro-dynamics; • Siltation of watercourse; • Erosion of watercourse;



Activity	Project activities that can cause loss/impacts to watercourse	Impacts to freshwater ecology
	<ul style="list-style-type: none"> • Core drilling and sampling • Digging of sump (lining), if applicable • Vehicle access (gravel roads and crossings) • Leaks and spillages from machinery, equipment & vehicles • Solid waste disposal • Human sanitation & ablutions • Re-fuelling of machinery and vehicles • Laying of core samples • Backfill of material 	<ul style="list-style-type: none"> • Loss of indigenous vegetation; • Altering hydromorphic soils; • Drainage pattern change; • Direct loss of riparian areas; • Decrease in functionality; • Additional water quality impairment; • Degradation of ecological integrity and ecosystem services.
Decommissioning Phase	<ul style="list-style-type: none"> • Removal of structures, machinery, and equipment • Backfilling of holes • Final landscaping and concurrent rehabilitation. 	<ul style="list-style-type: none"> • Impeding hydro-dynamics; • Siltation of watercourses; • Additional water quality impairment.

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Loss, disturbance and degradation of watercourses	Construction Operation	Medium to High (-)	Low (-)	Medium to Low (-)
Altered hydrological regimes (Drainage pattern change)	Construction Operation	Medium to High (-)	Low (-)	Medium to Low (-)
Increase in erosion of receiving freshwater systems	Construction Operation	Medium to High (-)	Low (-)	Medium to Low (-)
Introduction and spread of alien and invasive vegetation	Construction Operation	Medium to High (-)	Low (-)	Medium to Low (-)
Increased bare surfaces, flood peaks and potential erosion	Construction Operation	Medium to High (-)	Low (-)	Medium to Low (-)



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Impaired water quality (Contamination of freshwater systems)	Construction Operation	Medium to High (-)	Low (-)	Medium to Low (-)
Impeding hydro-dynamics	Decommissioning	Medium to High (-)	Low (-)	Medium to Low (-)
Additional water quality impairment	Decommissioning	Medium to High (-)	Low (-)	Medium to Low (-)
Siltation of watercourses	Decommissioning	Medium to High (-)	Low (-)	Medium to Low (-)
Potential cumulative/confounding effects	<p>Cumulative impacts are assessed in context of the extent of the proposed project area; other developments in the SQR and Quaternary catchment areas; and general habitat loss and transformation resulting from other activities in the area. The impacts of projects are often assessed by comparing the post-project condition to a pre-existing baseline condition. Where projects can be considered in isolation this provides a good method of assessing a project's impact. However, in areas where baselines have already been affected, or where future development will continue to add to the impacts in an area or region, it is appropriate to consider the cumulative effects of development. This is similar to the concept of shifting baselines, which describes how the environmental baseline at a point in time may represent a significant change from the original state of the system. This section describes the potential impacts of the project that are cumulative for freshwater fauna and flora.</p> <p>Localised cumulative impacts include the cumulative effects from anthropogenic activities that are close enough (such as nearby farming activities within the area) to potentially cause additive effects on the environment or sensitive receivers. These include disruption of ecological corridors or habitat such as watercourses, impacts to groundwater and surface water quality, and transport of soils and instream habitat smothering impacts.</p> <p>The cumulative impacts include the loss or alteration of watercourse system that maintains water quality for downslope aquatic systems when undisturbed), loss of interflow and the resulting deterioration of the systems to provide necessary ecological services. Following the implementation of appropriate mitigation, the cumulative impacts will remain as a low risk significance rating. Furthermore, should hazardous spillages occur, the associated FEPA areas could be contaminated and spilled materials could be carried from the contaminated soils into downstream freshwater systems during precipitation events.</p>			
Unplanned events	<p>Unplanned events may occur on any project during any of the phases of the project, and may have potential impacts which will need mitigation and management. These include:</p> <ul style="list-style-type: none"> Spills into the surrounding environment and watercourses may cause contamination of habitat as well as watercourses associated with a spillage 			



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
		<p>(at hazardous chemical and hydrocarbons storage areas and across Project Area).</p> <ul style="list-style-type: none"> • Uncontrolled erosion on the side of the access roads may cause sedimentation of downslope watercourses. • Uncontrolled/unmanaged fire that spreads to the surrounding natural areas which includes the watercourses. 		
<p>Mitigation Measures</p> <p>Unplanned Events:</p> <ul style="list-style-type: none"> • A spill response kit must be available at all times. The incident must be reported on and if necessary, an experienced ecologist must investigate the extent of the impact and provide rehabilitation recommendations. • Storm water management plan must be compiled by a suitably qualified engineer and implemented throughout the life of the activity. Erosion control measures must be put in place. Measures must include monthly inspections across the project footprint and should be adaptive based on site-conditions. • Appropriate/Adequate fire management plan needs to be implemented to protect the watercourse areas from potential loss. <p>Construction/Operation:</p> <ul style="list-style-type: none"> • A method statement is required from the Contractor(s) that includes the layout of the drilling site, amenities and wastewater / water management during drilling. • Site establishment must be undertaken in an orderly manner and all amenities must be installed before the onset of drilling. • Adherence to the buffer areas. These should be visibly demarcated on site to avoid encroachment into these areas. • Restrict all drilling related activities to within the designated footprint area. • Clearly demarcate drill site footprint areas and limit all activities to within this area. • Avoid the creation of new access roads; use existing roads where possible. • No vehicle or machinery is allowed to be washed within a watercourse or its buffer area. • Laydown yards, camps and storage areas must be beyond the watercourse areas. • Prevent uncontrolled access of vehicles through the watercourse. • Heavy vehicles must be parked outside of the riparian buffer zone except where needed for construction / operation. • Retain as much vegetation cover as possible for all selected routes and working areas to limit future erosion potential. • Minimise unnecessary clearing of vegetation. 				



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
<ul style="list-style-type: none"> • Landscape and re-vegetate all denuded areas as soon as possible. • Erosion and sedimentation into drainage lines must be minimised through stabilisation and revegetation. • All alterations or hardened surfaces must not induce sedimentation, erosion, or flooding, or cause detrimental changes in flow. • Landscape and revegetate all cleared areas as soon as possible. • Install sedimentation/erosion protection measures (sandbags, silt traps, fences). • Signs of erosion must be addressed immediately. • Temporary and permanent erosion control methods (silt fences, curtains, basins, ponds, ditches, seeding, riprap, mats, mulching). • Practice good soil management across the construction footprint, notably around the topsoil berms and road reserves. • All removed soil and drilled material must not be stockpiled within the system; stockpiles must be protected from erosion. • Erosion prevention and sediment control measures must be implemented. • An Alien Invasive Plant (AIP) Management Plan for the prospecting sites and access routes must be compiled prior to and implemented during any on-site activities. • Alien vegetation must not be allowed to encroach onto the sites and must be continually removed during construction / operation. • Avoid the creation of concentrated flow paths wherever possible, especially along the road reserves. • Devise and implement a suitable stormwater management plan for the construction and operation phases. • In addition to this, basic stormwater structures such as berms must be designed and implemented prior to and throughout the duration of the construction activities. 				
<p>Decommissioning:</p>				
<ul style="list-style-type: none"> • Landscape and revegetate all cleared areas as soon as possible. • Areas exposed to erosion must be protected through sandbags, berms, and efficient drilling processes. • Limit the extent and duration that areas are exposed. • All contractors and labour must undergo environmental awareness training and be encouraged to maintain a “clean” working area, and report any (potential) risks to the environment as a result of the drilling programme. • Ablution facilities with chemical toilets must be provided for all labour. The labour must be encouraged to make use of the abluion and under no circumstances shall indiscriminate excretion and urinating be permitted other than in supplied facilities. 				



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
				<ul style="list-style-type: none"> • The locations of domestic waste areas, contractors camp and placement of ablution facilities must be demarcated on an approved site plan. The temporary storage of domestic waste shall be in covered bins, but these must be emptied on a weekly basis. • The Contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected must be disposed of at a licensed disposal facility. • The Contractor must be in possession of emergency spill kits that must be complete and available at all times on site. • Any possible contamination of topsoil by hydrocarbons, concrete or concrete water must be avoided. Any contaminated soil must be treated in situ or be placed in containers and removed from the site for disposal in a licensed facility. • Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. • No storage of vehicles or equipment will be allowed outside of the designated drilling site or contractor's camp area. Make use of existing tracks and routes as much as possible before new routes are constructed. • No servicing of equipment on site unless absolutely necessary. Leaking equipment must be repaired immediately or be removed from site to facilitate repair. • All vehicles and equipment must be well maintained to ensure that there are no oil or fuel leakages. • Landscape and re-vegetate all denuded areas as soon as possible. • Erosion and sedimentation into drainage lines must be minimised through stabilisation and revegetation. • All alterations or hardened surfaces must not induce sedimentation, erosion, or flooding, or cause detrimental changes in flow. • All contractors and labour must undergo environmental awareness training and be encouraged to maintain a "clean" working area, and report any (potential) risks to the environment as a result of the drilling programme. • In the event the freshwater watercourses are contaminated by means of an unforeseen spill/ leak, relevant specialists should be consulted for suitable mitigation or rehabilitation measures. • No dumping of material on-site. • All waste generated on-site must be adequately managed, support separation and recycling. • All chemicals and toxicants must be stored in bunded areas. • All disturbed and compacted footprint areas must be rehabilitated and landscaped after drilling is complete. These areas must either be rehabilitated to the original land use or an agreed upon land use. • Landscape and revegetate all cleared areas as soon as possible. • Install sedimentation/erosion protection measures (sandbags, silt traps, fences). • Signs of erosion must be addressed immediately.



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
				<ul style="list-style-type: none"> • Temporary and permanent erosion control methods. • Practice good soil management across the construction footprint, notably around the topsoil berms and road reserves.

8.3.6 NOISE (N)

This section assesses the potential noise impacts associated with the proposed prospecting activities, specifically focusing on site clearance and establishment, the creation of access roads, and the drilling of target prospecting and widely spaced boreholes. The site clearance and establishment phase will involve the use of various heavy machinery, including bulldozers, excavators, graders, and trucks. These machines generate significant levels of noise, which can be intermittent but potentially high in intensity. Elevated noise levels can cause disturbance to sensitive receptors in the vicinity of the project area, including disrupting animal communication, breeding patterns, foraging behaviour, and potentially lead to habitat avoidance. The distance between the site drilling locations and the nearest residential area significantly reduces the potential for direct and significant noise disturbance to human receptors. While noise generated by the aforementioned activities will propagate outwards, the attenuation of sound over this distance, coupled with existing ambient noise levels at the residential location, is likely to result in a substantial reduction in the perceived noise levels emanating from the prospecting activities.

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Noise Impacts	All Phases	Low (-)	Low (-)	Low (-)
Potential cumulative/ confounding effects	Noise impacts are by their nature cumulative with existing ambient noise levels.			
Mitigation Measures				
<ul style="list-style-type: none"> • Noise-generating activities associated with construction activities should be kept to a minimum. • Local residents (landowners and directly adjacent landowners) should be notified of any potentially noisy activities or work and these activities should be undertaken at reasonable times of the day. Should work be required during weekends and or at night, the access agreement with the landowner should include this and must permit these activities, and if the noise is problematic, a grievance can be lodged by the landowner. • Compliance with the appropriate legislation/ any local by-laws and regulations regarding the generation of noise must be adhered to. • Noises that could cause a major disturbance should only be carried out in areas located in close proximity to communities and/or residences during normal working hours. Should noise-generating activities have to occur at night communities and/or landowners in the vicinity of the drilling should be warned about the noise well in advance and the activities should be kept to a minimum. • Awareness training should be provided to construction staff on safety, health and environmental matters. • Provide appropriate Personal Protective Equipment (PPE) where required. • Compliance with the Occupational Health and Safety Act (Act No. 85 of 1993) and associated regulations 				



8.3.7 TOPOGRAPHY (T)

This section assesses the potential impacts of the proposed prospecting activities on the topography of the project area, which is described as relatively hilly. The activities considered include site clearance and establishment, the creation of access roads, the drilling of target prospecting and widely spaced boreholes, undertaking closure and rehabilitation, and the removal of surface infrastructure.

Site clearance and establishment may involve minor earthworks such as levelling of areas for temporary facilities (e.g., offices, storage), which can result in localized alterations to the existing micro-topography. This could involve minor cut and fill activities. In hilly terrain, extensive or poorly managed site clearance, particularly on steeper slopes, can destabilize the ground, increasing the risk of soil erosion, landslides, and slumping. Removal of vegetation reduces the binding capacity of the soil.

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Impacts on topography	Construction	Low (-)	Low (-)	Low (-)
Impacts on topography	Rehabilitation and closure	Low (-)	Low (-)	Low (-)
Potential cumulative/confounding effects	Cumulative impacts on topography are expected to be of low significance.			
Mitigation Measures				
<ul style="list-style-type: none"> Follow required mitigation as proposed in Section 8.3.2. 				

8.3.8 VISUAL/ LANDSCAPE (V)

This section assesses the potential impacts of the proposed prospecting activities on the visual aesthetic and landscape of the project area, which is described as mostly natural. The activities considered include site clearance and establishment, the presence of chemical toilets, the creation of access roads, waste management practices, the drilling of target prospecting and widely spaced boreholes, the storage of vehicles, equipment, and machinery, undertaking closure and rehabilitation, monitoring of rehabilitation efforts, the removal of surface infrastructure, and the removal of waste.

The removal of natural vegetation for site establishment will create visible scars on the landscape, contrasting with the surrounding natural environment. The extent and duration of this impact will depend on the size of the cleared area and the rate of natural or assisted revegetation. The establishment of temporary infrastructure, such as offices, storage sheds, and parking areas, will introduce artificial elements into the natural landscape, potentially detracting from its aesthetic value. The visual impact will be influenced by the size, design, and materials used for these structures. Dust generated during site clearance activities can temporarily reduce visual clarity and coat vegetation, further detracting from the natural appearance of the area.

Drilling rigs are large, industrial structures that can be visually prominent in a natural landscape. Their presence will be temporary but can still impact the visual aesthetic during the drilling phase. Disturbance of Vegetation at Drill Sites: Clearing of vegetation for drill pads will create localized visual scars. Presence of Equipment and Supplies: The presence of support equipment, vehicles, and stored supplies at drill sites can contribute to visual clutter. The storage of vehicles, equipment, and machinery in open areas can be visually intrusive, particularly in a natural landscape. The size, number, and arrangement of these items can create a cluttered and industrial appearance. Successful closure and rehabilitation are crucial for restoring the visual aesthetics of the disturbed areas.



Inadequate rehabilitation can result in persistent visual scars, altered topography that doesn't blend with the surroundings, and the dominance of non-native vegetation. Failure to properly re-contour and revegetate disturbed areas can lead to long-term negative impacts on the visual quality of the landscape.

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Visual Impacts	Construction Operations	Medium - Low (-)	Low (-)	Low (-)
Potential cumulative/ confounding effects	Cumulative visual impacts are expected to be low due to the temporary nature of the project.			
Mitigation Measures				
<ul style="list-style-type: none"> • Prospecting site footprints should be kept as small as practical. • Good housekeeping practices, including waste management. • Rehabilitation of any disturbed areas due to prospecting. 				

8.3.9 TERRESTRIAL (FLORA (FL), FAUNA (FA) AND ECOSYSTEM/HABITATS (EH))

The construction phase of the proposed borehole / well drilling project is anticipated to exert the most significant direct impacts on terrestrial biodiversity. Key potential impacts considered include:

Site clearing activities will result in the destruction and further loss of vegetation communities, potentially leading to habitat fragmentation, loss of SCCs, increased susceptibility to alien invasive species establishment, and soil erosion. Contributing activities include off-site vehicle movement, physical vegetation removal, soil dust precipitation, waste dumping, hydrocarbon storage and leakages, and accidental fires. Cumulative impacts include the loss of habitat for indigenous species.

Introduction and Spread of Alien Invasive Species: Vegetation removal and soil disturbance during construction activities, vehicle seed dispersal, unsanitary conditions, and the presence of eating areas can facilitate the introduction and spread of alien invasive plant and pest species. This will lead to habitat and water loss for native flora and fauna, potentially spread diseases, and alter the native fauna assemblage. Cumulative impacts include habitat loss for indigenous species and the potential spread of diseases to surrounding areas.

Stormwater runoff and wind erosion, exacerbated by off-site vehicle and pedestrian movement, vegetation clearing, water runoff from bare soil, and road compaction, will lead to vegetation loss, topsoil removal/relocation, and habitat destruction. Cumulative impacts include topsoil removal and loss of habitat for indigenous species, potentially resulting in the irreplaceable loss of a Critical Biodiversity Area (CBA).

Potential leaks, discharges, and pollutant leaching from machinery pose a risk of hydrocarbon contamination to the surrounding environment. This can result in the loss of usable water resources, mortality of fauna and flora, and topsoil contamination, hindering future rehabilitation efforts.

Habitat loss due to vegetation clearing, direct mortalities from road collisions and poaching, and disturbances from noise, light, dust, and vibration associated with construction activities will displace the faunal community. This can lead to fauna moving out of the area, requiring adaptation, or resulting in direct or indirect mortality. Cumulative impacts include the loss of habitat for indigenous species. A summary impacts and significance is provided in Table 37. Table 37



Table 37: Summary of potential impacts to biodiversity associated with the proposed activity.

Main Impact	Project Activities	Secondary Impacts Anticipated
<p>Loss of indigenous habitats</p>	<ul style="list-style-type: none"> • Direct loss because of construction of the proposed development. • Secondary impacts associated with noise, dust and influx of AIPs into these areas. • Prevention of fires or incorrect fire regimes. • Improper solid waste disposal • Dust precipitation. • Contamination and pollution of water resources in the area. 	<ul style="list-style-type: none"> • Habitat fragmentation. • Loss of ecosystem services. • Emigration of fauna species, potentially including SCC. • Increased potential for soil erosion. • Habitat fragmentation. • Increased potential for establishment of alien invasive vegetation.
<p>Encroachment of AIP species in disturbed areas.</p>	<ul style="list-style-type: none"> • Vegetation removal. • Soil disturbance. • Vehicles potentially spreading seed. • Unsanitary conditions surrounding infrastructure promoting the establishment of alien and/or invasive rodents. 	<ul style="list-style-type: none"> • Habitat loss for native flora & fauna (including potential SCC). • Alteration of fauna assemblages due to habitat modification. • Reduced forage quality of grazing habitat. • Spreading of potentially dangerous diseases.
<p>Direct mortality of fauna species.</p>	<ul style="list-style-type: none"> • Clearing of vegetation. • Roadkill due to vehicle collision. • Preparation of soil with heavy machinery • Soil excavations and soil transportation. • Intentional killing of fauna for food (hunting) or persecution (especially regarding herpetofauna). • Pollution of water resources due to spilling of hazardous chemicals 	<ul style="list-style-type: none"> • Loss of ecosystem services. • Explosion of rodent populations and associated disease risk.



Main Impact	Project Activities	Secondary Impacts Anticipated
	from heavy machinery during construction.	
Emigration of fauna	<ul style="list-style-type: none"> Disturbance from construction activities. Loss of habitat and degradation of surrounding habitats. 	<ul style="list-style-type: none"> Reduced population of protected species, and potentially SCC Loss of ecosystem services.
Reduced dispersal/migration of fauna	<ul style="list-style-type: none"> Removal of vegetation 	<ul style="list-style-type: none"> Loss of ecosystem services Reduced plant seed dispersal. Disruption of migratory routes
Disruption/alteration of ecological life cycles (breeding, migration, feeding) due to noise, light and dust	<ul style="list-style-type: none"> Operation of machinery (generators, crushers, vehicles). Vehicles operating at night. Large, intense fluorescent and mercury vapor lighting. Drilling 	<ul style="list-style-type: none"> Loss of ecosystem services.
Loss of SCCs and/or protected species	<ul style="list-style-type: none"> All unregulated/unsupervised activities outdoors. Poaching and trapping Staff and others interacting directly with fauna (potentially dangerous), or flora. 	<ul style="list-style-type: none"> Loss of SCC. Harm to people (dangerous fauna).

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Continued degradation, loss and fragmentation of the vegetative community, and SCC or protected species	Construction Operation	High (-)	Medium to Low (-)	Medium to Low (-)



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Continued spread of alien invasive plant species and erosion due to disturbed soils	Construction Operation	Medium to High (-)	Medium to Low (-)	Medium to Low (-)
Continued displacement and fragmentation of the faunal community (including threatened species) due to ongoing anthropogenic disturbances (noise, dust and vibrations) and habitat degradation/loss (litter, road mortalities and/or poaching)	Construction Operation	High (-)	Medium to Low (-)	Medium to High (-)
Continued soil erosion (especially due to stormwater runoff)	Construction Operation	Medium to High (-)	Low (-)	Medium to Low (-)
Continued potential leaks, discharges (including prospecting sludge), and pollution from machinery and storage leaching into the surrounding environment	Construction Operation	High (-)	Low (-)	Medium to Low (-)
Destruction of vegetation, encroachment and displacement of the natural vegetation community and direct mortality of fauna	Decommissioning	Medium to High (-)	Low (-)	Low (-)
Potential cumulative/confounding effects	<p>Cumulative impacts are assessed in context of the extent of the proposed PAOI; other developments in the area; and general habitat loss and transformation resulting from other activities in the area. Due to the presence of intact ecosystems, including sensitive ecosystems (i.e. Rocky Arid Shrubland Grassland Mosaic, Quartz Outcrops, Rocky Outcrops and Water Resources), CBA 1 and CBA 2 areas, the area is sensitive. Impacts from prospecting are, in general, high, but localised.</p> <p>The impacts of projects are often assessed by comparing the post-project situation to a pre-existing baseline. Where projects can be considered in isolation this</p>			



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
		<p>provides a good method of assessing a project's impact. However, in areas where baselines have already been affected, or where future development will continue to add to the impacts in an area or region, it is appropriate to consider the cumulative effects of development. This is similar to the concept of shifting baselines, which describes how the environmental baseline at a point in time may represent a significant change from the original state of the system. This section describes the potential impacts of the project that are cumulative for fauna and flora. Localised cumulative impacts include the cumulative effects from operations that are close enough to potentially cause additive effects on the environment or sensitive receivers, dust deposition, noise and vibration, disruption of corridors or habitat, groundwater drawdown, groundwater and surface water quality, and transport.</p> <p>A total area of 30 km surrounding the PAOI was used to assess the total habitat loss in the area and subsequently the cumulative impact. To determine the intact remnant habitat the RLE (2022) remnant spatial data was utilised. The total habitat lost in the area, excluding the proposed project, is 0.16 %. If the proposed project is concluded (and it is assumed that the entire PAOI will be impacted), the percentage of habitat lost increases to 6.92%.</p> <p>Only about 0.16% of natural habitat has been lost to date. The proposed development is expected to cause an additional 6.76% loss, bringing the total cumulative loss to 6.92% if the current project proceeds. This estimate assumes that the entire PAOI will be affected or developed and is based on worst-case scenario. This is not expected during the prospecting phase of this project and the contribution is therefore likely to decline once the precise project footprint has been confirmed. The cumulative impact of the proposed development is therefore assessed as moderate. The area has remained relatively undisturbed, meaning that most of the cumulative impact is associated with the proposed project itself. It is therefore essential that the broader region be subject to careful spatial planning and management, and that existing major infrastructure developments be monitored closely over the long term.</p>		
<p>Unplanned events</p>		<p>Unplanned events may occur on any project and may have potential impacts which will need management. These include:</p> <ul style="list-style-type: none"> • Spills into the surrounding environment may cause contamination of habitat as well as water resources associated with a spillage. • Uncontrolled/unmanaged fire that spreads to the surrounding natural vegetation. 		
<p>Mitigation Measures:</p> <p>Mitigation for unplanned events:</p> <ul style="list-style-type: none"> • A spill response kit must always be available. The incident must be reported on and if necessary, a biodiversity specialist must investigate the extent of the impact and provide rehabilitation recommendations. • An appropriate/adequate fire management plan needs to be implemented. 				



Construction/Operation:

- A site walkdown and micro-siting must be performed, to locate and mark any flora SCC and protected species which may occur on site.
- Vegetation clearing commences only after the necessary permits for SCCs or protected plants have been obtained, if and where required. Any individual of the protected plants that were observed needs a relocation or destruction permit for any individual to be removed or destroyed due to the development. High visibility flags must be placed near any protected plants to avoid any damage or destruction of the species. If left undisturbed the sensitivity and importance of these species needs to be part of the environmental awareness program.
- Quartz Outcrops and Rocky Outcrops (High SEI) habitats, together with a 15 m buffer area, must be declared no-go areas. Existing roads transversing these areas may be used. No new roads to be developed within these areas.
- High SEI areas must be avoided (avoidance and minimisation mitigation).
- Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. Clearing of vegetation should be avoided where possible, otherwise minimized. All activities must be restricted within the very low-medium sensitivity areas. No further loss of high sensitivity areas and associated buffers should be permitted.
- It is recommended that areas to be developed be specifically demarcated so that during the construction phase, only the demarcated areas be impacted upon. Minimise vegetation clearing to the minimum required. Areas should be cleared and disturbed on a needs basis only, as opposed to clearing and disturbing a number of sites simultaneously.
- Access to the PAOI must be strictly controlled. No flora theft may be tolerated. Routine monitoring and checks of personnel must be performed for the duration of the project.
- All construction/operational and access must make use of the existing roads as much as possible, the creation of new roads should be avoided as much as possible.
- Make use of existing roads for crossing river, tributaries and drainage areas. Crossing of these features should only be considered in when dry.
- No vehicle crossing allowed through depression wetlands.
- All laydown, chemical toilets etc. should be restricted to Very Low SEI areas. Laydown areas are only allowed within Medium SEI areas if all Very Low SEI areas have been considered and exhausted. No laydown areas are allowed within High SEI areas.
- Any materials may not be stored for extended periods of time and must be removed from the PAOI once the construction/closure phase has been concluded. No permanent structures should be permitted sites. No storage of vehicles or equipment will be allowed outside of the designated project areas.
- A Rehabilitation Plan must be written for areas cleared of vegetation or disturbed during construction and operation and ensured that it is adhered to. An acceptable plan must be in place prior to the commencement of construction activities. The rehabilitated areas must be revegetated with indigenous vegetation. This will prevent erosion and reduce the likelihood of encroachment by alien invasive plant species. Bringing plant species into/out of the PAOI should only be allowed for rehabilitation purposes.
- Rehabilitation of the disturbed areas existing in the PAOI must be made a priority. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are endemic to this vegetation type



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
				<ul style="list-style-type: none"> • Progressive rehabilitation will enable topsoil to be returned more rapidly, thus ensuring more recruitment from the existing seedbank. Any woody material removed can be shredded and used in conjunction with the topsoil to augment soil moisture and prevent further erosion. • Environmental Officer (EO) to provide supervision and oversight of vegetation clearing activities. • A fire action plan needs to be complied and implemented to restrict the impact unplanned fires might have on the surrounding areas. • It should be made an offence for any staff to /take bring any plant species into/out of any portion of the project area without permission. The only exception to this involves the removal of exotic or invasive species from the site, and the introduction of indigenous species for rehabilitation of the site post development. Introductions and removals, however, must be closely monitored to ensure that the correct species are being removed/reintroduced. • The areas to be developed must be specifically demarcated to prevent movement of staff or any individual into High SEI areas and the surrounding environments. Signs must be put up to enforce this. • An Alien Invasive Plant (AIP) Management Plan for the prospecting sites and access routes must be compiled and implemented during any on-site activities. The plan must identify areas for action (if any) and prescribe the necessary removal methods and frequencies to be applied. This plan must also include a monitoring plan. <ul style="list-style-type: none"> ○ Conduct regular checks for alien invasive plant (AIP) encroachment during the operational phase to prevent alien invasion issues due to disturbances. Monitoring should occur every three months for the first two years and every six months thereafter for the project's duration. ○ Remove or control all AIP species using the appropriate methods outlined in the AIP management plan. • Implement a stormwater management plan for all developable areas. • Implementation of a waste management plan. • Temporary storage of domestic waste shall be in covered waste skips. • Removal of domestic waste on a regular basis, no overspill is permitted • Create and implement a Solid Waste Management Plan. Prioritise waste management by ensuring all waste is collected, stored, and disposed of properly. It is recommended to remove waste from the site at least weekly. • It should be made an offence for any staff to /take bring any plant species into/out of any portion of the project area without permission. The only exception to this involves the removal of exotic or invasive species from the site, and the introduction of indigenous species for rehabilitation of the site post development. Introductions and removals, however, must be closely monitored to ensure that the correct species are being removed/reintroduced. • Clearly mark construction zones to prevent impact on surrounding areas, using physical barriers like safety tape and signs instead of painted lines.



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
				<ul style="list-style-type: none"> • Prior to vegetation clearing activities, the area to be cleared should be walked on foot by 1-2 individuals to create a disturbance in order for fauna to move off. Disturbance must occur as soon before vegetation clearing as possible and no unnecessary disturbance to the area is permitted • Any tortoises present should be removed from the affected areas before the start of site clearing/ construction and relocated to safe areas within the PAOI. • Should this project continue to mining – special consideration should be given to the habitat requirements for the NT Northern Tent Tortoise (<i>Psammobates tentorius verroxii</i>). • Any fauna threatened by the construction activities should be removed safely by an appropriately qualified environmental officer or removal specialist. • Should nests be found an avifauna specialist must be consulted on the appropriate actions to take. • Safely relocate any wildlife at risk from construction and operational activities with the help of a qualified environmental officer or specialist. • Limit construction vehicle speeds to 40 km/h to prevent accidents and install appropriate speed control measures and signage. • Driving on access roads at night should be restricted to maximum 20 km/h to reduce or prevent wildlife road mortalities which occur more frequently during this period. • Wildlife-permeable fencing with holes large enough for mongoose and other smaller mammals should be installed, the holes must not be placed in the fence where it is next to a major road as this will increase road killings in the area. • An approximately 15 m x 15 m temporary barrier shall be installed around the active work area for the duration of the relevant activities. The barrier must be restricted to the minimum footprint required and may not be expanded beyond what is necessary for safe and effective operations. • Minimise the time between clearing an area and starting development to prevent wildlife from returning to disturbed sites. • Conduct excavations progressively and cover any open holes overnight to prevent wildlife from falling in. Inspect these areas before backfilling. • Focus work on one area at a time as far as possible, to reduce the extent of on-site activities, allowing wildlife to relocate as the project progresses. This helps smaller animals find refuge in nearby undisturbed areas. • Implement noise and light mitigation measures for any nighttime construction activities to minimise disturbances to nocturnal species expected in the area. • Require all personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. • All personnel should undergo environmental induction with regards to avifauna and in particular awareness about not harming, collecting, or hunting terrestrial species, and owls, which are often persecuted out of superstition. Signs must be put up to enforce this. • All infrastructure must be removed after decommissioning, and the site must be rehabilitated.



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
				<ul style="list-style-type: none"> • Where possible, instead of clearing the entire area at once, work on specific sections as needed. This approach involves focusing on one area at a time and following a systematic process. By doing so, the amount and scope of on-site activities are minimised, which allows wildlife to gradually relocate as the project advances. This method provides smaller birds, mammals, and reptiles the opportunity to cope with the disturbance by staying in nearby undisturbed areas that are close to their natural habitats. • Design and limit outdoor lighting to reduce its impact on wildlife. Use fixtures with baffles, hoods, or louvres, directing light downward and away from sensitive areas like outcrops, rivers and wetlands. Avoid fluorescent and mercury vapor lights, opting for sodium vapor (yellow) lights whenever possible. • Utilise motion detection lighting where feasible to minimise unnecessary illumination. • Limit the use of vehicles at night to what is absolutely necessary, with speed limits of 20 km/h applied. • Keep noise levels low from dusk to dawn to avoid disturbing nocturnal animals as well as birds. • All cleared or disturbed areas must be stabilized within 14 days of exposure using mulch, geotextiles, or indigenous grass seeding to prevent soil loss. • Install temporary berms, silt fences, or sandbags downslope of disturbed areas to intercept and slow stormwater runoff. • Limit the extent of vegetation clearing to only those areas necessary for prospecting activities. • Construct stormwater diversion channels upslope of work areas to direct clean water away from disturbed soils. • Inspect and maintain all erosion control structures weekly and after rainfall events, repairing any damage immediately. • Stockpile topsoil separately and cover with tarpaulin or vegetation to prevent wind and water erosion. • Rehabilitate all disturbed areas with indigenous vegetation immediately after prospecting activities are completed. • All machinery must be inspected daily for oil, fuel, and hydraulic leaks; any leaks must be repaired before equipment is used on site. • Designate a bunded, impermeable area for refuelling, maintenance, and storage of hazardous materials, located at least 50 m from any watercourse or drainage line. • Provide spill kits at all work and storage areas, and ensure all staff are trained in their use. • All prospecting sludge and wastewater must be contained in lined sumps or tanks; no discharge to the environment is permitted. • Store all chemicals, fuels, and lubricants in clearly marked, sealed containers within a bunded area with 110% capacity of the largest container. • Remove all waste oils, used filters, and contaminated materials from site for disposal at a licensed hazardous waste facility.



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
				<ul style="list-style-type: none"> Conduct weekly inspections of storage and machinery areas for signs of leaks or spills and document findings and corrective actions.
				<p>Decommissioning Phase Mitigations</p> <ul style="list-style-type: none"> Develop post-prospecting environments in conjunction with regional development plans as well as the recreation of habitats where possible or structure altered landscapes to be compatible with regional habitats. Any fauna threatened by the activities should be removed safely by an appropriately qualified environmental officer or removal specialist. All hazardous materials, if any, should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner. Areas other than the footprint areas and existing surface infrastructure areas, should be declared as 'no-go' areas to vehicles (only). All essential staff – machinery must be limited to decommissioning areas (no need to go outside the authorised area). The rehabilitated areas must be revegetated with indigenous vegetation. Reduce the dust generated by vehicles and earth moving machinery, through wetting the soil surface (with "dirty water") and putting up signs to enforce speed limits to enforce reduced speeds. Implementation of a closure / rehabilitation plan from the onset of the operation of infrastructure. Rehabilitation must be conducted concurrently. Monitoring of rehabilitation implementation on an annual basis for 5 years post-closure. The plan and interventions must be amended accordingly. Any gullies or dongas must also be backfilled. The area must be shaped to a natural topography. Trees (or vegetation stands) removed must be replaced with species indigenous to the area. No grazing must be permitted within the rehabilitating area to allow for vegetation recovery. Alternatively, the area must remain fenced or otherwise barriered off for the duration of the rehabilitation period to prevent disturbance and allow recovery to take place. Continued implementation of an alien vegetation management plan. Continued implementation of an alien vegetation management plan. Rehabilitation in accordance with the Rehabilitation Plan for the development must be undertaken in areas disturbed during the decommissioning phase. Monitoring of the rehabilitated area must be undertaken at quarterly intervals for 3 years after the decommissioning phase All erosion problems observed to be created during any onsite activities by the holder, should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques. <p>Generic Mitigations</p> <ul style="list-style-type: none"> Demarcate work areas during the construction phase to avoid affecting outside areas. Use physical barriers e.g., safety tape, not painted lines, and use signage.



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
				<ul style="list-style-type: none"> • All activities must make use of existing roads and tracks as far as practically and feasibly possible. Existing roads must be used as far as possible. Any new roads must be authorised. • Do not clear areas of indigenous vegetation outside of the direct project footprint. • Minimise vegetation clearing to the minimum required. • Compile and implement a rehabilitation plan from the onset of the project. • Rehabilitate areas as soon as they are no longer impacted by construction. • The rehabilitated areas must be revegetated with indigenous vegetation. • Progressive rehabilitation will enable topsoil to be returned more rapidly, thus ensuring more recruitment from the existing seedbank. Surplus rehabilitation material can be applied to other others in need of stabilisation and vegetation cover. • Environmental Officer (EO) to provide supervision and oversight of vegetation clearing activities. • A fire management plan must be compiled and implemented to minimise the risk of veld fires around the project site, unless suitable internal fire management and prevention procedures already exist, in which case these may be utilised and implemented, provided that they are adequate for the nature and scale of the proposed activities. • Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and bare (unvegetated) areas. <ul style="list-style-type: none"> ○ Reduce the dust generated by operational vehicles and earth moving machinery, through wetting the soil surface and putting up signs to enforce speed limits to enforce reduced speeds. ○ No non-environmentally friendly suppressants may be used as this could result in pollution of water sources • Implementation of a waste management plan, this plan must also prescribe a monitoring plan and be updated as/when new data is collated. Waste management must be a priority and all waste must be collected, stored and disposed of adequately. It is recommended that all waste be removed from site on a weekly basis (as a minimum) to prevent rodents and pests entering the site. <ul style="list-style-type: none"> ○ Refuse bins will be emptied and secured. ○ Temporary storage of domestic waste shall be in covered waste skips. ○ Maximum domestic waste storage period will be 7 days. • A pest control plan must be put in place and implemented; it is imperative that poisons not be used. • It should be made an offence for any staff to /take bring any plant species into/out of any portion of the project area without permission. The only exception to this involves the removal of exotic or invasive species from the site, and the introduction of indigenous species for rehabilitation of the site post development. Introductions and removals, however, must be closely monitored to ensure that the correct species are being removed/reintroduced. • Develop and strictly adhere to a Rehabilitation Plan for the development area. • Cement must be mixed in a designated area on a liner away from water sources and buffers and that successful rehabilitation of the construction areas can take place.



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
		<ul style="list-style-type: none"> Leaking equipment and vehicles must be repaired immediately or be removed from project area to facilitate repair. A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. No servicing of equipment on site unless necessary. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers. Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them from leaking and entering the environment. Construction activities and vehicles could cause spillages of lubricants, fuels and waste material negatively affecting the functioning of the ecosystem. All vehicles and equipment must be maintained, and all re-fuelling and servicing of equipment is to take place in demarcated areas outside of the PAOI. 		

8.3.10 SOCIAL (S)

Site clearance and establishment may temporarily disrupt existing land uses, such as grazing or access to natural resources, potentially impacting livelihoods. Lack of clear agreements or inadequate communication with landowners regarding access and land use during this phase can lead to conflict. This phase can create temporary employment opportunities for local labourers in tasks such as vegetation clearing, fencing, and basic construction. The scale of these opportunities will depend on the size and nature of the project. An influx of workers from outside the area can potentially strain local resources and infrastructure (e.g., housing, water supply) and may lead to social friction if not managed appropriately. The table below presents a consolidated summary of the identified impacts, detailing their corresponding significance scores both prior to and following the implementation of recommended mitigation measures. Furthermore, the table outlines the specific mitigation strategies proposed to address each relevant impact as discussed in the preceding sections of this report.

The presence of project personnel and vehicles can raise concerns among private landowners regarding increased risk of trespassing, unauthorised hunting and collection of wood, theft, and damage to property. Increased traffic and the presence of unfamiliar individuals can disrupt the privacy and traditional way of life of landowners. Project vehicles and activities may inadvertently cause damage to fences, gates, roads, or other infrastructure on private land. Inadequate consultation or unresolved concerns regarding drill sites on private land can also lead to social conflict.

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Social impacts	Construction			
	Operation	Low to Medium (-)	Low (-)	Low (-)
	Decommissioning			



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Potential cumulative/ confounding effects	None identified			
Mitigation Measures				
<ul style="list-style-type: none"> • BMM must continue to implement their grievance mechanism and ensure that it is community-friendly. BMM must continue to address and keep record of community grievances. BMM must keep a grievance register. It is important to have documented evidence of community/applicant interactions. This will assist BMM to track the issues, and the community to see what actions the applicant has taken to address these. • The BMM Project Manager should establish relationships with the landowners to keep them informed regarding the project. Any meetings should be recorded, and records must be included in the communication register. • No hunting or collection of wood to be allowed. This will be included in the environmental awareness training. 				

8.3.11 CULTURAL HERITAGE (C)

As described in previous sections, finds include the identified eight (8)(apart from farm dams or reservoirs) structures, buildings, or complexes as well as two grave sites. It is here proposed that buffers be placed around each of these features, with proposed activities not taking place within 30 meters of the buildings or structures, and 50 meters of the grave sites. It is here argued that the features should be avoided, and in doing so, there will be little to no impact on the features. The impact assessment methodology has therefore been applied considering scenarios where the proposed activities would impact identified features. Although farm dams and associated infrastructure was identified, these features were not graded and not considered given that many of these features may not hold heritage value. The developer is reminded that these features may still be protected by the NHRA and verification with an Archaeologist is suggested prior to disturbing these features. This can be accomplished through a pre-drilling survey as detailed below.

As a mitigation measure considering that final borehole locations will be determined at a later stage in the development, is the proposal of the conducting of pre-drilling surveys. Undertaken by an Archaeologist once a drilling location has been identified, a short report can subsequently be compiled to supplement the desktop findings of this assessment identifying any heritage features which may be impacted on by proposed activities.

While the features identified represent markers of heritage significance (in particular, the graves), the occurrence of below-ground heritage finds may be possible. For this reason, as a mitigation measure proposed, a Heritage Finds or Chance Find Procedure for addressing heritage finds must be adopted as part of construction processes. Should finds of an alarming significance, for example, a grave or high density of small finds be discovered during construction, this procedure will inform the next steps taken to ensure the documentation of these finds, and further action to be taken should a heritage professional deem necessary.

A key impact identified was that on sense of place. The proposed activities, although short-term, will have an impact on the overall sense of place of the area, altering its cultural significance. In this regard, while heritage features may not be affected by the proposed activities, the activities may alter the landscape which may, in itself, hold intangible heritage value. The implementation of buffers and avoidance of identified features during construction is presented as a mitigation measure to decrease the impact of activities on the overall sense of place of the site.

Altogether, post-mitigation of the identified heritage impacts is rated a Medium to Low Negative, given the potential for a heritage procedure to allow for the documentation, recording, and further assessment of undiscovered finds and sites. A heritage procedure can present opportunity to limit the impact of development



on heritage finds to construction activities, with the potential to document and further assess finds should they be related to broader sites. This ultimately presents opportunity to reverse the adverse effects of development of heritage finds, given that their value can be evaluated through documentation. This also presents opportunity to better understand the heritage significance of the area to be developed.

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Heritage Structures: Destruction or disturbance of structures older than 60 years	Construction	Medium - Low (-)	Low (-)	Low (-)
Graves: Destruction or disturbance of identified graves (Lovedale and Bossiekom)	Construction	Medium - Low (-)	Low (-)	Low (-)
Sense of place: Disturbance of overall sense of place	Construction	Medium - High (-)	Medium - Low (-)	Medium - Low (-)
Unidentified below-ground heritage features: Destruction or disturbance of below-ground heritage features.	Construction	Medium - High (-)	Medium - Low (-)	Medium - Low (-)
Potential cumulative/confounding effects	Cumulative impacts on heritage are rated as being low – moderate in significance.			
Mitigation Measures <ul style="list-style-type: none"> • A 30m buffer around all confirmed heritage structures must be implemented, within which no proposed activities are to take place. • A 50m buffer around all confirmed graves must be implemented within which no proposed activities are to take place. • A pre-drilling survey undertaken by an Archaeologist is proposed once borehole locations are determined. A supplementary report is to be prepared highlighting any additional impacts on heritage features identified. • Should finds of an alarming significance, for example, a grave or high density of small finds be discovered during construction, the ECO must be informed of the discovery. SAHRA must likewise be contacted, and a qualified Archaeologist must be consulted to provide advice on how to proceed. 				



Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
				<ul style="list-style-type: none"> A Chance Find Procedure is advised to be followed should additional heritage finds or sites be encountered.

8.3.12 ECONOMIC (E)

The prospecting phase itself will likely create temporary employment opportunities for geologists, surveyors, equipment operators, labourers, and administrative staff. Spending by the prospecting company and its employees on local goods and services (accommodation, food, fuel, supplies) could provide a short-term boost to the local economy, particularly benefiting the trade sector. If the prospecting efforts are successful and lead to the establishment of an alluvial diamond mine, this could result in significant long-term job creation in mining, processing, and related support services. This could diversify the local economy beyond its current reliance on agriculture and community services. The project could introduce new skills and technologies to the local workforce through training programs and on-the-job experience.

Impact	Phase	Pre-mitigation Impact	Post-mitigation Impact	Final Significance
Job Creation	Construction	Low (+)	Low (+)	Low (+)
Potential cumulative/ confounding effects	Cumulative economic and social impacts associated with the prospecting are expected to be of low significance at this stage. During production this could increase dramatically, however that will be the subject of a separate application.			
Mitigation Measures				
<ul style="list-style-type: none"> Local workforce to be utilised as far as possible. 				



9 CONCLUSIONS AND RECOMMENDATIONS

The BA process identified potential issues and impacts associated with the proposed project. The BA addresses those identified potential environmental impacts and benefits (direct, indirect and cumulative impacts) associated with applicable phases and activities of the project and recommends appropriate mitigation measures for potentially significant environmental impacts. The BA report provides sufficient information regarding the potential impacts and the acceptability of these impacts in order for the Competent Authority to make an informed decision regarding the proposed project. The release of a BA Report for public review and comment provides stakeholders with an opportunity to verify that the issues they have raised throughout the process to date has been captured and adequately considered. All issues raised throughout the public participation process have been captured and responded to as far as possible.

The BA report aims to achieve the following:

- Provide an overall assessment of the socio-economic and biophysical environments affected by the proposed project.
- Assess potentially significant impacts (direct, indirect and cumulative, and for unplanned events, where required) associated with the proposed project.
- Identify and recommend appropriate mitigation measures for potentially significant environmental impacts; and
- Undertake a fully inclusive public involvement process to ensure that I&APs are afforded the opportunity to participate, and that their issues and concerns are recorded.

9.1 CONCLUSIONS FROM SPECIALIST STUDIES

The conclusions and recommendations of this BA are the result of the assessment of identified impacts by specialists where applicable, and the parallel process of public participation. The main conclusions from each of the specialist studies are presented below.

9.1.1 TERRESTRIAL BIODIVERSITY

No fatal flaws were identified in relation to the project. With the proposed mitigation measures in place, the overall residual impact is anticipated to range from low to medium-high. Based on the information presented above, the specialists are of the opinion that the proposed project is acceptable only on condition that all mitigation measures contained in this report, as well as those outlined in the relevant specialist studies, are fully implemented and that the recommendations set out below are met.

The Competent Authority should take into account all mitigation measures included in this report, together with those contained in any supporting specialist reports, when considering the application.

There are areas within the PAOI that possess a High SEI. This denotes that avoidance mitigation wherever possible must be implemented. This includes changes to project infrastructure design and activity to limit the amount of habitat impacted. Project planning according to mitigation may provide favourable avoidance mitigation.

9.1.2 AQUATICS AND WETLANDS

The freshwater assessment of the Black Mountain Mining Sandgat Prospecting Right confirmed, through both desktop analysis and field verification, that the project area is of high aquatic ecological sensitivity. The desktop review, including the National Web-Based Environmental Screening Tool, classified the area as having Very High aquatic biodiversity sensitivity, and identified important freshwater features such as the Kaboep River, Steenkampsvlei se Holte River and tributary, Soutputs se Laagte River and tributary, in-stream dams, drainage areas, and temporary depression wetland. Desktop findings further indicated that wetlands within the area are considered 'Critically Endangered' while all the NFEPA Rivers are considered 'Endangered'. Field observations supported these findings and confirmed that the freshwater systems are 'Largely Natural' in condition.



Furthermore, in some of the sampled depression wetlands together with the in-stream dams, vernal biota was observed, lending evidence to the high sensitivity.

In the specialist's opinion, the proposed prospecting activities may be considered acceptable from a freshwater perspective, provided that all recommended mitigation and avoidance measures are fully implemented. The survey confirmed that the aquatic environment is sensitive, but the anticipated impacts are likely to remain low if the project footprint avoids watercourses and wetlands, field activities are tightly managed, and disturbed areas are rehabilitated without delay. Ongoing oversight and adherence to the recommended management measures will be essential to protect the integrity of the freshwater ecosystems within the project area.

9.1.3 SOILS

The land capability sensitivity (DAFF, 2017) indicated that the proposed project area falls predominately within the "Very low to Low" land capability sensitivity. The verified baseline findings concur with all areas that were demarcated with a "Very low to Low" and "Low Moderate" land capability sensitivity which were confirmed. The prospecting activities will result in minimal losses to the identified soil resources and activities can occur.

It is the specialist's opinion that the proposed project and the associated infrastructure will have an overall low residual impact on the agricultural production ability of the land. The proposed project and associated infrastructure may be favourably considered for development.

The proposed development area will have an overall low residual impact on the soil capability and agricultural production capability of the area. The proposed development can be favourably considered for authorisation. The following serves to substantiate this statement:

- The site verified land capability of the proposed project area is low;
- The agricultural potential of the area ranges is low;
- No active crop farming was only identified within the 50 m buffer of the project area; and
- The overall agricultural sensitivity for the project area is categorised as low sensitivity.

9.1.4 GROUNDWATER

No fatal flaws or showstoppers has been identified at the Desktop in terms of the Hydrogeological conditions at Sandgat project area.

It is recommended that proper site preparation is applied during the drilling phase of the project, this is done by managing drilling fluids and adhering to environmental regulations. Mine prospecting is strictly regulated under the Mineral and Petroleum Resources Development Act (MPRDA) and the National Environmental Management Act (NEMA) in South Africa.

Should any leaks/ spillages take place, immediate rehabilitation of the affected area/s should be considered in order to not further contaminate the groundwater/ soils.

Should the newly established boreholes be used for agricultural or industrial water supply after prospecting, then the water quality and groundwater levels should be monitored once before handover by the prospecting right and environmental authorisation holder to establish baseline conditions and if there are any pollution caused by prospecting that needs to be corrected. Thereafter, the responsibility of the user of the water supply will be to monitor groundwater at least quarterly, and any changes should be addressed. The user should be cognisant of any legislative requirements in terms of abstraction of water. The identified boreholes should be pump tested and sampled to determine the current groundwater quality and borehole yields.

Should the boreholes not be utilised for groundwater supply purposes, it is recommended that they are appropriately closed and rehabilitated to restore safety and prevent any environmental degradation from occurring. If rehabilitation is not done, there is a risk of groundwater contamination or collapse.



9.1.5 HERITAGE

Through the methodology adopted as part of this assessment, heritage features were identified which can be avoided during the implementation of the proposed activities. Apart from unassessed chance finds, little to no impact on heritage features can be expected should the proposed mitigation measures be followed. Therefore, from an Archaeological perspective, the development will not have significant foreseeable impacts save for its impact on the overall sense of place of the site.

9.2 SENSITIVITY MAP

Environmental sensitivity mapping provides a strategic overview of the environmental, cultural and social assets in a region. The sensitivity mapping technique integrates numerous datasets (base maps and shapefiles) into a single consolidated layer making use of Geographic Information System (GIS) software and analysis tools. Environmental sensitivity mapping is a rapid and objective method applied to identify areas which may be particularly sensitive to development based on environmental, cultural and social sensitivity weightings – which is refined by specialists' input within each respective specialist field based on aerial or ground-surveys. Therefore, the sensitivity mapping exercise assists in the identification of sensitive areas within and surrounding the proposed application area.

Figure 29 superimposes the proposed activity and its associated structures and infrastructure on the combined environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers.

High SEI and Quartz Outcrops and Rocky Outcrops areas, together with a 15 m buffer area, must be declared no-go areas, in addition to the other no-go areas identified. High SEI areas should be avoided.

A conservative buffer zone of 30 m for all the NFEPA rivers, in-stream dams and temporary depression wetlands, and a 22 m conservative buffer for the drainage areas were assigned according to the buffer guidelines, the maximum required buffer should be applied to a system (Macfarlane, et al., 2014). Note that drainage areas and their 22 m conservation buffer are **not** no-go areas. These post-mitigation buffers considered the projects description (to avoid all sensitive areas), localised and minimal impacts of prospecting, ephemeral nature these systems. These buffer areas serve as No-go zones for any *unauthorised activities*. The site development plan should therefore be created accordingly. Ensuring buffers are intact increases the resilience of a watercourse to future disturbances. It should be noted that these conservation buffers only apply to the prospecting activities, not Mining activities.

Buffers should be placed around each of the identified heritage features, with proposed activities not taking place within 30 meters of the buildings or structures, and 50 meters of the grave sites.

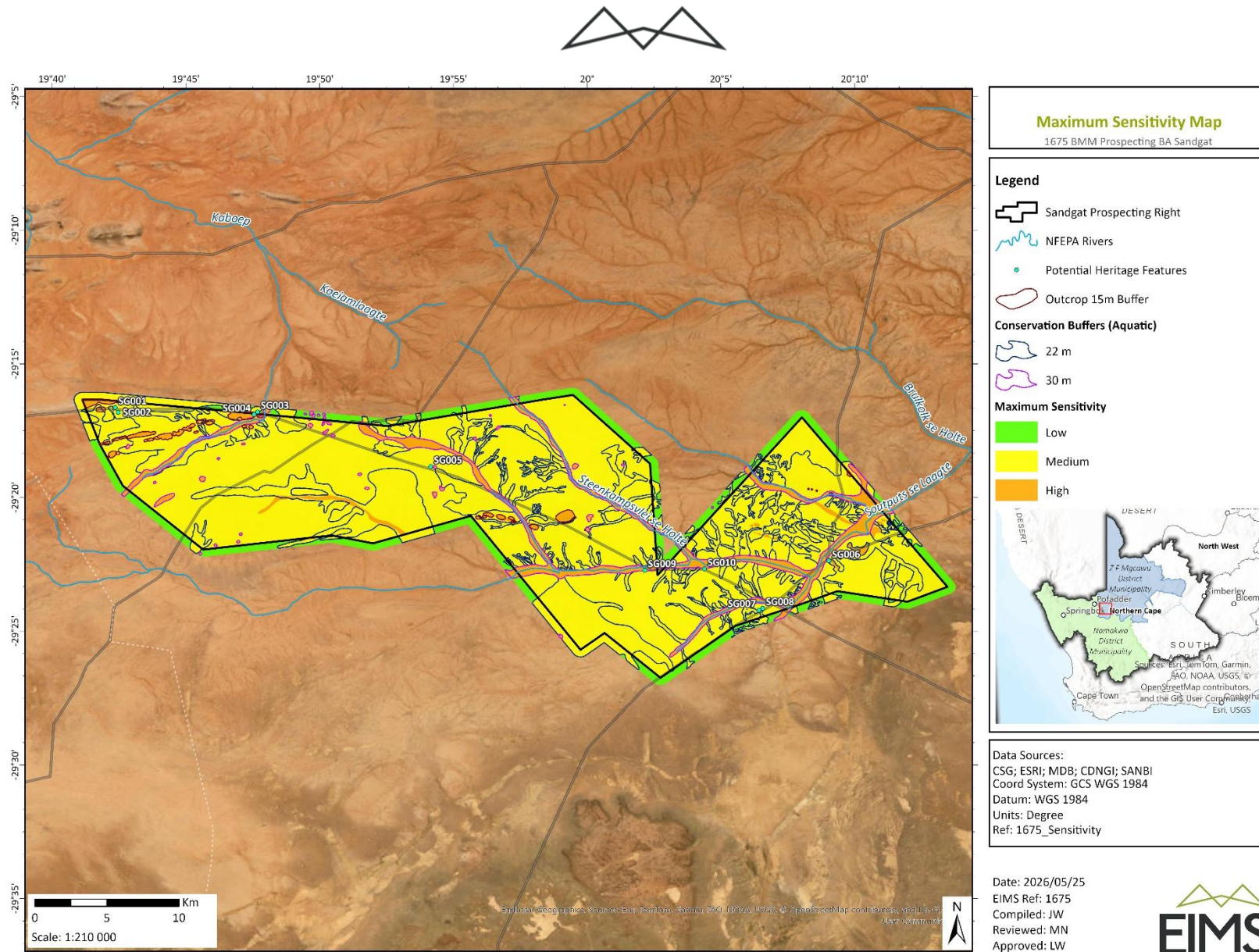


Figure 29: Composite sensitivity map.



9.3 ASSESSMENT OF ALTERNATIVES

The preferred alternatives identified in Section 5.1 are discussed and comparatively assessed in this section. Each discrete alternative identified is described in respect of the potential advantages and disadvantages with a final recommendation.

Table 38 presents the identified feasible alternatives considered. Layout option 2 is considered the preferred and recommended alternative.

Table 38: Comparative assessment of alternatives.

#	Category of Alternative	Alternative	Advantages	Disadvantages	Assessment
AL1	Layout option 1	Prospecting over entire area	Allows applicant to prospect anywhere over the identified properties.	Significant, irreversible terrestrial impacts.	Due to the limited extent of the no-go areas the exclusion of the areas in AL2 should not affect the overall goal of the prospecting operations. The environmental impact of prospecting in these no-go areas is considered significant and therefore <u>Layout option 2 (AL2) is preferred.</u>
AL2	Layout option 2	Prospecting avoids identified high sensitivity no-go areas.	Reduction in terrestrial and aquatic biodiversity impacts to acceptable levels.	Reduced area for prospecting.	
No-Go	No-go	Do not proceed with development	<ul style="list-style-type: none"> Approval of the application would enable the applicant to determine the extent and quality of available mineral resources, while simultaneously generating employment opportunities for local residents The applicant would be unable to diversify the property's income streams, limiting potential revenue 	<ul style="list-style-type: none"> Forfeiture of the potential to identify and delineate viable mineral resources within the project area. Prevents the discovery and subsequent development of mineral resources that could contribute 	<p>Under the "no-go" alternative, the current land use, characterized by a combination of agricultural activities and natural areas with future tourism development plans, would persist. While maintaining the status quo, this scenario would forego the potential economic stimulus and diversification associated with mineral resource development.</p> <p>In summary, the "no-go" alternative would result in the loss of significant</p>



#	Category of Alternative	Alternative	Advantages	Disadvantages	Assessment
			generation and economic development	to the local and provincial socio-economic structures	economic opportunities, including resource identification, job creation, and income diversification. It would also preclude potential contributions to local and provincial economic development, while maintaining the existing land use patterns. <u>The no-go alternative is not preferred.</u>



9.4 ENVIRONMENTAL IMPACT STATEMENT

The findings of the assessment and associated specialist studies conclude that there are no environmental fatal flaws that should prevent the proposed project from proceeding, provided that the recommended mitigation and management measures are implemented. Based on the nature and extent of the proposed project, the local level of disturbance predicted as a result of the reconnaissance activities, the findings of the specialist studies, and the understanding of the significance level of potential environmental impacts, it is the opinion of the BA project team and the EAP that the significance levels of the majority of identified negative impacts can generally be reduced to an acceptable level by implementing the recommended mitigation measures and the project should be authorized.

The following impacts were determined to have a potentially moderate - high negative final significance after mitigation:

- Continued displacement and fragmentation of the faunal community (including threatened species) due to ongoing anthropogenic disturbances (noise, dust and vibrations) and habitat degradation/loss (litter, road mortalities and/or poaching).

All other identified impacts are expected to have low or moderate to low significance after mitigation is applied.

9.5 RECOMMENDATIONS FOR INCLUSION IN ENVIRONMENTAL AUTHORISATION

This section contains recommendations from the EAP and various specialist's for inclusion in the EA. The following recommendations should be included:

- A 30m buffer around all confirmed heritage structures and a 50m buffer around all confirmed graves must be implemented, within which no proposed activities are to take place.
- A pre-drilling survey undertaken by an Archaeologist is proposed once borehole locations are determined. A supplementary report is to be prepared highlighting any additional impacts on heritage features identified.
- Should finds of high significance, for example, a grave or high density of small finds be discovered during construction, the ECO must be informed of the discovery. SAHRA must likewise be contacted, and a qualified Archaeologist must be consulted to provide advice on how to proceed.
- A Chance Find Procedure is advised to be followed should additional heritage and fossil (palaeontological) finds or sites be encountered.
- No development (no-go) within High SEI habitats, along with the prescribed 15 m buffer for the Quartz and Rocky Outcrop habitat types;
- This assessment does not consider proposed access roads, the locations of which were not provided prior to the field survey. Therefore, a separate survey must be conducted for the authorisation of any new access road developments for the project;
- A site walkdown must be undertaken during the appropriate flowering season and after sufficient rainfall to stimulate flowering. This assessment must be conducted once the proposed development footprint and borehole locations have been finalised in a detailed layout. The walkdown has two primary objectives: firstly, to inform the final layout through micro-siting; and secondly, to identify and map any SCC or protected plant species within the development footprint. This walkdown must be completed prior to the commencement of any development activities. All floral SCC and protected species must, as far as possible, be avoided; where avoidance is not feasible, the necessary permits must be obtained to undertake a plant search-and-rescue operation. In addition, a nest walkdown must be carried out before construction begins, specifically to identify any active nests within the affected area.



- The Water Resource habitats (except drainage areas and its 22 m conservation buffers) must be avoided and mitigations and buffers implemented as stipulated in the Freshwater Assessment (TBC, 2026);
- An Alien Invasive Plant (AIP) Management Plan for the prospecting sites and access routes must be compiled prior to and implemented during any on-site activities. The plan must identify areas for action (if any) and prescribe the necessary removal methods and frequencies to be applied. This plan must also include a monitoring plan.
- Rehabilitation of the area must be initiated from the onset of the project. All disturbed and compacted footprint areas must be rehabilitated and landscaped after drilling is complete. These areas must either be rehabilitated to the original land use or an agreed upon land use. The area must be shaped to a natural topography.
- It is recommended that an internal qualified Environmental Officer (EO) oversee and audit the prospecting activities and ensure that the watercourses (including buffer and regulated areas) are avoided. The buffer areas and mitigation measures for any mining activities must be determined in a separate study and authorised by the competent authority prior to commencement, due to the magnitude of environmental impacts associated with mining.
- A Water Use License will be required for any drilling within the regulated area of a wetland or watercourse. No invasive prospecting activities to be undertaken within the regulated area of a watercourse – 100m from a river and 500m from a wetland - unless approval for this has been obtained from DWS. Prevent uncontrolled access of vehicles through the watercourse.
- Prior to vegetation clearing activities, the area to be cleared should be walked on foot by 1-2 individuals to create a disturbance in order for fauna to move off. Disturbance must occur as soon before vegetation clearing as possible and no unnecessary disturbance to the area is permitted.
- Clearly demarcate drill site footprint areas and limit all activities to within this area. Prospecting site footprints should be kept to a minimum. Restrict all drilling related activities to within the designated footprint area. Minimise the time between clearing an area and starting development to prevent wildlife from returning to disturbed sites.
- Create and implement a Solid Waste Management Plan. Prioritise waste management by ensuring all waste is collected, stored, and disposed of properly. It is recommended to remove waste from the site at least weekly.
- The Contractor shall be in possession of an emergency spill kit that must be complete and available at all times on site.
- The applicant must implement a grievance mechanism and ensure that it is community-friendly.
- A fire management plan must be compiled and implemented to restrict the impact fire would have on the surrounding areas.
- Should any leaks/ spillages take place, immediate rehabilitation of the affected area/s should be considered in order to not further contaminate the groundwater/ soils.
- Should the newly established boreholes be used for agricultural or industrial water supply after prospecting, then the water quality and groundwater levels should be monitored once before handover by the prospecting right and environmental authorisation holder to establish baseline conditions and if there are any pollution caused by prospecting that needs to be corrected. Thereafter, the responsibility of the user of the water supply will be to monitor groundwater at least quarterly, and any changes should be addressed. The user should be cognisant of any legislative requirements in terms of abstraction of water. The identified boreholes should be pump tested and sampled to determine the current groundwater quality and borehole yields.



- Cap and seal all prospecting boreholes to prevent surface water from entering the borehole, if the boreholes will not be used by any other user after prospecting.



10 ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations relating to this assessment should be considered in evaluating and decision-making on this assessment:

- Unless specifically noted, the environmental attributes for the receiving environment have been obtained from best available spatial and scientific data sources. Whilst reasonable effort has been taken to obtain the most recent and relevant data, there may be gaps in baseline data, leading to uncertainties in impact predictions. Where uncertainty exists, efforts are made to indicate this in the assessment.
- This study is based on activity information provided by the applicant (including engineering designs, specifications, services reports, etc). The accuracy of this information has not been verified, and it is assumed that no significant changes or deviations to the final designs will occur. Should such occur the significance of the potential impacts may require reassessment and where relevant formal amendment processes.
- The information presented in this report is based on the information available at the time of compilation of the report.
- Whilst reasonable effort has been made to identify all potential environmental impacts, some impacts may not be reasonably foreseeable or may emerge only after project implementation.
- In determining the significance of impacts, with mitigation, it is assumed that mitigation measures proposed in the report are correctly and effectively implemented and managed throughout the life of the project.

The remaining sub-sections present the assumptions and limitations applicable to the respective specialist assessments.

10.1 HERITAGE

- Investigations are limited to desktop-based observations from which findings are drawn. Below-ground archaeological contexts would only apply in cases where the methodology includes components involving on-site surveys, excavations and test pitting. To mitigate this limitation, this report advises the application of heritage procedures adopted by the developer in cases where construction activities lead to the identification of unexpected finds.
- As a key limitation of this assessment, a desktop study is by nature limited to data available through different resources such as literature, maps, and photographs. The absence of a field survey would imply a lack of observational data to corroborate findings interpreted through desktop research. To address this limitation, site screening was conducted confirming the identification of key sites. Further triangulation was achieved through stakeholder engagement. It is important to note that final locations for proposed invasive activities (mainly the drilling of boreholes) are to be identified at later stages of the project. This has therefore affected the assessment of potential impacts. Mitigations have therefore considered this limitation.

10.2 SOILS

- Only the slopes affected by the proposed development have been assessed;
- It has been assumed that the extent of the development area provided by the responsible party is accurate;
- The GPS used for ground truthing is accurate to within five meters. Therefore, the soil and the observation site's delineation plotted digitally may be offset by up to five meters to either side; and



- No heavy metals have been assessed, nor fertility been analysed for the relevant classified soils.

10.3 GROUNDWATER

- The assessment is based primarily on available desktop information, regional geological and hydro-geological datasets, and the proposed prospecting scope involving the drilling of approximately six-teen boreholes. No site-specific aquifer testing, groundwater quality sampling, or long-term ground-water monitoring data were available for the study area at the time of assessment. As such, several assumptions and uncertainties remain regarding the local hydrogeological conditions.
- The assessment assumes that:
 - The proposed activities are limited to prospecting-related drilling only and do not include mining, bulk abstraction, infrastructure development, or large-scale groundwater dewatering;
 - Boreholes will be drilled using recognised industry-standard drilling methods and environmental management practices;
 - Drilling fluids, fuels, and hydrocarbons will be appropriately managed onsite;
 - All boreholes not required for future monitoring or exploration purposes will be sealed and rehabilitated in accordance with recognised standards.
- Uncertainties remain regarding:
 - The exact depth, extent, and hydraulic properties of local aquifer systems;
 - Groundwater flow directions and seasonal groundwater level fluctuations;
 - The potential presence of shallow perched groundwater zones or preferential flow pathways associated with geological structures;
 - Existing baseline groundwater quality conditions in the immediate prospecting area.
 - Due to the limited scale and temporary nature of the proposed prospecting activities, these uncertainties are not expected to materially alter the overall finding that impacts associated with the drilling programme are anticipated to be of low significance, provided mitigation measures are implemented.

10.4 AQUATICS

- It is assumed that the extent of the project area provided to the specialist is accurate;
- Due to the scope of the study, this report only assessed the impacts of prospecting activities;
- The specialist was not provided with an architectural plan or any engineering drawings with regard to the planned development activities and, as such, the potential impacts arising from these activities may only be assumed based on previous experience;
- All datasets accessed and utilised for this assessment are considered to be representative of the most recent and suitable data for the intended purposes;
- The assessment area was based on the footprint areas as provided by the client, and any alterations to the area and/or missing GIS information pertaining to the assessment area would have affected the area surveyed and hence the results of this assessment;
- A single-season survey was conducted for the respective study, which would constitute a wet season/high flow survey. Thus, temporal trends were not investigated. Despite this, it is the specialist's opinion that the findings are conclusive, and no further fieldwork would be required; and



- Due to the ephemeral nature of the assessed watercourses, standard freshwater methodologies could not be undertaken. Only the temporary depressions and In-stream dams, with water, were sampled for vernal biota.
- The Global Positioning System (GPS) used for watercourse delineations is accurate to five metres. Therefore, the delineation plotted digitally may be offset by a maximum of five metres to either side.

10.5 TERRESTRIAL BIODIVERSITY

- It is assumed that all information received from the client/developer is accurate;
- All datasets accessed and utilised for this assessment are considered to be representative of the most recent and suitable data for the intended purposes;
- The assessment area (PAOI) was based on the footprint areas as provided by the client, and any alterations to the area and/or missing GIS information pertaining to the assessment area would have affected the area surveyed and hence the results of this assessment;
- This assessment does not consider temporal trends;
- This assessment only considers non-volant mammals, avifauna, reptiles and amphibians. Bats and invertebrates were not assessed;
- Both the Terrestrial biodiversity and avifaunal site surveys were conducted on 13th to the 16th of April 2026. One (1) single season site survey was conducted, which constitutes a late wet-season survey and is considered sufficient to derive a meaningful baseline of the PAOI;
- Due to the high likelihood of occurrence of avifauna species of conservation concern, a nest walkdown is recommended in conjunction with the plant walkdown;
- The nest walkdown could be more targeted should the drill site locations be made available;
- This report is only relevant to prospecting and not mining activities;
- Exact drill sites (or associated layout) were not known at the time of completion of this report;
- Access limitations, including locked gates and denied access by landowners, prevented certain sections of the PAOI from being assessed in the field. These areas were therefore evaluated primarily using desktop information and satellite imagery, with assumptions informed by the surrounding areas that were assessed, as well as prior knowledge of the broader landscape;
- Given the extent of the PAOI, as well as access and time constraints, the habitat assessment focused on identifying the major habitat types. The habitat assessment should therefore be interpreted in this context;
- This survey must be followed by a terrestrial biodiversity walkdown to inform micro-siting, and a flora search and rescue plan of the development footprint, both conducted during the correct flowering season for the biome;
- Whilst every effort was made to cover as much of the PAOI as possible within the constraints of time, site access, and the availability of drivable roads, representative sampling was completed, and by its nature it is possible that some plant and animal species that are present within the PAOI were not recorded during the field investigations; and
- The Global Positioning System (GPS) used in the assessment has an accuracy of 5 m and consequently any spatial features may be offset by up to 5 m.



11 AFFIRMATION REGARDING CORRECTNESS OF INFORMATION

I Monica Niehof, declare that:

General declaration:

- I act as the independent environmental practitioner in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process; and I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not all the particulars furnished by me in this form are true and correct;
- I will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014.



Signature:

Environmental Impact Management Services (Pty) Ltd

Name of company:

2026/05/25

Date:



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APPENDICES



APPENDIX A: EAP CV



APPENDIX B: SCREENING TOOL REPORT AND SITE SENSITIVITY VERIFICATION REPORT



APPENDIX C: SITE LAYOUT AND MAPS



APPENDIX D: PUBLIC PARTICIPATION REPORT



APPENDIX E: SPECIALIST REPORTS



APPENDIX F: ENVIRONMENTAL MANAGEMENT PROGRAMME