BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

Basic Assessment Report in support of the application for Environmental Authorisation for the Proposed Schietfontein and Krelingspost Prospecting Right Application in terms of the National Environmental Management Act, No 107 of 1998, and Mineral and Petroleum Resources Development Act, 2002 (MPRDA) (As Amended).

NAME OF APPLICANT: **Eland Platinum (Pty) Ltd ("EP"), a subsidiary of Northam Platinum Limited ("Northam").**

TEL NO: +2712 381 4099

FAX NO: +2711 325 4795

POSTAL ADDRESS: PO Box 3436, Brits, 0250, South Africa

PHYSICAL ADDRESS: Farm Elandsfontein 440 JQ, District of Brits

FILE REFERENCE NUMBER SAMRAD: NW30/5/1/1/3/2/1/12604EM

Report No: CHEMC-Schietf-DBAR – June 2019

Prepared by: **CHEMC Environmental**
Contact: **Stephan Barkhuizen**
Tel: **012 802 1002**
Email: **stephan@chemc.com**

IMPORTANT NOTICE

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

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

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

It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore, please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulations 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 complete that information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

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

EXECUTIVE SUMARY

Eland Platinum Proprietary Limited ("**EP**"), a subsidiary of Northam Platinum Limited ("**Northam**"), has submitted an application for an environmental authorisation ("**EA Application**") under the National Environmental Management Act 107 of 1998 ("**NEMA**") to the Department of Mineral Resources ("**DMR**") for the prospecting right application ("**Prospecting Right Application**") on the Remaining Extents of Portions 5, 32, 99 and Portions 24, 27, 28, 33, 34, 35, 100 and 101 of the Farm Schietfontein 437 JQ ("**Schietfontein**") and Portions 2, 3, 70, 71, 72, 73, 74, 75, 76, 79 and 80 of the Farm Krelingspost 425 JQ ("**Krelingspost**") ("**Proposed Schietfontein and Krelingspost Prospecting Area**"). The EA Application was submitted to the DMR North-West Region on the 4th of May 2019, and CHEMC Environmental subsequently received an acknowledgement of receipt, dated 28 March 2015, from the North-West Regional DMR ("**North-West DMR**") with the application reference number **NW30/5/1/1/3/2/1/12604EM.**

The prospecting activities on the Proposed Prospecting Area will include the drilling of eleven diamond drilled boreholes on Schietfontein and eleven diamond drilled boreholes on Krelingspost for sampling over 5 years (the "**Proposed Project**"). The Proposed Project includes several properties with different landowners, targeting exclusively the Merensky Pyroxenite, Upper Group ("**UG**")2 and UG1 chromitite layers in, on or under the Proposed Schietfontein and Krelingspost Prospecting Area.

The Middle Group ("**MG**") and Lower Group (**"LG**") seams are therefore excluded from the scope of the Prospecting Right Application and associated prospecting works programme. It is also understood that Portions 1 and 3 of Krelingspost are subject to an existing prospecting right application for gold, silver, copper, cobalt, nickel and uranium by another entity. As such, the aforesaid minerals in relation to Portions 2 and 3 of Krelingspost are specifically excluded from the Prospecting Right Application's scope.

Details of the properties and landowners are given in **Section 2, Table 2**.

Eland Platinum Mine ("**EM**") is an established (est. 2006) platinum group metals ("**PGMs**") and chrome mining and processing operation, operated under two mining

rights namely DMR Reference. No: NW 30/5/1/2/2/341MR ("**Zilkaatsnek Mining Right**") and DMR Ref. No: NW 30/5/1/2/2/280MR ("**Elandsfontein Mining Right**"), granted in terms of the Mineral and Petroleum Resources Development Act, No. 28 of 2002 ("**MPRDA**") by the Department of Mineral Resources ("**DMR**"), which include opencast and underground mining sections. The Zilkaatsnek Mining Right and Elandsfontein Mining Right are collectively referred to as the "**Mining Rights**".

EM is located 10km east of Brits and 60 km west of Pretoria. The R566 (Brits - Rosslyn) provincial road is situated to the north of the boundary of the area on which the EM's surface infrastructure is located ("**EM Surface Area**") and is the main access road to the site. The N4 Bakwena National Highway forms the southern boundary of the EM Surface Area.

CHEMC Environmental has prepared a Draft Basic Assessment Report ("**DBAR**") to provide the relevant authorities and interested and affected parties ("**I&APs**") with sufficient information to ensure that they all have a clear understanding of the Proposed Project. The DBAR was specifically drafted to ensure that there will be a better understanding of the potential impacts from the activities comprising of the Proposed Project against the prevailing environmental and socio-economic conditions.

The EA Application process for the Proposed Project will be advertised in the Beeld and Britspos. Notices will be put up at the following places:

- Site Entrance of the EM;
- Madibeng Local Library;
- Mmakau Police Station;
- High density location in the Damonsville Community;
- High density location in the Tshwara Community; and
- High density location in the De Wildt Community.

Public Notices and Background Information Documents ("**BIDs**") will be send via registered mail, fax and email to the following:

- Landowner;
- Neighbouring landowners;

- Stakeholders (i.e. South African Heritage Resources Agency ("**SAHRA**"), Eskom Holdings SOC ("**Eskom**"), Tribal Authorities);
- Ward Councillors;
- Madibeng Local Municipality ("**MLM**");
- Bojanala Platinum District Municipality (**"BPDM**");
- North West Department of Rural, Environment and Agricultural Development ("**NWDREAD**");
- Department of Environmental, Fisheries and Forestry Affairs ("**DEFF**"); and
- Department of Water and Sanitation ("**DWS**").

Depending on the number of registered I&APs, convene a public meeting. Give registered I&APs and Stakeholders thirty (30) days to comment on DBAR and Draft Environmental Management Programme ("**EMPr**").

From the impact assessment undertaken for the site, it has been determined that the potential negative impacts associated with the proposed prospecting activities can all be mitigated to an acceptable level. The Proposed Schietfontein and Krelingspost Prospecting Area falls mainly within a degraded cultivated (agricultural) area with open natural areas in between. Schietfontein mainly consists of natural open areas with a few cultivated areas in between and the Krelingspost consists mainly of cultivated (agricultural) and degraded areas. The current land uses of the Proposed Schietfontein and Krelingspost Prospecting Area are discussed in detail below.

It is not foreseen that the Proposed Project will have a significant environmental impact on the area but sensitive areas, especially those in the natural open areas on Schietfontein and the densely vegetated areas along the Kareespruit, will be taken into consideration and the appropriate mitigation measures will be put into place to minimise the environmental impact. The EAP therefore finds it reasonable to recommend that the Proposed Project should be authorised to proceed. The Proposed Project will have a limited footprint disturbance and the foreseen impacts are considered to have a low significance after mitigation measures have been implemented.

TABLE OF CONTENT

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDIXES

LIST OF ABBREVIATIONS

Term/ Abbreviation	Definition
BIC	Bushveld Igneous Complex
BID	Background Information Document
BAR	Basic Assessment Report
BPDM	Bojanala Platinum District Municipality
BSP	Biodiversity Sector Plan
CA	Competent Authority
CBA	Critical Biodiversity Area
CARA	Conservation of Agricultural Resources Act (Act No. 43. of 1983)
CBA	Critical Biodiversity Area
Constitution	Constitution of the Republic of South Africa (Act No.108 of 1996)
DBAR	Draft Basic Assessment Report
DEFF	Department of Environment, Fisheries and Forestry
DMR	Department of Mineral Resources
DWAF	The previous Department of Water and Forestry
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECA	Environment Conservation Act (Act No. 73 of 1989)
EIA Regulations or GN R982	The Environmental Impact Assessment Regulations, published in GN R982 of Government Gazette 38282 on 8 December 2014 under section 24 of the NEMA
ESA	Ecological Support Areas
EMPr	Environmental Management Programme
EM	Eland Platinum Mine
EM Surface Area	The area on which the EM's surface infrastructure is located
EP	Eland Platinum Proprietary Limited
FBAR	Final Basic Assessment Report
FEPA	Freshwater Ecosystem Priority Area
GA	General Authorisation in terms of Section 39 of the National Water Act, 1998
GN	Government Notice
GN R921	GN R982 of Government Gazette 37083 published on 29 November 2013 under NEM:WA containing the list of waste activities that requires a WML.
GN R983	GN R983 of Government Gazette 38282 published on 8 December 2014 under section 24 of the NEMA
GN R985	GN R985 of Government Gazette 38282 published on 8 December 2014 under section 24 of the NEMA
Ha	Hectares (measure of area, 10 000 square metres)
HIA	Heritage Impact Assessment
HSA	Hazardous Substances Act (Act No. 15 of 1973)
HSEC	Health, Safety, Environment and Community
I&APs	Interested and Affected Parties
IBA	Important Bird Area
IDP	Integrated Development Plan
Km	Kilometres
Km^2	Square Kilometres

LOM	Life of Mine
M^2	Square Metres
MAP	Mean annual precipitation
mamsl	Metres above sea level
MHSA	Mine Health and Safety Act (Act No. 29 of 1996)
m	Metres
MPNE	Magaliesberg Protected Natural Environment
MG	Middle Group
mm	Millimetres
m/s	Metres per second
MLM	Madibeng Local Municipality
MPRDA	Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Act (Act No. 39 of 2004)
NEM:BA	National Environmental Management: Biodiversity Act (Act No. 10 of 2004)
NEM:WA	National Environmental Management: Waste Act (Act No. 59 of 2008)
NEM:PAA	National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
NHRA	National Heritage Resources Act (Act No. 25 of 1999)
NPA	National Priority Area
NWA	National Water Act (Act No. 36 of 1998)
NWBSP	North West Biodiversity Stewardship Program
NWP	North-West Province
NWREAD	North West Department of Rural, Environment and Agricultural Development
PAIA	Promotion of Access to Information Act (Act No. 2 of 2000)
PGMs	Platinum group metals
PPE	Personal Protective Equipment
PPP	Public Participation Process
Proposed Prospecting Area	Portion 83 and 86 (both portions of Portion 58) and Portion 197 (a portion of Portion 113) of the Farm Zilkaatsnek 439JQ
Pr.Sci. Nat	Professional Natural Scientists
QDS	Quaternary Drainage System
R	Resident
RLS	Rustenburg Layered Suite
SACNASP	The South African Council of Natural Scientific Professions
SAHRA	South African National Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANS	South African National Standards
SAWS	South African Weather Services
SDF	Spatial Development Framework
TOPS Regulations	Threatened and Protected Species Regulations, published GN 255 of 2015 under section 56(1) of the NEMBA.
UG	Upper Group
WUL	Water use licence

1. CONTACT PERSON AND CORRESPONDENCE ADDRESS:

1.1 Details of:

1.1.1 The applicant:

Eland Platinum Proprietary Limited ("**EP**"), a subsidiary of Northam Platinum Limited ("**Northam**"), owns and operates the Eland Platinum Mine ("**EM**") and mineral processing operation near Brits, situated in the Madibeng Local Municipality ("**MLM**") that forms part of the Bojanala Platinum District Municipality ("**BPDM**"), in the North-West Province ("**NWP"**) of South Africa.

Table 1: Details of the applicant and contact person

Landowner:	Refer to Table 2 for a list of the landowners.
Project applicant:	Eland Platinum Proprietary Limited, a wholly owned subsidiary of Northam Platinum Limited
Registration no:	2016/427918/07
Trading name:	Eland Platinum
Contact person:	Jacques Pretorius (General Manager)
Physical address:	Farm Elandsfontein 440 JQ, District of Brits, South Africa
Postal address:	PO Box 3436, Brits, 0250, South Africa
Telephone no:	012 381 4099
Fax no:	086 411 8000
Email:	Jacques.Pretorius@norplats.co.za
For the purpose of the application process the following people may be contacted at Eland Platinum:	
Mr. M Prinsloo **Safety Coordinator** **Tel No:** 012 381 4099 **Email:** martiens.prinsloo@norplats.co.za	**Ms. Baiphapi Sethaelo** **Stakeholder Engagement Specialist** **Tel No:** 012 381 4099 **Email:** Baiphapi.Sethaelo@norplats.co.za

1.1.2 The EAP who prepared the report:

Mr. GS Barkhuizen from CHEMC Environmental has been appointed as the independent Environmental Assessment Practitioner ("**EAP**") by EP to undertake the EA Application in terms of the National Environmental Management Act (Act No. 107 of 1998) ("**NEMA**") and the Environmental Impact Assessment ("**EIA**") Regulations

(GN R982 of 8 December 2014). The study will be undertaken by CHEMC Environmental.

CHEMC Environmental commenced business in 1994 and has since been involved in a large variety of environmental studies. It is a South African organisation of professionals providing a comprehensive range of consulting services to natural resource industries and organisations. CHEMC Environmental is based in Pretoria and staffed with professional consultants operating in a range of disciplines, mainly related to the environment, water and mining sectors.

Company: CHEMC Environmental
Name of the Practitioner: Gerhardus Stephanus (Stephan) Barkhuizen
Tel No.: +2712 802 1002
Cell No.: +2782 639 9944
Fax No.: +2712 802 1004
E-mail address: stephan@chemc.com

1.1.3 Expertise of the EAP.

1.1.3.1 Qualifications of the EAP

The qualifications of the EAP (With evidence attached as **Appendix 1**).

Mr Barkhuizen holds a BSc (Honours) in Environmental Monitoring and Modelling and a BTech in Landscape Technology. He is a certified Natural Scientist in the Environmental Sciences Field (Registration number: 115982) with the South African Council of Natural Scientific Professions ("**SACNASP**"). Copies of the EAP's qualifications as listed above for this project are included in ***Appendix 1***.

1.1.3.1 Summary of the EAP's past experience.

(Attach the EAP's curriculum vitae as **Appendix 2**)

Mr Barkhuizen will be the project lead EAP for the EA Application. He has 10 years' experience in the environmental field. His experience is in the management of EIA and EMPr processes; coordination and execution of public participation processes ("**PPP**"); and management of multi-disciplinary project teams, mainly for mining

related projects. He is also involved in conducting environmental audits and site assessments.

Mr. Jannie Cronje will be the project partner and reviewer of the Environmental Scoping and EIA Report. He is a senior member of CHEMC Environmental, with 25 years' experience in the environmental and geohydrology consultancy industry. Jannie Cronje is appropriately qualified and registered with the relevant professional bodies. He is registered as a Professional Natural Scientists (Pr.Sci.Nat. 400063/93) with the SACNASP.

Mrs. Marilize Potgieter, will be the junior environmental consultant providing assistance and a supplementary role in the EA Application. She has over 5 years' experience in the eco-conservation and game management field.

The team has extensive knowledge of environmental management extending from EMPrs, EIAs and basic assessments to environmental compliance auditing, environmental protection, pollution control and water and waste management. Curriculum Vitae ("**CVs**") of the project team members and past experience listed above for this project can be found in ***Appendix 2***.

2. DESCRIPTION OF THE SCHIETFONTEIN & KRELINGSPOST PROSPECTING AREA:

The Proposed Schietfontein and Krelingspost Prospecting Area is situated adjacent to the EM Surface Area, approximately 14km east of Brits and 60 km west of Pretoria. The R566 (Brits - Rosslyn) provincial road is situated to the north and will be used as an access road to the Proposed Prospecting Area. The M21 runs to the east of the Proposed Schietfontein and Krelingspost Prospecting Area and is mainly used to access a portion of Krelingspost. The N4 Bakwena National Highway forms the southern boundary of the Proposed Schietfontein and Krelingspost Prospecting Area.

Surrounding land uses comprise of livestock grazing, agriculture, mining (EM, Hernic Ferrochrome, Crocodile River Mine's Maroelabult section, and granite mining further north), and community residential area and related activities. Directly to the south

(across the N4 highway) is the Zilkaatsnek Eco-estate (mix land-use development). Further to the south and south-east, land is used for conservation purposes (Magaliesberg Nature Reserve and the De Wildt Cheetah Reserve).

The Proposed Schietfontein and Krelingspost Prospecting Area comprises mainly open agricultural farms, natural areas and cultivated fields. Some of the properties in the Proposed Prospecting Area have Farm Homesteads situated on them. There are a few local businesses situated on the Krelingspost section, including a local restaurant (Karen se Plaaskombuis), instant lawn distributors (Die Grasplaas and Easy Lawn) and a recycling business (Envirocycle). A solar power project is proposed on Portions 27 and 28 of Schietfontein. Samancor Chrome Ltd ("**Samancor**") also holds a prospecting right to chrome in the MG and LG seams on the aforesaid properties. The R566 and Rosslyn – Brits railway traverses certain of the properties. The land uses of the properties in the Proposed Schietfontein and Krelingspost Prospecting Area are discussed in detail in Table 22 below.

The surrounding communities and their proximity to the Proposed Schietfontein and Krelingspost Prospecting Area include:

- Brits (14 km west);
- Damonsville (8.2 km north-west);
- Mothotlung (5.4 km north-west);
- Moumong (2.5 km north-west);
- Ramolapong (2.3 km north);
- Mmakau (4.5 km north-west);
- Ga-Kwate (1.8 km north); and
- De Wildt (1.4 km north).

(Refer to Figure 1: Regional Locality map and Figure 2: Locality map).

A detailed property description of the Proposed Schietfontein and Krelingspost Prospecting Area is listed in ***Table 2***, below:

Table 2: Property description of the Proposed Schietfontein and Krelingspost Prospecting Area.

Farm Name	Portion and size	Landowner Detail
Farm Schietfontein 437 JQ ("Schietfontein"):	Remaining Extent of Portion 5, measuring 2.1756 hectares in extent.	Private owners – FJ Strauss, L Strauss & MN Ras
	Portion 24 (a portion of Portion 2), measuring 17.8382 hectares in extent.	Private owners – FJ Strauss & L Strauss
	Portion 27 (a portion of Portion 2), measuring 8.8184 hectares in extent.	
	Portion 28 (a portion of Portion 2), measuring 8.7843 hectares in extent.	
	Portion 33 (a portion of Portion 32), measuring 8.5653 hectares in extent.	
	Portion 34 (a portion of Portion 32), measuring 17.7839 hectares in extent.	
	Remaining Extent of Portion 32, measuring 15.0021 hectares in extent.	Private owner – MN Ras
	Portion 35 (a portion of Portion 2), measuring 49.659 hectares in extent.	
	Remaining Extent of Portion 99, measuring 11.339 hectares in extent.	Private owner – RG Jacobs
	Portion 100 (a portion of Portion 99), measuring 30.1315 hectares in extent.	Private owners – JJR van der Merwe & JJ van der Merwe
	Portion 101 (a portion of Portion 99), measuring 18.7922 hectares in extent.	Close Corporation – Madala's Padmark CC
Farm Krelingspost 425 JQ ("Krelingspost"):	Portion 2, measuring 6.5382 hectares in extent.	Close Corporation – Super Soya CC
	Portion 3, measuring 6.5382 hectares in extent.	Close Corporation – Macal Farms CC
	Portion 70 (a portion of Portion 67), measuring 4.9804 hectares in extent.	Private Company – Kreylingspost Nr 10 De Wildt Pty Ltd
	Portion 71 (a portion of Portion 67), measuring 5.1757 hectares in extent.	

	Portion 72 (a portion of portion 67), measuring 5.5491 hectares in extent.[1]	
	Portion 74, (a portion of Portion 67) measuring 5.529 hectares in extent.	
	Portion 75 (a portion of Portion 67), measuring 5.5411 hectares in extent.	
	Portion 76 (a portion of Portion 67), measuring 5.5850 hectares in extent.	
	Portion 79 (a portion of Portion 67), measuring 1.500 hectares in extent.	
	Portion 73 (a portion of Portion 67), measuring 10.4125 hectares in extent.	Close Corporation – Home Shopper CC
	Portion 80 (a portion of Portion 67), measuring 27.4933 hectares in extent.	Close Corporation – Corporate Flat CC
The above Schietfontein and Krelingspost properties are further collectively referred to as the "**Proposed Schietfontein & Krelingspost Prospecting Area".**		
Application area (Ha):	Total area of 273.732 hectares ("**Ha**"). The proposed prospecting activity will likely disturb a total area of +/- 4 000m^2 (taking into account potential temporary access roads)	
Magisterial district:	Madibeng Local Municipality	
Distance and direction from nearest town:	The Proposed Schietfontein and Krelingspost Prospecting Area is located approximately 14 km west of Brits. Surrounding communities include Damonsville, Mothotlung, Mmakau, Ga-Kwate, Ramolapong and private landowners and farmers. ***(Refer to Figure 1: Regional Locality map and Figure 2: Locality map).***	
21 digit Surveyor General Code for each farm portion:	**Portions of Schietfontein 437 JQ**	
	Remaining Extent of Portion 5	T0JQ00000000043700005
	Portion 24 (a portion of Portion 2)	T0JQ00000000043700024
	Portion 27 (a portion of Portion 2)	T0JQ00000000043700027
	Portion 28 (a portion of Portion 2)	T0JQ00000000043700028

[1] This property is incorrectly referred to as a portion of Portion 10 in T129551/2006. This inaccuracy can be evidenced by the endorsements for T129546/2006 for Portion 67 (a portion of Portion 10), wherein inter alia Portion 72 was subdivided from Portion 67 (evidenced by SG diagram A5465/199) and not Portion 10.

	Remaining Extent of Portion 32	T0JQ00000000043700032
	Portion 33 (a portion of Portion 32)	T0JQ00000000043700033
	Portion 34 (a portion of Portion 32)	T0JQ00000000043700034
	Portion 35 (a portion of Portion 2)	T0JQ00000000043700035
	Remaining Extent of Portion 99	T0JQ00000000043700099
	Portion 100 (a portion of Portion 99)	T0JQ00000000043700100
	Portion 101 (a portion of Portion 99)	T0JQ00000000043700101
	Portions of Krelingspost 425 JQ	
	Portion 2	T0JQ00000000042500002
	Portion 3	T0JQ00000000042500003
	Portion 70 (a portion of Portion 67)	T0JQ00000000042500070
	Portion 71 (a portion of Portion 67)	T0JQ00000000042500071
	Portion 72 (a portion of Portion 67)	T0JQ00000000042500072
	Portion 73 (a Portion of Portion 67)	T0JQ00000000042500073
	Portion 74 (a Portion of Portion 67)	T0JQ00000000042500074
	Portion 75 (a portion of Portion 67)	T0JQ00000000042500075
	Portion 76 (a portion of Portion 67)	T0JQ00000000042500076
	Portion 79 (a portion of Portion 67)	T0JQ00000000042500079
	Portion 80 (a portion of portion 67)	T0JQ00000000042500080

2.1 Locality Map

(Show the nearest town, scale not smaller than 1: 250000 attached as Appendix 3)

Refer to ***Figure 1 and 2*** for the Regional and Aerial map.

The Proposed Project will be located on the Remaining Extents of Portions 5, 32, 99 and Portions 24, 27, 28, 33, 34, 35, 100 and 101 of Schietfontein" and Portions 2, 3, 70, 71, 72, 73, 74, 75, 76, 79 and 80 of Krelingspost (Refer to ***Figure 3, 4 and 5***).

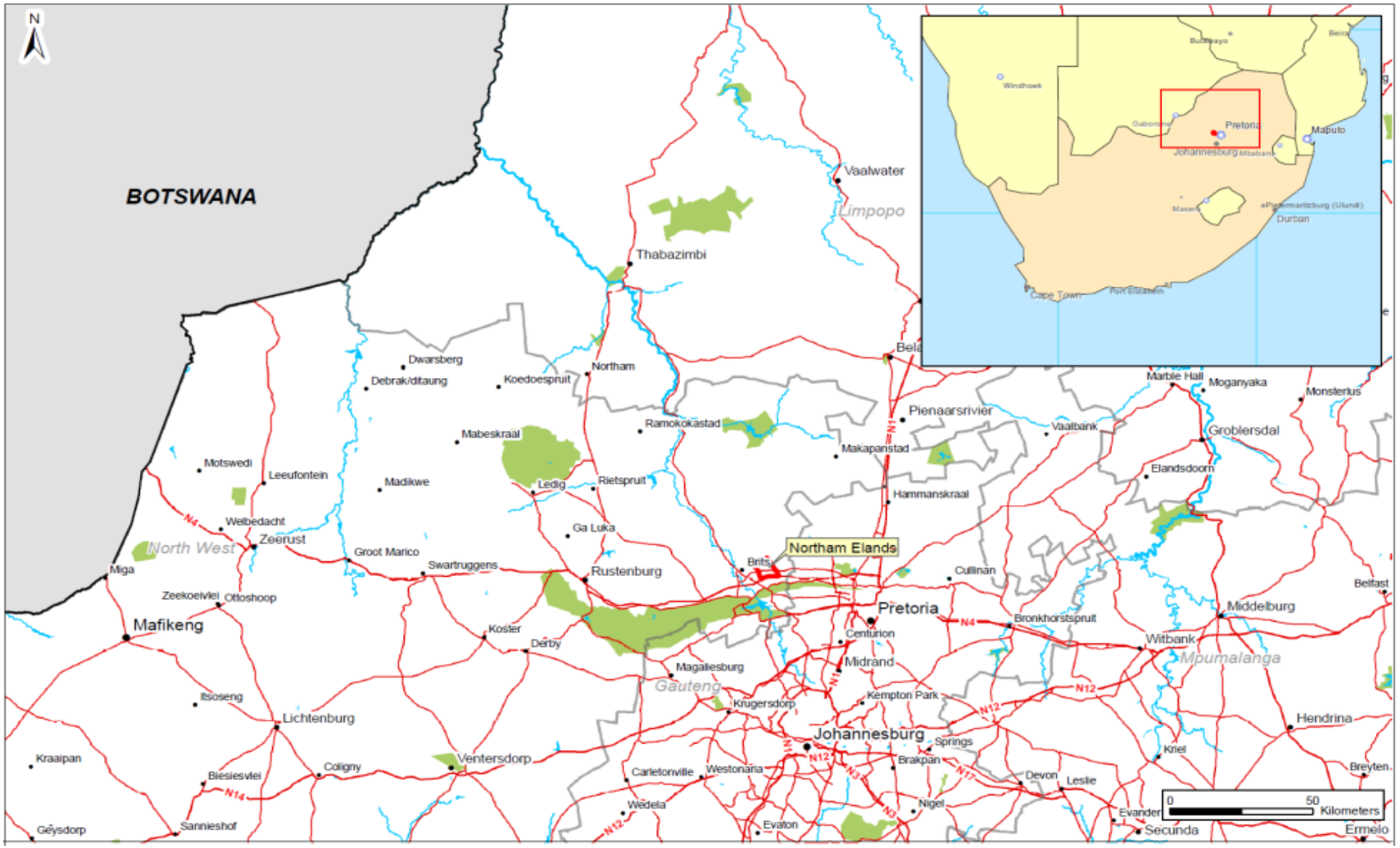

Figure 1: Regional locality map of EM

Figure 2: Aerial locality map of the EM Surface Area and Proposed Schietfontein and Krelingspost Prospecting Area.

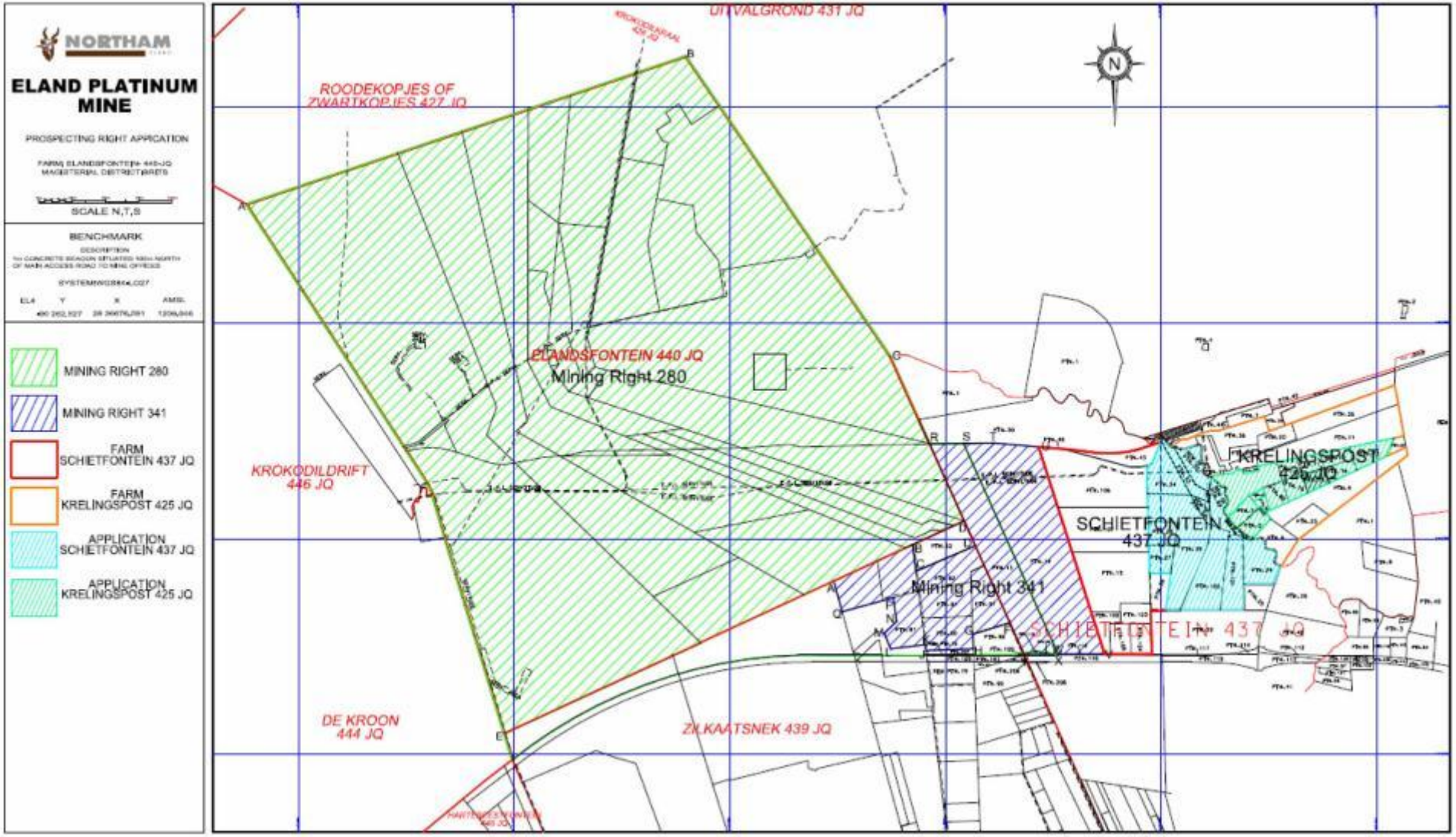

Figure 3: Location for Proposed Project

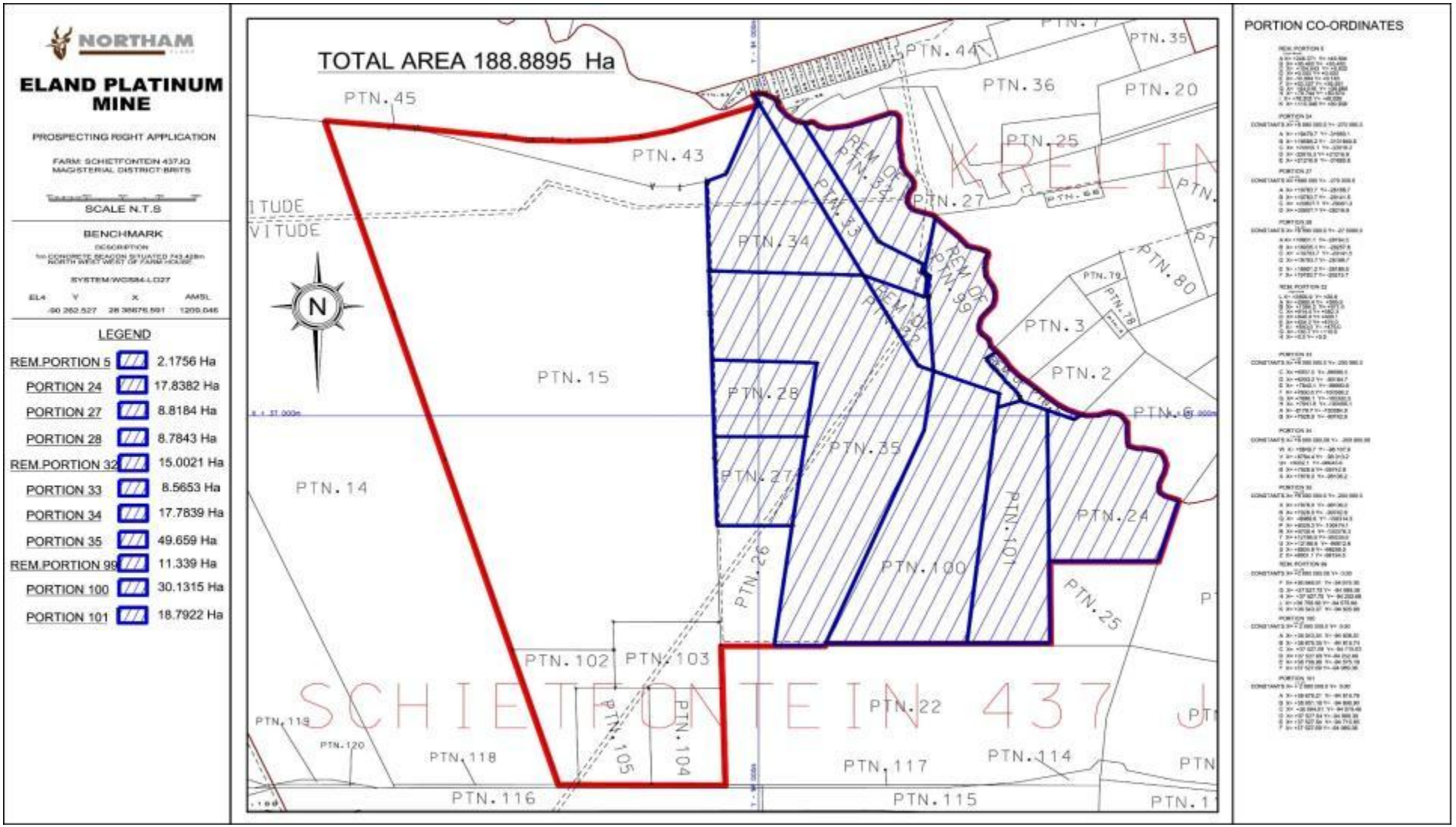

Figure 4: Schietfontein Properties in the Proposed Schietfontein and Krelingspost Prospecting Area

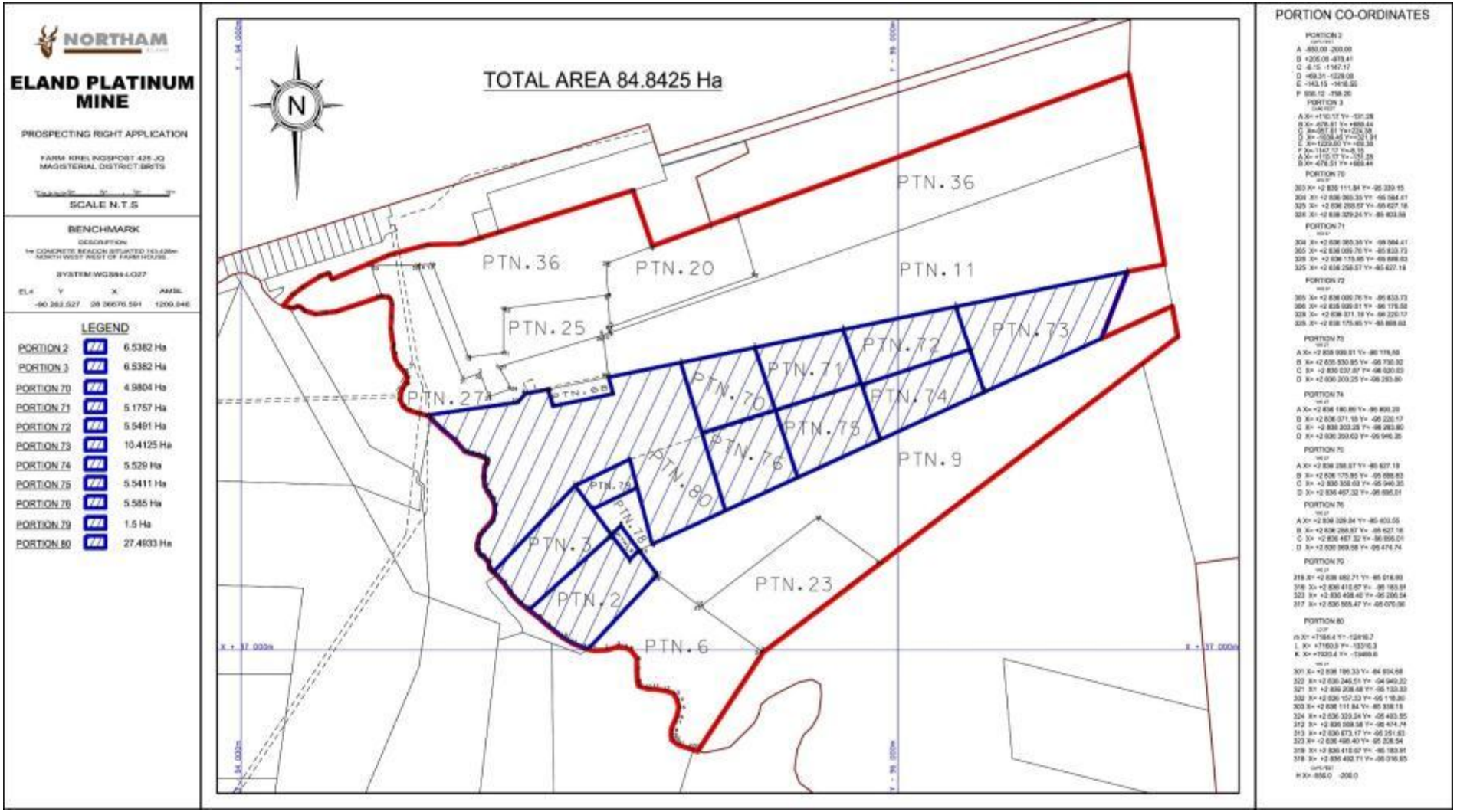

Figure 5: Krelingspost Properties in the Proposed Schietfontein and Krelingspost Prospecting Area

3. DESCRIPTION OF THE SCOPE OF THE PROPOSED PROJECT:

3.1 Listed and specified activities

Provide a plan drawn to a scale acceptable to the competent authority but not less than 1: 10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site and attach as Appendix 4.

3.1.1 EP's Current Mining Operations

EM is an existing mine that produces PGM concentrate and chromite concentrate as a co-product. Minimal mining and processing activities are taking place on the EM operation. Operations have re-commenced in 2019, after a care and maintenance phase from October 2015.

The existing mining, processing and auxiliary infrastructure comprise of the following:

- Workshops and Stores;
- Overburden Rock and Topsoil Dumps;
- Opencast Mining Pits;
- Concentrator Plant;
- On-site Laboratory;
- Mine clinic and training centre;
- Water Management Infrastructure (i.e. dams, channels and pipelines);
- Waste Water Treatment Plant (**"WWTP**") and Water Treatment Plant (**"WTP**");
- Two decline Shafts (Kukama and Nyala) and supporting infrastructure;
- Tailings Storage Facilities ("**TSF**") comprising of four Paddocks;
- Offices and auxiliaries;
- Recreational Area (Game Farm);
- Agricultural fields; and
- Haul and internal Roads.

3.1.2 Proposed Activity Description

The following activities are planned on the Proposed Schietfontein and Krelingspost Prospecting Area:

3.1.2.1 Schietfontein 437JQ

Eleven diamond drilled boreholes are planned on Remaining Extents of Portions 5, 32, 99 and Portions 24, 27, 28, 33, 34, 35, 100 and 101 of Schietfontein over a five-year period, targeting the Merensky Pyroxenite, UG2 and UG1 chromitite layers. These boreholes will provide valuable information relating to the continuity of both reefs and contribute to the understanding of the magnitude of the structural features, which currently prohibit a reliable resource estimation of the Merensky UG2 and UG1 Reefs.

The mineral distribution of the ore-body is to be determined by diamond core drilling, core logging, sampling and assaying of the drill core.

The relevant lithological, structural and assay information of each borehole will be collected according to EP's prospecting protocols, which are considered acceptable for PGE resource estimation and comparable to industry standard practise.

Analysis of Pt, Pd, Rh, Au, Cu, Ni, Cr_2O^3 and Fe_2O^3 will be undertaken by an accredited laboratory and the remaining borehole core will be stored for reference purposes at the core storage facility, located at EM. All geological information collected from the borehole logs will be stored in digital format in a database.

A table listing the planned prospecting boreholes is inserted below (Table 3) followed by a locality plan indicating the borehole positions (Figure 6)

Table 3: Planned diamond drilling activity on portions of Schietfontein.

FARM	PORTION	PLANNED BHOLE	X	Y	Z	FINAL DEPTH	TARGET
SCHIETFONTEIN 437JQ	PTN 28	S_PL01	93973	-37015	1229	170	MR, UG2
SCHIETFONTEIN 437JQ	PTN 35	S_PL02	94271	-37014	1232	170	MR, UG2
SCHIETFONTEIN 437JQ	PTN 100	S_PL03	94632	-37022	1233	170	MR, UG2
SCHIETFONTEIN 437JQ	PTN 99	S_PL04	94615	-36812	1230	245	MR, UG2
SCHIETFONTEIN 437JQ	PTN 27	S_PL05	94057	-37305	1234	250	UG2,UG1
SCHIETFONTEIN 437JQ	PTN 101	S_PL06	94811	-37236	1236	80	UG2
SCHIETFONTEIN 437JQ	PTN 24	S_PL07	95049	-37085	1236	150	UG2
SCHIETFONTEIN 437JQ	PTN 5	S_PL08	94878	-36906	1233	190	MR, UG2
SCHIETFONTEIN 437JQ	PTN 32	S_PL09	94529	-36408	1218	420	MR, UG2
SCHIETFONTEIN 437JQ	PTN 34	S_PL10	94140	-36446	1219	360	MR, UG2
SCHIETFONTEIN 437JQ	PTN 33	S_PL11	94480	-36496	1220	390	MR, UG2
						2595	

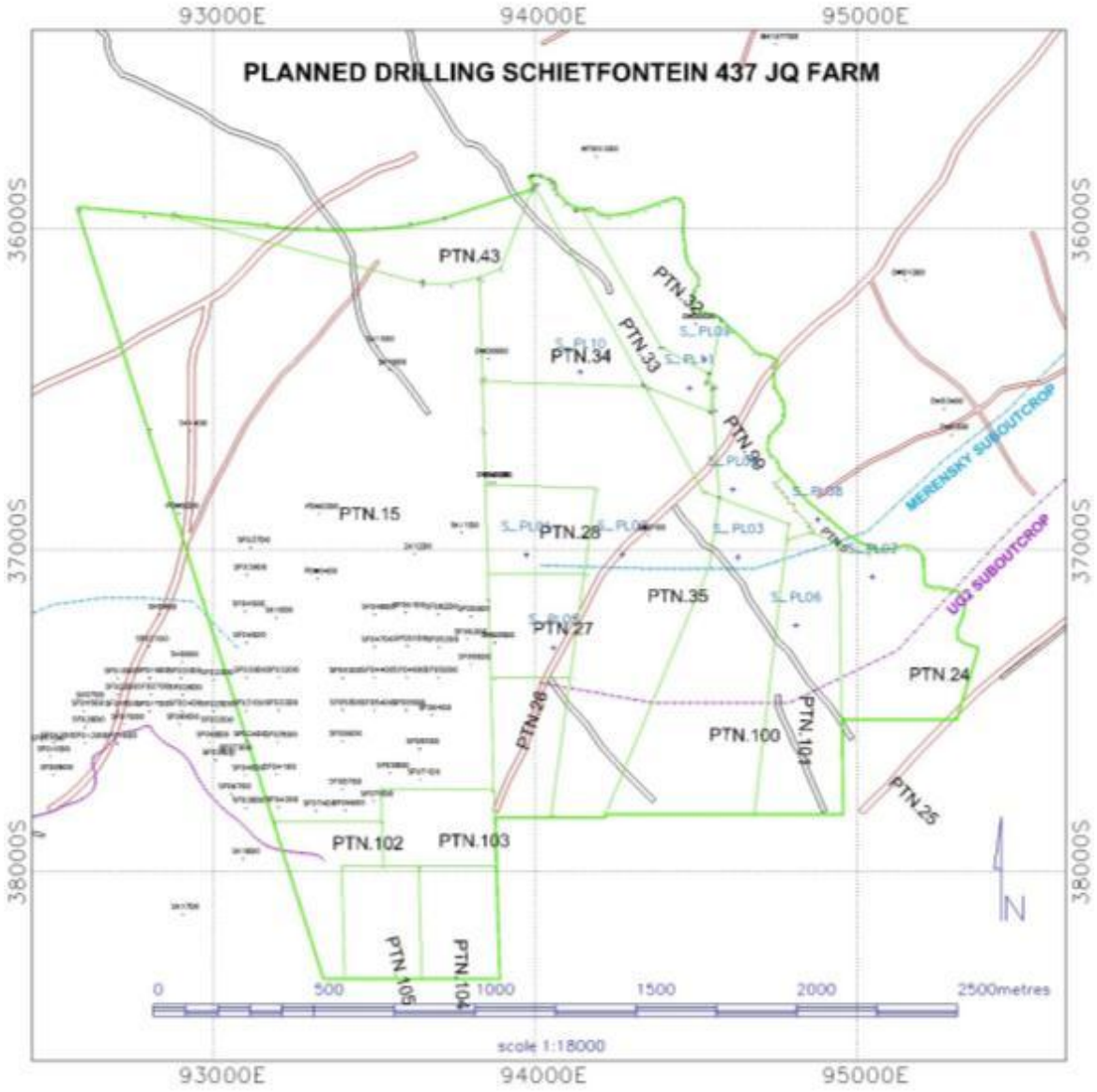

Figure 6: Planned prospecting boreholes on Schietfontein.

3.1.2.2 Krelingspost 425JQ

Eleven diamond drilled boreholes are planned on Portions 2, 3, 70, 71, 72, 73, 74, 75, 76, 79 and 80 of Krelingspost over a five-year period, targeting the Merensky Pyroxenite, UG2 and UG1 chromitite layers. These boreholes will provide valuable information relating to the continuity of these Reefs.

The mineral distribution of the ore-body is to be determined by diamond core drilling, core logging, sampling and assaying of the drill core.

The relevant lithological, structural and assay information of each borehole will be collected according to EP's prospecting protocols, which are considered acceptable for PGE resource estimation and comparable to industry standard practise.

Analysis of Pt, Pd, Rh, Au, Cu, Ni, Cr_2O^3 and Fe_2O^3 will be undertaken by an accredited laboratory and the remaining borehole core will be stored for reference purposes at the core storage facility located at EM. All geological information collected from the borehole logs will be stored in digital format in a database.

A table listing the planned prospecting boreholes is inserted below (Table 4) followed by a locality plan indicating the borehole positions (Figure 7).

Table 4: Planned diamond drilling activity on portions of Krelingspost

FARM	PORTION	PLANNED BHOLE	X	Y	Z	FINAL DEPTH	TARGET
KRELINGSPOST 425JQ	PTN 2	K_P01	95034	-36853	1234	180	MR, UG2
KRELINGSPOST 425JQ	PTN 80	K_P02	95406	-36500	1233	175	
KRELINGSPOST 425JQ	PTN 76	K_P03	95559	-36384	1235	180	
KRELINGSPOST 425JQ	PTN 75	K_P04	95835	-36269	1237	340	MR, UG2, UG1
KRELINGSPOST 425JQ	PTN 74	K_P05	96166	-36153	1241	250	
KRELINGSPOST 425JQ	PTN 73	K_P06	96525	-35927	1247	440	MR, UG2
KRELINGSPOST 425JQ	PTN 3	K_P07	94876	-36817	1232	230	MR, UG2
KRELINGSPOST 425JQ	PTN 79	K_P08	95083	-36527	1231	290	MR, UG2
KRELINGSPOST 425JQ	PTN 70	K_P09	95421	-36298	1235	270	MR, UG2
KRELINGSPOST 425JQ	PTN 71	K_P10	95674	-36210	1236	250	MR, UG2
KRELINGSPOST 425JQ	PTN 72	K_P11	95978	-36124	1238	260	MR, UG2
						2865	

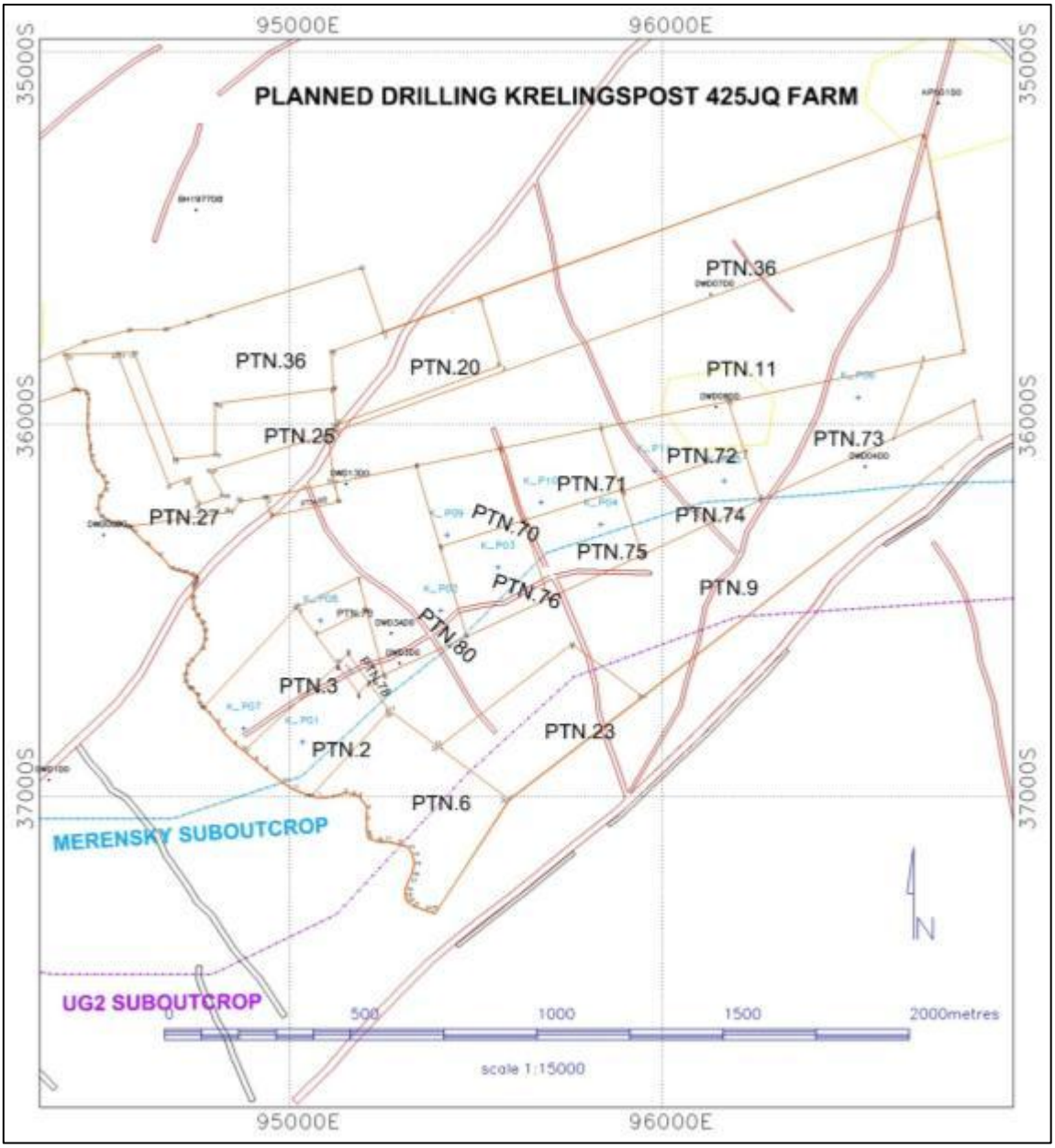

Figure 7: Planned exploration boreholes on Krelingspost

3.2 Description of the activities to be undertaken

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

The purpose of this application is to obtain an EA from the DMR to authorise undertaking prospecting activities on certain farm portions, known as the Proposed Schietfontein and Krelingspost Prospecting Area.

The Proposed Schietfontein and Krelingspost Prospecting Area is to the east of the existing EM, over which two mineral rights are held, namely the Zilkaatsnek Mining

Right (DMR Reference. No: NW 30/5/1/2/2/341MR) and Elandsfontein Mining Right (DMR Ref. No: NW 30/5/1/2/2/280MR), (collectively the "**Mining Rights**"). The Prospecting Right Application's main objective is to apply for a prospecting right to better understand the structural complexity of the Bushveld Igneous Complex ("**BIC**") to the east of EM.

The Proposed Project will comprise of several diamond-drilled boreholes over a five-year period, targeting the Merensky Pyroxenite, UG2 and UG1 chromitite layers. These boreholes will provide valuable information relating to the continuity of both reefs and contribute to understanding the magnitude of the structural features, which currently prohibit a reliable resource estimation of the Merensky, UG2 and UG1 Reefs.

The mineral distribution of the orebody will be determined by core logging, sampling and assaying of the drill core.

The Proposed Project: (i) will comprise of prospecting activities and vegetation clearance; and (ii) may require / entail widening of an existing road and / or impacting on land within 32m of a watercourse.

Each drill site will be fenced off and only EP's personnel, contractors or their representatives will be allowed to enter the drill site. Diamond core drilling will be conducted within the Proposed Schietfontein and Krelingspost Prospecting Area. The drill rigs will be wheel mounted, with outriggers to stabilize the rigs. The ground below the drill rigs will be covered with devices to contain any possible drill rig leakages. The drilling fluids will be pumped through a settling sump, which will be lined. The contents of the sump will be removed from the Prospecting Area after the drilling and disposed at an approved dumping site.

The drilled core will be packed into core trays, which will be removed from the site and transported to EM for further processing. A geological report will be compiled, containing all the historical and current data, geological modelling outcomes, resource estimations, conclusions and recommendations for any possible further investigations and exploratory work.

Table 5: List of proposed activities

NAME OF ACTIVITY **(All activities including activities not listed)**		LISTED ACTIVITY **Mark with an X where applicable or affected.**	APPLICABLE LISTING NOTICE **(GNR 544, GNR 545 or GNR546)/NOT LISTED**
1. Establishment of twenty-two drill sites with sumps and parking for the drill rig, equipment storage, water storage, waste bins and portable toilets.		N/A	Not listed
2. Parking for the excavator, equipment storage, water storage, waste bins and portable toilets.		N/A	Not listed
3. Twenty-two (22) diamond drilled boreholes are planned across the Proposed Schietfontein and Krelingspost Prospecting Area. An average footprint of 90m^2 will be disturbed for the drilling operation at each location (total footprint of 1980m^2). There are also temporary roads that will possibly have to be cleared to allow for access to the proposed drilling locations (total footprint of +/- 4 000m^2 (inclusive of 1980m^2)).	+/- 4 000m^2 (taking into account potential temporary access roads)	**X**	**<u>Listing No. 1 – GNR 983</u>** • **Activity 20** Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the MPRDA, including- (a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource
4. Vegetation will be cleared for the drilling sites and potentially for the temporary access roads. It is likely that	+/- 4 000m^2 (taking into account	**X**	**<u>Listing No. 3 – GNR 985</u>** • **Activity 12 (h)** The clearance of an area of 300m^2

the impacted vegetation will include indigenous vegetation, as the Proposed Schietfontein and Krelingspost Prospecting Area is within / near the Marikana Thornveld ecosystem and is situated in a critical biodiversity area ("**CBA**"),_ as per NWP Biodiversity Sector Plan ("**BSP**").	potential temporary access roads)		or more of indigenous vegetation (except where such clearance of is required for maintenance purposes undertaken in accordance with a maintenance management plan) in the NWP on land situated within a CBA, as identified in systematic biodiversity plans adopted by the competent authority ("**CA**").
5. It is not foreseen that any prospecting activities will be undertaken within 32m of a watercourse. However, provision is made to include this listed activity should this be required. The Proposed Project is within / near the Marikana Thornveld ecosystem and is situated in a CBA, as per the NWP BSP. The Magaliesberg Protected Natural Environment ("**MPNE**") is situated ± 3.1 km south of the Proposed Schietfontein and Krelingspost Prospecting Area. The Hartbeespoort Dam Nature Reserve and M'Nandi Private Nature Reserve are located ± 4.1 km south-west and ± 0.2 km east of the Proposed Prospecting Area respectively. The prospecting area falls within the Magaliesberg	+/- 4 000m^2 (taking into account potential temporary access roads)	**X**	**<u>Listing No. 3 – GNR 985</u>** • **Activity 14 (h)** The development of infrastructure or structures with a physical footprint of 10m^2 or more; where such development occurs – (a) within a watercourse; or (c) if no development setback has been adopted, within 32m of a watercourse, measured from the edge of a watercourse in the NWP on land, where such land is situated within *inter alia*: • a CBA, as identified in systematic biodiversity plans adopted by the CA; and • Areas within 5 kilometres from protected areas identified in terms of the National Environmental Management: Protected Areas Act (Act No. 57 of 2003) ("**NEM:PAA**") or from the core areas of a

Biosphere Reserve.			biosphere reserve.
6. The proposed drilling localities have been determined and existing access roads will be used as far as possible. There will however potentially be a need to widen these roads to allow for access. The Proposed Project is within / near the Marikana Thornveld ecosystem and is situated in a CBA, as per the NWP BSP. The MPNE is situated ± 3.1 km south of the Proposed Schietfontein and Krelingspost Prospecting Area. The Hartbeespoort Dam Nature Reserve and M'Nandi Private Nature Reserve are located ± 4.1 km south-west and ± 0.2 km east of the Proposed Prospecting Area respectively. The prospecting area falls within the Magaliesberg Biosphere Reserve.	+/- 4 000m^2 (taking into account potential temporary access roads)	**X**	**<u>Listing No. 3 – GNR 985</u>** • **Activity 18 (h)** The widening of a road by more than 4m, or the lengthening of a road by more than 1Km, which occurs in a where such land is situated within *inter alia:* • a CBA, as identified in systematic biodiversity plans adopted by the CA; and • Areas within 5 kilometres from protected areas identified in terms of the National Environmental Management: Protected Areas Act (Act No. 57 of 2003) ("**NEM:PAA**") or from the core areas of a biosphere reserve.

4. POLICY AND LEGISLATIVE CONTEXT

Table 6: Policy and legislative context of the proposed activity

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLIY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT?
1. <u>Constitution of the Republic of South Africa (Act No. 108 of 1996)</u> In terms of section 24 of the Constitution of the Republic of South Africa (Act No.108 of 1996) (the "**Constitution**"), everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislation and other measures that prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development and use of natural resources, while prompting justifiable economic and social development. The needs of the environment, as well as affected parties, should thus be integrated into overall project management to fulfil the requirements of section 24 of the Constitution.		***<u>Applicability to the Proposed Project:</u>*** The implications for the Proposed Project include the obligation to ensure that it: (i) will not result in significant pollution and / or ecological degradation; and (ii) is ecologically sustainable, while promoting justifiable economic and social development.
2. <u>National Environmental Management Act (Act No. 107 of 1998)</u> The NEMA, as amended, contains a set of principles in Chapter		***<u>Applicability to the Proposed Project</u>*** The EA Application has been submitted.

2 that govern environmental management. These principles must be adhered to and taken into consideration during the EA Application and the life cycle phases of the Proposed Project. The term 'environment' is defined in terms of NEMA as: *"Environment means the surroundings within which humans exist and that are made up of –* *(i) the land, water and atmosphere of the earth;* *(ii) micro-organisms, plant and animal life;* *(iii) any part or combination of (i) or (ii) and the interrelationship among and between them; and* *(iv) the physical, chemical, aesthetic and cultural, properties and conditions of the foregoing that influence human health and wellbeing".* Section 24(1) of the NEMA states: *"In order to give effect to the general objectives of integrated environmental management laid down in this Chapter* [Chapter 5], *the potential consequences for or impacts on the environment of listed activities or specified activities must be considered, investigated, assessed and reported on to the competent authority or the Minister of Minerals and Energy, as the case may be, except in respect of those activities that may commence without having to obtain an environmental*		The Duty of Care has been applied during the basic assessment process, through the consideration of potential impacts (cumulative, direct, and indirect). It will continue to apply throughout the life cycle of the Proposed Project.

authorisation in terms of this Act."

Section 28 of the NEMA places a duty of care on all persons to prevent, limit or remediate any pollution or degradation of the environment (the "**Duty of Care**"). Section 28 applies to all activities taking place, and not solely focused on the listed activities being applied for.

3. <u>EIA Regulations (GN R982 of 8 December 2014) (Describe the listed activities which occur as part of the Proposed Project)</u>

The EIA Regulations (published in GN R982 of Government Gazette 38282 on 8 December 2014 under section 24 of the NEMA), to manage the process, methodologies and requirements for the undertaking of an EA Application. The EIA Regulations stipulate that the applicant must appoint an independent EAP to manage the EA Application process where a development constitutes activity/ies listed in terms of GN R983, GN R984 and/or GN R985 (all published in Government Gazette 38282 of 8 December 2014 under section 24 of the NEMA) ("**GN R983**", "**GN R984**" and "**GN R985**" respectively).

GN R982 defines two categories for undertaking an application for EA, namely the basic assessment process and the 'full' EIA process.

Section 24C(2A) of NEMA indicates that where listed activities

<u>Applicability to the Proposed Project:</u>

The drilling of twenty-two diamond drilled boreholes triggers a listed activity in terms of GN R983 and GN R985. Based on the regulatory requirements, a basic environmental assessment process must be undertaken in terms of GN R982.

Number and date of relevant notice	Activity No.	Description of each listed activity as per the GN.	Description of the proposed activities in relation to the listed activities being applied for.
GN. 983	20	Any activity, including the operation of that activity, which requires a prospecting right in terms of section 16 of the MPRDA, including- (a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource; or (b) the primary processing of a mineral resource	The Proposed Project will comprise of 22 diamond drilled boreholes over a five-year period, targeting the Merensky Pyroxenite, UG2 and UG1 chromitite layers. These boreholes will provide valuable information relating to the continuity of both reefs and contribute to understanding the magnitude of the structural features,

are directly related to the extraction and primary processing of a mineral or petroleum resource the Minister of Mineral Resources is the CA or officials at the DMR to whom he has delegated his authority, being the Regional Managers.					including winning, extraction, classifying, concentrating, crushing, screening or washing.	which currently prohibit a reliable resource estimation of the Merensky, UG2 and UG1 Reefs.
		GN R. 985	12(h)	The clearance of an area of 300 square metres or more of indigenous vegetation (except where such clearance is required for maintenance purposes undertaken in accordance with a maintenance management plan) in the NWP on land, where such land is situated within a CBA, as identified in systematic biodiversity plans adopted by the CA;	Vegetation will be cleared for the drilling sites and potentially for the temporary access roads. It is likely that the impacted vegetation will include indigenous vegetation, as the Proposed Schietfontein and Krelingspost Prospecting Area is within the Marikana Thornveld ecosystem and is situated in a CBA as per the NWP BSP.
		GN R. 985	14(h)	The development of infrastructure or structures with a physical footprint of $10m^2$ or more, where such development occurs- (a) within a watercourse; (c) if no development setback has been adopted, within 32m of a watercourse, measured from the edge of a watercourse in the NWP on land, where such land is situated within *inter alia*: (i) a CBA, as identified in systematic biodiversity plans adopted by the CA; or (ii) b) 5 kilometres from protected as identified in terms of the NEM:PAA or from the core areas of a	It is not foreseen that any prospecting activities will be undertaken within 32m of a watercourse. However, provision is made to include the listed activity should this be required. The Proposed Project is within / near the Marikana Thornveld ecosystem and is situated in a CBA as per the NWP BSP. The MPNE is situated ± 3.1 km south of the Proposed Schietfontein and Krelingspost Prospecting Area. The Hartbeespoort Dam Nature Reserve and M'Nandi Private Nature Reserve are located ± 4.1 km south-west and

					biosphere reserve.	± 0.2 km east of the Proposed Prospecting Area respectively. The prospecting area falls within the Magaliesberg Biosphere Reserve.
		GN R. 985	18(h)	The widening of a road by more than 4m, or the lengthening of a road by more than 1Km, in the NWP on land, where such land is situated within i*nter alia:* (i) a CBA, as identified in systematic biodiversity plans adopted by the CA; or (ii) b) 5 kilometres from protected as identified in terms of the NEM:PAA or from the core areas of a biosphere reserve.	The proposed drilling localities have been determined and existing access roads will be used as far as possible. There will however potentially be a need to widen these roads to allow for access. The Proposed Activities is within / near the Marikana Thornveld ecosystem and is situated in a CBA, as per the NWP BSP. The MPNE is situated ± 3.1 km south of the Proposed Schietfontein and Krelingspost Prospecting Area. The Hartbeespoort Dam Nature Reserve and M'Nandi Private Nature Reserve are located ± 4.1 km south-west and ± 0.2 km east of the Proposed Prospecting Area respectively. The prospecting area falls within the Magaliesberg Biosphere Reserve.

4. <u>National Environmental Management: Air Quality Act (Act No. 39 of 2004</u>) The National Environmental Management: Air Quality Act (Act No. 39 of 2004) ("**NEM:AQA**") was implemented on 24 February 2005 and reforms the law regulating air quality, in order to protect the environment by providing: (i) reasonable measures be implemented for the prevention of pollution and ecological degradation and securing ecologically sustainable development while promoting justifiable economic and social development; and (ii) for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto. On 22 November 2013 the List of Activities which result in Atmospheric Emissions which have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage was published under GN R893 in Governmental Gazette No 37054, in terms of section 21(1)(b) of the NEM:AQA (**GN R893**") thereby repealing the previous list of activities which were promulgated on 31 March 2010.		***<u>Applicability to the Proposed Project:</u>*** No activity listed GN R893 is applicable to the Proposed Project. The Proposed Schietfontein and Krelingspost Prospecting Area falls within the Waterberg-Bojanala National Priority Area ("**NPA**"), as contemplated in section 18(1) of NEMAQA.

5. <u>National Environmental Management: Biodiversity Act (Act No. 10 of 2004)</u> In line with the Convention on Biological Diversity, the National Environmental Management: Biodiversity Act (Act No. 10 of 2004) ("**NEM:BA**") aims to legally provide for biodiversity conservation, sustainable use and equitable access and benefit sharing. NEM:BA creates a basic legal framework for the formation of a national biodiversity strategy and action plan and identification of biodiversity hotspots and bioregions, which will then be given legal recognition. It imposes obligations on landowners (state or private) governing alien invasive and regulates the introduction of genetically modified organisms. The NEM:BA ensures that provision is made by the site developer to remove any aliens which have been introduced to, or are present on, the site. NEM:BA also provides for listing of threatened or protected ecosystems, in one of four categories: critically endangered, endangered, vulnerable or protected. Threatened ecosystems are listed to reduce the rate of ecosystem and species extinction by preventing further degradation and loss of structure, function and composition of threatened ecosystems. The purpose of listing protected ecosystems is primarily to conserve sites of exceptionally high conservation value.		***<u>Applicability to the Proposed Project:</u>*** The Proposed Project will take place on degraded, cultivated fields and natural open areas. No critical endangered ecosystems are located within the area, however the prospecting area falls within the vulnerable Marikana Thornveld Ecosystem.

6. <u>National Environmental Management: Waste Act (Act No. 59 of 2008)</u> The NEM:WA was implemented on 1 July 2009 and section 20 of the Environment Conservation Act (Act No. 73 of 1989) ("**ECA**"), under which waste disposal sites was previously governed, was repealed. The objectives of NEM:WA involve the protection of health, wellbeing and the environment by providing reasonable measures for the minimisation of natural resource consumption; avoiding and minimising the generation of waste; reducing, recycling and recovering waste; and treating and safely disposal of waste as a last resort. In terms of the NEM:WA, all waste management activities must be licenced. According to section 44 of the NEM:WA, the licensing procedure must be integrated with an EIA process in terms of the NEMA. GN R921, published under NEM:WA in *Government Gazette* 37083 on 29 November 2013 contains the list of waste activities that requires a waste management licence ("**GN R921**").		***<u>Applicability to the Proposed Project:</u>*** No listed activities in terms of GN R921 are anticipated for the Proposed Project. Waste handling, storage and disposal during operation are required to be undertaken in accordance with the requirements of the Act, as has been detailed in the EMPr.
7. <u>National Heritage Resources Act (Act No. 25 of 1999)</u> The protection and management of South Africa's heritage resources are regulated by the National Heritage Resources Act		***<u>Applicability to the Proposed Project:</u>*** Based on the desktop survey of specialist studies conducted in the area no heritage resources of significance are present on the

(Act No. 25 of 1999) ("**NHRA**"). The national enforcing authority for the NHRA is the South African Heritage Resources Agency ("**SAHRA**"). In terms of the NHRA, historically important features such as graves, archaeology and fossil beds are protected. Similarly, culturally significant symbols, spaces and landscapes are also afforded protection. Permits are required to damage or destroy such heritage resources, unless the provisions of section 38(8) of NEMA are followed.		Proposed Schietfontein and Krelingspost Prospecting Area.
8. <u>National Water Act (Act No. 36 of 1998)</u> The National Water Act (Act No. 36 of 1998) ("**NWA**") is the primary regulatory legislation, controlling and managing the use and pollution of water resources. It provides for fundamental reformation of legislation relating to water resource use. The NWA's preamble recognises that the: (i) ultimate aim of water resource management is to achieve sustainable use of water for the benefit of all users; and (ii) protection of water resources' quality is necessary to ensure sustainability of the nation's water resources in all water users' interests. The NWA's purpose is stated in section 2 and enforced by the Department of Water and Sanitation ("**DWS**"). The NWA's principles are set out in section 2 and include the following: • *Promoting the efficient, sustainable and beneficial use of water in the public interest;* • *Facilitating social and economic development;*		***<u>Applicability to the Proposed Project:</u>*** The Proposed Project for the drilling of diamond drilled boreholes may potentially require a General Authorisation in terms of the NWA, 1998. This is due to the fact that some of the drilling sites might potentially be situated within 100m of the 1 in 100 year floodline of the non-perennial stream that traverses between the Schietfontein and Krelingspost Farm boundary.

• *Protecting aquatic and associated ecosystems and their biological diversity;* • *Reducing and preventing pollution and degradation of water resources; and* • *Meeting international obligations.* The NWA presents strategies to facilitate sound management of water resources; provides for the protection of water resources; and regulates use of water by means of Catchment Management Agencies, Water User Associations, Advisory Committees and International Water Management. As the NWA is founded on the principle that government has overall responsibility for and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest, an industry (including mines) can only be entitled to use water if it has an entitlement for such use under the NWA.		
9. <u>Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)</u> The MPRDA's main objective is to recognise the State as the custodian over all the mineral and petroleum resources in South Africa and promote equitable access to the country's resources. It allows for previously disadvantaged persons to enter the minerals and petroleum industry and benefit from the		***<u>Applicability to the Proposed Project:</u>*** A prospecting right application for the Proposed Project was submitted by EP to the DMR as the CA.

exploitation of the country's minerals. This is done through the focus on job creation in the mining industry for previously disadvantaged people. The MPRDA ensures that holders of existing and new mining rights contribute towards the socio-economic development in the areas in which they operate, promoting economic growth, employment and advance the social- economic welfare of all South Africans. A prospecting right is required to be granted by the DMR for prospecting activities relating to mineral resources.		
10. <u>Mine Health and Safety Act (Act No. 29 of 1996)</u> The Mine Health and Safety Act (Act No. 29 of 1996) ("**MHSA**") aims to provide for protection of the health and safety of all employees and other personnel at South African mines. Its main objectives are: • Protection of the health and safety of all persons at mines; • Requiring employers and employees to identify hazards and eliminate, control and minimise the risks relating to health and safety at mines; • Giving effect to the public international law obligations of South Africa that concern health and safety at all mines; • Providing for - o employee participation in matters of health and		***<u>Applicability to the Proposed Project:</u>*** EP will need to ensure that the MHSA is adhered to on Proposed Schietfontein and Krelingspost Prospecting Area by employees, contractors, sub-contractors and visiting personnel. This is especially pertinent during the operational phase of the Proposed Project.

safety through health and safety representatives and the health and safety committees at mines; o effective monitoring of health and safety conditions at mines; o enforcement of health and safety measures at mines; o investigations and inquiries to improve health and safety at mines; and • To promote: o a culture of health and safety in the mining industry; o training in health and safety in the mining industry; and o co-operation and consultation on health and safety between the State, employers, employees and their representatives.		
11. <u>Conservation of Agricultural Resources Act (Act No. 43 of 1983)</u> The CARA aims to provide for control over the utilisation of natural agricultural resources, including: promoting the conservation of soil, water resources and vegetation; and combatting weeds and invader plants. It makes provision for control measures to achieve the CARA's objectives relating to	***Refer to point 11 in table 6.***	***<u>Applicability to the Proposed Project:</u>*** The Proposed Project will take place on degraded, cultivated fields and natural open area and EP will take cognisance of the requirements of CARA, where applicable.

inter alia: • Cultivation of virgin soil; • Utilisation / protection of wetlands, marshes, water sponges, watercourses / sources; • Regulating of the flow pattern of run-off water; • Utilisation and protection of vegetation; • Grazing capacity of veld and the number and type of animals; • Control of weeds and invader plants; and • Restoration or reclamation of eroded land or land which is disturbed or denuded.		
12. <u>Hazardous Substance Act (Act No. 15 of 1973)</u> The Hazardous Substances Act (Act No. 15 of 1973) ("**HSA**") provides for the: • Control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances; • Control of certain electronic products; • Division of such substances or products into groups in relation to the degree of danger; • Prohibition and control of the importation, manufacture,	***Refer to point 12 in table 6.***	***<u>Applicability to the Proposed Project:</u>*** EP will take cognisance of the requirements of the HSA in relation to hazardous substances that may be used for the Proposed Project. It is not anticipated that significant volumes of hazardous substances will be used.

sale, use, operation, application, modification, disposal or dumping of such substances and products; and • Matters connected therewith.		
13. <u>Promotion of Access to Information Act (Act No. 2 of 2000)</u> The Promotion of Access to Information Act (Act No. 2 of 2000) ("**PAIA**") recognises that everyone has a right of access to any information held by the State; and another person when that information is required to exercise or protect any right. PAIA's purpose is to promote transparency and accountability in public and private bodies and a society in which people have access to information that enables them to exercise and protect their rights.	***Refer to point 13 in table 6.***	***<u>Applicability to the Proposed Project:</u>*** GN R982 contains regulations pertaining to public involvement and the provision of *inter alia* BARs to I&APs to enable public comment. These Regulations will be adhered to during the PPP. However, the PAIA will also be considered and adhered to.
14. <u>Provincial and Municipal Bylaws</u> The MLM, BPDM and NWP has developed local bylaws, provincial legislation and various policies relating to waste disposal, water, economic development, air quality etc.	***Refer to point 14 in table 6.***	***<u>Applicability to the Proposed Project:</u>*** The following provincial legislation, municipal bylaws and policies are applicable to EP: ➢ Spatial Development Framework ("**SDF**"), 2016: NWP; ➢ MLM: Air Quality Management By-Laws, 2013; ➢ MLM: Waste Management By-Laws, 2008; ➢ MLM: Storm water management By-laws, 2013; and ➢ MLM: Water & Sanitation By-Laws, 2015. EP will ensure that such policies, provincial legislation and bylaws,

		are adhered to during the Proposed Project's commencement and operation.
15. <u>Guidelines</u> In addition to the abovementioned Acts and their associated Regulations, the following guidelines and reports have been taken cognisance of during the application process: • BPDM Integrated Development Plan ("**IDP**"), 2012. • BPDM SDF, 2016. • MLM IDP, 2017-2018. • Madibeng Environmental Management Framework, 2009. • SANS 10103 of 2008. • SANS 10210 of 2004. • NEMA Implementation Guidelines: Sector Guidelines for Environmental Impact Assessment Regulation (published under GN 654 in GG 3333 of 29 June 2010). • DEA (2011); A user friendly guide to the National Environmental Management: Waste Act, 2008. South Africa, Pretoria.	***Refer to point 15 in table 6.***	***<u>Applicability to the project:</u>*** EP will ensure that such policies and standards, as far as possible, are adhered to during the Proposed Project.

• DEA (2017) Guideline on Need and Desirability. • Department of Environmental Affairs and Tourism (2004): Criteria for determining Alternatives in EIA, Integrated Environmental Management, Information Series 11. • Guideline for Implementation: Public Participation in the EIA Process (published in under GN 807 in GG 35769 of 10 October 2012).		
16. <u>EP Health, Safety, Environmental and Community Policy (HSEC) and Emergency preparedness and response plan</u> A copy of EP's HSEC Policy can be found under ***Appendix 5***.	***Refer to point 16 in table 6.***	***<u>Applicability to the project:</u>*** EP will ensure that its HSEC Policy is adhered to during the Proposed Project's operational phase.

5. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES.

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

Northam is an independent, fully empowered, mid-tier and integrated PGM producer. It currently has two operating assets, Zondereinde and Booysendal Mines (owned by Northam and Booysendal Platinum (Pty) Ltd ("**Booysendal**") respectively, in addition to the recently acquired EM. EP will take leverage off Northam and Booysendal for their technical competence and experience in the commencement of its operations. All three operations are PGM mines in the South African BIC.

EM, acquired by EP in 2018, is operated under the two Mining Rights (resource estimated at 21.3 Moz 4E) with fully developed, world-class surface infrastructure. It is located on the south-eastern limit of the western limb of the BIC. Having commenced initial operations in 2007, the previous operator placed the mine under care and maintenance in 2015. Following EP's acquisition, EM was under care and maintenance and the re-establishment of the operation in 2019 as a PGM production unit with a 30-year life.

EM was previously operated as a board and pillar, fully mechanised mine. EP intends to change the mining method to a conventional hybrid type mining. This is expected to increase the previous forecast life of mine ("**LOM**").

The EM infrastructure includes two decline shaft systems (Kukama and Nyala), opencast sections, workshops and stores, overburden rock and topsoil dumps, opencast mining pits, Concentrator Plant, water management infrastructure (i.e. dams, channels and pipelines), WWTP and WTP, TSF (four Paddocks), offices and auxiliaries (i.e. mine clinic, laboratory, training centre, etc.), recreational area (Game Farm), agricultural fields, and haul and internal roads.

The probable need and desirability for the Proposed Project have been identified as the following:

a) Economic benefit

The Proposed Project has economic benefits for South Africa due to local socio-economic benefits from job creation; capital expenditure on contractors, materials and equipment; and potentially increasing platinum production in the BIC area.

b) Job Creation

The Proposed Project would have a beneficial impact on the local economy through the creation of new employment opportunities during its operational phase. Both skilled and unskilled temporary employment opportunities would be created through the Proposed Project. In a developing country, such as South Africa, following a "no-project" option would have potential adverse impacts on a local and regional employment scale.

As mentioned earlier, the Proposed Project could increase the mining potential of the area, which may potentially result in employment opportunities.

5.1 Description of the process followed to reach the proposed preferred site.

NB!! – This section is not about the impact assessment itself; It is about the determination of the specific site layout having taken into consideration (1) the comparison of the originally proposed site plan, the comparison of that plan with the plan of environmental features and current land uses, the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout as a result.

As mentioned previously, the Proposed Project will be located on portions of Schietfontein and Krelingspost. The site selection was done by taking cognisance of the following factors:

- Location of existing disturbed footprints;
- Existing and future infrastructure and servitudes e.g. future plant upgrades etc.;
- Position in relation to other mine infrastructure;
- Distance from the Concentrator Plant;
- Area and footprint available for the Proposed Project;
- Environmental and social constraints;
- General topography;
- Geology of the Proposed Schietfontein and Krelingspost Prospecting Area;

- Surface geotechnical conditions in the footprint zone;
- Geohydrology features and optimal resource locations;
- Watercourse locations;
- Land use;
- Burial and archaeological sites; and
- Proximity to settlements.

5.2 Details of all alternatives considered.

With reference to the site plan provided as Appendix 4 and the location of the individual activities on site, provide details of the alternatives considered with respect to:
(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

5.2.1 Location Alternatives

No location alternatives were identified, as the location of the Proposed Project is determined on initial assessment of the geological data available. This data suggests that chromite and other PGMs might be found in the identified area.

5.2.2 Access Route Alternative

No alternatives were considered for the access roads, as the intention is to make use of existing access roads as far as possible. This will reduce the Proposed Project's impact / environmental footprint. There will however potentially be a need to widen these roads to allow for access.

5.2.3 Design/ Layout

Since no complicated surface infrastructure will be required for the Proposed Project, no design and layout alternatives were assessed.

5.2.4 Operational Alternatives

Diamond drilling/ core-drilling methods - Core drilling techniques uses diamond drilling methods. A hollow cylindrical drill bit, filled with industrial diamonds, is attached to a series of metal drill rods and rotated under controlled downward pressure. A circle of rock is ground away; the cutting removed by water flushing; and a cylindrical core remains in the hollow centre of the drill string. Core drilling is the only satisfactory means of obtaining representative samples of seams at depth for quality determination.

An alternative to core drilling is non-core drilling. This technique uses rotary drilling methods. In this technique, a string of metal rods is rotated axially and a bit at the base of the string is forced downward, under controlled pressure, breaking up the ground and advancing the hole's depth. Cuttings are swept away from the bit and lifted to the surface either by pumped circulating water or jets of compressed air. Logging of the hole drilled by non-core drilling methods is mainly based on the cuttings obtained as the drill progresses. In view of the difficulty and error bound logging, this drilling method was discarded and may be used only for infill drilling wherever necessary.

The preferred drilling methods will therefore be the core drilling technique, using the diamond drill.

6. DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED

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

The Stakeholder Engagement Process undertaken during the project announcement phase will be included in the Final BAR ("**FBAR**") and undertaken in terms of Regulations 39 to 44 of the GN 982.

The following tasks will be performed during the PPP to inform stakeholders and I&APs (Evidence of PPP that will be conducted will be appended under ***Appendix 6 – I&AP Consultation Report***):

Details of the public participation process to be followed:

- Fixing of Notice Boards at the following places:
    - Site Entrance of the EM;
    - Madibeng Local Library;
    - Mmakau Police Station;
    - High density location in the Damonsville Community;
    - High density location in the Tshwara Community; and
    - High density location in the De Wildt Community.

- Distribute Public Notices and BID via registered mail, fax and email to the following:
    - Landowner;
    - Neighbouring landowners;
    - Stakeholders (i.e. SAHRA, Eskom, Tribal Authorities);
    - Ward Councillors;
    - MLM;
    - BPDM;
    - NWDREAD;
    - DEFF; and
    - DWS.
- Place newspaper advertisements in the following newspapers:
    - Beeld; and
    - Brits Pos.
- Depending on the number of registered I&APs, convene a public meeting.
- Give registered I&APs and Stakeholders thirty (30) days to comment on the DBAR and Draft EMPr).
- Make the FBAR and Final EMPr available to I&APs for comments prior to submission to the CA.
- Keep a register of all registered I&APs.
- Compile a Comments and Responses Report.
- Notify all I&APs and stakeholders of the CA's decision.

6.1 Summary of issues raised by I&AP's

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

Table 7: Table summarising comments and issues raised, and reaction to those responses

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		**Date Comments Received**	**Issues raised**	**EAP's Response to the issues raised**	**Reference** Section and paragraph reference in this report where the issues and or response were incorporated.
Affected Parties					
1. <u>Landowners and Occupants</u>					
• ***FJ Strauss & L Strauss***	***X***				
• ***MN Ras***	***X***				
• ***RG Jacobs***	***X***				
• ***JJR Van der Merwe and JJ Van der Merwe***	***X***				
• ***Madala's Padmark CC***	***X***				
• ***Super Soya CC***	***X***				
• ***Macal Farms CC***	***X***				
• ***Kreylingspost Nr 10 De Wildt Pty Ltd***	***X***				
• ***Home Shopper CC***	***X***				
• ***Corporate Flat CC***	***X***				

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		**Date Comments Received**	**Issues raised**	**EAP's Response to the issues raised**	**Reference** Section and paragraph reference in this report where the issues and or response were incorporated.
2. Lawful Occupants					
Samancor (holder of a prospecting right over Portions 27 and 28 of Schietfontein for chrome in the MG and LG seams, with reference PR11613)	***X***				
Easy Lawn	***X***				
EL EM Skadugras	***X***				
KWM Workshop	***X***				
Die Grasplaas	***X***				
Envirocycle	***X***				
3. Adjacent properties					
• ***South African National Roads Agency SOC Ltd***	***X***				
• ***MLM***	***X***				
• ***Jo-Fana Roses CC***	***X***				
• ***National Housing Board***	***X***				
• ***Suid - Afrikaanse Ontwikkelings Trust***	***X***				

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAP's Response to the issues raised	Reference Section and paragraph reference in this report where the issues and or response were incorporated.
• ***Republic of South Africa Government***	***X***				
• ***Salene Mining (Pty) Ltd***	***X***				
• ***Hernic Ferrochrome (Pty) Ltd***	***X***				
4. <u>Municipal councillor</u>					
• ***Ward 19 – Proposed Prospecting Area situated in this Ward.*** ***Mr TS Bogale***	***X***				
• ***Ward 17 – Proposed Prospecting Area situated in this Ward.*** ***Mr TS Bogale***	***X***				
• ***Ward 21 – Surrounding Ward*** ***Mr MW Motlhasedi***	***X***				
• ***Ward 18 – Surrounding Ward*** ***Mr Barney A Maubane***	***X***				
• ***Ward 20 – Surrounding Ward*** ***Mr Chris Seabi***	***X***				
• ***Ward 35 – Surrounding Ward*** ***Ms Nomsa Maqakamba***	***X***				
5. <u>Municipality</u>					
• ***BDPM;***	***X***				
• ***MLM;***	***X***				

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAP's Response to the issues raised	Reference Section and paragraph reference in this report where the issues and or response were incorporated.
6. Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWS etc.					
• ***NWREAD***	***X***				
• ***DWS***	***X***				
• ***DMR***	***X***				
• ***SAHRA***	***X***				
• ***Eskom***	***X***				
7. Communities					
• ***Damonsville Community***	***X***				
• ***Mothotlung Community***	***X***				
• ***Ramolapong Community***	***X***				
• ***Mmakau Community***	***X***				
• ***Tshwara Community***	***X***				
• ***De Wildt Community***	***X***				
• **Traditional Leaders / Land Claimants**					

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAP's Response to the issues raised	Reference Section and paragraph reference in this report where the issues and or response were incorporated.
• ***Bakgatla-Ba-Mmakau Tribal Council***	***X***				
• **DEFF**					
• ***Director: Environmental Authorisations***	***X***				
• **Other Authorities**					
• ***Department of Public Works Road and Transport***	***X***				
• ***Department of Rural Development***	***X***				
• ***Department of Local Government and Traditional Affairs***	***X***				
• ***Land Claims Commission***	***X***				
• **Other Affected Parties**					
• ***Agri North West***	***X***				
• **Interested Parties**					
• ***De Wildt Helpmekaar Company***	***X***				
• ***Johan Janse van Rensburg***	***X***				
• ***Ugwa Consulting Services CC,*** *whose application for a*	***X***				

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAP's Response to the issues raised	Reference Section and paragraph reference in this report where the issues and or response were incorporated.
prospecting right was apparently accepted on 15 August 2011 to prospect for gold, silver, nickel, uranium in respect of inter alia Portions 2 and 3 of Krelingspost.					
• ***Zolograph Investments (RF) (Pty) Ltd,*** *developer that will be constructing a 50MW Solar Farm on Portions 15, 27 and 28 of Farm Schietfontein 437* • *JQ*	***X***				

7. THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE SITES

This section describes the existing status of the environment that may be affected by the proposed project.

In this section of the report, a summary of the baseline environment of the Proposed Schietfontein and Krelingspost Prospecting Area is described. This has been compiled based on the following:

- Available information from the existing EM EMPRs;
- Specialist reports conducted in and around the Proposed Schietfontein and Krelingspost Prospecting Area on previous applications lodged;
- South African Weather Service ("**SAWS**");
- South African National Biodiversity Institute (SANBI);
- Statistics South Africa;
- MLM IDP;
- Existing information on the environmental parameters of the area;
- Stakeholder and I&AP comments received from the BID and DBAR.

7.1 Baseline Environment

7.1.1 Type of environment affected by the proposed activity.

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

7.1.1.1 Regional Setting

The Proposed Project will be taking place on portions of Schietfontein and Krelingspost, which is located within the MLM that forms part of the BPDM, situated within the NWP of South Africa.

The Proposed Schietfontein and Krelingspost Prospecting Area is located approximately 14 km east of Brits and 60 km west of Pretoria. Neighbouring communities in proximity to the prospecting area includes Damonsville, Mothutlung, Moumong, De Wilt, Mmakau, Ramolapong, Tshwara and Ga-Kwate. It is situated between the N4 Bakwena highway (south) and R566 Brits-Rosslyn Provincial Road (north).

The Proposed Schietfontein and Krelingspost Prospecting Area is located within Ward 19 and 17 of the MLM. The towns and residential areas close to the Proposed Prospecting Area are given in ***Table 8*** (line-of-sight distances).

Table 8: Line of sight distances to nearest towns for the border of the EM Surface Area

Town	Distance Km	Direction
Damonsville	1 Km	North
Moumong	2.5 Km	North-west
Mothutlung	5.4 Km	North-west
Tshwara	1 Km	North
Ramolapong	2.3 Km	North
Mmakau	4.5 Km	North-west
De Wilt	1.4 Km	North
Ga-Kwate	1.8 Km	North
Brits	14 Km	West
Pretoria	60 Km	East

7.1.1.2 Climate

The Proposed Schietfontein and Krelingspost Area fall within the Highveld Climatic Zone, as defined by Schulze (1974). Detailed features of this climatic zone are outlined below:

- Temperatures in this climatic zone are generally mild but low minima can be experienced in winter due to clear night skies. Average annual precipitation ranges from 650 mm (west) to 900 mm (east);
- Rain generally occurs in summer from October to March;
- The mean annual precipitation ("**MAP"**), 85% falls during summer thunderstorms. The thunderstorms generally occur every 3 to 4 days in

summer and are of short duration and high intensity, accompanied by strong gusty south westerly winds;

- Hail frequency is high, tending to occur 4 to 7 times per season;
- Average of 75 storms occurs per year;
- Summer average daily temperatures range from 17 to 27°C, with maxima of 38°C. In winter average daily temperatures range from 0 to 13°C;
- Frosts may occur from May to September for about 120 days; and
- Light north-easterly and south-westerly winds prevail. However, strong gusty south-westerly winds often accompany thunderstorms.

Various weather stations managed by both the SAWS and the DWS are located close to the Proposed Schietfontein and Krelingspost Prospecting Area. The SAWS station and DWS station (A2E001) are located respectively approximately 5 and 7.5km from the EM Surface Area boundary. The DWS station has a rainfall record length of 91 years (1926 - 2017).

Lynch (2004) was also used as a source of rainfall data for the Proposed Prospecting Area and is the source of the MAP data. A comparison of DWS station A2E001 and Lynch (2004) average monthly rainfall is presented in ***Table 9***. MAP for DWS station A2E001 is 686mm.

Table 9: Average Monthly Rainfall Distribution.

Rainfall (mm)		
Month	**A2E001**	**Lynch (2004)**
Jan	126	119
Feb	94	94
Mar	86	81
Apr	45	40
May	19	16
Jun	8	5
Jul	5	4
Aug	6	6
Sep	15	16
Oct	60	100
Nov	108	100
Dec	114	105
Total	686	686

7.1.1.3 Wind Direction and Speed.

Winds vary diurnally and between seasons. The predominant wind direction in the Brits area is from the east, with frequent winds also occurring from the north-east and south. During the day there is an increase in winds from the north-west and north-east. At night, wind flow occurs mainly from the east and south, with north-westerly and south-easterly winds decreasing at night. Night-time conditions also reflect a difference in wind speed ranging from 1 - 4 m/s at night in comparison to daily wind speed, which ranges between 2 – 13 m/s. During the summer months, strong winds from the east and north-east dominate, with wind speeds of up to 17 m/s from the east. In winter, winds from the east dominate however strong and frequent winds from the south also occur.

7.1.1.4 Topography

The NWP, the sixth largest province in South Africa, occupies a total area of 116 320 km^2 (9,5% of the total area of South Africa). It is geographically situated between 25° and 28° south of the equator and 22° and 28° longitude east of Greenwich Meridian. With altitudes ranging from 920 m – 1782 m above sea level ("**mamsl**"), the NWP is professed to have the most uniform terrain of all provinces.

The Proposed Schietfontein and Krelingspost Prospecting Area's topography is relatively flat, with koppies and hills bordering it to the north and the Magaliesberg mountain range to the south. It is located approximately 11 km north-east of Hartbeespoort Dam. The Proposed Schietfontein and Krelingspost Prospecting Area's elevation ranges between 1208 m in the north–west and 1261 m in the east. Mountain peaks in the nearest section of the Magaliesberg rise to 1 500 – 1 600 mamsl. The Hartbeespoort Dam lies at an altitude of approximately 1 200 mamsl and the Crocodile River flows from it in a north-westerly direction, passing about 14 km to the west of the Proposed Schietfontein and Krelingspost Prospecting Area at an altitude of about 1 110 mamsl.

The Proposed Prospecting Area is relatively flat, with a gentle slope towards the north-west. The overall slope of the area is 1:35. The slope increases slightly to the north near the Msilitswane koppie (Trig beacon no. 16), which peaks at 1 317.2 mamsl.

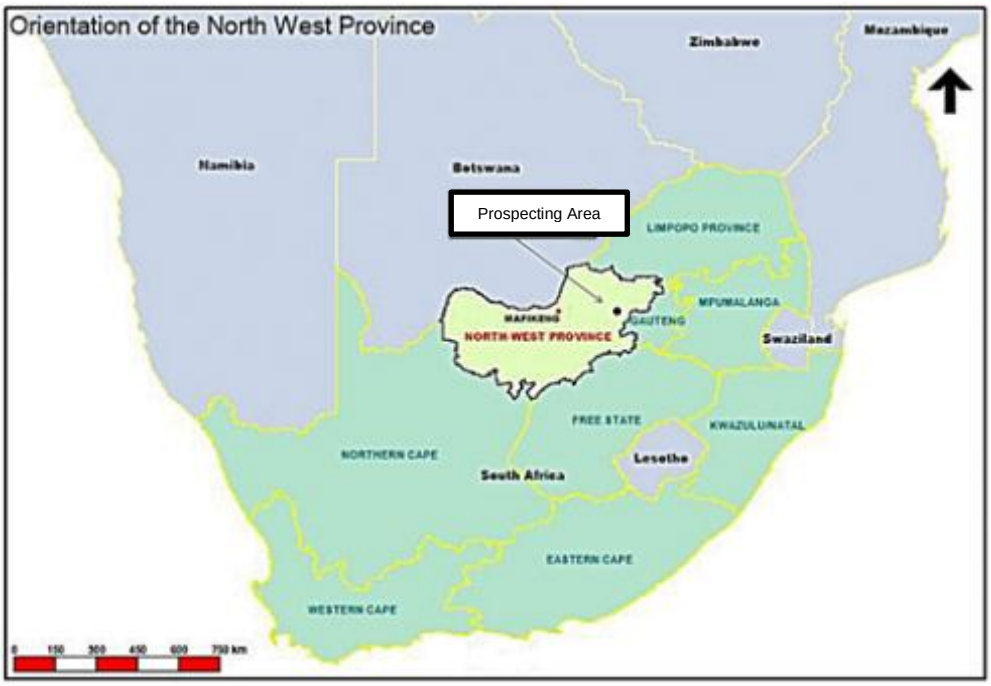

Figure 8: Orientation of the NWP – South Africa.

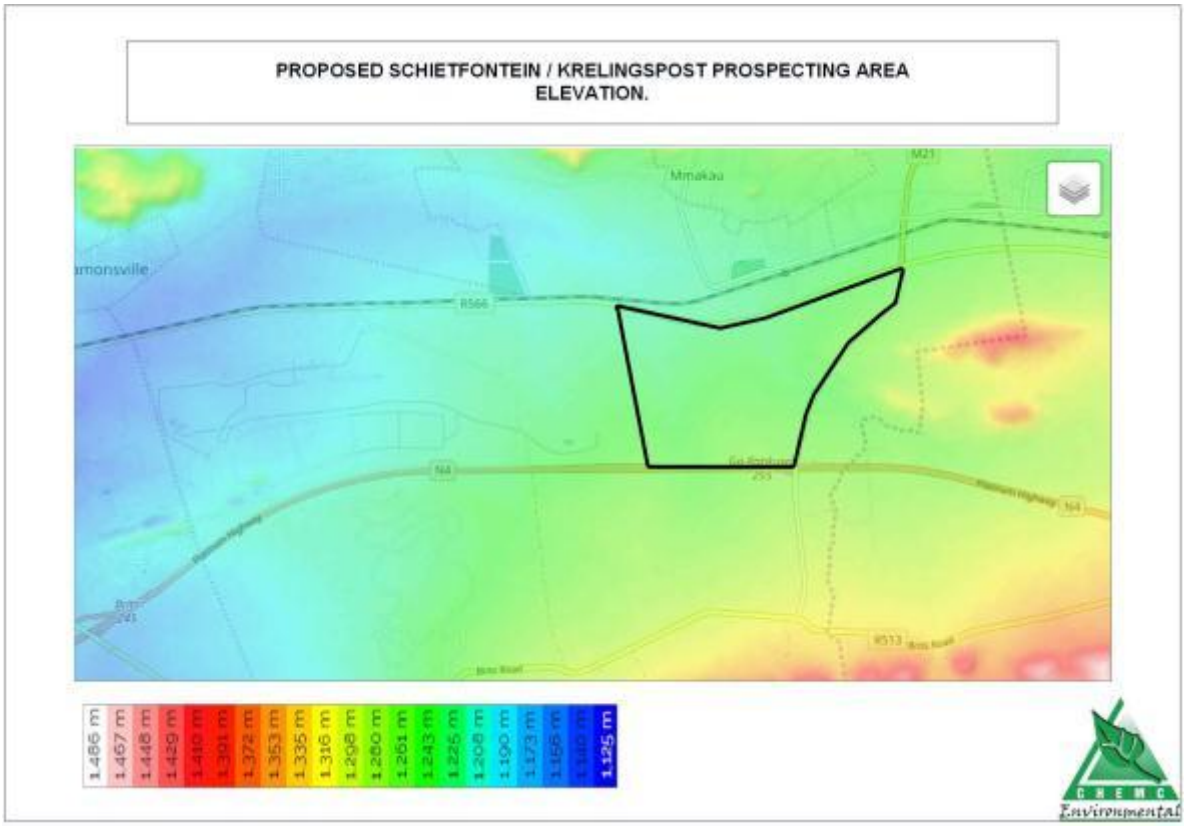

Figure 9: Local Topography of the Proposed Schietfontein and Krelingspost Prospecting Area

7.1.1.5 Geology

The Proposed Schietfontein and Krelingspost Prospecting Area is located adjacent east of EM, where the platinum bearing UG1, UG2 and Merensky reefs occur. It is located within the south-eastern most region of the western limb of the BIC.

The BIC comprises of volcanic rocks (Rooiberg Group); a mafic layered suite (Rustenburg Layered Suite); and sheeted granite (Lebowa Granite Suite) emplaced onto and within sediments of the Transvaal Supergroup.

a) Regional Geology

Southern Africa is characterised by the presence of large mafic to ultramafic layered complexes, the best known of which is the Great Dyke in the Zimbabwe Craton and the Bushveld and Molopo Complexes in the Kaapvaal Craton. By far the largest, best-known and economically most important of these is the BIC, which was intruded about 2060 million years ago into rocks of the Transvaal Supergroup, largely along an unconformity between the Magaliesberg quartzite of the Pretoria Group and overlying Rooiberg felsites. The total estimated extent of the BIC is some 66 000 km^2, of which about 55% is covered by younger formations. The mafic rocks of the BIC host layers rich in Platinum Group Metals ("**PGM"**), chromium and vanadium, and constitute the world's largest known resource of these metals.

The mafic rocks (collectively termed the RLS) can be divided into five zones known as the Marginal, Lower, Critical, Main and Upper Zones from the base upwards.

- The Marginal Zone is comprised of generally finer grained rocks than those of the interior of the BIC and contains abundant xenoliths of country rock. It is highly variable in thickness; may be completely absent in some areas; and contains no known economic mineralisation.
- The Lower Zone is dominated by orthopyroxenite, with associated olivine-rich cumulates in the form of harzburgites and dunites.
- The Critical Zone is characterised by regular and often fine-scale rhythmic, or cyclic, layering of well-defined layers of cumulus chromite within pyroxenites and olivine-rich rocks. The economically important PGM deposits are part of the Critical Zone.

The Merensky Reef has traditionally been the most important platinum producing layer in the BIC. Seismic surveys undertaken by the Council for Geoscience indicate that reflectors associated with the Merensky Reef can be traced as far as 50km down dip, to depths of 6 000m below surface. The Merensky Reef varies considerably in its nature but can be broadly defined as a mineralised zone within, or closely associated with, the ultramafic cumulate at the base of the Merensky cyclic unit. In addition to the PGM mineralisation associated with the Merensky Reef, all chromitites in the Critical Zone at times contain elevated concentrations of PGM.

The UG2 Chromitite Layer is the only chromitite layer that is significantly exploited for PGMs at present. The major geological features that affect the UG2 Chromitite Layer are faults, dykes, potholes and mafic / ultramafic pegmatites. Potholes are features of subsidence or erosion, where the igneous layer is absent or occurs at a lower elevation in a modified form. Typically, the PGM concentration and thickness of the layer is modified. Potholes typically approach a circular shape and occur within both the Merensky Reef and the UG2 Chromitite Layer. Poor ground conditions may be associated with potholes and pothole edges; potholes may cause a geological loss of ground of up to 25%. Another unique feature of the BIC's geology is the mafic / ultramafic pegmatites, sometimes referred to as iron rich ultramafic pegmatites or replacement pegmatites. They often destroy the structure of the layering and therefore affect the PGM potential. Mining may be problematic, depending on the situation.

The Rustenburg Layered Suite ("**RLS**") comprises the mafic phase of the BIC and is host to several economically extracted minerals, such as chromite, vanadium and platinum group elements. The RLS is divided into five zones known as the Marginal, Lower, Critical, Main and Upper Zones from the base upwards (Figure 10). Both the Merensky Pyroxenite and UG2 Reef occur within the Upper Critical Zone.

The Critical Zone is divided into the Lower Critical and Upper Critical Zones (Figure 11).The transition between the Lower and Upper Critical Zones is defined as the last occurrence of upper most MG chromitite horizon, usually the MG4. The MG1 and MG2 chromitite layers are extensively mined for chrome.

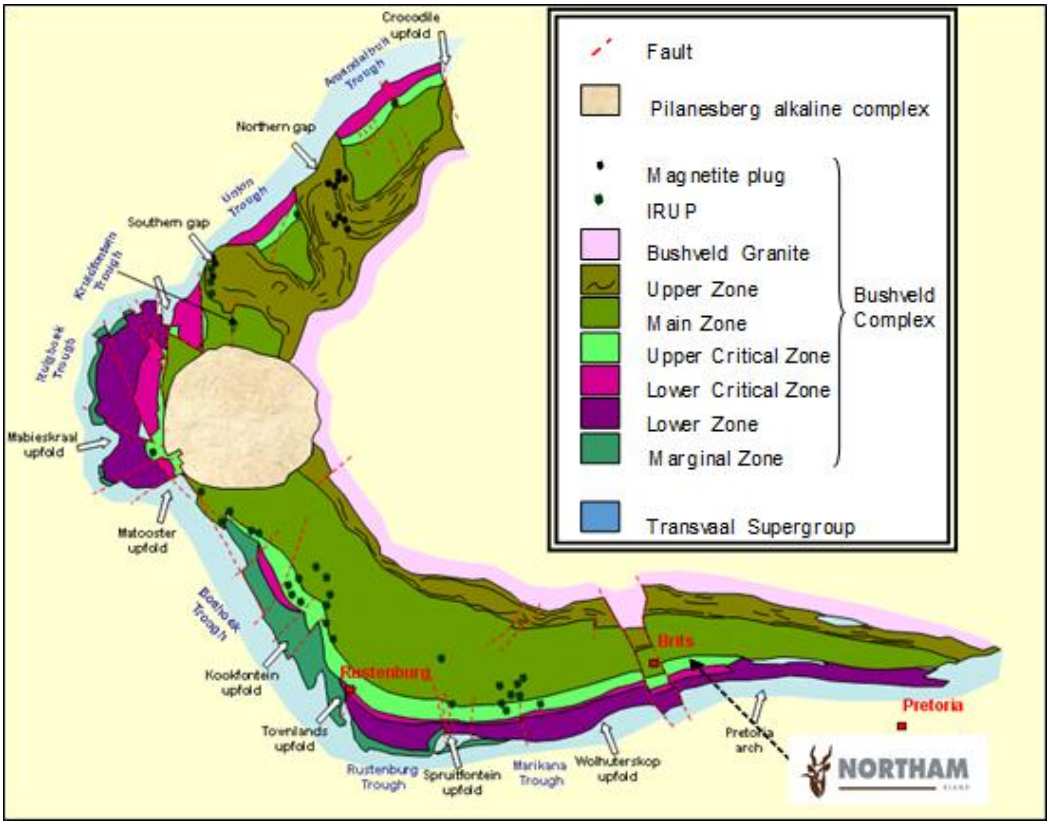

Figure 10: Generalised layout of the western BIC

The Upper Critical Zone is characterised by regular and often fine-scale rhythmic, or cyclic, layering of well-defined layers of cumulus chromite within pyroxenites and olivine-rich rocks.

The first important cycle is the lower of the two UG Chromitite Layers (the UG1 Chromitite Layer). This unit consists of a chromitite layer and underlying footwall chromitite layers that are interlayered with anorthosite. The overlying UG2 chromitite is important because it contains economic concentrations of PGM's and is extensively mined.

The two uppermost cycles of the Critical Zone are the Merensky and Bastard cycles. The former is also of great economic importance, as it contains at its base the PGM-bearing Merensky Reef, a pegmatitic feldspathic pyroxenitic assemblage, with associated thin chromitite layers. The top of the Critical Zone is generally defined as the top of the robust anorthosite (the Giant Mottled Anorthosite) that forms the top of the Bastard cyclic unit.

The economically viable chromite reserves of the BIC, most of which are hosted in the Critical Zone, are estimated at 68% of the world's total, whilst the BIC also contains 56% of all known PGMs.

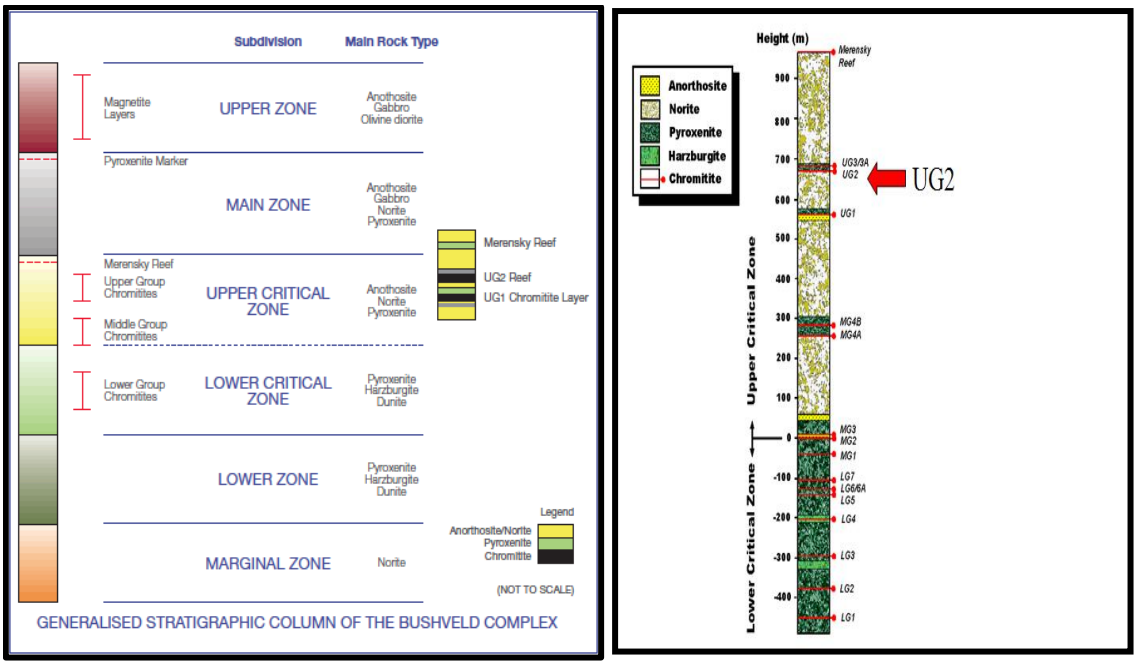

Figure 11: Generalised stratigraphy on the western BIC

Limited published data exists for the region east of the Brits graben toward the De Wildt area, including the Proposed Schietfontein and Krelingspost Prospecting Area; however mention is made of the absence of LG chromitites, as well as the thinning of the BIC toward Pretoria.

The surface geology exposed on Schietfontein and Krelingspost is correlated with rocks of the Main, Critical and Marginal Zones of the BIC, as well as the much older east-west trending Magaliesberg Quartzite units located in the south. The layered BIC rocks generally trend east / west and dip between 18-28°N.

The disturbed nature of the UG2 and Merensky Reefs east of EM is due to the highly complex structural setting and proximity to the basement sedimentary units of the Transvaal floor rocks. The UG2 chromitite layer on Schietfontein is reported to overlay a large meta sedimentary footwall block. Further east, pyroxenite and

melanorite units of the BIC crop out and contact the Magaliesberg quartzite floor rocks.

The available geological information for Schietfontein and Krelingspost is in the form of historical borehole logs, assay data and interpreted structural features from geophysical surveys. Due to their historically being no central data reporting point; the number of companies prospecting over an extended time period; and prospecting rights being transferred between various parties, data has been lost and / or has not been verified.

Suspect collar coordinates (possibly due to different survey systems and different logging standards applied by various companies) introduces uncertainty in the correlation of units. Furthermore, the reported assay data could not be verified against original documentation and the use of different techniques and laboratories introduces uncertainty.

The geological data available is therefore in some instances inadequate or incomplete and adds uncertainty to the geological interpretation of the area under review.

The anticipated structural complexity on Schietfontein and Krelingspost, together with limited borehole information, has made the geological interpretation of the both the UG2 and Merensky Reefs difficult and therefore the continuity and character of both Reefs in this area is interpreted with low confidence. Geological features such as dykes, IRUP, potholes and faults, as well as UG2 facies changes, are known to occur in this Region.

Both the UG2 and Merensky Reefs occur in borehole intersections on Schietfontein and Krelingspost. In total, 57 boreholes were previously drilled in the area under review, with only 6 boreholes located on Krelingspost. The vertical separation between the two Reefs is approximately 200m at EM and appears to decrease toward the east, reaching 188m in Krelingspost, with a minimum middling of 30m occurring on Schietfontein.

b) Local Geology

The Merensky pyroxenite in this Region is similar to that found at EM and can be described as a thick pyroxenite, with a widely spread distribution of PGMs. A total of 5 boreholes have intersected the Merensky pyroxenite (2 on Krelingspost and 3 on Schietfontein), therefore confirming the occurrence of the Merensky pyroxenite. More information is required to confirm the continuity and characteristics of the Merensky pyroxenite on Schietfontein and Krelingspost.

The UG2 Reef at the EM is subdivided into three facies based on the morphology of the chromitite cycle, namely: Normal, Split Reef and Zilkaatsnek Facies (Figure 12). These facies types are described in detail below:

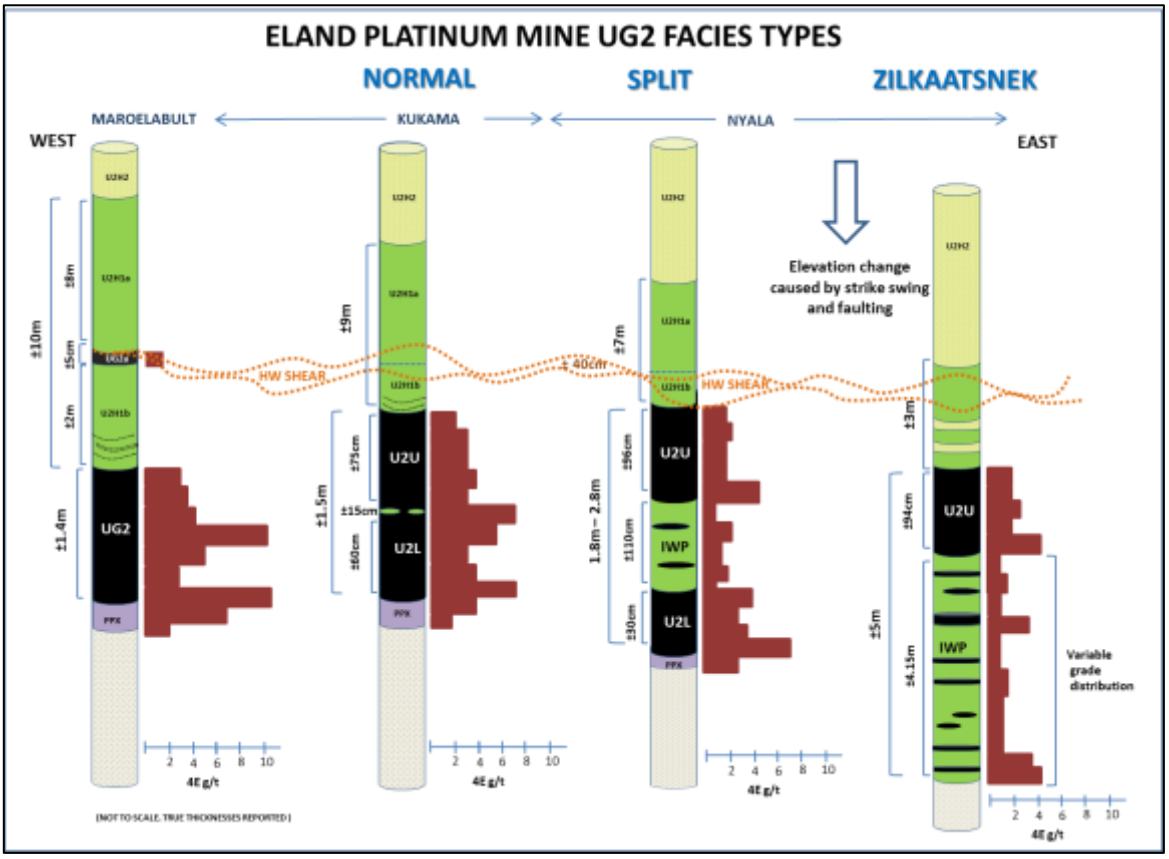

Figure 12: UG2 Facies types at the EM

The Normal Facies constitutes the majority of the UG2 Reef type at the EM. In the Normal Facies, the UG2 Reef consists of a basal chromitite layer (UG2 Lower Chromitite/U2L) and immediately overlying it, another chromitite layer (UG2 Upper

Chromitite/U2U), hosted inside a package of feldspathic pyroxenite and pegmatitic feldspathic pyroxenite or norite.

Typically, the UG2 main chromitite in the western BIC ranges from 0.8m to 1.2m thick and is underlain by a series of chromitite layers, referred to as the Triplets/UG2a/Leaders. It is believed that these chromitite layers coalesced with the UG2 main layer in this Region, explaining an increased average thickness of 1.6m for the UG2 (Normal Facies). The triplets/UG2a/Leaders can be correlated with the UG2 Upper Chromitite (U2U) and the UG2 Main layer is represented by the Lower Chromitite (U2L).

The Split Reef Facies is considered transitional facies and is very similar to the Normal Facies. The main differences are that the Upper and Lower Chromitite layers are separated by anorthosite lenses and / or feldspathic pyroxenite. The average thickness of the Split reef facies is 2.8m. Isolated split reef UG2 intersections also occur within the Normal Facies and are sometimes associated with or in the vicinity of potholes.

A UG2 Facies delineation plan of the EM indicating the location of Schietfontein and Krelingspost is inserted below (Figure 13).

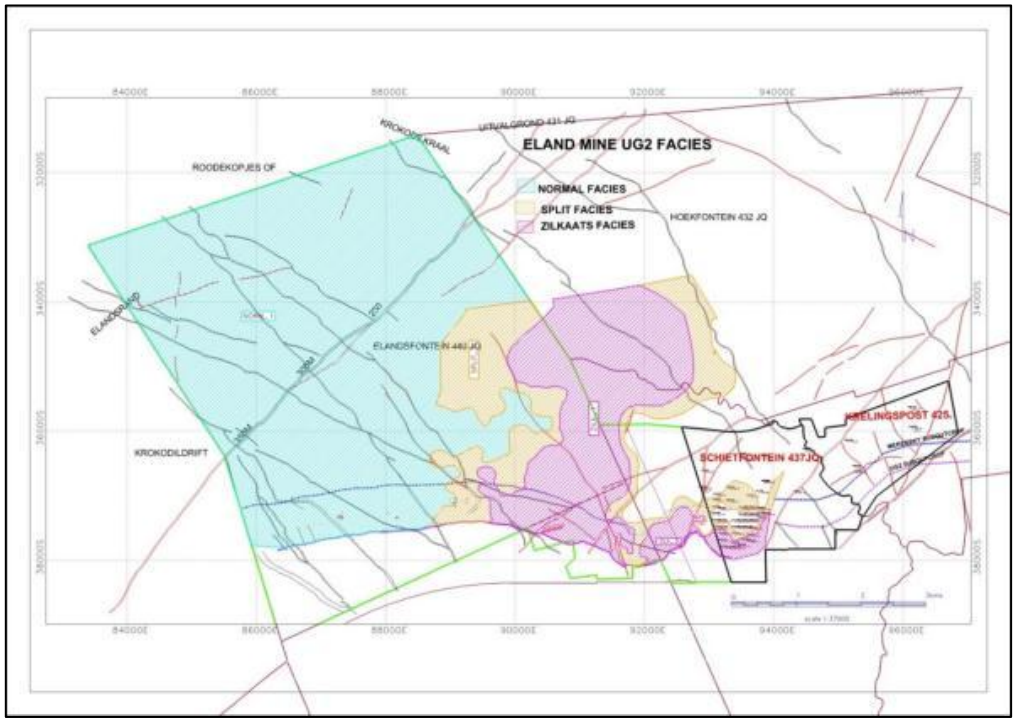

Figure 13: UG2 Facies distribution at the EM

7.1.1.6 Soils

Soils are a significant component of most ecosystems. As an ecological driver, it is the medium in which most vegetation grows and a range of vertebrates and invertebrates exist.

The Proposed Schietfontein and Krelingspost Prospecting Area is dominated by a red soil, with a high base status that is freely drained and structureless. The north-western corner of the Proposed Schietfontein and Krelingspost Prospecting Area consists of dark coloured swelling clay soils, which are strongly structured.

a) <u>Implications for the Proposed Project</u>

Chemical spills are a possibility during the Proposed Project; working machinery and storage facilities bear a risk for chemical spillage and the impact thereof may result in soil pollution. The location of the drill sites will be rehabilitated once the Proposed Project has been completed.

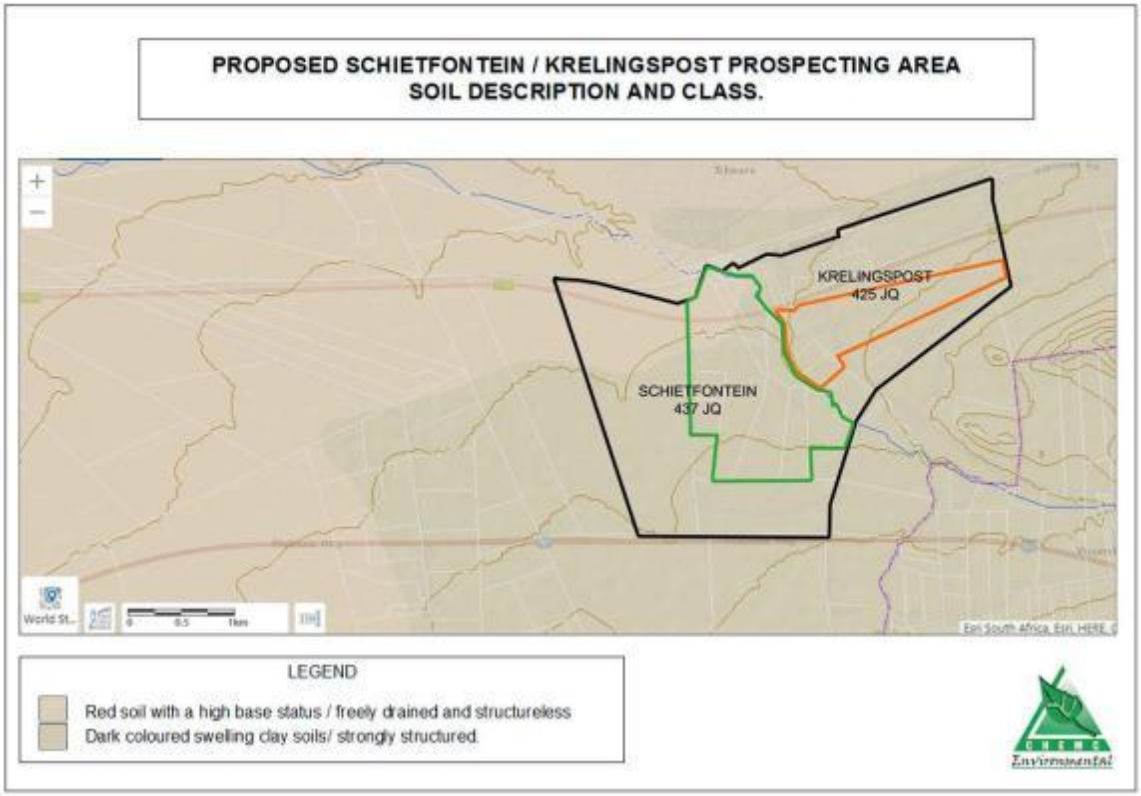

Figure 14: Soil description and class of the Proposed Schietfontein and Krelingspost Prospecting Area

7.1.1.7 Land Use

The Proposed Schietfontein and Krelingspost Prospecting Area comprises mainly of open natural areas, Bushveld and current and previously cultivated fields. The western side of the Proposed Schietfontein and Krelingspost Prospecting Area is mainly private land consisting of open natural areas and cultivated grass areas (Landscaping sod production) whereas the eastern side is more degraded cultivated land and open areas owned by corporations. The area is used for agricultural purposed and has a high grazing capacity. It is mainly free roaming animals that graze on the open areas and grasslands.

A solar power project is proposed on Portions 27 and 28 of Schietfontein. Samancor also holds a prospecting right to chrome in the MG and LG seams on the aforesaid properties. The R566 and Rosslyn – Brits railway traverses certain of the properties. The land uses of the properties in the Proposed Schietfontein and Krelingspost Prospecting Area are discussed in detail in Table 22 below.

7.1.1.8 Land Capability

Land-cover of the Proposed Schietfontein and Krelingspost Prospecting Area is classified mainly as grasslands, open bush and cultivated fields according to the National Landcover dataset from DEA 2014 (https://egis.environment.gov.za).

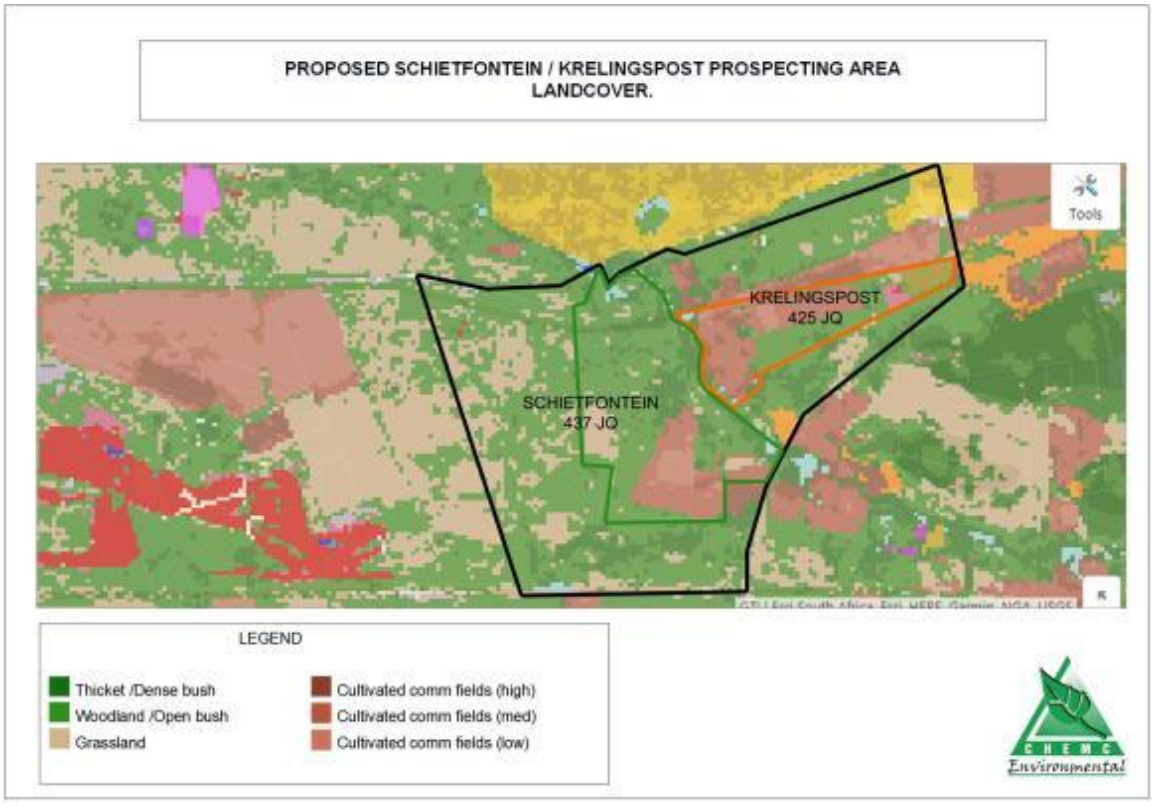

Figure 15: Landcover of the Proposed Schietfontein and Krelingspost Prospecting Area.

7.1.1.9 Surface Water

The Proposed Schietfontein and Krelingspost Prospecting Area falls within quaternary catchment A21J of the Crocodile River West Catchment, which forms part of the Crocodile West Marico Water Management Area.

There is a non-perennial stream, a tributary of the Kareespruit, which flows from north-east to south-west, between Schietfontein and Krelingspost. The majority of the drainage on Schietfontein and Krelingspost is primarily by sheet flow. The Schietfontein area drains from west towards the tributary and the Krelingspost area drains from the east to the tributary.

Surface water quality in the region generally exhibits high levels of nitrate, which are elevated above the recommended Department of Water and Forestry ("**DWAF**") domestic use guidelines (DWAF Water Quality Guidelines, 1996). Water in the Crocodile River (the nearest perennial water source to the area) does not meet

applicable irrigation standards for total dissolved solids and manganese concentrations.

According to the National Freshwater Ecosystem Priority Areas (FEPAs) database for river ecosystems the tributary has been classified with a Present Ecological State (PES) of Class C: Moderately Modified (DWS, 1999).

a) *Implications for the proposed prospecting activities*

The activities will unlikely disturb the surface flow. If it does, the impact would be temporary; and the natural gradient will be restored after the prospecting activities.

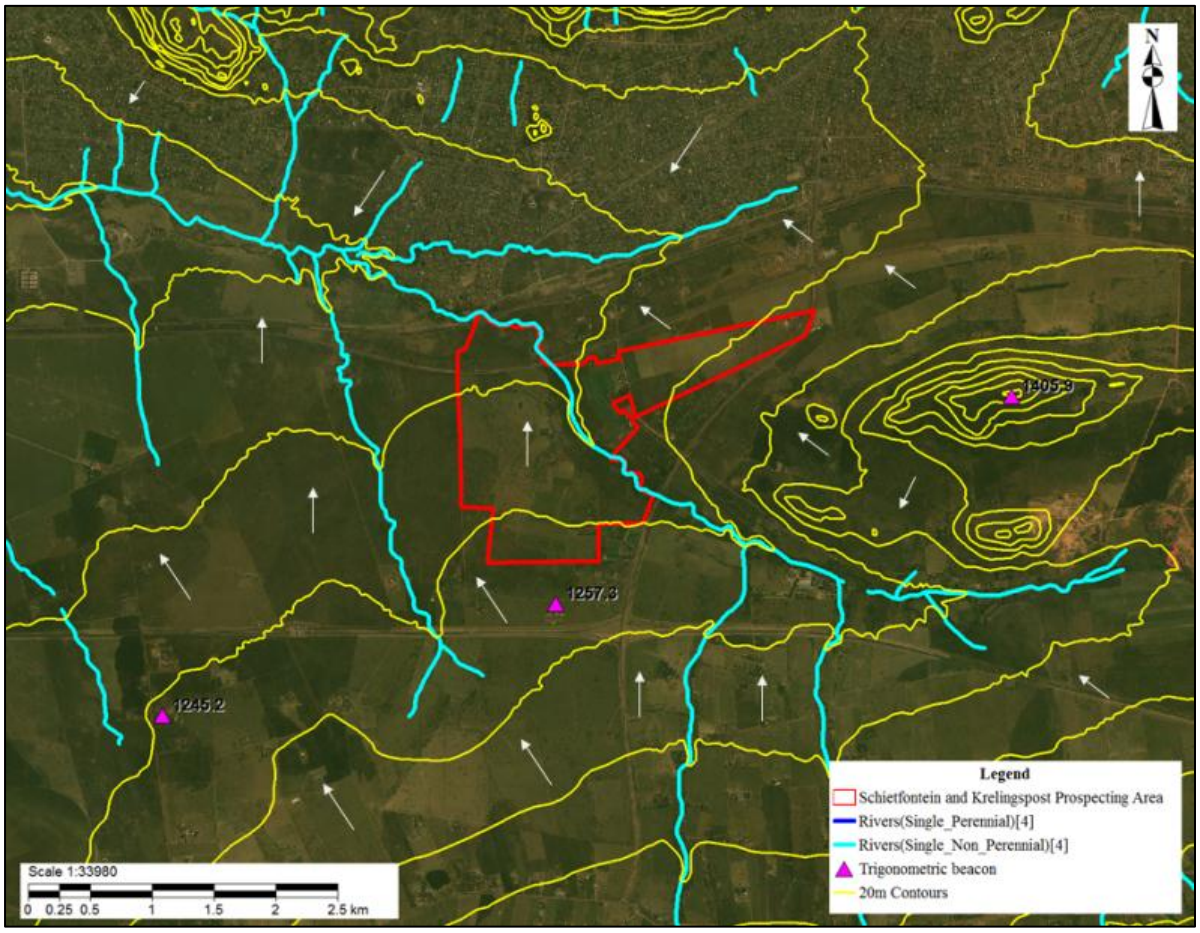

Figure 16: Surface Hydrology Map

7.1.1.10 Geohydrology

Groundwater is a valuable resource and is defined as water which is located beneath the ground surface in soil / rock pore spaces and the fractures of lithological

formations. Groundwater in and surrounding the Proposed Schietfontein and Krelingspost Prospecting Area is used mainly for mining, domestic supply and agricultural irrigation.

a) *Implications for the proposed prospecting activities*

The Proposed Project, involving non-intrusive drilling, will highly unlikely have a groundwater impact. Cognisance will be taken of the boreholes of surrounding land users and owners to prevent possible damage or impacts.

7.1.1.11 Biodiversity

According to the NWP Biodiversity Conservation Assessment, about 40% of the NWP's ecosystems are under severe pressure. The Proposed Schietfontein and Krelingspost Prospecting Area is located within the Savanna Biome and is depicted in ***Figure 17*** below (Rutherford & Westfall, 1994 and Mucina & Rutherford, 2006). The Savanna Biome is regarded as the spatially largest biome in South Africa, comprising some 32.5% of the country (Rutherford & Westfall, 1994).

Mucina & Rutherford (2006) have further defined bioregions as being spatial terrestrial units which have similar biotic, physical features and processes at regional scale. The Central Bushveld Bioregion forms part of the Savanna Biome. The Central Bushveld Bioregion has the highest number of vegetation types and covers most of the high-lying plateau west of the main escarpment from the Magaliesberg in the south to the Soutpansberg in the north.

The MLM recognises four formal land-based protected areas, including two Nature Reserves, one World Heritage Site and one Protected Natural Environment. No RAMSAR sites are located within MLM and, therefore, there are no internationally recognised areas of significance.

a) *Conservation Characteristics of the Proposed Schietfontein and Krelingspost Prospecting Area*

The following table contains data accessed as part of the desktop assessment. It is important to note that, although all data sources used provide useful and often verifiable high-quality data, the various databases do not always provide an entirely

accurate indication of the Proposed Schietfontein and Krelingspost Prospecting Area's actual biodiversity characteristics.

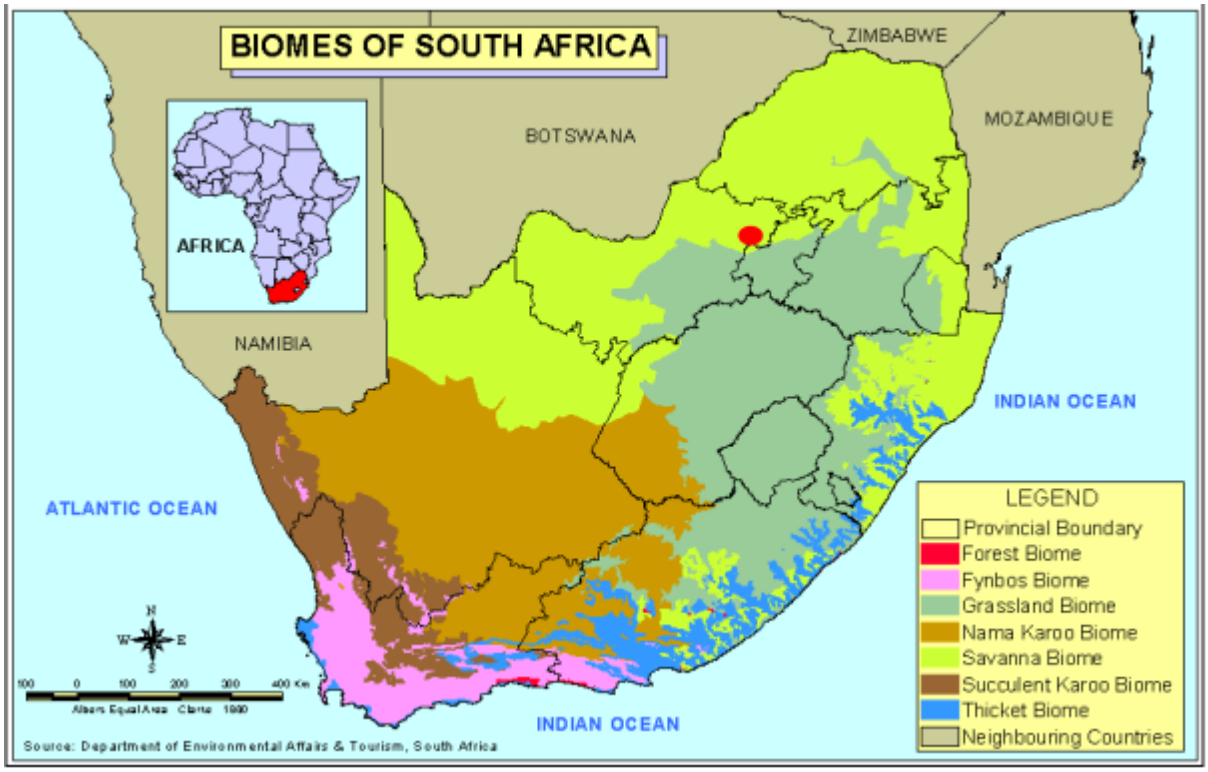

Figure 17: Biomes associated with the Proposed Schietfontein and Krelingspost Prospecting Area.

Table 10: Summary of the conservation characteristics for the EM Surface Area.

DETAILS OF THE SCHIETFONTEIN AND KRELINGSPOST PROSPECTING AREA IN TERMS OF MUCINA & RUTHERFORD (2012)		**DESCRIPTION OF THE VEGETATION TYPE(S) RELEVANT TO THE PROSPECTING AREA (MUCINA & RUTHERFORD 2012)**	
Biome	The Proposed Schietfontein and Krelingspost Prospecting Area is situated within the **Savanna Biome.**	**Vegetation Type**	Marikana Thornveld
Bioregion	The Proposed Schietfontein and Krelingspost Prospecting Area is located within the **Central Bushveld Bioregion**	**Climate**	Summer rainfall with very dry winters
Vegetation Type	The Proposed Schietfontein and Krelingspost Prospecting Area is situated within the **Marikana Thornveld**	**Altitude (m)**	1050 - 1450
CONSERVATION DETAILS PERTAINING TO SCHIETFONTEIN AND KRELINGSPOST PROSPECTING AREA (VARIOUS DATABASES)		**MAP* (mm)**	682
NBA (2011)	The Proposed Schietfontein and Krelingspost Prospecting Area falls within an area that is currently not protected.	**MAT* (°C)**	19.4
National Threatened Ecosystems (2011)	The entire Proposed Schietfontein and Krelingspost Prospecting Area falls within the remaining extent of the vulnerable Marikana Thornveld Ecosystem.	**MFD* (Days)**	21
		MAPE* (mm)	2284
SACAD (2017), SAPAD (2017) & NPAES (2009)	According to SACAD (2019, Q1), the Proposed Prospecting Area falls within the Magaliesberg Biosphere Reserve. The SAPAD (2018, Q1) and NPAES (2009) database indicates that the MPNE is situated ± 3.1 km south of the Proposed Schietfontein and Krelingspost Prospecting Area. SAPAD (2018, Q1) additionally shows the Hartbeespoort Dam Nature Reserve to be located ± 4.1 km south west of the Area and the M'Nandi Private Nature Reserve ± 0.2 km east of the Proposed Prospecting Area. No other protected areas are located within 10 km of the Proposed Prospecting Area.	**MASMS* (%)**	76
		Distribution	NWP and Gauteng Provinces
IBA (2015)	The Proposed Schietfontein and Krelingspost Prospecting Area is located the Magaliesberg Important Bird Area ("**IBA**") (Refer to Figure19). The most important trigger species in the IBA is the globally threatened Cape Vulture.	**Geology & Soils**	The BIC comprises of volcanic rocks (Rooiberg Group); a mafic layered suite (RLS); and sheeted granite (Lebowa Granite Suite) emplaced onto and within sediments of the Transvaal Supergroup. The Proposed Schietfontein and Krelingspost Prospecting Area is dominated by a red soil, with a high base status that is freely drained and structureless. The north-western corner of the Proposed Schietfontein and Krelingspost Prospecting Area consists of dark coloured swelling clay soils.
MINING AND BIODIVERSITY GUIDELINES (2013) (Refer to Figure 18).			
Highest Biodiversity Importance	Most of the portions of the Proposed Schietfontein and Krelingspost Prospecting Area are situated within an area considered of highest biodiversity importance. These areas include critically endangered and endangered ecosystems, CBAs (or equivalent areas) from provincial spatial biodiversity plans, river and wetland FEPAs, and a 1km buffer around these FEPAs, as well as RAMSAR Sites. These areas are important for conserving biodiversity for: (i) supporting / buffering other biodiversity priority areas; and (ii) maintaining important ecosystem services for particular	**Conservation**	Endangered. Approximately 3% conserved. Conservation target is 24%.
		Vegetation & landscape features	Open *Vachellia karroo* woodland, occurring in valleys and slightly undulating plains, and some lowland hills. Shrubs are denser along drainage lines, on termitaria and rocky outcrops or in other habitat protected from fire.

	communities or the country as a whole. Mining options may be limited in these areas, and red flags for mining projects are possible. Authorisations may set limits and specify biodiversity offsets that would be written into licence agreements and/or authorisations.	**NORTH WEST BIODIVERSITY SECTOR PLAN (NWBSP, 2015) -** (Refer to Figure21).
High Biodiversity Importance	A small portion of the Proposed Schietfontein and Krelingspost Prospecting Area falls within an area considered of high biodiversity importance. High biodiversity importance areas include protected area buffers (around national parks, world heritage sites and nature reserves), Transfrontier conservation areas (remaining areas outside of formally proclaimed protected areas), other identified priorities from provincial spatial biodiversity plans and high-water yield areas, amongst others. These areas are important for conserving biodiversity, for supporting / buffering other biodiversity priority areas, for maintaining important ecosystem services for particular communities or the country as a whole.	CBAs are terrestrial or aquatic areas of the landscape that need to be maintained in a natural or near natural state, to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. The CBA 2 is considered a critical corridor linkage; forms part of the 5km Protected Areas buffer; and is an important bird area in a natural state. If these areas are not in a natural state, they are then categorised as ESA2. ESAs are terrestrial and aquatic areas that are not essential for meeting biodiversity representation targets (thresholds) but which nevertheless play an important role in supporting the ecological functioning of CBAs and / or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration.
Moderate Biodiversity Importance	Only two small sections on Krelingspost are situated within an area considered of moderate biodiversity importance. Moderate biodiversity important areas include Ecological Support Areas ("**ESAs**"), vulnerable ecosystems and focus areas for protected area expansion. These areas are of moderate biodiversity value and therefore pose a moderate risk to mining. EIAs and associated specialist studies should focus on confirming the presence and significance of these biodiversity features, identifying features (e.g. threatened species) not included in the existing datasets, and providing site-specific information to guide the application of the mitigation hierarchy.	A large section of the western area of Schietfontein has been demarcated as CBA 2 and the south section as ESA 2 in terms of the NWBSP, 2015. A large section of the Krelingspost area has been demarcated as ESA 2 with the eastern section as CBA2 and ESA1. The non-perennial stream situated between the Proposed Schietfontein and Krelingspost Prospecting Area has an ESA1 and ESA2 demarcation in terms of the NWP Aquatic Biodiversity Plan (Refer to Map). It is evident that the NWBSP, 2015 is a planning tool that doesn't correlate to the actual status quo on the ground.

NBA = National Biodiversity Assessment; SAPAD = South African Protected Areas Database; SACAD = South African Conservation Areas Database; NPAES = National Protected Areas Expansion Strategy; IBA = Important Bird Area; MAP = Mean annual precipitation; MAT = Mean annual temperature; MAPE = Mean annual potential evaporation; MFD = Mean Frost Days; MASMS = Mean annual soil moisture stress (% of days when evaporative demand was more than double the soil moisture supply).

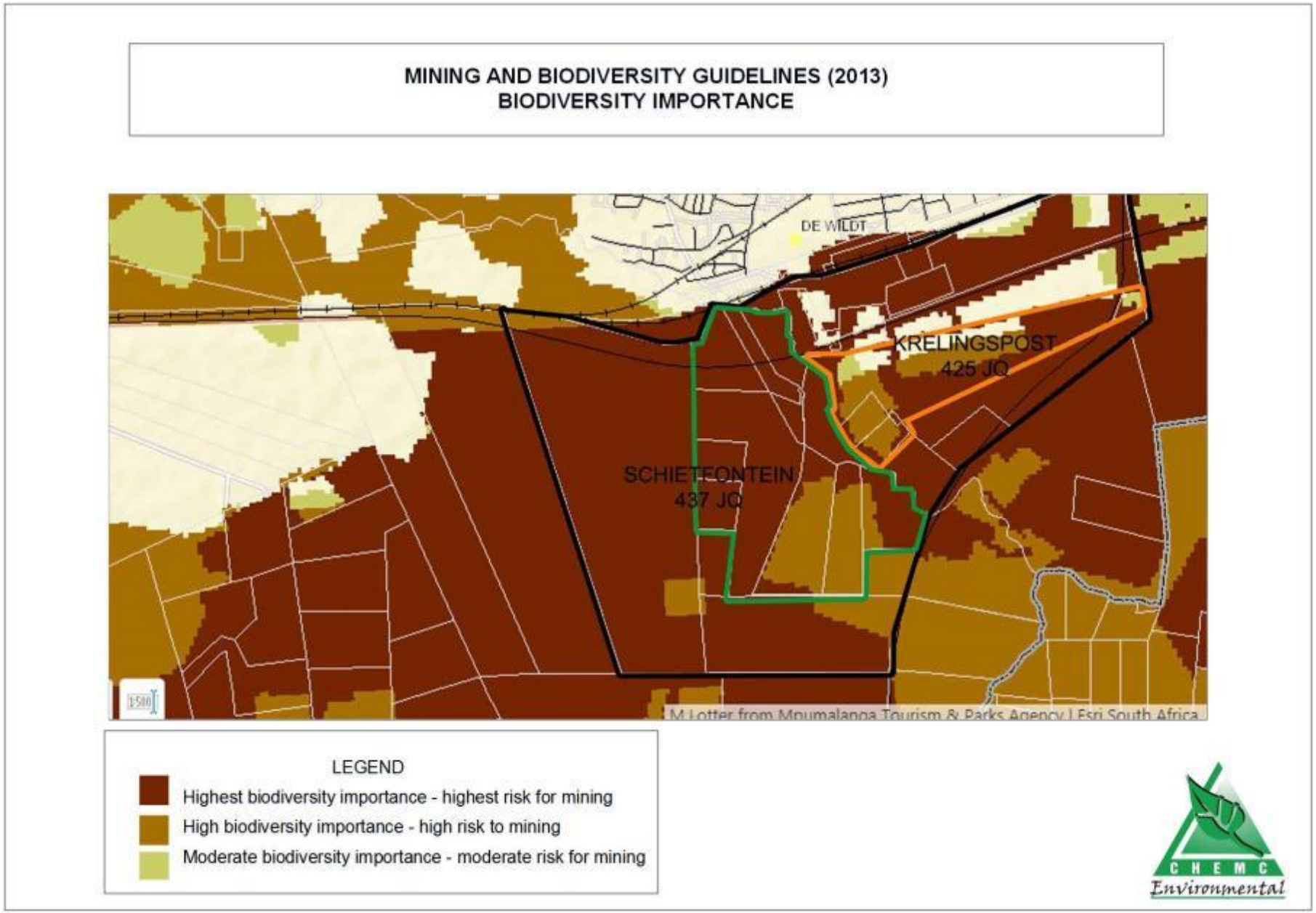

Figure 18: Mining and Biodiversity Guidelines (2013)

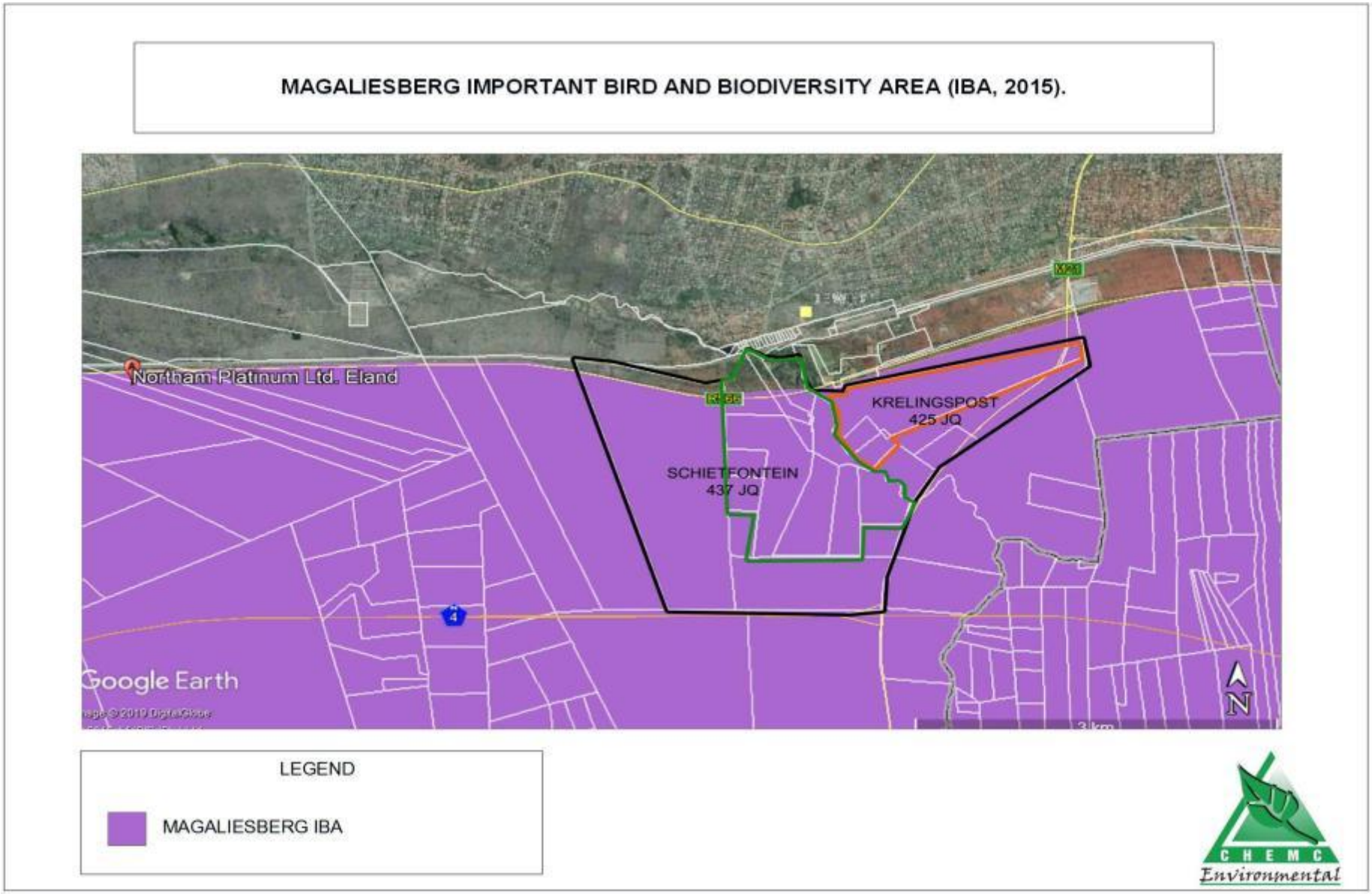

Figure 19: Proposed Schietfontein and Krelingspost Prospecting Area within the Magaliesberg Important Bird and Biodiversity Area.

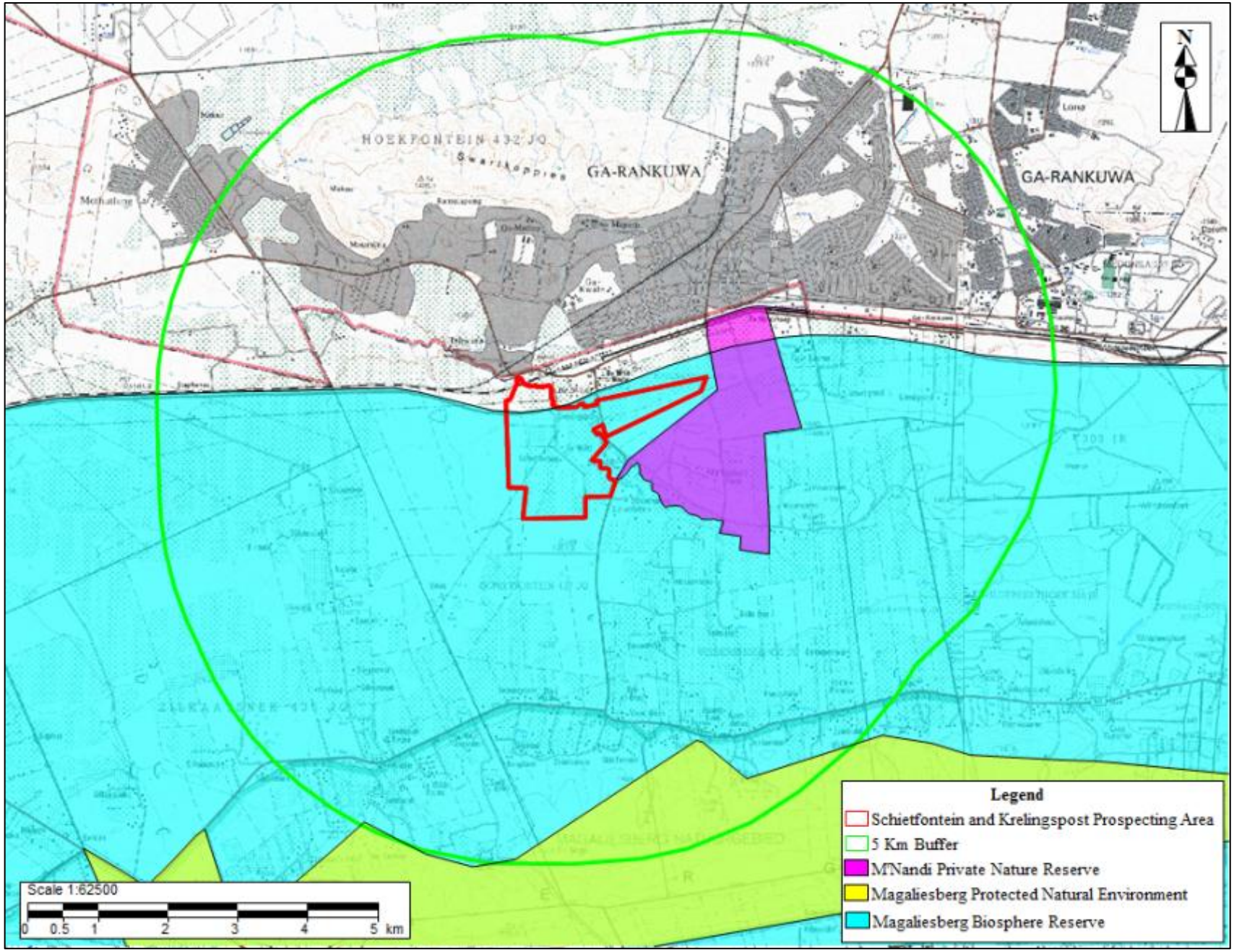

Figure 20: Protected Areas, Nature and other Reserves in relation to the Proposed Schietfontein and Krelingspost Prospecting Area

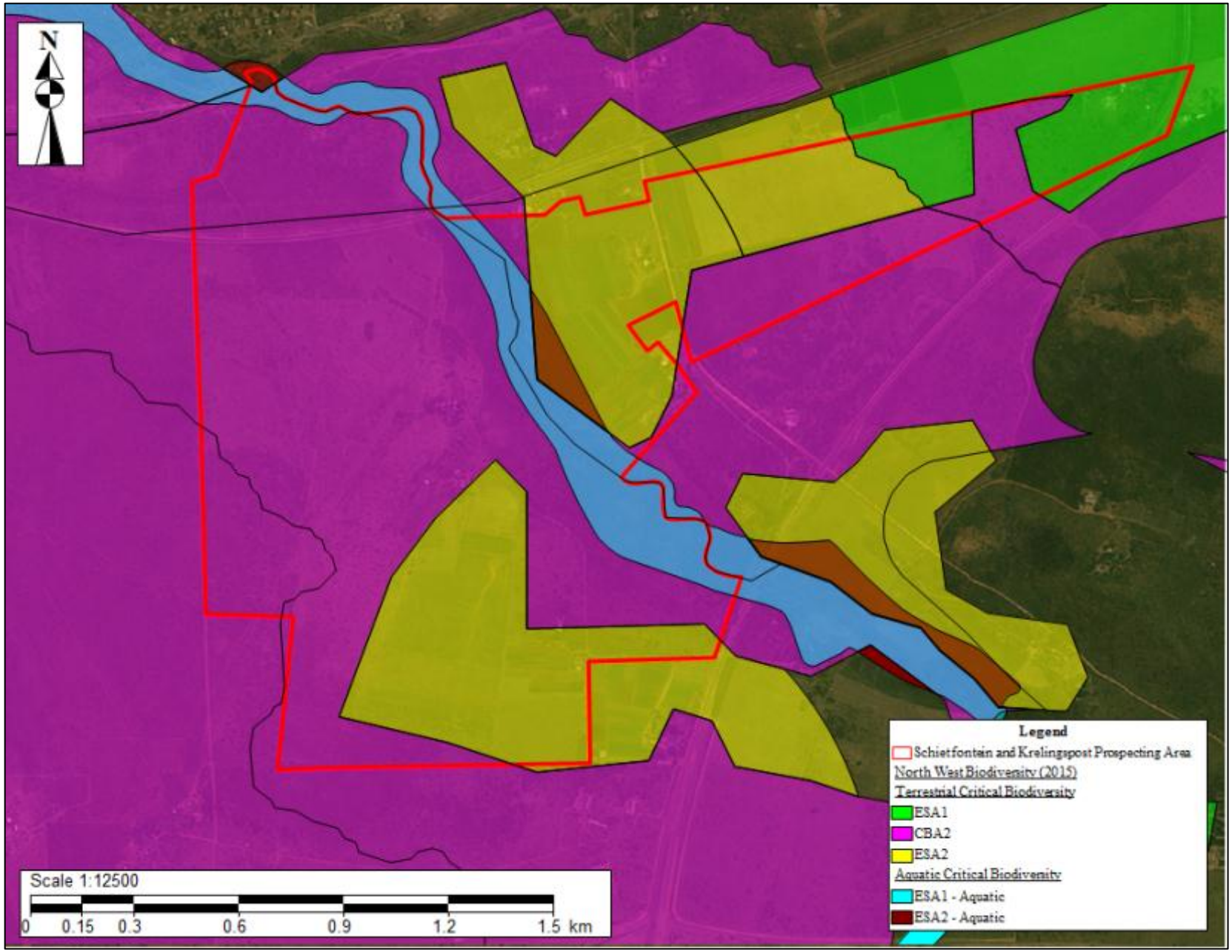

Figure 21: NWP Biodiversity Plan in relation to the Proposed Schietfontein and Krelingspost Prospecting Area

b) Desktop analysis of the Proposed Schietfontein and Krelingspost Prospecting Area

The following reports were reviewed as part of the desktop analysis in establishing the biodiversity and ecological resources within the Proposed Schietfontein and Krelingspost Prospecting Area:

- Biodiversity Study for the EIA Application for the Development of a Diesel Depot in Krelingspost, North West Province, dated March 2019 and conducted by Mveledzo Environmental and Safety Solutions Pty Ltd.
- Ecological Assessment for the proposed development of a 50MW Solar Farm on Portions 26, 27 and 28 of the Farm Schietfontein 437-JQ, Madibeng Local Municipality, North West Province, dated November 2015 and conducted by Vincent van der Merwe and Clayton Cook.
- Biodiversity Habitat Assessment of Portions 22 and 41 of the Farm Schietfontein 437-JQ (Q4 City), dated May 2014 and compiled by Galago Environmental.
- Herpetofauna Habitat Assessment of Portions 22 and 41 of the Farm Schietfontein 437-JQ (Q4 City), dated May 2014 and compiled by Galago Environmental.
- Avifaunal Habitat Assessment of Portions 22 and 41 of the Farm Schietfontein 437-JQ (Q4 City), dated May 2014 and compiled by Galago Environmental.
- Mammal Species Richness and Habitat Assessment of Portions 22 and 41 of the Farm Schietfontein 437-JQ (Q4 City), dated May 2014 and compiled by Galago Environmental.
- Flora Assessment of Portions 22 and 41 of the Farm Schietfontein 437-JQ (Q4 City), dated May 2014 and Compiled by Galago Environmental.
- Avifaunal Habitat Assessment of Proposed 50MW PV Solar Farm on Portions 26 - 28, 106, 107 and the Remainder of Portion 15 of the Farm Schietfontein 437 JQ, dated May 2016 and compiled by Galago Environmental.
- Terrestrial Ecological Assessment as part of the Environmental Assessment and Environmental Authorisation Process for the Upgrading Activities at Northam Eland Platinum Mine, near Brits, North West Province, dated June 2018 and compiled by SAS Environmental.

- Freshwater Resource Ecological Assessment as part of the Environmental Assessment and Environmental Authorisation Process for the Upgrading Activities at Northam Eland Platinum Mine, near Brits, North West Province, dated June 2018 and compiled by SAS Environmental.
- Ecological Assessment for the Proposed Eland Platinum Mine Extension, dated March 2010 and compiled by SAS Environmental.
- Grass Owl Assessment for Xstrata's Eland Platinum Mine, near Brits, North West Province, dated May 2010 and compiled by NSS.
- Ecological Impact Assessment for Eland Mine, dated May 2006 and Compiled by Delta Environmental Consultants.
- Biodiversity: Faunal Life Specialist Study Report and Action Plan prepared for Eland Platinum, dated January 2009 and compiled by SAS Environmental.
- Biodiversity: Floral Life Specialist Study Report and Action Plan prepared for Eland Platinum, dated January 2009 and compiled by SAS Environmental.
- Follow-Up African Grass-Owl Survey Prepared for Glencore Eland Platinum Mine, Brits, dated December 2013 and compiled by SAS Environmental.
- Terrestrial Monitoring Programme for Glencore Xstrata Eland Platinum Mine, dated November 2013 and compiled by SAS Environmental.

- *Flora*

The following tables represent the floral specials of conservation concern in the North West Province.

Table 11: Threatened Plant Species of Conservation Concern for the North West Province (NWBSP, 2015)

Family	Scientific Name	NWBSP 2015 Status	National Status	Habitat
ACANTHACEAE	*Barleria media*	VU	VU	Uncertain, possibly rocky slopes or koppies. Kalahari region near Kuruman
ANACAMPSEROTACEAE	*Anacampseros decapitata*	VU	VU	Shallow soils derived from coarse quartzite and sandstone sediments. Magaliesberg Mountain Range, near Rustenburg.

APOCYNACEAE	*Brachystelma canum*	CR	CR PE	Sandy Terminalia veld. Between Setlagole and Mafeking
APOCYNACEAE	*Brachystelma gracillimum*	CR	CR	Sandy loams in Thornveld. Marico district, east of Ramotswa
APOCYNACEAE	*Ceropegia insignis*	EN	EN	Stony slopes and sandy soils in grassland and open Savanna. Northern NWP and adjacent areas in Limpopo Province between Ramotswa and Dwaalboom. It possibly also occurs in adjacent areas in Botswana.
APOCYNACEAE	*Brachystelma dimorphum*	VU	VU	Alluvial soils and large, shallow pans in grassland. Kimberley to Vryburg and Bloemfontein.
APOCYNACEAE	*Brachystelma incanum*	VU	VU	Sandy loam soils in thornveld and *Themeda* grassland. Lichtenburg to Wolmaransstad and Sasolburg.
APOCYNACEAE	*Ceropegia stentiae*	VU	EN	Rocky outcrops and hill slopes in short, open sparse woodland. Polokwane to Mookgophong.
APOCYNACEAE	*Miraglossum laeve*	VU	CR PE	Hills in Gold Reef Mountain Bushveld and possibly Gauteng Shale Mountain Bushveld. Hills south of Pretoria and the Vredefort Dome north-east of Parys.
ASPHODELACEAE	*Aloe peglerae*	VU	CR	Grassland, in shallow, gravely quartzitic soils on rocky, north-facing slopes or summits of ridges
ASTERACEAE	*Senecio holubii*	DD CR	CR PE	Zeerust District
EUPHORBIACEAE	*Euphorbia knobelii*	EN	EN	Woodland and thornveld, wedged among large rocks on the slopes of quartzitic ridges, 1000 - 1200 m.
EUPHORBIACEAE	*Euphorbia perangusta*	EN	DD	Woodland and thornveld, wedged among large rocks on the slopes of quartzitic ridges, 1000 - 1200 m. Marico district
FABACEAE	*Indigofera commixta*	VU	LC	Rocky hills in grassland and thornveld. Wolmaransstad to Christiana.

LOBELIACEAE	*Lobelia cuneifolia var. ananda*	VU	Critically rare	Shaded seeps on vertical rock-faces in narrow gullies. Magaliesberg near Rustenburg.
ROSACEAE	*Prunus africana*	VU	VU	Evergreen forests near the coast, inland mistbelt forests and afromontane forests up to 2100 m.

CR PE = Criticaly Endangered (Possibly Extinct); CR = Critically Endangered; EN = Endangered; VU = Vulnerable; DD = Data Deficient; NT = Near Threatened; LC = Least Concern

Table 12: PRECIS plant list for the QDS 2527DB (Raimondo et al., 2009; SANBI, www.sanbi.org).

Family	Species	2009 Threat Status (PRECIS)	SANBI Red List Status (2016)	Habitat description
CRASSULACEAE	*Adromischus umbraticola* subsp. *umbraticola*	NT	NT	South-facing rock crevices on ridges, restricted to Gold Reef Mountain Bushveld in the northern parts of its range, and Andesite Mountain Bushveld in the south
AMARYLLIDACEAE	*Boophone disticha*	Declining	LC	Dry grassland and rocky areas.
AMARYLLIDACEAE	*Crinum macowanii*	Declining	LC	Mountain grassland and stony slopes in hard dry shale, gravely soil or sandy flats
AQUIFOLIACEAE	*Ilex mitis* var. *mitis*	Declining	LC	Along rivers and streams in forest and thickets, sometimes in the open. Found from sea level to inland mountain slopes
APOCYNACEAE	*Stenostelma umbelluliferum*	NT	NT	Deep black turf in open woodland mainly in the vicinity of drainage lines.

NT = Near Threatened;

Table 13: Additional Protected plants listed for the NWP by the TOPS Regulations

Family	Scientific Name	Threat Status	Habitat
HYACINTHACEAE	*Drimia sanguinea*	NT	Open veld and scrubby woodland in a variety of soil types
PEDALIACEAE	*Harpagophytum procumbens*	LC	Well drained sandy habitats in open savanna and woodlands.
GERANIACEAE	*Pelargonium sidoides*	LC	Usually in short grassland, sometimes with occasional

			shrubs or trees, often in stony soils varying from clay-loam, shale or basalt.

CR = Critically Endangered; EN = Endangered; VU = Vulnerable; DD = Data Deficient; NT = Near Threatened; LC = Least Concern

- *Fauna*

The following tables represent the faunal species of conservation concern in the NWP.

Table 14: Mammal species of conservation concern in the NWP (NWBSP, 2015).

Scientific Name	Common Name	Friedmann & Daly (2004)	IUCN Status
Acinonyx jubatus	Cheetah	VU	VU
Atelerix frontalis	African Hedgehog	NT	LC
Ceratotherium simum	White Rhino	LC	NT
*Chrysospalax villosus**	Rough-haired golden mole*	CR	VU
Cloeotis percivali	Short-eared trident bat	CR	LC
Crocuta	Spotted Hyena	NT	LC
Damaliscus lunatus	Tsessebe	EN	LC
Dasymus incomtus	African Marsh Rat	NT	LC
Diceros bicornis mnor	Black Rhinoceros	CR	CR
Eidolon helvum	Straw-Coloured Fruit Bat	NT	NT
Felis nigripes	Black-Footed Cat	LC	VU
Felis silvestris	African Wild Cat	LC	LC
Hippopotamus amphibius	Hippo	LC	VU
Hippotragus equinus	Roan Antelope	VU	LC
Hippotragus niger	Sable Antelope	VU	LC
Hyaena brunnea	Brown Hyena	NT	NT
Leptailurus sefval	Serval	NT	LC
Loxodonta africana	African Savanna Elephant	LC	VU
Lutra (Hydrictis) maculicollis	Spotted-necked otter	NT	NT
Lycaon pictus	African Wild dog	EN	EN
Mellivora capensis	Honey Badger	NT	LC
Miniopterus schreibersii	Shreibers' Long-Fingered Bat	NT	NT
Myotis tricolor	Temminck's Hairy Bat	NT	LC
Mystromys albicaudatus	White-tailed mouse	EN	EN
Ourebia ourebi	Oribi	EN	LC
Panthera leo	Lion	LC	VU

Panthera pardus	Leopard	LC	VU
Pelea capreolus	Grey Rhebok	LC	LC
Pipistrellus rusticus	Rusty Pipistrelle	NT	LC
Poecilogale albinucha	African Striped Weasel	DD	LC
Redunca arundinum	Southern reedbuck	LC	LC
Rhinolophus clivosus	Geoffroy's Horseshoe Bat	NT	LC
Rhinolophus darlingi	Darling's Horseshoe Bat	NT	LC
Rhinolophus denti	Dent's Horseshoe Bat	NT	LC
Smutsia temminckii	Ground Pangolin	VU	VU
Thallomys nigricauda	Black-Tailed Tree Rat	LC	LC

CR = Critically Endangered, EN = Endangered, VU = Vulnerable, NT = Near Threatened, DD = Data Deficient; LC = Least Concern

* This species was previously listed in the NWP Environmental Outlook Report of 2008 (NW DACE, 2008). The NWBSP states that an on the ground effort is required to determine whether any golden moles are present within the province.

Table 15: Avifaunal species of conservation concern in the NWP (NWBSP, 2015).

Scientific name	**Common name**	**Provincial (2012)**	**National (Taylor *et al.*, 2015)**	**IUCN Status**
Alcedo semitorquata	Half-collared Kingfisher	NT	NT	LC
Anastomus lamelligerus	African Openbill Stork	NT	LC	LC
Anthropoides paradiseus	Blue Crane	VU	NT	VU
Aquila rapax	Tawny Eagle	VU	EN	LC
Ardeotis kori	Kori Bustard	VU	NT	NT
Buphagus erythrorhynchus	Red-billed Oxpecker	NT	LC	LC
Certhilauda chuana	Short-clawed Lark	NT	NT	LC
Charadrius pallidus	Chestnut-banded Plover	NT	NT	NT
Ciconia nigra	Black Stork	NT	VU	LC
Circus macrourus	Pallid Harrier	NT	NT	NT
Circus maurus	Black Harrier	NT	EN	VU
Circus ranivorus	African Marsh Harrier	VU	EN	LC
Ephippiorhynchus senegalensis	Saddle-billed Stork	EN	EN	LC
Eupodotis cafra (senegalensis)	White-bellied Korhaan	VU	VU	LC
Falco biarmicus	Lanner Falcon	NT	VU	LC
Falco naumanni	Lesser kestrel	VU	LC	LC
Falco peregrinus	Peregrine Falcon	NT	LC	LC
Glareola nordmanni	Black-winged Pratincole	NT	NT	NT

Gorsachius leuconotus	White-backed Night Heron	VU	VU	LC
Gyps africanus	African White-backed Vulture	VU	CR	CR
Gyps coprotheres	Cape Vulture	VU	EN	EN
Hieraaetus ayresii	Ayres's Eagle	NT	LC	LC
Leptoptilos crumeniferus	Marabou Stork	NT	NT	LC
Mirafra cheniana	Melodious Lark	NT	LC	NT
Mycteria ibis	Yellow-billed Stork.	NT	EN	LC
Neotis denhami	Denhams Bustard	VU	VU	NT
Pelecanus onocrotalus	Great White Pelican	NT	VU	LC
Pelicanus rufescens	Pink-backed Pelican	VU	VU	LC
Phoenicopterus minor	Lesser Flamingo	NT	NT	NT
Phoenicopterus ruber	Greater Flamingo	NT	NT	LC
Podica senegalensis	African Finfoot	VU	VU	LC
Polemaetus bellicosus	Martial Eagle	VU	EN	VU
Pterocles gutturalis	Yellow-throated Sandgrouse	NT	NT	LC
Rostratula benghalensis	Greater Painted Snipe	NT	NT	LC
Rynchops flavirostris	African Skimmer	Regionally EX		NT
Sagittarius serpentarius	Secretarybird	NT	VU	VU
Sterna caspia	Caspian Tern	NT	VU	LC
Terathopius ecaudatus	Bataleur	VU	EN	NT
Torgos tracheliotus	Lappet-faced Vulture	VU	EN	EN
Tyto capensis	African Grass Owl	VU	VU	LC

CR = Critically endangered; EN = Endangered; VU = Vulnerable, NT = Near Threatened, EX = Extinct, LC = Least concern,

Table 16: Reptile species of conservation concern in the NWP (NWBSP, 2015).

Scientific name	Common name	Power & Verbugt (2014)	IUCN Status
Chamaesaura aenea	Coppery Grass Lizard	NT	NYBA
Crocodylus niloticus	Nile Crocodile	VU	LC
Homoroselaps dorsalis	Striped Harlequin snake	NT	NT
Python natalensis	Southern African Python	LC	NYBA

NT = Near Threatened, VU = Vulnerable; NYBA= Not Yet Been Assessed, LC = Least Concern

Table 17: Amphibian species of conservation concern in the NWP (NWBSP, 2015).

Scientific Name	Common Name	Power & Verbugt (2014)	IUCN Status
Pyxicephalus adspersus	African Giant Bullfrog	NT	LC

NT = Near Threatened, LC = Least Concern

Table 18: Arachnid species of conservation concern in the NWP (NWBSP, 2015).

Scientific name	Common Name	IUCN Status
Aelurillus cristatopalpus	Jumping Spiders	NYBA
Afromarengo bimaculata	Jumping Spiders	NYBA
Ariadna similis	Jack-in-a-box Spiders	NYBA
Austrachelas merwei	Corrinid Sac Spider	NYBA
Cyatholipus isolatus	Spotted Tree Sheet-web Spiders	NYBA
Diores femoralis	Zodariid Ground Spiders	NYBA
Diphya simoni	Long-jawed Orb Weavers	NYBA
Eusparassus borakalalo	Huntsman Spiders	NYBA
Evarcha flagellaris	Jumping Spiders	NYBA
Galeosoma coronatum	Armoured Trapdoor Spiders	NYBA
Galeosoma crinitum	Armoured Trapdoor Spiders	NYBA
Galeosoma scutatum	Armoured Trapdoor Spiders	NYBA
Idiops pallus	Armoured Trapdoor Spiders	NYBA
Langona manicata	Jumping Spiders	NYBA
Pseudicius gracilis	Jumping Spiders	NYBA
Rhene konradi	Jumping Spiders	NYBA
Setaphis sexmaculata	Ground Spiders	NYBA

Table 19: Threatened invertebrate species of NWP (NW DACE, 2008).

Scientific name	Common Name	NW Status 2008	IUCN Status
Metisella meninx	Marsh Sylph	VU	NYBA
Lepidochrysops praeterita	Highveld Blue	EN	NYBA
Platylesches dolomitica	Hilltop Hopper	VU	NYBA
Lepidochrysops hypopolia	Morant's blue	EX	EX

EN = Endangered, VU = Vulnerable, EX=Extinct, NYBA= Not Yet Been Assessed

Table 20: Avifaunal Species for the pentads 2535_2750 and 2535_2755 within the QDS 2527DB

Pentads	Link to pentad summary on the South African Bird Atlas Project 2 web page
2535_2750	http://sabap2.adu.org.za/pentad_info.php?pentad=2535_2750#menu_top
2535_2755	http://sabap2.adu.org.za/pentad_info.php?pentad=2535_2755#menu_top

c) Implications for the Proposed Project

It is estimated that the total area disturbed for the Proposed Project will be approximately +/- 4000 m^2. The Proposed Project will be temporary. It will not compromise habitat connectivity and the Proposed Schietfontein and Krelingspost Prospecting Area will be rehabilitated after the Proposed Project has been completed. Existing roads will be used as far as possible to access prospecting drilling sites and existing disturbed areas will be utilised as far as possible.

7.1.1.12 Air Quality

The Brits-Rustenburg Region is the industrial hub of the NWP, with all the platinum, chromium and vanadium mines located in this Region.

The Proposed Schietfontein and Krelingspost Prospecting Area falls within the Waterberg-Bojanala NPA, as contemplated in section 18(1) of NEM:AQA. The Waterberg-Bojanala NPA was established due to the exceedance of the ambient air quality standards; or alternatively that a situation exists within the area which is causing or may cause a significant negative impact on air quality in the area and the area requires specific air quality management action to rectify the situation.

The main sources of pollution include:

- *Industrial sources*

Hernic Ferrochrome is located west of the Proposed Schietfontein and Krelingspost Prospecting Area. Emissions derived from its smelter operations include particulates (PM10 size fraction, including heavy metals); sulphur dioxide (SO_2); oxides of nitrogen (NOx); carbon dioxide (CO_2); and, to a lesser extent, hydrogen sulphide (H_2S), ammonia (NH_3), hydrochloric acid, hydrogen fluoride, etc. Heavy metals include magnesium, trivalent chromium, iron, aluminium, zinc, calcium, potassium, sodium, manganese, titanium, tin, lead, hexavalent chrome, barium, and vanadium.

- *Fugitive dust sources*

These sources are termed fugitive because they are not discharged to the atmosphere in a confined flow stream. The Proposed Schietfontein and Krelingspost

Prospecting Area is located directly east of EM. Sources of fugitive dust identified to potentially occur in the EM Surface Area include paved and unpaved roads; agricultural tilling operations; blasting and mining activities; and wind erosion of sparsely vegetated surfaces.

Agricultural activities that potentially generate dust are taking place on the Proposed Schietfontein and Krelingspost Prospecting Area.

There are also unpaved roads in this area contributing to dust pollution. Emissions from unpaved roads constitute a major emission to the atmosphere in South Africa. Dust emissions from unpaved roads vary in relation to the vehicle traffic and silt loading on the roads. Emissions from paved roads are significantly less than those originating from unpaved roads, however they do contribute to the particulate load of the atmosphere. The fugitive dust emissions are due to the re-suspension of loose material on the road surface.

Emissions generated by wind erosion are dependent on the frequency of disturbance of the erodible surface. Every time that a surface is disturbed, its erosion potential is restored. Further erodible surfaces may be due to agriculture and / or grazing activities.

- *Mining emission sources*

The main air pollutant generated by mining activities is dust. Sources of dust include haul roads, plant operations (crushing and milling) and TSFs. The amount of dust emitted by these activities depends on the physical characteristics of the material and the way in which the material is handled.

- *Domestic fuel combustion*

Domestic households are known to have the potential to be one the most important sources contributing to poor air quality within residential areas. Individual households are low volume emitters but their cumulative impact is significant. It is likely that households within the local communities / settlements utilise coal or wood for cooking and / or space heating (mainly during winter) purposes.

- *Biomass burning*

Biomass burning includes the burning of evergreen and deciduous forests, woodlands, grasslands, and agricultural lands. Within the vicinity of the Proposed Schietfontein and Krelingspost Prospecting Area, crop-residue burning and wildfires (locally known as veld fires) may represent significant sources of combustion-related emissions. In addition to the impact of biomass burning within the vicinity of the Proposed Schietfontein and Krelingspost Prospecting Area, long-range transported emissions from this source can be expected to impact on the air quality between August to October. It is impossible to control this source of atmospheric pollution loading however, it should be noted as part of the background or baseline condition before considering the impacts of other local sources.

- *Vehicle tailpipe emissions*

Emissions resulting from motor vehicles can be grouped into primary and secondary pollutants. While primary pollutants are emitted directly into the atmosphere, secondary pollutants form in the atmosphere due to chemical reactions. Significant primary pollutants emitted combustion engines include carbon dioxide (CO_2), carbon (C), and sulphur dioxide (SO_2), oxides of nitrogen (mainly NO), particulates and lead.

Secondary pollutants include NO_2, photochemical oxidants (such as ozone, sulphur acid, sulphates and nitric acid) and nitrate aerosols (particulate matter). The Proposed Schietfontein and Krelingspost Prospecting Area is bordered by three main regional roads, namely the N4, M21 and the R566 between Rosslyn and Brits.

- *Informal refuse burning*

Additional sources of emissions emanate from the waste sector and typically include informal refuse and tyre burning. The informal burning of refuse tips within community areas and burning of waste at local municipal landfill sites represents a source of concern in all provinces.

a) Dust Mitigation

There are currently no dust monitoring stations situated in the Proposed Schietfontein and Krelingspost Prospecting Area. It is proposed that dust mitigation

measures be implemented during all phases of the Proposed Project, as there are farms, smallholdings and businesses close to the drill sites.

b) Implications for the proposed prospecting activities

The Proposed Project will generate localised and short-term dust impacts. The following activities are prone to generate dust:

- Travelling and moving of vehicles and equipment; and
- Drilling activities during the operational phase.

7.1.1.13 Noise

The general noise climate in the area and surrounds can be described as industrial / semi-rural. The area is characterised by farms and smallholdings; industrial and mining operations; and local communities' residences.

Existing sources of noise include:

- Traffic (heavy and light vehicles) on the new N4, R511 and R566 (Rosslyn road);
- Various mining operations Maroelabult, Hernic, Lonmin and including EM;
- The railway line; and
- The Brits industrial area to the west of EM.

The previous noise sampling survey, undertaken at a residence near to the R566, shows that the average daytime level corresponds to the typical level found in suburban districts with little road traffic. This was deemed by the specialist to be reasonable, considering the location of the smallholding and level of road infrastructure and industrial development in the area. The night-time ambient noise in this area was elevated to a higher level by mining noise and specific sources of mining noise, which at times were clearly perceptible above the general ambient noise.

a) Implications for the proposed prospecting activities

During the Proposed Project localised noise will be generated by the machinery. The potential noise impacts associated with the Proposed Project will be less intrusive

than the existing and surrounding mining operations and will have a low impact to the surrounding land users. However prospecting activities must preferably be conducted during non-intrusive hours during the day and not on Saturdays, Sundays and Public Holidays.

7.1.1.14 Visual quality

Data on the visual resource was collected from topographical maps and available satellite imagery for the Proposed Schietfontein and Krelingspost Prospecting Area Surface Area.

There are many open natural areas within the Proposed Schietfontein and Krelingspost Prospecting Area that should be taken into consideration. The area around the Kareespruit is densely vegetated and special care should be taken to limit the impact on the visual quality within this area. The landscape character, aesthetic value and sense of place have been slightly altered by agricultural activities in the area. The recycling site situated in the north-eastern part of the prospecting area is the only area where the visual quality is poor.

b) Implications for the proposed prospecting activities

The Proposed Project will highly likely have a visual impact on the surrounding land-uses during the operational phase. The highest impact will be to the landowners and tenants.

The R561 and M21 forms the northern and eastern boundary of the Proposed Schietfontein and Krelingspost Prospecting Area and will likely be the routes providing the viewshed for commuters and traffic travelling between Pretoria and Brits and Zilkaatsnek / De Wildt and Mothutlung.

7.1.1.15 Socio-Economic Environment

a) Madibeng Local Municipality

Brits was founded on 25 May 1924 and it gained municipal status in 1944. During 2000 the Municipalities of Brits and Hartbeespoort were incorporated and named the MLM.

MLM is classified as a Category B Municipality, functioning through the Executive Mayoral System. It was recently demarcated into 41 wards and the Municipal Council comprises of 82 Councillors.

The two main economic contributing areas within the MLM are Brits and Hartbeespoort Areas. Agriculture, tourism and mining are the main primary economies. The Agricultural Sector, which produces food, is the biggest primary economy. It is categorized into four classifications, namely, extensive farming (44%), intensive agriculture (18%), game farming (10%) and subsistence farming.

Tourism also plays a major economic role, as it is based on the natural systems (11%). Scenic routes, heritage sites, resorts and nature reserves are some of the main attractions in the tourism sector.

The mining sector is dominated by platinum and chromium mining and quarrying activity. Platinum mining activity is located on the south-eastern side of Brits, while quarrying is spread around the MLM.

b) Demographics

The socio-economic environment in the MLM can be summarised as follows:

- Population:

MLM has a population of approximately 536 110 residents (MDB, 2018), with a gender characterisation of 53.6% male and 46.4% female. The age distribution in the MLM has been recorded as: 1) 0 - 14 years (29.4%); 2) 15 - 34 Years (34.8%); 3) 35 - 64 years (28.0%); and 4) 65+ years (7.8%).

- Economic Activity:

Provincially it was estimated that the most dominant sector contributing to the NWP's economy was the mining industry. This was demonstrated by 25% of the economically active population being employed in this industry. The sectors with the smallest contributions to the NWP's Gross Geographic Product were electricity and water; and the transportation industry.

In the MLM the monthly household income average has been recorded as follow: 1) >R 6 500 = 6.3%; 2) R 800 – R 6 500 = 43.3%; 3) <R 800 = 27.3%; and 4) No Income = 23%.

- Employment Status:

It was estimated that the unemployment rate of the NWP in 2009 was 26% (presenting a similar profile to South Africa as a whole – with an unemployment rate of 25% in the same year). In the MLM the unemployment status averages 30.4% versus 69.6% being employed (MDB, 2018).

- Education:

Ten percent (10%) of the working age population has had no formal education. Furthermore, only 18% of the total population in the NWP obtained a grade 12 / matric education.

- Basic services:

The majority of the population's households have access to piped water (61.3%), with 16.6% receiving water from neighbour / communities; 11.6% from boreholes (groundwater); 5.9% from water carrier and tankers; and less than 5% from flowing water and other sources. Approximately 51.4% of households have a pit toiler without a ventilation pipe; 27.3% a flush toilet; 9.3% a pit toiler with a ventilation pipe; and 10% a flush toilet connected to a septic tank and; 2.4% don't have access to sewage and sanitation.

In terms of households' dominant energy source, 86% use electricity as the primary means for lighting. Refuse removal services are provided to most households, with a small percentage of the population (an estimated nine percent (9%)) not having any refuse disposal facilities.

- Housing:

Within the NWP it is estimated that 22% of the population reside in informal dwellings (with 15% of the population living in informal settlements and seven percent (7%) in backyards).

The population growth and urbanization information indicate that in future greater pressure on environmental resources, such as open space and water, can be expected in the MLM. Timeous planning is required to provide adequate infrastructure, especially in informal settlements where lack of infrastructure leads to water, soil and air pollution. A demographic statistical overview, as per census 2011, follows in ***Table 23*** below. The Proposed Project will have limited to zero negative socio-economic impacts.

c) Implications for the Proposed Project

- Disruption of existing land-use

The Proposed Project will likely have an intrusive impact on the current land-uses taking place on the applicable properties. The following land-uses have been identified on the proposed prospecting areas:

Table 21: Properties that forms part of the Proposed Schietfontein and Krelingspost Prospecting Area and the current and future land-use.

Farm Name	Portion and size	Land-use
Farm Schietfontein 437 JQ	Remaining Extent of Portion 5, measuring 2.1756 hectares in extent.	Non-perennial stream, agricultural land used for grazing.
	Portion 24 (a portion of Portion 2), measuring 17.8382 hectares in extent.	Non-perennial stream, agricultural land used for grazing, with remnants of old cultivated crop fields.
	Portion 27 (a portion of Portion 2), measuring 8.8184 hectares in extent.	Agricultural land used for grazing. Proposed Solar Power Farm and related activities (transmission line and substation). Samancor is the holder of a prospecting right over Portions 27 and 28 of Schietfontein for

		chrome in the MG and LG seams.
	Portion 28 (a portion of Portion 2), measuring 8.7843 hectares in extent.	Agricultural land used for grazing. Proposed Solar Power Farm and related activities. Samancor is the holder of a prospecting right over Portions 27 and 28 of Schietfontein for chrome in the MG and LG seams.
	Portion 33 (a portion of Portion 32), measuring 8.5653 hectares in extent.	Non-perennial stream, agricultural land used for grazing and section of the R566 traverses from east / west and the Rosslyn – Brits railway forms the northern most boundary.
	Portion 34 (a portion of Portion 32), measuring 17.7839 hectares in extent.	Agricultural land used for grazing and section of the R566 traverses from east/west and the Rosslyn – Brits railway forms the northern most boundary.
	Remaining Extent of Portion 32, measuring 15.0021 hectares in extent.	Non-perennial stream, agricultural land used for grazing and section of the R566 traverses from east / west.
	Portion 35 (a portion of Portion 2), measuring 49.659 hectares in extent.	Agricultural land used for grazing with remnants of old cultivated crop fields.
	Remaining Extent of Portion 99, measuring 11.339 hectares in extent.	Non-perennial stream, Farm Homestead, with agricultural land used for grazing and remnants of old cultivated crop fields.
	Portion 100 (a portion of Portion 99), measuring 30.1315 hectares in extent.	Farm homestead and associated infrastructure situated on property, with remnants of cultivate crop fields.
	Portion 101 (a portion of Portion 99), measuring 18.7922 hectares in extent.	Farm homestead, greenhouses (tunnels) and associated infrastructure situated on property, with remnants of cultivate crop fields.
Farm Krelingspost	Portion 2, measuring 6.5382	Non-perennial stream and

425 JQ	hectares in extent.	cultivated crop lands.
	Portion 3, measuring 6.5382 hectares in extent.	Non-perennial stream and Farm Homestead, with cultivated crop lands.
	Portion 70 (a portion of Portion 67), measuring 4.9804 hectares in extent.	Agricultural land used for grazing, with remnants of old cultivated crop fields.
	Portion 71 (a portion of Portion 67), measuring 5.1757 hectares in extent.	Agricultural land used for grazing, with remnants of old cultivated crop fields.
	Portion 72 (a portion of Portion 67), measuring 5.5491 hectares in extent.	Agricultural land used for grazing, with remnants of old cultivated crop fields.
	Portion 74, (a portion of Portion 67) measuring 5.529 hectares in extent.	Agricultural land used for grazing, with remnants of old cultivated crop fields.
	Portion 75 (a portion of Portion 67), measuring 5.5411 hectares in extent.	Agricultural land used for grazing with remnants of old cultivated crop fields.
	Portion 76 (a portion of Portion 67), measuring 5.5850 hectares in extent.	Agricultural land used for grazing with remnants of old cultivated crop fields.
	Portion 79 (a portion of Portion 67), measuring 1.500 hectares in extent.	Cultivated crop lands.
	Portion 73 (a portion of Portion 67), measuring 10.4125 hectares in extent.	Recycling Company known as “Envirocycle”, with section disturbed by anthropogenic activities. M21 traverses the property from north/south.
	Portion 80 (a portion of Portion 67), measuring 27.4933 hectares in extent.	Non-perennial stream and Farm Homestead, with cultivated crop lands.

- Economic benefit

The Proposed Project has local socio-economic benefits from job creation and capital expenditure on contractors, materials and equipment, which will have a knock-on effect in terms of employment opportunities and economic benefits for South Africa due to increased chrome and PGM production.

- Job Creation

The Proposed Project would have a beneficial impact on the local economy through the creation of new employment opportunities during its operational phase. Both skilled and unskilled temporary employment opportunities would be created through the Proposed Project. In a developing country, such as South Africa, following a "no-project" option would have potential adverse impacts on a local and regional employment scale.

Table 22: A demographic statistical overview, as per census 2011 (MLM – IDP, 2017-2018)

Population Size Census 1996 Census 2001 Census 2011	 319 974 347 578 477 381	Population group Black African Coloured Indian or Asian White	 426 192 4 292 2 445 42 691
Average annual Growth Rate	3.17%	Population (Area km²)	3839
Population density	124 per km²	Sex Ratio (Males/100 Females)	114
Number of Households	160 724	Dependency ration	0.44
Average Household Size	3.00	Female headed hh	30.3%
Gender Distribution: Male Female	 53% 47%	Age Distribution/ Structure: Young (0-14 Years) Working age (5-65 Years) Eldery (Older than 65 Years)	 25.70% 69.20% 5.10%
Employment Status - Persons 15 to 65 Years of Age: Employment Unemployment Youth Unemployment(15-34)	 69.60% 30.40% 38.20%	Monthly Income levels: No Income Income up to R800 Income between R800-R 6500 Income above R6500	 23.3% 27.3% 43.3 6.3%
Education levels - Persons Older Than 20 Years: No Schooling Some Primary to Secondary Schooling Grade 12 Higher	 7.80% 57.30% 7.30% 27.60%	Formal dwellings 59.2% Housing owned/paid off 54.1% Flush toilet connected to sewerage 27.2%	Agricultural hh 23,621 Piped water inside dwelling 22.2% Electricity for lighting 81%
HIV 45.5% compared against North West Province prevalence rate of 26.7%			Weekly refuse removal 25.7%

7.1.1.16 Heritage Environment

The Proposed Schietfontein and Krelingspost Prospecting Area is located to the north of the Magaliesberg, which is known for its rich and diverse range of heritage resources (De Beer 1975). Stone Age sites are scattered along the Magaliesberg and are also found in its caves and rock shelters. Rock engraving sites are located further towards Maanhaarrand and Rustenburg in the west. Blockhouses along the Magaliesberg and colonial farm homesteads are still common in Marikana and on

the outskirts of Brits (Madibeng). The most abundant heritage, however, are those that date from the Late Iron Age and which are associated with the numerous Tswana chiefdoms who occupied this region during the last four centuries.

The following reports were reviewed as part of the desktop analysis in establishing the heritage resources within the Proposed Schietfontein and Krelingspost Prospecting Area:

- Phase 1: Heritage Impact Assessment for the Proposed Diesel Depot in Krelingspost, Portion of the Remainder of Portion 11 of the Farm Krelingspost N0.425 JQ, North West Province, dated March 2019 and conducted by Vhufahashu Heritage Consultants CC.
- Phase 1 Heritage Impact Assessment for the Proposed Q4 Filling Station South on Portion 41 of the Farm Schietfontein Situated on the N4, close to Brits in the North West Province, dated May 2014 and conducted by Leonie Marais-Botes and Dr A.C. van Vollenhoven.
- Amended Phase 1 Heritage Impact Assessment for the Proposed Dinaledi-Substation to Anderson-Substation 400KV Transmission Powerline, dated November 2012 and conducted by Leonie Marais-Botes.
- De Wildt 50 MW Solar Power Station. Scoping Report Palaeontology, dated October 2011 and compiled by Dr JF Durand.
- Amendment of an Archaeological Impact Assessment Study Report for the Proposed Construction of de Wildt 50 MW Solar Power Station and 88 KV Transmission Line on Portions 15, 27 and 28 of the Farm Schietfontein, within Madibeng Local Municipality of Bojanala Platinum District Municipality, North West Province, dated May 2016 and compiled by Vhubvo Archaeo-Heritage Consultant CC
- Phase I Heritage Impact Assessment (HIA) Study for Portion 86 of the Farm Zilkaatsnek 439JQ and Portions 12 and 13 of the Farm Schietfontein 437JQ for Eland Platinum Mines (Pty) Ltd (Eland Mines) near Madibeng in the North-West Province, dated March 2010 and compiled by Dr Julius CC Pistorius.
- Phase I Heritage Impact Assessment (HIA) Study for the Proposed New Eland Platinum Mines (Pty) Ltd (Eland Mines) near Madibeng in the Central

Bankeveld of the North-West Province of South Africa, dated February 2006 and compiled by Dr Julius CC Pistorius.

In order to place possible finds that could be unearthed during construction and operation activities in context, it is necessary to give a background regarding the different phases of human history.

- *Stone Age*

The Stone Age is the period in human history when lithic material was mainly used to produce tools. In South Africa the Stone Age can be divided in three periods. It is, however, important to note that dates are relative and only provide a broad framework for interpretation (Botes & van Vollenhoven, 2014). The division for the Stone Age according to is as follows:

- Early Stone Age (ESA) 2 million – 150 000 years ago;
- Middle Stone Age (MSA) 150 000 – 30 000 years ago; and
- Late Stone Age (LSA) 40 000 years ago – 1850 - A.D.

The closest known Stone Age site in the vicinity of Brits is a rock art site to the north-west. Rock engravings are found to the south and east of Rustenburg (the latter lying to the west of the surveyed area). These date back to the Late Stone Age (Botes & van Vollenhoven, 2014).

Proximity to a river makes the area suitable for human habitation. The area likely provided good grazing and therefore it is possible that Stone Age people may have utilized the site for hunting purposes. There is a possibility that Stone Age material could be found in this area.

- *Iron Age*

The Iron Age is the name given to the period of human history when metal was mainly used to produce metal artefacts (Botes & van Vollenhoven, 2014). In South Africa it can be divided in two separate phases namely:

- Early Iron Age (EIA) 200 – 1000 A.D; and
- Late Iron Age (LIA) 1000 – 1850 A.D.

Botes & van Vollenhoven, 2014 however, indicates that a Middle Iron Age should be included. The dates, which now seem to be widely accepted in archaeological circles, are:

- Early Iron Age (EIA) 250 – 900 A.D.;
- Middle Iron Age (MIA) 900 – 1300 A.D.; and
- Late Iron Age (LIA) 1300 – 1840 A.D.

Many Late Iron Age sites have been identified in the area around Brits and Rustenburg and in the Waterberg Mountains. This includes the surveyed area (Botes & van Vollenhoven, 2014). During earlier times the area was inhabited by Tswana groups, namely the Fokeng and Hurutshe. In the 19th century, and even today, the area is inhabited by other Tswana groups, namely the Kwena, Tlokwa, Phiring, Taung and the Fokeng (Botes & van Vollenhoven, 2014). During the Difaquane these people moved further to the north and south, but they returned later (Botes & van Vollenhoven, 2014). The subterranean presence of archaeological material is something that should however always be kept in mind. It also should be realized that the area may not have been surveyed before and therefore the possibility of finding new sites is always a reality.

The type of environment is suitable for human habitation. There is ample water sources and good grazing. One would therefore expect that Iron Age people may have utilized the area. This is the same reason why white settlers later moved into this environment.

- *Historical Age*

The historical age began with the first recorded oral histories in the area. It includes the moving into the area of people that were literate. This era is often referred to as the Colonial Era or the recent past. Due to factors such as population growth and a decrease in mortality rates, more people inhabited the country during the recent historical past. Therefore, much more cultural heritage resources from this era have been left on the landscape. It is important to note that all cultural resources older than 60 years are potentially regarded as part of South Africa's heritage estate under the NHRA and detailed studies are required to determine whether these indeed have

cultural significance (Botes & van Vollenhoven, 2014). Factors to be considered include aesthetic, scientific, cultural and religious value of such resources.

Early travellers have moved through this part of the NWP. This included Coenraad de Buys in 1821 and 1825, David Hume in 1825, Robert Scoon and William McLuckie in 1827 and 1829 and Dr. Robert Moffat and Reverend James Archbell in 1829 (Botes & van Vollenhoven, 2014). Hume again moved through this area in 1830, followed by the expedition of Dr. Andrew Smith in 1835 (Botes & van Vollenhoven, 2014). Hume again moved through the area with Scoon in 1835. In 1836 William Cornwallis Harris visited the area. The well-known explorer Dr. David Livingston passed through this area in 1847 (Botes & van Vollenhoven, 2014).

The greater Magaliesberg and Rustenburg area saw much action during the Anglo-Boer War (1899-1902). British troops reached Rustenburg on 14 June 1900. Three battles were fought here during the War, being at: Buffelspoort on 3 December 1900, Nooitgedacht on 13 December 1900; and Vlakfontein on 29 May 1901 (Bergh 1999: 51-52).

Historical structures, such as farmhouses and infrastructure may therefore be found in the larger geographical area. The Proposed Schietfontein and Krelingspost Prospecting Area however is very flat, meaning that it would not have had any military advantage and therefore it may not have been utilized for this purpose during wars. Historical structures, such as farmhouses and infrastructure relating to these times may be found in this Area. It is also possible that graves, associated with the above, may be present.

a) <u>Implications for the Proposed Project</u>

The Proposed Project will not be undertaken close to identified features of heritage significance. The area must be survey prior to the final prospecting drilling site selection.

7.1.2 Description of the current land uses.

The Proposed Schietfontein and Krelingspost Prospecting Area includes the following properties (Refer to ***Figure 3-5):***

Portions 5, 24, 27, 28, 32, 33, 34, 35, 99, 100 and 101 of Schietfontein and Portions 2, 3, 70, 71, 72, 73, 74, 75, 76, 79 and 80 of Krelingspost.

The majority of these properties are privately owned with a few, mainly on Krelingspost corporately owned. The land is mainly used for private or commercial agricultural purposes. Large portions of Schietfontein are natural grazing areas. Refer to Section 7.1.1.7.

8. ACTIVITY, IMPACTS AND RISKS

8.1 Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts

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

This part of the document focuses on the identification of the major potential impacts and risks the activities, processes and actions may have on the surrounding environment. It indicates the major impacts that these activities may have on the environmental components associated with Proposed Schietfontein and Krelingspost Prospecting Area, as required in terms of Regulation 19(3) of GN R982.

8.1.1 Project phases and activities to be undertaken

For the purposes of this impact identification, the Proposed Project timeframe will be subdivided into the following four phases:

- Construction Phase.
- Operational Phase.
- Decommissioning Phase.
- Post-closure Phase

8.1.1.1 Construction Phase

The following impacts and risks were identified by looking at the proposed activities during the Construction Phase, including the nature, significance, consequence, extent, duration and probability of the impacts:

1. Site Establishment;
2. Vegetation clearing; and
3. Hydrocarbon management.

8.1.1.2 Operational Phase

Activities that will be conducted in the Operational Phase include the following:

- Drilling of diamond core prospecting holes;
- Removal of cores and storing at the core yard for analysis;

8.1.1.3 Decommissioning Phase

Activities that will be included in the Decommissioning Phase include the following:

- Site break down
- Plugging of core hole;
- Rehabilitating the area by:
    - Removal and rehabilitation of contaminated soil;
    - Re-vegetating;
    - Levelling the area; and
    - Controlling invasive plants.

8.1.1.4 Post-Closure Phase

. Monitoring and rehabilitation of the area will continue.

9. METHODOLOGY USED IN DETERMINING AND RANKING THE NATURE, SIGNIFICANCE, CONSEQUENCES, EXTENT, DURATION AND PROBABILITY OF POTENTIAL ENVIRONMENTAL IMPACTS AND RISKS

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

The potential impacts were determined by evaluating the different phases associated with the drilling of the boreholes. These phases were determined to be as follow:

- Construction Phase (C)
- Operational Phase (O)
- Decommissioning Phase (D)
- Post-Closure Phase (P)

A description of the parameters and methodology used in identifying and assessing impacts are given in ***Table 25*** under Section 9.5 below.

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

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

N.B. No alternatives were considered as discussed above.

Table 23: Potential positive and negative impacts associated with the Construction -, Operational - and Decommissioning Phases of the proposed activity.

Impact	Feature Impacted	Phase	Type of Impact
Construction Phase			
1). Loss of indigenous natural vegetation during site preparation and establishment.	Biodiversity	Construction	Negative
2). Impact on plant species of conservation concern during site preparation and establishment.	Biodiversity	Construction	Negative

3). Establishment and spread of declared weeds and alien invader plants.	Biodiversity	Construction	Negative
4). Widening of existing access roads and establishing temporary access roads.	Biodiversity	Construction	Negative
5). Land clearing, causing physical disturbance to the soil.	Soil	Construction	Negative
6). Dust emissions	Health	Construction	Negative
7). Construction vehicles and activities increase the ambient noise levels.	Social	Construction	Negative
8). Employment and skills development.	Economic	Construction	Positive
9). Economic multiplier effect from using local contractors.	Economic	Construction	Positive
10). Generation of general (non-hazardous) industrial waste materials during construction phase.	Waste	Construction	Negative
11) Prospecting activities impact on the current land-users.	Social (nuisance)	Construction	Negative
12) Discovery of heritage resources	Heritage	Construction	Negative
13) Damage to local roads	Social	Construction	Negative
Operational Phase			
14). Land clearing causing physical disturbance to the soil.	Soil	Operational	Negative
15). Dust Emissions.	Health	Operational	Negative
16). Construction vehicles and activities may increase the ambient noise levels.	Social	Operational	Negative
17). Employment and skills development	Economic	Operational	Positive
18). Economic multiplier effect from using local contractors.	Economic	Operational	Positive
19). Generation of general (non-hazardous) industrial waste materials during the operational phase.	Waste	Operational	Negative
20) Prospecting activities impact on the current land-users.	Social (nuisance)	Operational	Negative

21) Damage to local roads	Social	Operational	Negative
Decommissioning Phase			
22). Habitat transformation (limited to the drilling footprint).	Biodiversity	Decommissioning	Negative
23). Dust emission	Health	Decommissioning	Negative
24). Construction vehicles and activities may increase the ambient noise levels.	Social	Decommissioning	Negative
25). Employment and skills development	Economic	Decommissioning	Negative
26). Economic multiplier effect from using local contractors.	Economic	Decommissioning	Negative
27). Generation of general (non-hazardous) industrial waste materials during decommissioning phase.	Waste	Decommissioning	Negative
28) Property damage and residual impact	Social and Economic	Decommissioning	Negative

9.2 The possible mitigation measures that could be applied and the level of risk.

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

Mitigation measures need to be identified to ensure that impacts from the Proposed Project are reduced as far as possible. The following mitigation measures objectives were considered when developing mitigations, to:

- find more environmentally sound ways of undertaking specific activities;
- enhance any environmental and social benefits of a proposed activity;
- avoid, minimise or remedy negative environmental impacts; and
- ensure that any residual negative environmental impacts are environmentally acceptable.

Identifying appropriate mitigation measures were conducted in a hierarchal manner:

1. Preventative measures will be identified to avoid, where possible, negative impacts that may arise due to the proposed activity;
2. Measures will be identified to minimise and / or reduce the negative impacts to “as low as practicable” levels; and
3. Measures will be identified to compensate or remedy residual negative impacts that are unavoidable and cannot be minimised or reduced any further (Department of Environmental Affairs, 2006).

Refer to Section 10, below for the mitigation measures proposed for the Proposed Project.

9.3 Motivation where no alternative sites were considered.

No alternatives have been considered. Please refer to Sections (7), (8) and (9) above.

9.4 Statement motivating the preferred site.

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

No alternatives have been considered. Please refer to Sections (7), (8) and (9) above.

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

(Including (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.)

Different impacts are associated with the different phases of the Proposed Project. The significance will be determined by both the extent and duration of the impact. The environmental risk of any aspect is determined by a combination of parameters associated with the impact. Each parameter connects the physical characteristics of an impact to a quantifiable value to rate the environmental risk. A description of the parameters used in this impact assessment is given in the table below.

Table 24: Impact Assessment Methodology.

Parameter	Description
Extent:	**Area extent affected by the potential impact:** • **Onsite – Within specific site boundary (weight value – 1)** • **Local – Within municipal boundary (weight value – 2)** • **Regional – Outside municipal boundary (weight value – 3)**
Duration:	**Time that the potential impact will be in effect** • **Short term – 1 Year or less (weight value – 1)** • **Medium term – 1- 5 Years (weight value –2)** • **Long term – Longer than 5 Years (weight value – 3)**
Intensity:	**The severity of an impact on the receiving environment:** • **Low – Natural and/or cultural processes continue in a modified way and is reversible (weight value – 1)** • **Medium – Natural and/or cultural processes stop and is partially reversible (weight value – 2)** • **High – Natural and/or cultural processes disturbed to an irreversible state (weight value – 3)**
Significance of Impact / Consequence	**Adding the extent, duration and intensity together provides the significance of the impact (High, Medium or Low).** **Extent + Duration + Intensity = High/Medium/Low Impact**
Probability:	**The likelihood of an impact occurring:** • **Unlikely – 0% - 45% chance of the potential impact occurring (weight value – 1)** • **Possible – 46% - 75% chance of the potential impact occurring (weight value – 2)** • **Likely - >75% chance of the potential impact occurring (weight value – 3)**
Environmental Risk Refer to the table below	**Multiplication of the significance of the impact by the probability of the impact occurring produces a conclusion of the overall risk that an impact poses to the surrounding environment.** **High / Medium/Low Impact X Probability = High / Medium/Low Environmental Risk**

Table 25: Environmental risk and impact significance matrix.

Significance of Impact				
		Low Impact (3 → 5)	**Medium Impact (6 → 8)**	**High Impact (9)**
Probability	**Definite / Very Likely 3**	9 -15 L - M	18 -24 M-H	27 H
	Possible 2	6 - 10 L - M	12 - 16 M	18 M – H
	Unlikely 1	3 - 5 L	6 - 8 L	9 L

Environmental Risk	Guidelines for Control Strategies
(H) - High	Proactively reduce risk level, short term response.
(M - H) - Medium to High	Proactively reduce risk level, short term response.
(M) - Medium	Management strategies to reduce risk level, short to medium term response.
(L - M) - Low to Medium	Management strategies to reduce risk level, short to medium term response, operational control and housekeeping.
(L) - Low	Operational control and housekeeping.

10. ASSESSMENT OF EACH IDENTIFIED POTENTIALLY SIGNIFICANT IMPACT AND RISK

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

Impact	Phase	Extent	Duration	Intensity	Significance	Probability	Environmental Risk	Mitigation Measures	Extent	Duration	Intensity	Significance	Probability	Environmental Risk
	Before Mitigation								After Mitigation					
10.1 Biodiversity														
Site preparation, establishment and decommissioning, including movement of equipment will potentially have the following impacts on the biodiversity: • Loss of indigenous natural vegetation during site preparation and establishment. • Establishment and spread of declared weeds and alien invader plants. • Habitat transformation (limited to the prospecting sites and parking footprint).	C, O, D	1	2	2	5	3	15	• Avoid unnecessary impacts on natural vegetation. Impacts should be contained, as much as possible, within the footprint of the drilling areas. • Keep disturbance of vegetation surrounding drilling areas to a minimum. • Rehabilitate disturbed areas as quickly as possible following completion of prospecting activities in an area. • Make use of existing access roads where possible. • Do not translocate soil stockpiles from areas with alien plants. • Control any alien plants immediately, to avoid establishment of a soil seed bank that would take decades to remove. • Establish an on-going monitoring programme to detect and quantify any aliens that may become established. • Rehabilitate and re-vegetate the disturbed areas as per the EM rehabilitation plan.	1	2	1	4	2	8
10.2 Soil														
Site preparation, establishment and decommissioning, including movement of equipment will potentially have the following impacts on soil: • Land clearing, causing physical disturbance to the soil. • Loss of topsoil • Soil compaction • Soil erosion	C, O, D	1	2	2	5	3	15	• Impacts must be contained, as much as possible, within the footprint of the drilling area. • Rehabilitate disturbed areas as quickly as possible following completion of prospecting activities in an area. • Do not translocate soil stockpiles from areas with alien plants. • Rehabilitate and re-vegetate the disturbed areas as per the EM rehabilitation plan.	1	2	1	4	2	8
10.3 Air														
Dust emissions within the site due to movement of vehicles and operation of equipment	C, O, D	2	2	1	5	2	10	• Dust suppression mitigation measures, such as wetting of roads and stopping drilling operations during high wind conditions, must be implemented to limit and / or minimise/control airborne dust.	1	2	1	4	1	4

Impact	Phase	Extent	Duration	Intensity	Significance	Probability	Environmental Risk	Mitigation Measures	Extent	Duration	Intensity	Significance	Probability	Environmental Risk
	Before Mitigation								After Mitigation					
								• Ensure that a complaints register is kept at EM's entrance to capture any complaints from surrounding land users. • The construction activities must be kept to a small footprint. • Monthly dust monitoring must be implemented on the Proposed Schietfontein and Krelingspost Prospecting Area. • Adequate Personal Protective Equipment ("**PPE**") must be used.						
10.4 Noise														
Increased ambient noise levels due to the following activities: • Movement of vehicles, drilling equipment and site clearing equipment to the Proposed Prospecting Area. • Drilling activities • Rehabilitation activities once drilling has been completed.	C, O, D	2	2	1	5	2	10	• Establish, implement and maintain an effective vehicle maintenance system. • Prospecting activities must be undertaken during week days between 6:00am and 18:00pm. • Adequate PPE must be used. • Complaints register must be kept at the security office.	1	2	1	4	1	4
10.5 Economic (Positive)														
Employment and skills development due to the Proposed Project.	C, O, D	2	2	2	6	2	12	• It is recommended that local contractors are used to maximise the opportunities made available to the local labour force. • Training and skills development programmes should be initiated prior to the commencement of the operation phase. • Develop a database of local BEE service providers and ensure that they are informed of economic opportunities.	2	2	2	6	2	12
10.6 Waste														
Generation of general (non-hazardous) industrial waste materials during the different phases of the Proposed Project.	C, O, D	1	2	1	4	3	12	• Provide suitable containers and temporary storage areas as close to the point of generation as practical possible. • Implement the waste management hierarchy principles, where practical possible. • Separate waste at source and recycle wherever possible. • Ensure unusable waste is disposed of in an environmentally responsible manner at licensed disposal facilities only ("cradle to grave" responsibility).	1	2	1	4	2	8
10.7 Surface water														
Impact on the surface water quality or run-off as a result of potential chemical and solvent spillages	C, O, D	1	2	3	6	3	18	• The location of all activities and infrastructure should be outside of the specified zones and/or flood lines of watercourses. If this is	1	1	2	4	2	8

Impact	Phase	Extent	Duration	Intensity	Significance	Probability	Environmental Risk	Mitigation Measures	Extent	Duration	Intensity	Significance	Probability	Environmental Risk
	Before Mitigation								After Mitigation					
from drilling and earth moving equipment								unavoidable, the necessary exemptions / approvals will be obtained. • Potential pollution must be managed by implementing the following processes: ➢ maintenance of equipment; ➢ education and training of workers (permanent and temporary); ➢ appropriate management of hazardous materials and waste; ➢ the required steps to enable containment and remediation of pollution incidents; and ➢ specifications for post rehabilitation audit criteria to ascertain whether the remediation has been successful and, if not, to recommend and implement further measures.						
10.8 Groundwater														
Impact on the groundwater quality due to potential chemical and solvent spillages from drilling and earth moving equipment	C, O, D	1	2	3	6	3	18	• EP must identify boreholes on the Proposed Schietfontein and Krelingspost Prospecting Area and monitor the groundwater quality prior to commencement of the activities to establish the baseline. • It is recommended that quarterly monitoring samples be taken of boreholes within the Proposed Prospecting Area. • Equipment and vehicles must be maintained. • Potential pollution must be managed by implementing the following processes: ➢ maintenance of equipment; ➢ education and training of workers (permanent and temporary); ➢ appropriate management of hazardous materials and waste; ➢ the required steps to enable containment and remediation of pollution incidents; and ➢ specifications for post rehabilitation audit criteria to ascertain whether the remediation has been successful and, if not, to recommend and implement further measures.	1	1	2	4	2	8
10.9 Social Economic														
Impact on the surrounding land owners and users. Impact includes: • **Property damage** • **Trespassing on private property** • **Nuisance** • **Disturbance of day to day activities** • **Damage to private roads**	C, O, D	1	2	2	5	3	15	• Prospecting activities must only be undertaken during weekdays from 6:00 to 18:00. • Damage caused as a result of prospecting activities must be repaired to the reasonable satisfaction of the landowner. •	1	1	2	4	2	8

Impact	Phase	Extent	Duration	Intensity	Significance	Probability	Environmental Risk	Mitigation Measures	Extent	Duration	Intensity	Significance	Probability	Environmental Risk
	Before Mitigation								After Mitigation					
10.10 Heritage														
Discovery of Heritage resources.	C, O, D	1	2	2	5	3	15	• On discovery of heritage resources the operations must be stopped. Do not further disturb the area before the below is undertaken. • Notify the ECO. The ECO must arrange an assessment of the resource. If confirmed significant, the ECO must liaise with National, Cultural and History Museum. P.O. Box 28088 SUNNYSIDE 0132 • Work must only recommence when cleared by ECO.	1	1	1	3	1	3

11. SUMMARY OF SPECIALIST REPORTS.

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

Refer to Section 7.1.

12. ENVIRONMENTAL IMPACT STATEMENT

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

Table 26: Summary of the Environmental Risk before and After Mitigation for every phase of the development.

Phase	Environmental Risk									
	Before Mitigation					After Mitigation				
	High	Medium to High	Medium	Low to Medium	Low	High	Medium to High	Medium	Low to Medium	Low
- **Construction** - **Operational** - **Decommission and Closure**	0	2	1	7	0	0	0	1	6	3
Total	0	2	1	7	0		0	1	6	3

Nine (9) negative impacts were anticipated with the construction, operational and decommission phases of the Proposed Project, and one (1) positive impact was identified. None of the impacts had a high significance rating, after mitigation, however, the medium impact is a positive impact relating to the Proposed Project's economic benefits.

No “fatal flaw” adverse impacts or adverse impacts that cannot be adequately mitigated are anticipated with the Proposed Project. The potential impacts identified are of low to medium risk and no new high-risk impacts were identified due to the Proposed Project.

Environmental impacts will occur due to the Proposed Project's construction, operational and decommission phases but will be kept to a minimum by following the recommended processes and mitigation measures outlined in the existing EMPr.

The EMPr lists the various impacts that may occur during a construction, operation and decommissioning phase. It also states the: proposed management and mitigation measures; responsible person or party for ensuring that the mitigation

measures are complied with; and frequency of compliance monitoring to be undertaken.

12.2 Final Site Map

Provide a map at an appropriate scale which superimposes the proposed overall activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers .Attach as **Appendix 4**

The final site map is attached under ***Appendix 4***.

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

No alternatives have been considered. Please refer to **Sections (7), (8) and (9)** above. Positive and negative impacts associated with the proposed activity are presented in **Section 9.1 (Table 24).**

12.4 Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr

Based on the assessment and where applicable the recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation.

Refer to Appendix 8: Environmental Management Programme (EMPr)

The EMPr will seek to achieve an essential end state and describe how activities that could have an adverse environmental impact will be mitigated and monitored. It will address the environmental impacts during the pre-construction, construction, operational, decommissioning and post-closure phases of the Proposed Project. Specific environmental recommendations will therefore be made to be achieved by a certain date. The environmental and social objectives will be set to allow prospecting in an environmental and socially responsible manner, while ensuring that sustainable closure can be achieved.

12.4.1 Environmental Objectives and Goals

- Protect the biophysical environment from any impacts that cannot be mitigated.
- Prevent negatively impact on biodiversity on a regional scale; and
- Ensure that activities are carried out to support rehabilitation.

12.4.2 Socio-economic Objectives and Goals

- Adhere to an open and transparent communication procedure with stakeholders.
- Ensure that information is communicated accurately and regularly to IAPs in a manner which is understandable and accessible.
- Mitigate negative impacts.
- Prevent damage to private property.
- Enhance project benefits and minimise negative impacts through continuous consultation with stakeholders.
- Assemble adequate, accurate, appropriate, and relevant socio-economic information relating to the Proposed Project's context.
- Prioritise the sourcing of local labour and share in gender equality.
- Ensure an atmosphere of equality and non-discrimination among the workforce.
- Develop skills that will equip employees to obtain employment in other sectors of the economy.

12.5 Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

To minimise potential impacts associated with the establishment and management of the Proposed Prospecting Area, the following measures must be implemented and therefore included as conditions of the authorisation:

Responsibility

- The affected environment shall be maintained in a stable condition that will not: (i) be detrimental to the safety and health of humans and animals; and (ii) pollute the environment or lead to the degradation thereof.
- It must be EP's responsibility to ensure that the site manager and the employees are capable of complying with all the requirements which must be met in order to prospect (being the implementation of the EMPr).

Demarcation

- The Proposed Prospecting Area must be clearly demarcated with barrier tape and signboards.
- Prospecting activities shall only take place within the demarcated area. EP must ensure this.

Site Establishment

- Any site offices which may be required shall be established on an already disturbed area. Offices should be of modular design, so that these can be easily dismantled and relocated.
- The area chosen for these purposes shall be the minimum reasonably required and which will involve the least disturbance to vegetation.
- No site office shall be located closer than 32 m from a stream, river, spring, dam or pan.
- No fires are allowed inside the Proposed Schietfontein and Krelingspost Prospecting Area.
- Noise disturbance or any other form of disturbance shall be kept to a minimum.

Ablution facilities

- As a minimum requirement, EP must provide chemical toilet facilities or other DMR and DWS approved toilet facilities for employees.
- Proper hygiene measures must be established for toilet and / or change house facilities (if required), such that they do not cause water or other pollution.

Rehabilitation of the office site

- Areas containing ablution facilities must be restored and covered with a layer of topsoil.

- The site must be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

Topsoil Management

- Topsoil must be removed from areas where physical disturbance of the surface will take place.
- All available topsoil must be removed prior to the commencement of any operations.
- Topsoil shall be kept separate from overburden and not be used for building or maintenance of access roads.
- The topsoil stored in the bund wall area shall be adequately protected from being blown away or being eroded.

Access to the Proposed Prospecting Area

- Utilise existing access roads as far as possible.
- Consult and agree on routes with landowners and private landowners.
- Any new access roads that will be established must not exceed four (4) meters in width.
- Access roads may not cross or encroach any wetlands, drainage lines or streams.
- If a portion of the access road needs to be newly constructed, it must be done in a manner that causes minimal vegetation disturbance. Drainage and erosion protection in the form of cut-off berms or trenches should be provided where necessary.
- Only designated routes will be used by vehicles or personnel to gain access to the Proposed Schietfontein and Krelingspost Prospecting Area.

Maintenance of Access Roads

- Access roads shall be adequately maintained to minimise dust and erosion.
- Damage on private roads as a result of the Proposed Project will be repaired.

Waste Management

- Suitable covered receptacles shall be placed within the Proposed Schietfontein and Krelingspost Prospecting Area for waste disposal.

- Oil and fuel spills must be cleaned up immediately to the satisfaction of the ECO by removing the spillage, together with the polluted soil and disposing of them at a licenced waste management facility.

Monitoring and Reporting

- Regular monitoring of all the environmental management measures and components must be carried out by EP.
- Various points of compliance must be identified relating to the Proposed Project's various environmental impacts.

Compliance Reporting/ Submission of information

- Reports confirming compliance with various points identified in the EMPr must be submitted to the DMR Regional Manager on a regular basis.
- Emergencies or unforeseen impacts must be reported as soon as possible.

Closure

- An environmental risk report must accompany the application for closure.
- A closure plan must be compiled and accompany the application for closure.

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

(Which relate to the assessment and mitigation measures proposed)

The following assumptions and limitations are applicable to the studies undertaken within this basic assessment process:

- The information provided by EP and I&APs to the environmental team was correct and valid at the time it was provided.
- It is assumed that the borehole drill sites area identified by EP represent technically suitable sites for the prospecting.
- This report and its investigations are project-specific and consequently the environmental team did not evaluate any other alternatives.
- A desktop study was undertaken of existing specialist studies and it is assumed these studies are correct.
- The EAP does not accept any responsibility for liability incurred by the EP, or any of its agents, parent companies, affiliates, employees or contractors, because of reliance on the findings and opinions or any omissions from the report content, findings or opinions.

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

12.7.1 Reasons why the activity should be authorized or not.

Refer to Section 12.1 above.

12.7.2 Condition that must be included in the authorisation.

Refer to Section 12.5 above.

12.8 Period for which the Environmental Authorisation is required.

EAs are usually granted for a period of five years for construction activities to be undertaken from the date of issue. Should a longer period be required, the applicant / EAP is requested to provide a detailed motivation on what the period of validity should be.

The Proposed Project will take place over a period of 5 years. Detailed motivation by the EAP will be provided, if necessary, to apply for a longer period.

13. FINANCIAL PROVISION

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

The financial provision has been provided for in the ***Prospecting Works Programme, Refer to the Appendix 7***. R8 463 000 has been provided for the Proposed Project, which includes rehabilitation and managing the environmental impact.

13.1 Explain how the aforesaid amount was derived.

The amounts required for the rehabilitation was derived from the GNR 1147 NEMA Regulation for Financial Provision for Prospecting, Exploration, Mining or Production Operations. The provision was determined by acquiring market related rates for the rehabilitation and closure of the prospecting sites.

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

(Confirm that the amount, is anticipated to be an operating cost and is provided for as such in the Mining work programme, Financial and Technical Competence Report or Prospecting Work Programme as the case may be).

The applicant has confirmed that the finances are available, refer to the ***Appendix 7.***

14. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

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

14.1 Impact on the socio-economic conditions of any directly affected person.

(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as an Appendix .

The Proposed Project will have the following socio-economic benefits:

14.1.1 Construction Phase

- Potential temporary employment opportunities.
- Damage of private property.
- Trespassing of private property.
- Damage of private roads.
- Nuisance to landowners or tenants.
- Noise and visual impact.

14.1.2 Operational Phase

- Potential temporary employment opportunities.
- Damage of private property.
- Trespassing of private property.
- Damage of private roads.
- Nuisance to landowners or tenants.
- Noise and visual impact.

14.1.3 Decommissioning and Post-closure Phase

- Potential temporary employment opportunities.

- Damage of private property.
- Damage of private roads.

14.2 Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.

(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) with the exception of the national estate contemplated in section 3(2)(i)(vi) and (vii) of that Act, attach the investigation report as Appendix 11.19.2 and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6.and 2.12.herein).

Several heritage impact studies conducted in the area were reviewed. Based on the review no heritage resources of significance were identified within the Proposed Schietfontein and Krelingspost Prospecting Area.

It is however advised that the proposed drilling sites and access roads be surveyed for heritage resources prior to the undertaking of the said activities.

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

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

This BAR compiled in accordance with the NEMA, GN R982 and MPRDA. The EAP managing the application confirms that this BAR is being submitted for an EA in terms of the NEMA in respect of listed activities that have been triggered by an application in terms of the MPRDA. Should the DMR require any additional information, this will be provided upon request.

No reasonable or feasible alternatives exist for the Prospecting Right Application and, as such, motivation for no alternatives has been provided.

16. CONCLUSION AND RECOMMENDATIONS

This basic assessment process has been carried out in accordance with the NEMA, 1998, and the relevant Regulations thereunder. The likely negative impacts and risks associated with the Proposed Project will be short term and in a reasonably small footprint compared to overall EM activities.

Based on the outcomes of the risk assessments conducted, coupled with the recommendations made by the EAP, the EAP has not identified any reasons why the Proposed Project cannot proceed, provided that the mitigation measures contained in the EMPr are implemented.

I&APs will be identified and notified of the availability of the DBAR and FBAR. I&AP will be provided an opportunity to review it and furnish important inputs taking the process forward.

17. REFERENCES

- Department of Environmental Affairs, 2009.National Environmental Management: Waste Act (59/2008): List of waste management activities that have, or are likely to have a detrimental effect on the environment. Government Gazette 37083, Government Notice 921 of 29 November 2013, Government Printer, Pretoria.
- Department of Environmental Affairs, 2013. National Environmental Management Act: Waste Act, Act No. 107 of 1998. Waste Classification and Management Regulations. Government Gazette 36784, Government Notice R 634 of 23 August, 2013, Government Printer, Pretoria.
- Department of Environmental Affairs, 2014. National Environmental Management Act, 1998 (Act 107 of 1998). Environmental Impact Assessment Regulations. Government Gazette 38282, Government Notice R 982 of 4 December 2014, Government Printer, Pretoria.
- Department of Environmental Affairs, 2014. National Environmental Management Act, 1998 (Act 107 of 1998). Listing Notice 1: List of activities and competent authorities identified in terms of Section No. 24(2) and 24D. Government Gazette 38282, Government Notice R 983 of 4 December 2014, Government Printer, Pretoria.

- Department of Environmental Affairs, 2014. National Environmental Management Act, 1998 (Act 107 of 1998). Listing Notice 2: List of activities and competent authorities identified in terms of Section No. 24(2) and 24D. Government Gazette 38282, Government Notice R 984 of 4 December 2014, Government Printer, Pretoria.
- Department of Environmental Affairs, 2015. National Environmental Management: Waste Act, Act No 59 of 2008: regulations regarding the planning and management of residue stockpiles and residue deposits. Government Gazette 39020, Government Notice R 632 of 24 July, 2015, Government Printer, Pretoria.
- Department of Environmental Affairs, 2015. National Environmental Management: Waste Act, Act No 59 of 2008: Amendments to the list of waste management activities that have, or are likely to have, a detrimental effect on the environment. Government Gazette 39020, Government Notice R 633 of 24 July, 2015, Government Printer, Pretoria.
- DWAF, 2006. Best Practice Guideline G1 Storm Water Management, s.l.: Department of Water Affairs and Forestry.
- Eland Mine, Mining right from the Department of Mineral Resources (DMR) covering the farm Elandsfontein 440JQ in terms of the MPRDA. Reference No. (NW) 30/5/1/2/3/2/1/280EM. Dated 21 December 2006.
- Eland Mine, Environmental authorization from the Department of Economic Development, Environment, Conservation and Tourism (DEDECT) in terms of the old Environment Conservation Act, 73 of 1989 (ECA), for listed activities associated with the initial mine development. Reference No. EIA 518/2005NW. Dated 13 March 2007.
- Eland Mine, Section 102 amendment and update of the EMP to include Portions 84 and 97 of the Farm Zilkaatsnek 439 JQ. Reference No. (NW) 30/5/1/2/3/2/1/280EM. Dated 19 November 2010.
- Eland Mine, Environmental authorization submitted for listed activities associated with the concentrator expansion project. Reference No. NWP/EIA/441/2007. Dated August 2012. Decision still pending.

- Eland Mine Environmental authorisation Zilkaatsnek Prospecting Right Application. Reference No. NW30/5/1/1/3/2/1/12469EM. Dated 24 January 2019.
- Eland Mine, water use license from the Department of Water Affairs (DWA) under Section 21 of the NWA for water uses associated with the Elandsfontein site including the planned concentrator expansion project. License No: 03/A21J/ABCGIJ/1547. Dated 23 October 2012.
- Eland Mine, Section 102 amendment and update of the EMP to include Portions 13 and 14 of the Farm Schietfontein 439 JQ into the existing mining right in respect of the remainder of Portion 58, 80, 81, 82, 84, 87 and 97 of the Farm Zilkaatsnek 439 JQ. Reference No. (NW) 30/5/1/2/3/2/1/341EM. Dated 19 March 2013.
- Eland Mine. Prospecting Work Programme. Prospecting Right Application Without Bulk Sampling
- Mvelo Minerals, 2017, Basic assessment report and Environmental management programme report (EMPr)
- IUCN, 2013. IUCN Red List. [Online] Available at: http://www.iucnredlist.org/
- Mucina, L. & Rutherford, M., 2006. The Vegetation of South Africa, Lesotho and Swaziland. Pretoria: South Africa National Biodiversity Institute.
- South Africa, Republic, 1998. National Environmental Management Act, Act No. 107 of 1998. Government Gazette 19519, Government Printer, Pretoria.
- South Africa, Republic, 1998. National Environmental Management Act: Waste Act, Act No. 107 of 1998. Government Gazette 32000, Government Printer, Pretoria.
- South Africa, Republic, 1998. National Water Act, Act No. 36 of 1998. Government Gazette 19182, Government Printer, Pretoria.
- South Africa, Republic, 2008. Mineral and Petroleum Resources Development Amendment Act, Act No 49 of 2008. Government Gazette 32151, Government Printer, Pretoria.
- Municipal Demarcation Board, 2018. Municipal Capacity Assessment 2018. Madibeng NW372.

18. UNDERTAKING

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

I ***GS Barkhuizen*** herewith confirm

a) the correctness of the information provided in the reports ☐
b) the inclusion of comments and inputs from stakeholders and I&APs ; ☐
c) the inclusion of inputs and recommendations from the specialist reports where relevant; and ☐
d) that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein. ☐

_____
Signature of the environmental assessment practitioner:

CHEMC Environmental CC
Name of company:

_____
Date: