

KRUIDFONTEIN MRA AND TRIPLE CROWN PROJECT - SCOPING REPORT FOR PUBLIC REVIEW

Kruidfontein, Magazynskraal and Wilgespruit Projects

Prepared for: C&L Mining & Resources (Pty) Ltd; Pilanesberg Platinum
Mines (Pty) Ltd; Richtrau No. 123 (Pty) Ltd

Authority References:

DMRE: tbc

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SLR Project No.: 720.19080.00006
Report No.: 1
Revision No.: 0
August 2022

DOCUMENT INFORMATION

Title	KRUIDFONTEIN MRA AND TRIPLE CROWN PROJECT - SCOPING REPORT FOR PUBLIC REVIEW
Project Manager	Kate Hamilton
Project Manager Email	khamilton@slrconsulting.com
Author	Kate Hamilton
Reviewer	Ed Perry
Keywords	Platinum, chrome, Sedibelo, Pilanesberg
Status	Draft
Report No.	1
SLR Company	SLR Consulting (South Africa) (Pty) Ltd
DMRE:	tbc

DOCUMENT REVISION RECORD

Rev No.	Issue Date	Description	Issued By
A	18 July 2022	Client Review	KH
B	8 August 2022	Public Review	KH

REPORT SIGN OFF AND APPROVALS



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EXECUTIVE SUMMARY

INTRODUCTION

Sedibelo Resources Limited (SRL) (previously known as Sedibelo Platinum Mines Limited), through its South African operating subsidiaries Pilanesberg Platinum Mines (Pty) Ltd (PPM), Itereleng Bakgatla Mineral Resources (Pty) Ltd (IBMR), Richtrau No. 123 (Pty) Ltd and C&L Mining and Resources (Pty) Ltd (C&L), has mining interests over various properties to the northwest and north of the Pilanesberg National Park. In 2022, IBMR ceded the Mining Right for the Wilgespruit Project to PPM.

This Environmental Impact Assessment (EIA) process consists of two parallel processes, a Mining Right Application (MRA) for the Kruidfontein Project and the consolidation of the Kruidfontein Mining Right (MR) (should it be approved by the North West Department of Minerals and Energy - DMRE) and the approved Magazynskraal MR into the approved Wilgespruit Project MR (the Triple Crown Project) (Figures 1 and 2).

Once this Application is approved, all environmental impacts associated with the mining areas for the Wilgespruit, Magazynskraal and Kruidfontein Projects will be authorised and managed in terms of the amended Wilgespruit Project Environmental Management Programme (EMPr). Should the Kruidfontein MRA not be approved by the DMRE, then that element of the Triple Crown Project would be excluded. The proposed Triple Crown Project site is located northwest of the Pilanesberg National Park within the Moses Kotane Local Municipality (MKLM) in the North West Province of South Africa (Figure 1).

This Scoping Report, the EIA Report and the Public Participation Process (PPP) relating to the Triple Crown Project will be integrated. The objective of this Environmental Authorisation (EA) application is in support of creating “one mine”. The total extent of the Triple Crown Project area will be equivalent to 16 927 ha. Proposed changes to the adjacent approved PPM mining operation are dealt with under a separate application process.

SLR Consulting (South Africa) (Pty) Ltd (SLR) was appointed as the Environmental Assessment Practitioner (EAP) to undertake the regulatory EIA and associated EMPr Amendment process for the proposed Triple Crown Project. In this regard, PPM intends to lodge an application for EA to the DMRE in terms of the National Environmental Management Act (No. 107 of 1998) (NEMA), the Mineral and Petroleum Resources Development Act (No. 28 of 2002) (MPRDA) and other relevant legislation.

This Executive Summary provides a synopsis of the Scoping Report (SR) prepared for the Kruidfontein MRA and the Triple Crown Project. The SR will be submitted to the North West DMRE for decision making. The NTS is available in English and Setswana and is being distributed to stakeholders as a basis for notification and comment.

AFFECTED PROPERTIES

The proposed projects and the associated properties to be affected for each project are listed below:

Kruidfontein Project (Kruidfontein MRA applied for by C&L):

- Portion 1 and 2 and Remainder of the Farm Middelkuil 8 JQ
- Farm Kruidfontein 40 JQ
- Portion 1, 2 and Remainder of the Farm Modderkuil 39 JQ

Magazynskraal Project (Magazynskraal Mining Right held by Richtrau):

- Farm Magazynskraal 3 JQ

Wilgespruit Project (Wilgespruit Mining Right held by PPM):

- Farm Wilgespruit 2 JQ
- A portion of the Farm Legkraal 45 JQ
- A portion of the Farm Koedoesfontein 42 JQ
- A portion of Portion 1 of the Farm Rooderand 46 JQ

HOW CAN YOU GET INVOLVED?

This SR will be distributed for a 30-day comment period from 8 August to 7 September 2022 in order to provide Interested & Affected Parties (I&APs) an opportunity to comment on any aspect of the project and the findings of the Scoping & EIA (S&EIA) process to date. Copies of the full report are available on <http://mts-engage.co.za/sedibelo>.

Please send your comments to MTS at the address, telephone/fax numbers or e-mail address shown below by no later than 4 September 2022 for them to be included. All comments received during the review process will be included in the updated Scoping Report for the DMRE.

Please send your comments to:

Michael Nkomo

Cell: 074 582 4384

Website : <http://mts-engage.co.za/sedibelo>

Comments must reach MTS by 4 September 2022

By providing your personal information to be registered as an I&AP for this Project you consent to SLR managing your information in accordance with the Protection of Personal Information Act 4 of 2013. If you register and supply your contact details as an Interested and Affected Party (IAP) for this Project, you will be included in the SLR I&AP database. It is assumed that as an I&AP for this Project you authorise SLR to retain and use your Personal Information as part of a contact database for this and/or other Social and Environmental Impact Assessments (ESIA) and that you confirm your acceptance for SLR to contact you regarding this and/or other ESIA processes. SLR will not process your Personal Information, other than as permitted or required by ESIA processes, or as required by law or public policy. SLR will use reasonable, appropriate security safeguards in order to protect Personal Information, and to reasonably prevent any damage to, loss of, or unauthorised access or disclosure of Personal Information, other than as required for ESIA processes or as required by any Law or public policy. You may request for your Personal Information to be deleted from the I&AP database at any time by contacting SLR.

PROJECT DESCRIPTION

In support of the continuation of approved mining operations at the Wilgespruit Project, the following main activities are proposed:

Kruidfontein Project

Underground mining would be undertaken with access from underground from the adjacent Magazynskraal mining area. No surface infrastructure is proposed at this stage at the Kruidfontein Project. All services and facilities needed to support the underground mining activities will be provided from the Wilgespruit Project.

Magazynskraal Project

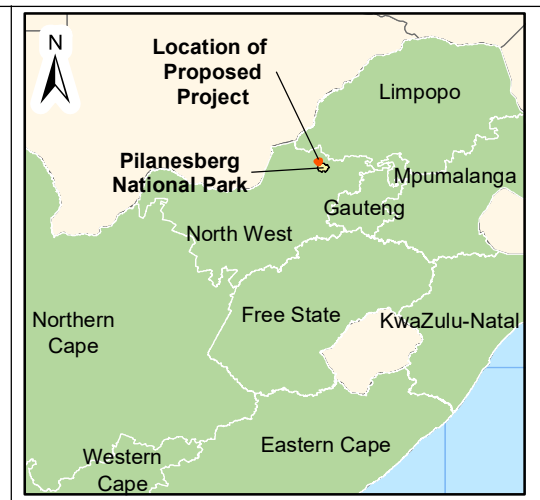
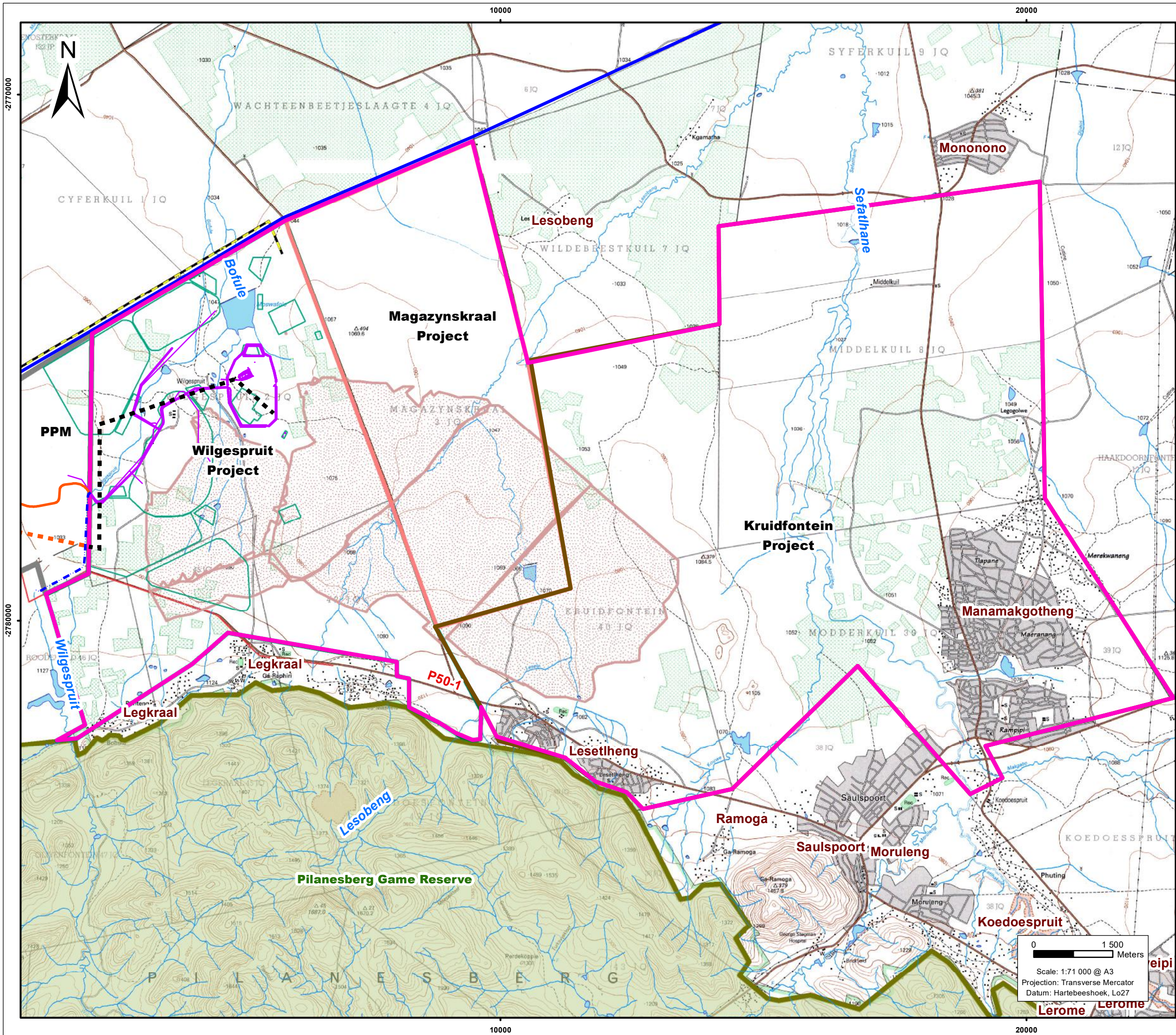
The mining right over this area has been granted, however, no development has taken place at Magazynskraal to date. The proposed plan for the Magazynskraal Project is to access the underground ore reserves from the East Portal at the Wilgespruit Project. No surface infrastructure is proposed at this stage at the Magazynskraal Project. All services and facilities needed to support the underground mining activities will be provided from the approved Wilgespruit Project.

Wilgespruit Project

The following is proposed at the Wilgespruit Project:

- Reconfiguration of the decline shaft complex (East Portal) within the approved shaft complex footprint;
- Rope conveyor from the East Portal to the PPM run of mine (ROM) pad;
- Use of internal haul roads to transport ROM from the East Portal to the existing ROM pad at PPM until the rope conveyor is in place;
- Use of the PPM mineral processing facilities to process ore from the Wilgespruit Project; and
- Revised underground mine plan to support the mining of the adjacent mining areas using approved infrastructure at the Wilgespruit Project.

Once steady state mining is achieved (after approximately 6 years), a RopeCon ore and waste transport system is proposed to be installed from the East Portal to the PPM concentrator plant's ROM Pad at PPM. A typical RopeCon is shown in Figure 3. The proposed alignment for the RopeCon is shown in Figure 1. The tower bases of the RopeCon are anticipated to be positioned within areas approved for surface disturbance as part of the approved Wilgespruit Project operations. The surface conveyor is proposed to be approximately 6 000 m in length and will have in the order of 6 towers each with a fenced footprint area of 400 m². The final number of towers and the proposed height will be further defined in the EIA phase once finalised.



- Legend**
- Roads
 - Powerline
 - Watercourses
 - Dams
 - Wilgespruit River Diversion
 - Magalies Water Pipeline
 - Pipeline from Tuschenkomst Reservoir to Sedibelo / Magazynskraal Mining Projects
 - Pilanesberg National Park
- Mining Operations**
- Triple Crown Project Area
 - Kruidfontein Project MRA
 - Magazynskraal Project
 - Wilgespruit Project
 - Approved Wilgespruit Project Infrastructure
 - Proposed Wilgespruit Project Infrastructure
 - Proposed Ropecon
 - Proposed Underground Mining Area
 - Pilanesberg Platinum Mine

Kruidfontein MRA and Triple Crown Project

Figure 1
Local Setting



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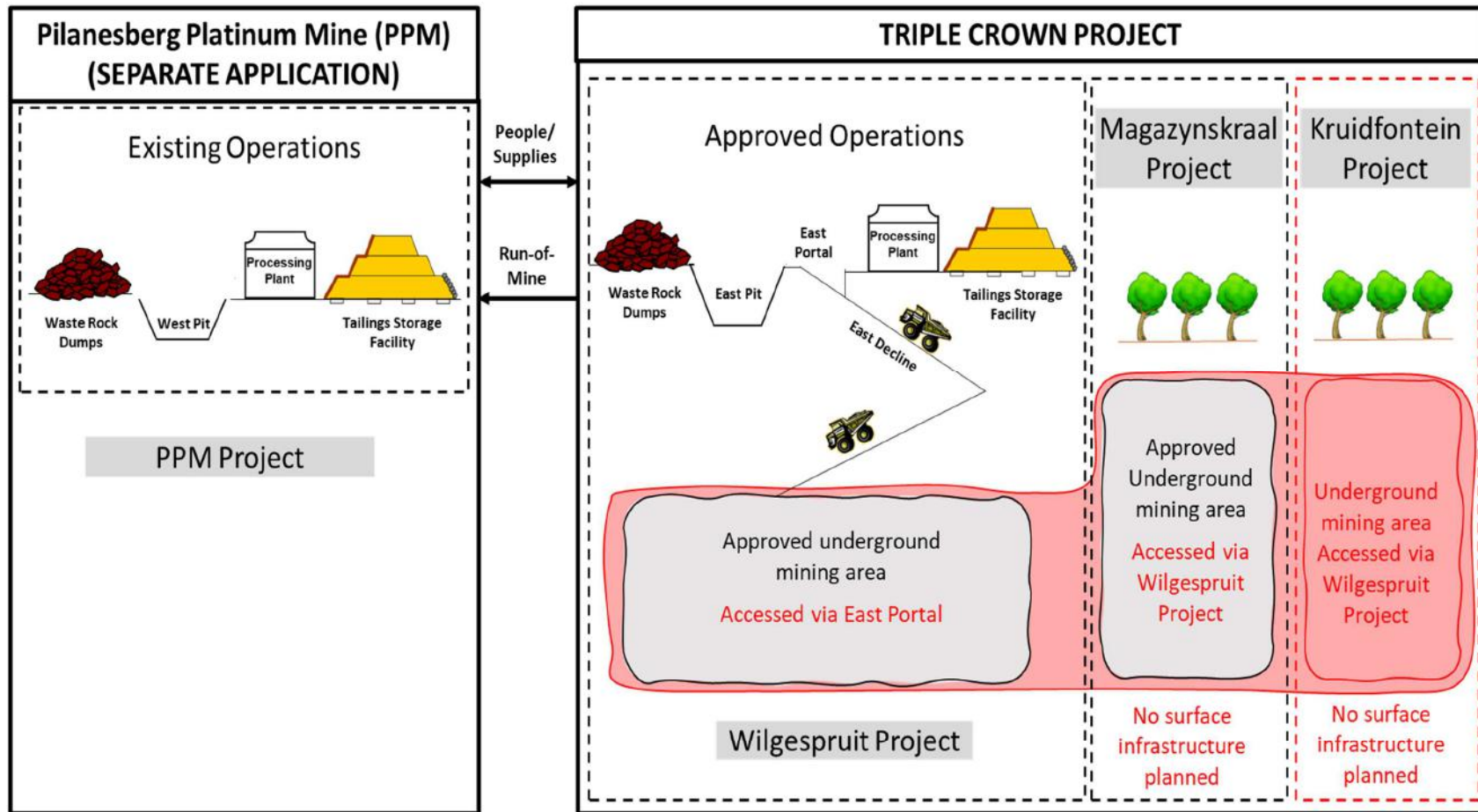


Figure 2: Proposed PPM and Triple Crown Applications



Figure 3. Typical RopeCon Section

The Triple Crown Project

The aim is to consolidate and operate a single mining operation under the Wilgespruit Project’s amended EMPr. The extent of the updated underground mine layout can be seen in Figure 4 showing the progression and depth of the underground workings from the west (on the farm Wilgespruit) to the east (at the Kruidfontein Project). Underground mining on the farm Wilgespruit starts at an average depth of 250 m below ground level (bgl) increasing to a depth of approximately 1 000 m bgl at the Magazynskraal Project area and 2 000 m bgl at the Kruidfontein Project area. All ore would be removed from underground via the approved facilities at the Wilgespruit Project and transported to the PPM mineral processing facilities.

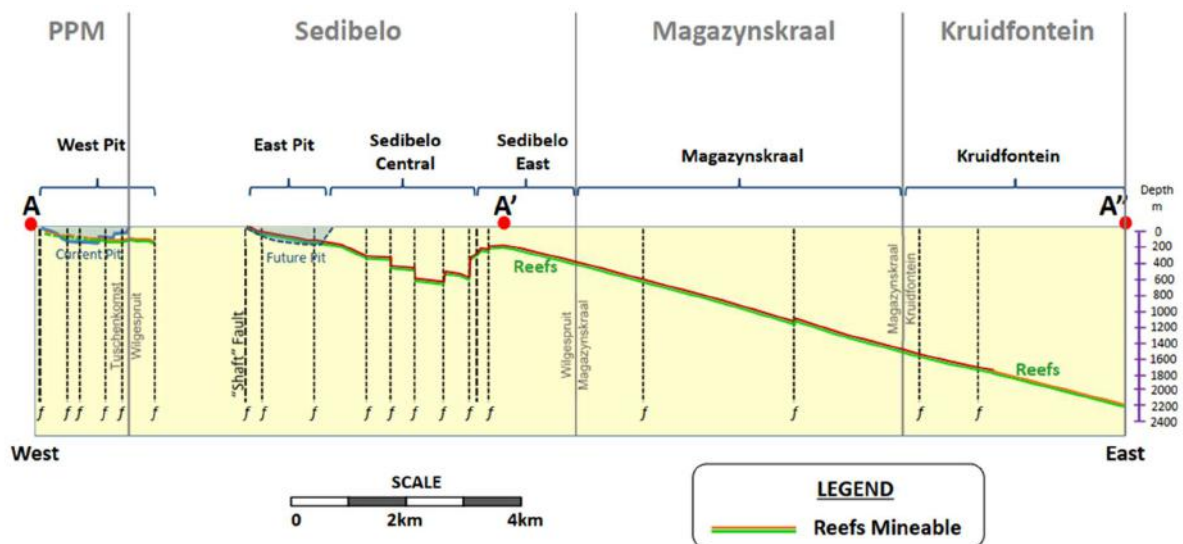


Figure 4. Cross Section Showing Underground Mining Across the Triple Crown Projects

POLICY AND LEGISLATIVE CONTEXT

Prior to the commencement of the proposed Triple Crown Project, Environmental Authorisations are required from the following competent authorities:

- Mining Right Application from the DMRE in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA) and Regulations, as amended for the Kruidfontein Project.
- Environmental Authorisation from the DMRE in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and regulations (as amended).
- In terms of Section 102 of the MPRDA, an EMPr may also not be amended or varied without the written consent of the Minister of the DMRE.
- An amended Water Use Licence (WUL) from the Department of Water and Sanitation (DWS) in terms of the National Water Act, 1998 (No. 36 of 1998) (NWA).

A Scoping and EIA process conducted in terms of the EIA Regulations (as amended) is required to inform the DMRE's decision making. The Scoping Report considers the potential issues relating to the proposed Kruidfontein MRA and Triple Crown Project and identifies issues which are potentially significant. It also outlines how the EIA will deal with each of the issues, providing the scope for further studies, as required.

NEED & DESIRABILITY OF THE PROJECT

The key components of the Need and Desirability Guideline are:

Ecological Sustainable Development and Use of Natural Resources

Due to the nature of mining projects, impacts on biodiversity and the role that it plays in the ecosystem are inevitable. The proposed project footprint is located within the Dwaalboom Thornveld and the Central Sandy Bushveld which are both considered Least Concern (LC) ecosystems and are currently Moderately Protected.

According to the North West Biodiversity Sector Plan (2015) (NW BSP), the MRA and associated focus area fall within both a Critical Biodiversity Area (CBA2) and an Ecological Support Area (ESA2). Due to the potential occurrence of floral and faunal species of conservation concern (SCC) permits may be required to move or destroy any SCC if identified on site.

In addition, according to the National River Freshwater Ecosystem Priority Areas (NFEPA) database, numerous artificial wetlands are located within the study area. These range from channelled valley bottom wetlands, unchannelled valley bottom wetlands and wetland flats. These wetland features are, however, indicated as heavily to critically modified due to current activities in the area.

As per the approved EMPr for the Wilgespruit Project, measures to avoid or minimise potential impacts on terrestrial biodiversity, aquatic habitat and soil resources must be implemented and will continue to be implemented. In addition, as part of this Triple Crown Consolidation Project no additional surface area will be impacted.

Promoting Justifiable Economic and Social Development

National Policy and Planning Framework:

South Africa's mining and minerals industry is backed by a vast and diversified resource base, which since its inception, has been the cornerstone of South Africa's economy and at the forefront of developmental

opportunities. A key intent of the Minerals and Mining Policy of South Africa, 1998 states that government will: “Promote exploration and investment leading to increased mining output and employment”. The proposed project is in alignment with the policy as the proposed expansion into underground resources will contribute directly to the mining and minerals sector through the provision of ongoing job and procurement opportunities.

Regional and Local Policy and Planning Framework:

As part of the North West Provincial Spatial Development Framework (PSDF), 2016 five strategic objectives have been identified. Strategic Objective 4 states “Support economic development and job creation guiding the spatial development pattern of the North West” relates to the Triple Crown Project as the proposed project would support economic development through the provision of job and procurement opportunities within the region. Good environmental management on the site also supports Strategic Objective 2.

PUBLIC PARTICIPATION UNDERTAKEN TO DATE

The following public participation has been undertaken so far:

- Pre-application meeting with the DMRE and approval of a Stakeholder Engagement Plan.
- Focussed Meetings with the Commenting Authorities, Tribal Council and Ward Councillors.
- Development and continuous update of an Interested and Affected Party (I&AP) database;
- Notification to I&APs in June 2021;
- Distribution of a Background Information Document (BID), in English and Setswana, in November 2021;
- Publication of advertisements in the Rustenburg Herald and the Platinum weekly for the edition dated 13 May 2022;
- Erection of site notices at various locations in April 2022; and
- Public meetings with affected communities were held on the 22 and 29 November 2021.

The Draft Scoping Report is currently out for the regulated 30 day public comment period from 8 August to 7 September 2022.

ALTERNATIVES ANALYSIS

Due to the minor amendments to the footprint that are proposed as part of the Triple Crown Project the preferred alternative is to keep any amendments within the approved footprint of the Wilgespruit Project, thereby minimising any additional impacts.

In terms of ROM transport from the East Portal to the PPM ROM pad, a mix of trucking using new haul roads and the installation of the RopeCon once steady state mining is achieved (after approximately 6 years) was decided on due to minimal additional clearing and limited emissions from the haul trucks. Additional recommendations from specialist studies will be considered as part of the EIA Phase.

WHAT ARE THE KEY ENVIRONMENTAL AND SOCIAL SENSITIVITIES?

The (1) Physical, (2) Biological and (3) Social status of the potentially affected environment is being investigated in order to assess impacts. The SR presents the findings of the investigations undertaken to date, a summary of these findings is in the following sections.

9.1 Physical Environment

The Triple Crown Project falls within the Highveld Climatic Zone where 85% of the mean annual precipitation falls during summer thunderstorms. The thunderstorms generally occur every three to four days in summer. Temperatures in this climatic zone are generally mild, but low minima can be experienced in winter due to clear night skies. The prevailing wind direction is from the east, however, strong winds can be experienced during the day from the east and north, with a decrease in the wind speed during the night-time.

In terms of geology, the Triple Crown Project falls within the Bushveld Complex (BC). The BC is centred on the Limpopo Province and extends into the Mpumalanga, North West and Gauteng Provinces in South Africa. It is one of three layered igneous complexes in the world where Platinum Group Elements are currently mined as a primary product. In the area the topography slopes gently towards the north-east and topographic elevation varies between 1 060 to 1 100 metres above sea level (masl). The study area is relatively flat at an average elevation of 1 080 masl.

Groundwater in the area is influenced by the non-perennial Wilgespruit, as well as the Motlhabe, Lesele, Bofule, and Lesobeng drainages. The groundwater flows from the southwest towards the northeast, away from the Pilanesberg complex. Boreholes are mainly distributed along perennial and non-perennial streams, local dykes and local faults which are mainly concentrated on the western side of the Pilanesberg and the existing PPM. Boreholes within the area are largely used for monitoring and mining purposes as well as domestic and livestock watering. There are four perennial springs located approximately 4km southwest of the project area.

The proposed Triple Crown Project area falls within the Crocodile West and Marico Water Management Area (WMA) with the major river catchment being the Crocodile River. The project falls within quaternary catchment A24D and A24E. The Wilgespruit River which traverses the project area originates south of the project area and flows in a northerly and north easterly direction towards the Bofule River. Surface water use by the communities locally is not an option due to the irregular flow patterns and the elevated levels of naturally occurring fluoride.

9.2 Biological Environment

The study area is situated within the Central Bushveld Bioregion of the Savanna Biome. Two main vegetation types are found in the area: Dwaalboom Thornveld and the Central Sandy Bushveld.

Both the Dwaalboom Thornveld and the Central Sandy Bushveld are of LC. LC ecosystems have not experienced a significant loss of natural habitat or deterioration in condition.

Several faunal SCC have distribution ranges which encompass the study area, however, it is considered unlikely that any faunal SCC will permanently utilise the study area, due to the location of the study area within an existing mine setting and the limited habitat and food resources necessary to support faunal SCC. The study area is located within a 10km radius of the Pilanesberg National Park Bird Area.

A desktop analysis established that the study area has a high terrestrial sensitivity which is likely triggered by several attributes of the area which include a CBA2, ESA2, freshwater ecosystem priority area quinary catchments, focus areas for land-based protected areas expansion and South African Protected Areas. As

noted previously, however, the area is currently an operating mining project under an approved EMP and proposed development will be undertaken within this approved footprint.

According to the NFEPA database, five rivers traverse the study area. These are the Wilgespruit, Sefathlane, Lesobeng, Kolobeng and Bofule Rivers. The Wilgespruit has been diverted by historic mining activities and is therefore no longer in a completely natural state. The Lesobeng River within the Magazynskraal Project, the Sefathlane River within the Kruidfontein Project area and the Kolobeng River situated approximately 6.7 km north-west of the investigation area are all classified under NFEPA as moderately modified. In addition, numerous artificial wetlands that are located within the study area and are indicated as heavily to critically modified.

The land capability of the soils within the Triple Crown Project area is considered as marginal potential arable land and the livestock grazing capacity potential is considered not ideal for commercial grazing. A sensitivity map for the Triple Crown Project is included in Figure 5.

9.3 Socio-economic Environment

Approximately 65% of North West residents live in rural areas, and the majority of residents speak Setswana as a first language, with English primarily spoken as second language. Mahikeng is the province's capital, and other larger towns include Brits, Klerksdorp, Lichtenburg, Potchefstroom and Rustenburg.

The province has four districts, each administering a number of local municipalities. The Triple Crown Project falls within the Bojanala Platinum District and MKLM.

The MKLM covers an area of approximately 5 719 km² and is mostly rural in nature, comprising 107 villages and the two towns of Mogwase and Madikwe.

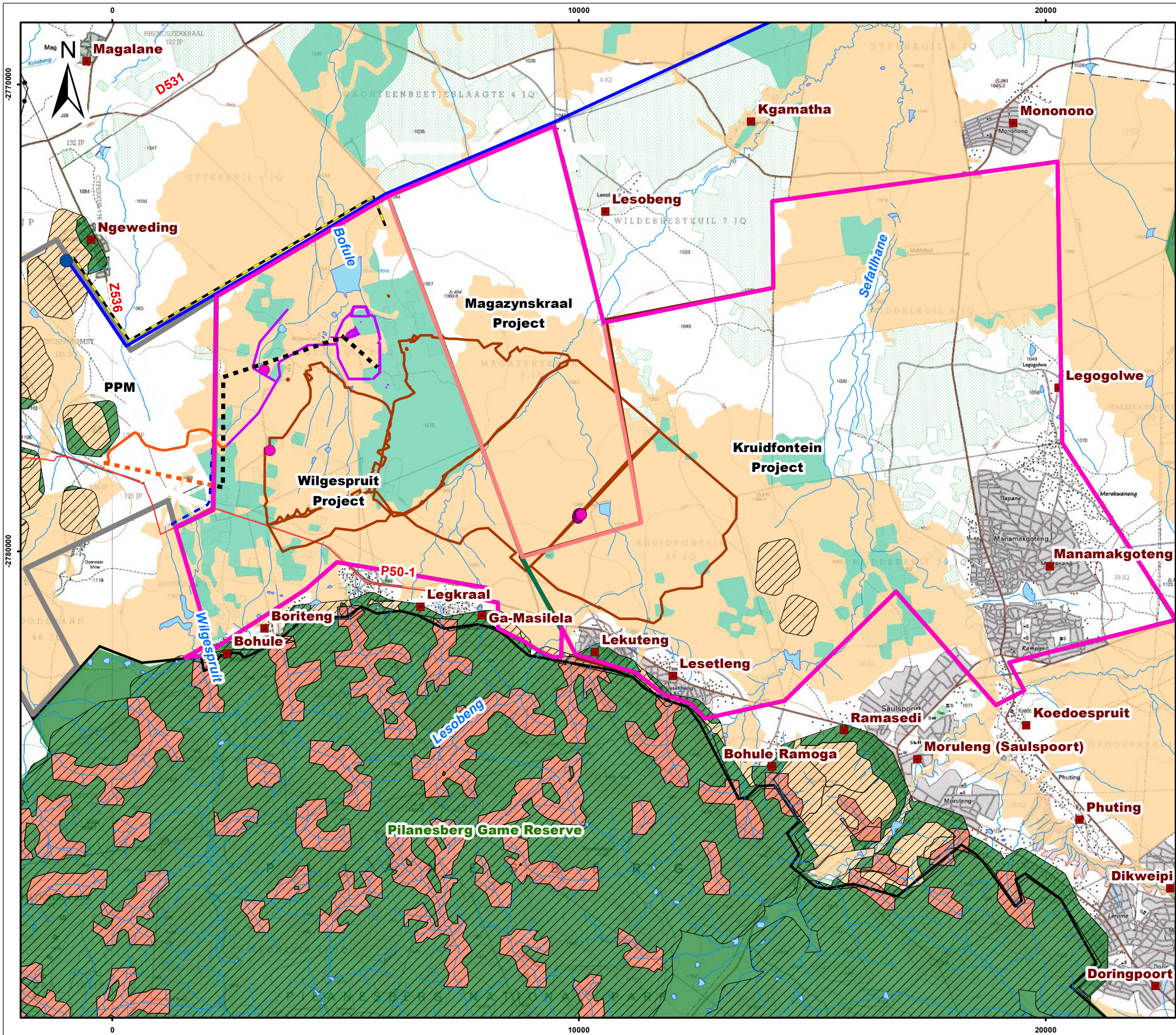
The economy of MKLM is mainly characterized by mining, tourism and agriculture, and two of the province's main tourist attractions, Pilanesberg and Sun City, are located in this municipality. According to the MKLM Final IDP/Budget for the Financial Year 2017/2022, the unemployment rate in the municipality is 51%, which is a significant increase from the 2011 rate, and also significantly higher than the national rate of 30.1%. Although the average yearly income has increased, the municipality still experiences high levels of poverty.

POTENTIAL ENVIRONMENTAL & SOCIAL IMPACTS IDENTIFIED AND PLAN OF STUDY

This section provides a list of high level potential impacts on the biophysical, heritage/cultural and socio-economic aspects that have been identified in respect of each of the Triple Crown Project for each of the project phases. A full assessment and rating of these impacts will be undertaken during the EIA phase and mitigation measures will be included to feed into the Environmental Management Programme (EMPr).

Table 1. Potential identified Impacts and Associated Specialist Input

Potential Impact	Proposed Specialist Study	Specialist Details	Unmitigated Significance	Mitigated Significance
Reduced groundwater quantity and quality, affecting downstream and third-party users	Groundwater Study	Exigo Sustainability (Pty) Ltd	Medium Negative	Very Low Negative
Reduced groundwater quantity due to dewatering – impact on 3rd party groundwater users			Medium Negative	Low Negative
Reduced surface water quantity and quality, affecting downstream and third-party users	Surface Water Study		Very Low Negative	Very Low Negative
Physical loss or general disturbance of terrestrial biodiversity	Terrestrial Ecology Study	Scientific Terrestrial Services	Low Negative	Very Low Negative
Loss or disturbance of aquatic ecosystems	Aquatic Biodiversity Study	Scientific Aquatic Resources	Medium Negative	Low Negative
Loss of soil and land capability through contamination and physical disturbance	Soil, Land Capability and Agricultural Potential Study	Zimpande Research Collaborative	Low Negative	Very Low Negative
Increase in ambient noise levels	Noise Impact Study	Airshed Planning Professionals	Low Negative	Very Low Negative
Reduced air quality	Air Quality Impact Study		Low Negative	Low – Medium Negative
Negative visual impacts due to the proposed development	Visual Impact Study	Graham Young Landscape Architect	Low Negative	Very Low Negative
Reduced road safety due to project related traffic	Traffic Impact Study	Siyazi Gauteng Consulting Services (Pty) Ltd	Very Low Negative	Very Low Negative
Positive socio-economic changes due to increased investment and job creation	Socio-economic Study	Hilda Bezuidenhout	Medium Positive	High Positive
Negative socio-economic impacts due to influx and reduced security			Medium Negative	Low Negative
Loss of or damage to cultural heritage and/or paleontological resources	Cultural Heritage and Palaeontological Study	Julius Pistorius (Heritage) Marion Bamford (Palaeontology)	Medium Negative	Very Low Negative



Legend

- Triple Crown Project
- Kruidfontein Project MRA
- Magazynskraal Project
- Wilgespruit Project
- Proposed Ropecon
- Proposed Wilgespruit Project Infrastructure
- Proposed Underground Mining
- Pilanesburg Platinum Mine
- Proposed PPM Infrastructure (Separate Application)
- Villages
- Roads
- Powerline
- Watercourses
- Dams
- Wilgespruit River Diversion
- Magalies Water Pipeline
- Pipeline from Tuschenkomst Reservoir to Sedibelo / Magazynskraal Mining Projects
- Water Reservoir
- Heritage Resources
- Pilanesberg National Park
- North West Critical Biodiversity Areas
- Critical Biodiversity Area
- Critical Biodiversity Area
- Ecological Support Area
- Ecological Support Area
- Rocky Ridges / Important Habitats 2015

0 1 000 2 000 Meters
 Scale: 1:80 000 @ A3
 Projection: Transverse Mercator
 Datum: Hartebeeshoek, Lo27

Kruidfontein MRA and Triple Crown Project

Figure 5
Environmental and Land Use Map

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ACRONYMS AND ABBREVIATIONS

Acronym / Abbreviation	Definition
AGIS	Agricultural Geo-Referenced Information System
BBK	Bakgatla-ba-Kgafela
BBKTA	Bakgatla-ba-Kgafela Tribal Authority
BID	Background Information Document
BPDM	Bojanala Platinum District Municipality
B.Sc.	Bachelor of Science
CBA	Critical Biodiversity Area
CRD	Cumulative Rainfall Departures
CRR	Comments and Responses Report
DEA	Department of Environmental Affairs
DFFE	Department of Forestry, Fisheries and Environment
DMR	Department of Mineral Resources
DMS	Dense Media Separation
DMRE	Department of Mineral Resources and Energy
DRDLR	Department of Rural Development and Land Reform
DTM	Digital Terrain Model
DWAF	Department of Water Affairs and Forestry
DWS	Department of Water and Sanitation
EA	Environmental Authorisation, i.t.o. NEMA
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
EC	Electrical Conductivity
EIA	Environmental Impact Assessment
EIA Regulations, 2014	Environmental Impact Assessment Regulations, 2014 (GN R 982 of 2014)*
EIS	Ecological Importance & Sensitivity
EMF	Environmental Management Framework
EMPr	Environmental Management Programme
ESA	Ecological Support Areas
ESIA	Environmental and Social Impact Assessment
FAQ	Frequently Asked Questions
FEPA	Freshwater Ecosystem Priority Area
Financial Provision Regulations, 2015	Regulations Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations, 2015 (GN R 1147 of 2015)
GDP	Gross Domestic Product

Acronym / Abbreviation	Definition
GHG	Greenhouse Gas
GN R	Government Notice Regulation
HFC	Hydrofluorocarbons
HIA	Heritage Impact Assessment
HSA	Hazardous Substances Act, 1973 (Act No. 15 of 1973)
I&AP	Interested and Affected Party
IAIA	International Association for Impact Assessment
IBA	Important Bird Area
IBMR	Itereleng Bakgatla Mineral Resources (Pty) Ltd
IDP	Integrated Development Plan
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
IWULA	Integrated Water Use Licence Application
LC	Least Concern
LGS	Lebowa Granite Suite
LN 1, 2014	EIA Regulation Listing Notice 1, 2014 (GN R 983 of 2014)
LN 2, 2014	EIA Regulation Listing Notice 2, 2014 (GN R 984 of 2014)
LN 3, 2014	EIA Regulation Listing Notice 3, 2014 (GN R 985 of 2014)
LoM	Life of Mine
LoS	Level-of-Service
LP	Plain Landform
MAP	Mean Annual Precipitation
mbgl	Metres below ground level
masl	Metres above sea level
MHSA	Mine Health and Safety Act, 1996 (Act No. 29 of 1996)
MPRDA	Minerals and Petroleum Resources Development Act, 2002 (No. 28 of 2002)
MKLM	Moses Kotane Local Municipality
MR	Mining Right
MRA	Mining Right Application, i.t.o. MPRDA
M.Sc.	Master of Science
NAAQS	National Ambient Air Quality Standard
NDCR	National Dust Control Regulations, 2013
NDP	National Development Plan
NEMA	National Environmental Management Act, 1998 (No. 107 of 1998)
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (No. 10 of 2004)
NEM:WA	National Environmental Management: Waste Act, 2008 (No. 59 of 2008)
NFEPA	National Freshwater Ecosystem Priority Areas, 2011

Acronym / Abbreviation	Definition
NG	Net Gain
NHRA	National Heritage Resources Act, 1999 (No. 25 of 1999)
NNL	No Net Loss
North West DEDECT	North West Department of Economic Development, Environment, Conservation And Tourism
NPAES	National Protected Areas Expansion Strategy 2008
NPI	National Pollutant Inventory
NSDP	National Spatial Development Plan
NSR	Noise Sensitive Receptor
NSSD	National Strategy for Sustainable Development and Action Plan 2011 - 2014
NT	Near Threatened
NTS	Non-Technical Summary
NWA	National Water Act, 1998 (No. 36 of 1989)
NWBSP	North West Biodiversity Sector Plan (2015)
PES	Present Ecological State
PFC	Perfluorocarbons
PGE	Platinum Group Element
PIC	Platinum Investment Consortium
PES	Present Ecological State
PM	Particulate Matter
PPM	Pilanesberg Platinum Mines (Pty) Ltd
PPP	Public Participation Process
PSDF	Provincial Spatial Development Framework
Pr.Sci.Nat.	Registered Professional Natural Scientists
RDL	Red Data List
Regulation, GN R, 704	Regulations on Use of Water for Mining and Related Activities Aimed at the Protection of Water Resources, 704 (GN R 704 of 1999)
RLS	Rustenburg Layered Suite
ROM	Ron of Mine
RQIS	Research Quality Information Services
SACAD	South Africa Conservation Areas Database (, 2017)
SAPAD	South Africa Protected Area Database (, 2017)
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resource Information System
SAMRAD	South African Mineral Resources Administration System
SANS	South African National Standards
SAWS	South African Weather Services
SCC	Species of Conservation Concern

Acronym / Abbreviation	Definition
SDF	Spatial Development Framework
SEMA	specific environmental management Act
SIA	Social Impact Assessment
SLP	Social and Labour Plan
SLR	SLR Consulting (South Africa OR Africa) (Pty) Ltd
SOTER	Soil and Terrain database
SPLUMA	Spatial Planning and Land Use Management Act, 2013 (No. 16 of 2013)
SRL	Sedibelo Resources Limited
STP	Sewage Treatment Plant
SWCD	Stormwater Control Dam
S&EIA	Scoping and Environmental Impact Assessment
tpm	Tonnes per month
TDS	Total Dissolved Solids
TOC	Total Organic Carbon
TSF	Tailings Storage Facility
US EPA	United States Environmental Protection Agency
VIA	Visual Impact Assessment
VU	Vulnerable
WHO	World Health Organization
WMA	Water Management Area
WML	Waste Management Licence, i.t.o. NEM: WA
WRD	Waste Rock Dump
WRF	Weather Research and Forecasting Model
WUL	Water Use Licence, i.t.o. NWA
WULA	Water Use Licence Application
WULA Regulations, 2017	Regulations Regarding the Procedural Requirements for Water Use Licence Applications and Appeals, 2017 (GN R 267 of 2017)
ZAR	South African Rand
ZOI	Zone of Influence

KRUIDFONTEIN MRA AND TRIPLE CROWN PROJECT - SCOPING REPORT FOR PUBLIC REVIEW

1. INTRODUCTION

Sedibelo Resources Limited (SRL) (previously known as Sedibelo Platinum Mines Limited), through its South African operating subsidiaries Pilanesberg Platinum Mines (Pty) Ltd (PPM), Itereleng Bakgatla Mineral Resources (Pty) Ltd (IBMR), Richtrau No. 123 (Pty) Ltd and C&L Mining and Resources (Pty) Ltd (C&L) (Figure 1-1), has mining interests over various properties to the northwest and north of the Pilanesberg National Park. PPM is a platinum and chrome mining and mineral processing operation and in 2022, IBMR ceded the Mining Right for the Wilgespruit Project (NW30/5/1/2/3/2/1/333) to PPM¹.

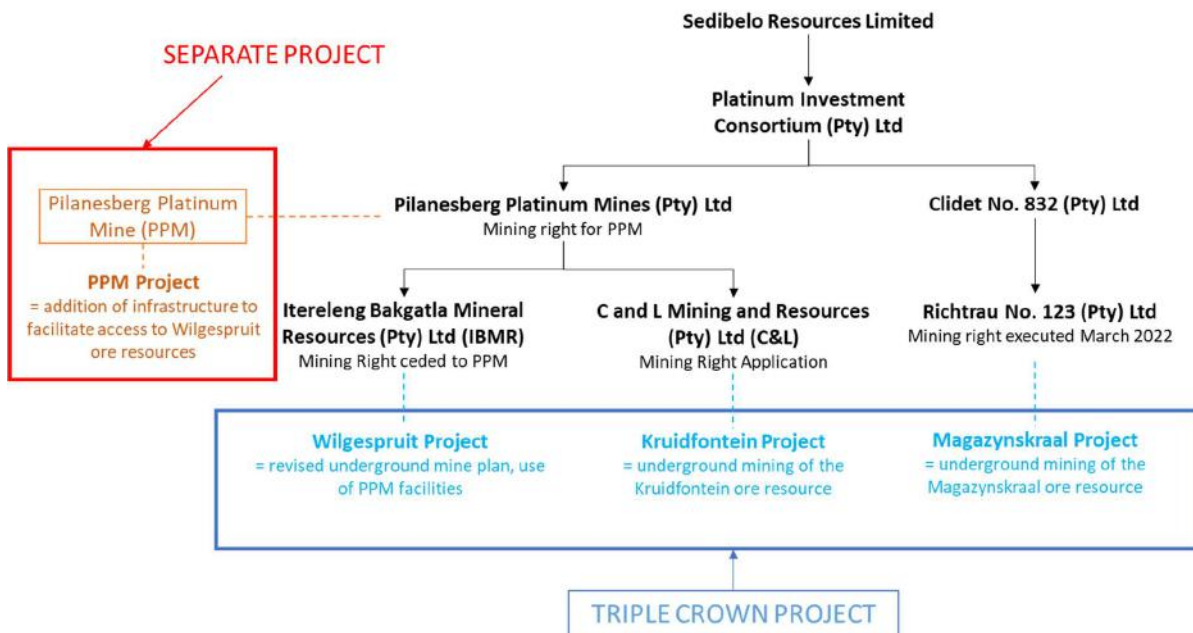


Figure 1-1 Company Organogram

This Environmental Impact Assessment (EIA) process consists of two contiguous processes, a Mining Right Application (MRA) for the Kruidfontein Project and the consolidation of, subject to the Department of Mineral Resources and Energy (DMRE) exercising its discretion to approve the Kruidfontein MRA, the Mining Right granted for the Kruidfontein Project and the Mining Rights already issued for the Magazynskraal and Wilgespruit Projects.

For the Kruidfontein Project, SRL through C&L, intends submitting a MRA as well as an Environmental Authorisation (EA) for the development of an underground operation. Separately, SRL, through PPM, is also contemporaneously applying in terms of section 102 of the MPRDA, read with Regulation 31 of the EIA

¹ PPM and IBMR will now be applying for the transfer, from IBMR to PPM, of the environmental authorisation (NWP/EIA59/2007 dated 04/08/2008), as amended (NWP/EIA/89/2011 dated 28/06/2016), issued to IBMR in respect of the listed activities associated with the Wilgespruit Project.

Regulations, 2014 (as amended) for the consolidation of the Mining Right granted for the Kruidfontein Project (as previously discussed) and the Mining Rights already issued for the Magazynskraal and Wilgespruit Projects into a single mining area under the Wilgespruit Mining Right (known as the Triple Crown Project).

Once this Application is approved, all environmental impacts associated with the mining areas for the Wilgespruit, Magazynskraal and Kruidfontein Projects will be authorised by virtue of, and managed in terms of the amended Wilgespruit Project Environmental Management Programme (EMPr). Where the Kruidfontein MRA is not approved by the DMRE, then that element of the Triple Crown Project would be assumed to be excluded. The proposed Triple Crown Project site is located northwest of the Pilanesberg National Park within the Moses Kotane Local Municipality (MKLM) in the North West Province of South Africa (Figure 2-1).

The proposed projects and the associated properties to be affected for each project are listed below:

Kruidfontein Project (Kruidfontein MRA applied for by C&L):

- Portion 1 and 2 and Remainder of the Farm Middelkuil 8 JQ
- Farm Kruidfontein 40 JQ
- Portion 1, 2 and Remainder of the Farm Modderkuil 39 JQ

Magazynskraal Project (Magazynskraal Mining Right held by Richtrau):

- Farm Magazynskraal 3 JQ

Wilgespruit Project (Wilgespruit Mining Right held by PPM):

- Farm Wilgespruit 2 JQ
- A portion of the Farm Legkraal 45 JQ
- A portion of the Farm Koedoesfontein 42 JQ
- A portion of Portion 1 of the Farm Rooderand 46 JQ

This Scoping Report, EIA Report and the Public Participation Process relating to the Triple Crown Project will be integrated. The objective of this EA application is in support of creating “one mine”. The total extent of the Triple Crown Project area will be equivalent to 16 927 ha. The Triple Crown Project area is contiguous to the mining area of the neighbouring Pilanesberg Platinum Mine. Proposed changes to the approved PPM mining operation are dealt with under a separate application process.

SLR Consulting (South Africa) (Pty) Ltd (SLR) was appointed as the Environmental Assessment Practitioner (EAP) to undertake the regulatory EIA and associated EMPr Amendment process for the proposed Triple Crown Project. In this regard, PPM intends to lodge an application for Environmental Authorisation (EA) to the DMRE in terms of the National Environmental Management Act (No. 107 of 1998) (NEMA), the Mineral and Petroleum Resources Development Act (No. 28 of 2002) (MPRDA) and other relevant legislation.

1.1 SUMMARY OF EXISTING ENVIRONMENTAL AUTHORISATIONS

A summary of the EAs currently held for the properties that are being applied for as part of this EA are included in Table 1-1 and Table 1-2.

Table 1-1 Summary of Approvals for the Wilgespruit Project

Relevant Act	Reference No.	Competent Authority (at the time)	Date of Submission	Date of Approval
Original EIA/ EMP and IWULA – Undertaken by Knight Piesold				
MPRDA	NW30/5/1/2/3/2/1/333	DMR	01 November 2007	20 June 2008
NEMA	NWP/EIA/59/2007	DACE	15 January 2008	04 August 2008
NEM:WA	12/9/11/L157/7	DEA		01 July 2010
NWA	27/2/2/A424/4/1	DWS	31 January 2011	16 August 2015
EIA & EMPr for Changes to Surface Infrastructure at Sedibelo Platinum Mine – Undertaken by SLR South Africa (Pty) Ltd				
MPRDA	NW30/5/1/2/3/2/1/333MR	DMR		
NEMA	NWP/EIA/89/2011	READ	28 August 2015	25 June 2016
NWA		DWS	4 December 2020	Not yet approved

Table 1-2 Summary of Approvals for Magazynskraal Platinum Mine

Relevant Act	Reference No.	Competent Authority (at the time)	Date of Submission	Date of Approval
MPRDA	NW 30/5/1/2/2/10029 MR	DMR	22 March 2013	31 March 2022

1.2 SUMMARY OF ENVIRONMENTAL AUTHORISATION REQUIREMENTS

The proposed Triple Crown Project will require an integrated EA and amendment of the Wilgespruit Project EMPr to address changes in surface infrastructure on Wilgespruit, an updated underground mine plan taking into account access from the East Portal at the approved Wilgespruit Project and include underground mining activities on Magazynskraal and Kruidfontein. The project includes activities listed under the NEMA. Under NEMA, listed activities are prohibited from commencing until written authorisation is obtained from the competent authority, which in this case is the North West office of the DMRE.

The project requires approval of an EA in terms of Section 24 of NEMA from the North West DMRE. In terms of Section 102 of the MPRDA, an EMPr may also not be amended or varied without the written consent of the Minister of Mineral Resources and Energy. In addition, a Mining Right for the Kruidfontein Project is being applied for in terms of both NEMA and the MPRDA.

The MPRDA and NEMA require that an applicant submit the relevant environmental reports required in terms of NEMA. The EIA Regulations, 2014 (published under Government Notice Regulation (GNR) 982 of 4 December 2014 (as amended by GNR 517 of 2021) (hereafter referred to as the EIA Regulations), promulgated in terms of NEMA set out the assessment process and reporting requirements where

authorisation is required. For the purpose of this project, an integrated EIA process will be undertaken and will meet the requirements of:

- Regulation 31 (Part 2: substantive amendment process) to cater for changes to the approved EMPr in terms of the EIA Regulations; and
- Regulation 21 and 23 (Scoping and Environmental Impact Assessment (S&EIA) process) to cater for listed activities in terms of the EIA Regulations. Listed activities triggered as a result of the project are outlined in Section 3.2.

The processes proposed to be followed are summarised in Table 1-3.

Table 1-3 Proposed NEMA and MPRDA Processes for the Triple Crown Project

Authorisations required	Process to be followed	Decision authority
Kruidfontein Project (C&L)		
<p>Mining Right and Environmental Authorisation.</p> <p>Grant of this application for an Environmental Authorisation to include the environmental impacts associated with the Kruidfontein Project under the EMPr approved for the Wilgespruit Project (and Section 102 in terms of the MPRDA should the mining right be granted)</p> <p>PPM has been advised that all of the jurisdictional requirements of Regulation 29 of the EIA Regulations, 2014 (as amended) will have been satisfied by this substantive application in terms of Regulations 11, 21 and 31 of the EIA Regulations, 2014 (as amended). An application to transfer the environmental authorisation from C&L to PPM, if and once granted to C&L, in terms of Regulation 29 of the EIA Regulations, 2014 (as amended), will therefore not be required as a separate application.</p>	<p>Mining Right Application, Scoping Report and EIA and EMPr Report (NEMA, MPRDA).</p>	<p>DMRE</p>
Magazynskraal Project (Richtrau)		
<p>Grant of this application for an Environmental Authorisation to include the environmental impacts associated with the Magazynskraal Project under the EMPr approved for the Wilgespruit Project (and the interrelated Section 102 in terms of the MPRDA).</p> <p>PPM has been advised that all of the jurisdictional requirements of Regulation 29 of the EIA Regulations, 2014 (as amended) will have been satisfied by this substantive application in terms of Regulations 11, 21 and 31 of the EIA Regulations, 2014 (as amended). An application to transfer the existing environmental authorisation / EMPr from Richtrau to PPM, in terms of Regulation 29 of the EIA Regulations, 2014 (as amended), will therefore not be required as a separate application.</p>	<p>No specific environmental process is required; the execution of the Magazynskraal mining right supports the broader mine planning objective</p>	<p>DMRE</p>
Wilgespruit Project (IBMR)		

Authorisations required	Process to be followed	Decision authority
This application for an Environmental Authorisation (& the interrelated Section 102 in terms of the MPRDA)	EA Application and EIA and EMPr Report (NEMA, MPRDA).	DMRE
Triple Crown Project (Consolidation of Wilgespruit, Magazynskraal and Kruidfontein Projects under PPM)		
This application for an Environmental Authorisation (& the interrelated Section 102 in terms of the MPRDA)	Application and EIA and EMPr Report (NEMA, MPRDA).	DMRE

The project also requires authorisation from the DWS for specific water uses listed under Section 21 of the National Water Act (No. 36 of 1998) (NWA). This Report does not address the requirements of a water use licensing process. This will be handled as part of a separate process with the DWS. The public participation process is, however, integrated.

1.3 PURPOSE OF THE REPORT

This Scoping Report has been compiled and will be distributed for review and comment as part of the S&EIA process that is being undertaken for the Triple Crown Project. The S&EIA is prescribed in the EIA Regulations in terms of the NEMA.

This Scoping Report includes the following:

- The applicable regulatory framework;
- A description of the proposed project and the affected environment;
- The S&EIA process followed to date;
- The development alternatives that have been considered;
- The potential project impacts and mitigation measures; and
- A Plan of Study for the EIA phase.

Interested and Affected Parties (I&APs) are asked to comment on the Scoping Report. The Scoping Report will be updated for submission to the DMRE, giving due consideration to the comments received, and will be submitted for consideration as part of the application for an EA made in terms of NEMA.

1.4 STRUCTURE OF THE REPORT

This document has been prepared in accordance with the DMRE Scoping Report template format and was informed by the guidelines posted on the official DMRE website. In addition, this report complies with the requirements of the NEMA and Appendix 2 of the EIA Regulations. Table 1-4 provides a summary of the requirements, with cross references to the report sections where these requirements have been addressed.

Table 1-4 Structure of the Scoping Report

Legal and Regulatory Requirement		Section of Report
DMRE requirement	template NEMA: GNR 982 Appendix 2	
-	A scoping report must contain the information that is necessary for a proper understanding of the process, informing all preferred alternatives, including location alternatives, the scope of the assessment, and the consultation process to be undertaken through the environmental impact assessment process.	See references below.
The EAP who prepared the report and expertise of the EAP.	Details of: <ul style="list-style-type: none"> The EAP who prepared the report; and The expertise of the EAP, including a curriculum vitae. 	Section 2.1 & 2.2.
Description of the property.	The location of the activity, including: <ul style="list-style-type: none"> The 21-digit surveyor general code of each cadastral land parcel; Where available, the physical address and farm name; and Where the requirement information in terms (i) and (ii) is not available, the coordinates of the boundary of the property or properties. 	Section 2.3
Locality plan.	A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or on land where the property has not been defined, the coordinates within which the activity is to be undertaken.	Section 2.4
Description of the scope of the proposed overall activity, including listed and specified activities;	A description of the scope of the proposed activity: <ul style="list-style-type: none"> All listed and specified activities triggered; and A description of the activities to be undertaken, including associated structures and infrastructure. 	Section 3.2 Section 3.3
Description of the activities to be undertaken.		
Policy and legislative context.	A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning framework and instruments that are applicable to this activity and are to be considered in the assessment process.	Section 4
Need and desirability of the proposed activity.	A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location.	Section 5

Legal and Regulatory Requirement		Section of Report
DMRE template requirement	NEMA: GNR 982 Appendix 2	
Period for which the EA is required.	-	Section 6
Description of the process followed to reach the proposed preferred site.	A full description of the process followed to reach the proposed preferred activity, site and location within the site.	Section 7
Details of the alternatives considered.	Details of all the alternatives considered.	Section 7.2
Details of the public participation process followed.	Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs.	Section 7.3
Summary of issues raised by I&APs.	A summary of the issues raised by I&APs, and an indication of the manner in which the issues were incorporated, or the reasons for not including them.	Section 7.3.1
Environmental attributes associated with the sites.	The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.	Section 7.7
Impacts identified.	<ul style="list-style-type: none"> The impacts and risks identified for each alternative, Including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts-can be reversed; and That may cause irreplaceable loss of resources; and can be avoided, managed or mitigated. 	Section 7.8
Methodology used in determining the significance of environmental impacts.	The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives.	Section 7.9
The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternative will have on the environment and the community that may be affected.	Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.	Section 7.10
The possible mitigation measures that could be applied and the level of risk.	The possible mitigation measures that could be applied and level of residual risk.	Section 7.11
The outcome of the site selection matrix. Final site layout plan.	The outcome of the site selection matrix.	Section 7.12

Legal and Regulatory Requirement		Section of Report
DMRE requirement	template NEMA: GNR 982 Appendix 2	
Motivation where no alternative sites were considered.	If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such.	Section 7.13
Statement motivating the preferred site.	A concluding statement indicating the preferred alternatives, including preferred location of the activity.	Section 7.14
Plan of study for the environmental impact assess process;	A plan of study for undertaking the environmental impact assessment process to be undertaken.	Section 8
Description of alternatives to be considered including the option of not going ahead with the activity	A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity.	Section 8.1
A description of the aspects to be assessed as part of the environmental impact assessment process	A description of the aspects to be assessed as part of the environmental impact assessment process.	Section 8.2
Description of aspects to be assessed by specialists.	Aspects to be assessed by specialists.	Section 8.3
Proposed method of assessing the environmental aspects including the proposed method of assessing alternatives.	A description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists.	Section 8.4
Proposed method of assessing duration significance.	A description of the proposed method of assessing duration and significance.	Section 8.5
The stages at which the competent authority will be consulted.	An indication of the stages at which the competent authority will be consulted.	Section 8.6
Particulars of the public participation process with regard to the impact assessment process that will be conducted.	Particulars of the public participation process that will be conducted during the environmental impact assessment process.	Section 8.7
Description of the tasks that will be undertaken during the environmental impact assessment process.	A description of the tasks that will be undertaken as part of the environmental impact assessment process.	Section 8.8
Measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	Section 8.9

Legal and Regulatory Requirement		Section of Report
DMRE template requirement	NEMA: GNR 982 Appendix 2	
Other information required by the competent authority.	Where applicable, any specific information required by the competent authority.	Section 9
Other matter required in terms of section 24(4)(a) and (b) of the Act.	Any other matter required in terms of section 24(4)(a) and (b) of the Act.	Section 10
Undertaking regarding correctness of information;	An undertaking under oath or affirmation by the EAP in relation to: <ul style="list-style-type: none"> • The correctness of the information provided in the report; • The inclusion of comments and inputs from stakeholders and I&APs; and • Any information provided by the EAP to I&APs and any responses by the EAP to comments or inputs made by I&APs. 	Section 11
Undertaking regarding level of agreement.	An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and I&APs on the plan of study for undertaking the environmental impact assessment.	Section 11

1.5 OPPORTUNITY TO COMMENT

This Scoping Report will be distributed for a 30-day comment period from 8 August to 7 September 2022 in order to provide I&APs an opportunity to comment on any aspect of the project and the findings of the S&EIA process to date.

By providing your personal information to be registered as an I&AP for this project you consent to SLR managing your information in accordance with the Protection of Personal Information Act 4 of 2013. This includes; retaining and using your Personal Information as part of a contact database for this and/or other S&EIAs), contacting you regarding this and/or other S&EIA processes, disclosing the database to other authorised parties including the applicant for lawful purposes, and including any correspondence in the S&EIA Reports. You may request for your Personal Information to be deleted from the Project database or comments to be excluded from S&EIA Reports at any time by contacting SLR.

2. DETAILS OF THE EAP WHO PREPARED THE REPORT

2.1 CONTACT PERSON AND CORRESPONDENCE ADDRESS

SLR has been appointed as the independent EAP in line with Part 2, Regulation 12 and 13 of the EIA Regulations (2014), as amended by GN No. 517 of 11 June 2021. The details of the EAP project team involved in the preparation of this Scoping Report are provided in Table 2-1.

Table 2-1 Contact Details of the EAP

Details	Registered EAP	Project Reviewer	Project Manager
Name of practitioner	Edward Perry	Alex Pheiffer	Kate Hamilton
Responsibility on project	EAP	Reviewer	Project Manager
Tel No.:	011 467 0945		
Fax No.:	011 467 0975		
Postal address	PO Box 1596, Cramerview, 2060		
E-mail address	eperry@slrconsulting.com	apheiffer@slrconsulting.com	khamilton@slrconsulting.com

Neither SLR nor any of the specialists involved in the S&EIA process have any interest in the project other than contractually agreed payment for consulting services rendered as part of the EIA process. An undertaking by SLR is provided in Section 11.

2.2 QUALIFICATIONS AND EXPERIENCE OF THE EAP

Edward Perry

Ed Perry has worked in environmental consultancy for over twenty years for a wide range of public and private sector clients. Ed is a registered Environmental Auditor with the Institute for Environmental Management and Assessment and a Lead Auditor with the International Cyanide Management Institute. Prior to moving to South Africa in 2011 Ed worked in the UK on a wide range of projects including EIAs and Integrated Pollution and Prevention Permits. This included permitting the first hazardous waste landfill in the UK under the new integrated permitting mechanism and undertaking a study for the European Commission on the implementation of the Landfill Directive in 15 European countries. Ed is a member of the International Association for Impact Assessment South Africa (IAIASa) and a Registered EAP with the Environmental Assessment Practitioners Association of South Africa (EAPASA).

Alex Pheiffer

Alex, the Project Director, holds a Master's Degree in Environmental Management (from the Rand Afrikaans University) and has 20 years of experience in a range of environmental disciplines, including EIAs, Licensing, Environmental Auditing and Monitoring, Due Diligence and Reviews and Public Consultation. She has expertise in a wide range of projects. She is a Registered Professional Natural Scientist (Pr.Sci.Nat., Environmental Science) and is a member of the International Association of Impact Assessment South Africa (IAIASa).

Kate Hamilton

Kate is an Associate Environmental Consultant based in Johannesburg. As a specialist environmental project manager she has over 14 years of private sector experience in environmental consulting. Kate has worked as a project manager in the environmental field where she has developed core competencies in environmental impact assessments and management programmes, project management and coordination and environmental monitoring, with a focus in the mining sector.

Kate has worked on projects throughout the project lifecycle from exploration/ site identification through pre-feasibility to feasibility, to operation and closure for the mining, power, infrastructure and oil and gas sectors. This includes conducting site identification, screening and scoping studies, baseline studies and specialist management, impact assessments, monitoring, management planning and implementation, as well as public consultation processes, for local regulatory permitting processes. Other areas of expertise include project finance and development finance institution's alignment with requirements for international best practice standards. Kate has worked extensively in the Southern African Development Corporation region as well as in West Africa and has experience in managing large scale environmental projects with large integrated teams in challenging locations across the continent. Kate has also worked in the Asia-Pacific region in both the Philippines and Papua New Guinea.

2.3 DESCRIPTION OF THE PROPERTY

2.3.1 Project Locality

A description of the property on which the project is located is provided in Table 2-2.

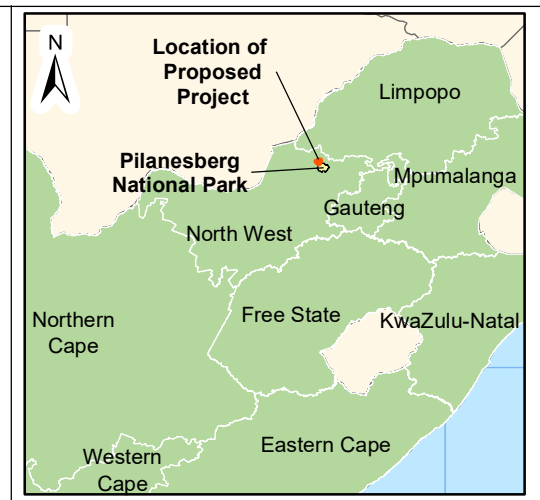
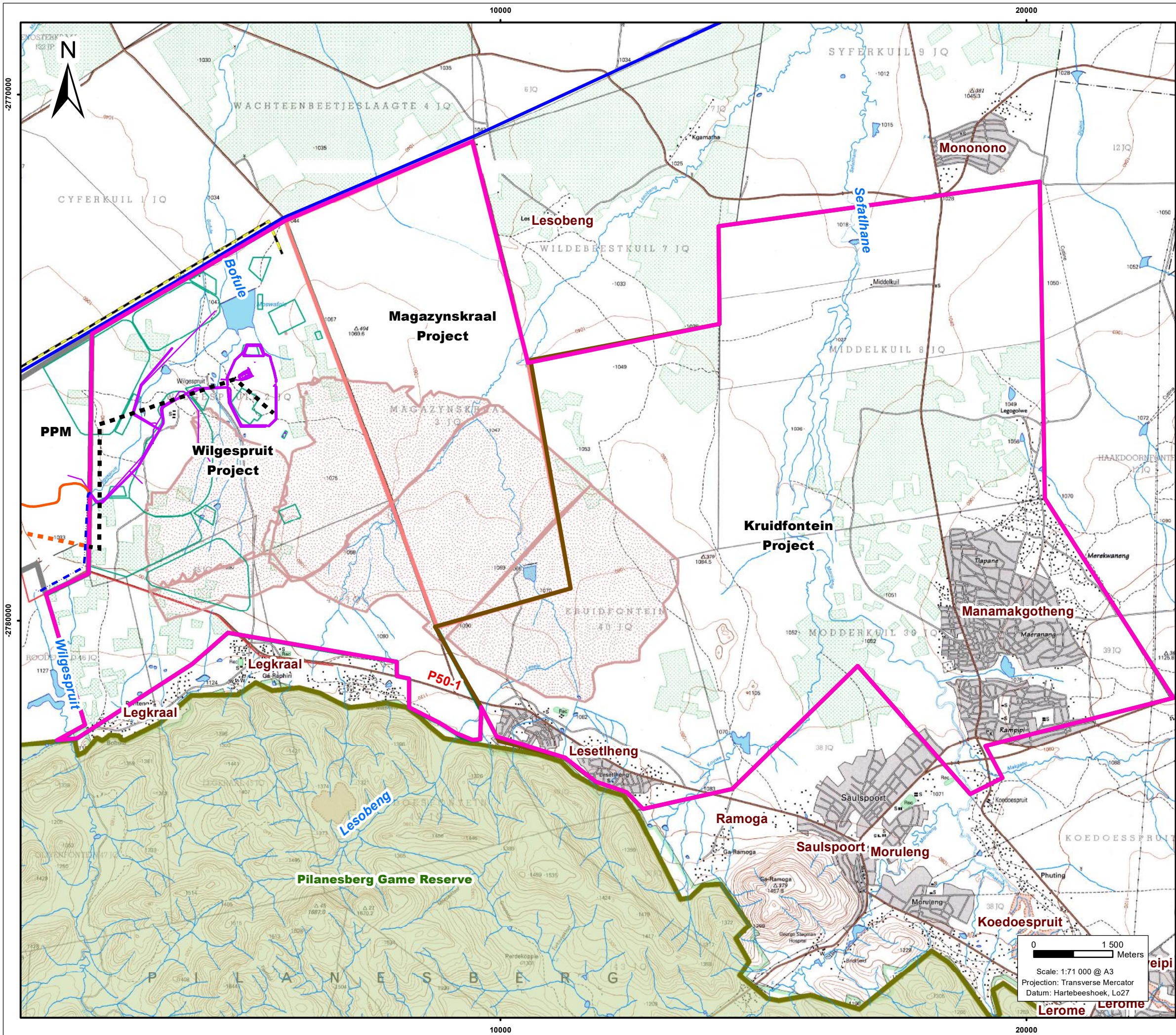
Table 2-2 Property Information

Aspect	Detail
Centre co-ordinates for the site	Wilgespruit Project: 27°3'0,842"E 25°6'18,691"S Magazynskraal Project: 27°5'14,622"E 25°5'3,191"S Kruidfontein Project: 27°9'26,418"E 25°6'25,191"S
Nearest towns	The three projects are located 16km north, north-west of Saulspoort / Moruleng, 30km north of Ledig, 30km north-west of Mogwase and 35km south-west of Northam in the North West Province.
Province	North West
Local Authority	Moses Kotane Local Municipality (MKLM) and Bojanala Platinum District Municipality (BPDM)
Traditional Authority	Bakgatla-Ba-Kgafela (BBK)
Water catchment and management area	The project area falls within quaternary surface water catchments A24D and A24E. The Water Management Area (WMA) is the Crocodile West and Marico.
Farms on which the proposed project is located	Wilgespruit Project: <ul style="list-style-type: none"> • Farm Wilgespruit 2 JQ • A portion of the Farm Legkraal 45 JQ • A portion of the Farm Koedoesfontein 42 JQ • A portion of Portion 1 of the Farm Rooderand 46 JQ

Aspect	Detail
	<p>Magazynskraal Project:</p> <ul style="list-style-type: none"> • Farm Magazynskraal 3 JQ <p>Kruidfontein Project:</p> <ul style="list-style-type: none"> • Portion 1 and 2 and Remainder of the Farm Middelkuil 8 JQ • Farm Kruidfontein 40 JQ • Portion 1, 2 and Remainder of the Farm Modderkuil 39 JQ •
<p>Application areas (ha)</p>	<p>The total extent of the Triple Crown Project Area, which will consist of the three projects; Kruidfontein, Magazynskraal and Wilgespruit, will be equivalent to 16 927 ha.</p> <p>The Kruidfontein Project under the MRA is 9 950 ha.</p> <p>The surface area being applied for will only affect the Wilgespruit Project and will have a footprint of approximately 135 ha.</p>
<p>21 digit surveyor general code</p>	<p>Wilgespruit Project:</p> <ul style="list-style-type: none"> • T0JQ0000000000200000 • T0JQ00000000004600001 • T0JQ00000000004500000 • T0JQ00000000004200000 <p>Magazynskraal Project:</p> <ul style="list-style-type: none"> • T0JQ0000000000300000 <p>Kruidfontein Project:</p> <ul style="list-style-type: none"> • T0JQ0000000000800000 • T0JQ0000000000800001 • T0JQ0000000000800002 • T0JQ00000000004000000 • T0JQ00000000003900000 • T0JQ00000000003900001 • T0JQ00000000003900002 •

2.4 LOCALITY MAP

See the site locality map included in Figure 2-1.



- Legend**
- Roads
 - Powerline
 - Watercourses
 - Dams
 - Wilgespruit River Diversion
 - Magalies Water Pipeline
 - Pipeline from Tuschenkomst Reservoir to Sedibelo / Magazynskraal Mining Projects
 - Pilanesberg National Park
- Mining Operations**
- Triple Crown Project Area
 - Kruidfontein Project MRA
 - Magazynskraal Project
 - Wilgespruit Project
 - Approved Wilgespruit Project Infrastructure
 - Proposed Wilgespruit Project Infrastructure
 - Proposed Ropecon
 - Proposed Underground Mining Area
 - Pilanesberg Platinum Mine

Kruidfontein MRA and Triple Crown Project

Figure 2-1
Local Setting



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3. DESCRIPTION OF THE SCOPE OF THE OVERALL ACTIVITY

3.1 OVERVIEW

To improve mining and processing efficiencies while minimising overall environmental and social impacts, SRL intends to operate two separate but contiguous mining operations: namely PPM and Wilgespruit respectively. To achieve this, changes are required to the PPM and Wilgespruit mining operations as per Section 1. Proposed changes to the approved Wilgespruit Project mining operation and the Kruidfontein MRA ONLY are dealt with under this S&EIA process as per Table 3-1 and Figure 3-1. Amendments to the PPM EMPr are being applied for separately.

A summary of the proposed projects and related applicants has been outlined in Table 3-1 and are discussed in more detail in Section 3.4.

Table 3-1 Summary of the proposed projects and related applicants

Applicant	Project Names	Short name	Project overview	Additional Infrastructure required	Final 2 Operations after process is completed
C and L Mining and Resources (Pty) Ltd	Kruidfontein Project	C&L	To facilitate underground mining of the Kruidfontein ore resource (no surface infrastructure is planned).	No	The intention is to consolidate the Kruidfontein, Magazynskraal and Wilgespruit Projects into a single mining operation under the Wilgespruit Mining Right to operate as “one mine” – the Triple Crown Project.
Richtrau No. 132 (Pty) Ltd	Magazynskraal Project	Richtrau	To enable the underground mining of the Magazynskraal ore resource (no surface infrastructure is planned).	No	
Pilanesberg Platinum Mines (Pty) Ltd	Wilgespruit Project	PPM	To facilitate access to the Magazynskraal and Kruidfontein ore resources and maximise the use of existing and approved PPM facilities (this is in support of already approved mining operations).	Yes	

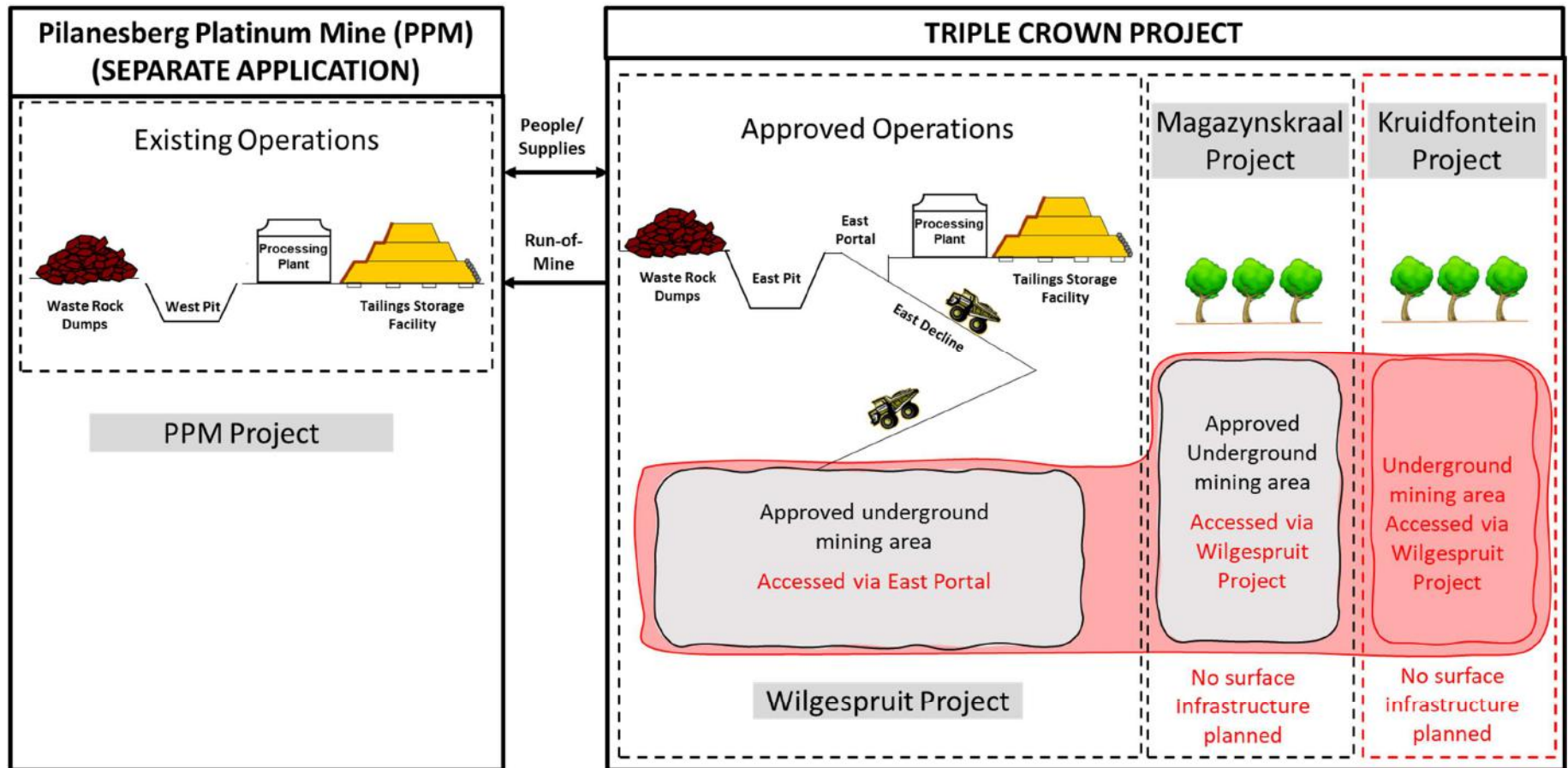


Figure 3-1 Proposed PPM and Triple Crown Applications

3.2 LISTED AND SPECIFIED ACTIVITIES

The EIA Regulations control certain Listed Activities which are listed in GN No. R983 (Listing Notice 1; as amended by GN No. 517 of 11 June 2021), GN No. R984 (Listing Notice 2; as amended by GN No. 517 of 11 June 2021) and GN No. R985 (Listing Notice 3; as amended by GN No. 517 of 11 June 2021) and are prohibited until an EA has been obtained from the competent authority. Such EA, which may be granted subject to conditions, will only be considered once there has been compliance with the NEMA EIA Regulations which sets out the procedures and documentation that need to be complied with when applying for an EA.

The proposed project activities are outlined in Table 3-2. The proposed project would trigger a number of listed activities in terms of the 2014 EIA Regulations and therefore require authorisation in the form of an EA from the DMRE prior to commencement. Listed Activities in GN No. 984 of 2014 require authorisation through a S&EIA process, whilst those listed in GN No. 983 and GN No. 985 of 2014 require a Basic Assessment (unless they are being assessed under a Scoping and EIA process). The listed activities applicable to this project and being applied for in this S&EIA process are listed in Table 3 1 and Table 3-3.

The proposed project triggers listed activities contained in Listing Notice 1 and Listing Notice 2; therefore, a S&EIA process must be undertaken in accordance with the procedures as prescribed in regulations 21 to 24 of the EIA Regulations in order for the DMRE to consider the application in terms of NEMA and make a decision to grant the EA or not.

The proposed project will require a WUL for water uses in terms of Section 21 of the NWA. Water uses identified have been included in Table 3-5.

NOTE: The Wilgespruit Project already has an approved EA under the IBMR which has now been ceded to PPM. The approved activities and infrastructure at the Wilgespruit Project are included in Table 3-6. This EIA process only covers new or additional activities.

Table 3-2 Activities Associated with the Triple Crown Project

Description of the Project Activity	Approximate Aerial Extent of the Activity (ha)	Applicable Listed Activity and/ or Water Use
Site preparation and construction activities		
Clearance of land will largely be limited to within the areas already approved, however, the potential for additional land clearance will be confirmed during the EIA phase.	Within overall application area of approx. 135 ha	Not applicable.
Mining related activities at the East Portal		
Mining related activities comprising: <ul style="list-style-type: none"> Expansion of the approved Wilgespruit Project underground area to include the adjacent Magazykskraal and Kruidfontein mining areas. Rearrangement of the East Portal layout within the approved footprint. Associated dewatering at the approved East Portal. Reconfiguration of the ventilation shafts and fans. 	East Portal: 14 ha (no additional clearing) Vent shafts: 1.8ha Haul Roads: 5.6 ha Service Roads: 9 ha	NEMA GNR 984 (6) NWA 21 (j).
Transportation		
Vehicle, machinery and/or material movement within the site boundary. 5 000 m of haul road and 15 000 m of service roads within currently disturbed area.	Approx. 15 ha	Not applicable.
Construction of new Rope Conveyor (RopeCon) from the East Portal to the West Portal at PPM. Tower footprint within approved overall footprint.	Approximately 6 000 m in length ~ 6 towers at 0.04 ha each = approx. 0.5 ha	Not applicable.
Use of existing access road and public roads for transporting staff, consumables, general/industrial waste.	N/A	Not applicable.
Water supply and management		
As per approved EMPr.		Not applicable.

Description of the Project Activity	Approximate Aerial Extent of the Activity (ha)	Applicable Listed Activity and/ or Water Use
Power supply		
As per approved EMPr.		Not applicable.
Support facilities		
As per approved EMPr.		Not applicable.
Rehabilitation of construction affected areas		
As per approved EMPr.		Not applicable.

Table 3-3 Listed Activities Being Applied For – Kruidfontein Project

Activity No.	Listed activity	Applicability of the activity
NEMA Listing Notice 2 (as amended by GN No. 517 of 11 June 2021)		
17	Any activity including the operation of that activity which requires a mining right in terms of section 22 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice, in Listing Notice 1 of 2014 or Listing Notice 3 of 2014, required to exercise the mining right.	A Mining Right is required for the underground mining operation proposed at the Kruidfontein Project.

Table 3-4 Listed Activities Being Applied For – Wilgespruit Project

Activity No.	Listed activity	Applicability of the activity
NEMA Listing Notice 1 (as amended by GN No. 517 of 11 June 2021)		
21D	Any activity including the operation of that activity which requires an amendment or variation to a right or permit in terms of section 102 of the Mineral and	A Section 102 Amendment to the existing MR and EMPr for the Wilgespruit Project is sought.

Activity No.	Listed activity	Applicability of the activity
	Petroleum Resources Development Act, as well as any other applicable activity contained in this Listing Notice or in Listing Notice 3 of 2014, required for such amendment.	
NEMA Listing Notice 2, 2014 (as amended by GN No. 517 of 11 June 2021)		
6	<p>The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding -</p> <p>(i) activities which are identified and included in Listing Notice 1 of 2014;</p> <p>(ii) activities which are included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies;</p> <p>(iii) the development of facilities or infrastructure for the treatment of effluent, polluted water, wastewater or sewage where such facilities have a daily throughput capacity of 2 000 cubic metres or less.</p>	An amended WUL is required for the proposed activities.

Table 3-5 Proposed Water Uses in terms of S21 of the NWA

Use No.	Water Uses	Applicability of the Activity
21 (j)	Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people	Dewatering will be undertaken for the proposed new underground areas.

3.3 DESCRIPTION OF THE ACTIVITIES TO BE UNDERTAKEN

3.3.1 Currently Approved Operations

3.3.1.1 Wilgespruit Project

The Wilgespruit Project MRA (held by PPM) is located on the farms Wilgespruit 2 JQ, parts of portion 1 of Rooderand 46 JQ, a portion of the farm Legkraal 45 JQ and a portion of the farm Koedoesfontein 42 JQ.

The original mine layout and associated activities were approved in 2008 in terms of the MPRDA (Reference number NW30/5/1/2/3/2/1/333MR) and NEMA (Reference number NWP/EIA/59/2007) (Table 1-1). The mine was issued a Waste Management Licence in July 2010 in terms of the NEM:WA for a general landfill and the storage of general and hazardous waste (Reference number 12/9/11/L157/7). An integrated Water Use Licence Application (IWULA) in terms of the NWA was also submitted to the DWS in 2011 and approved on 16 August 2015.

In broad terms the scope of the Wilgespruit Project operation, approved in 2008, comprised an open pit and underground mining operation with decline and ventilation shafts, a processing facility, a TSF, three waste rock dumps (WRDs), topsoil stockpiles, run-of mine (ROM) pads, explosives magazine, concentrator plant, contractors laydown area, solid and hazardous waste skips and transfer areas, a waste management complex, workshops, fuel bays, a salvage yard, raw water reservoir, administration buildings, change houses, an accommodation camp, transport and conveyance infrastructure. Figure 3-2 shows the approved Wilgespruit Projects infrastructure footprint.

In 2015 in order to optimise the extraction of available mineral resources an additional EIA was undertaken for the changes to surface infrastructure, these included the following:

- enlarging of the open pit;
- repositioning/ redesigning of the approved surface infrastructure including repositioning of the concentrator plant and shafts, and redesign of the TSF and WRD to cater for additional mineralised waste;
- additional surface infrastructure: including a shaft complex, WRDs, ventilation shafts, stormwater management infrastructure including stormwater dams, channels and berms, sewage pump stations, a helipad and a telecommunications mast;
- an increase in capacity of the approved sewage treatment plant; and
- the exclusion of a portion of the Wilgespruit Project's MRA (referred to as the "Mineral Rights Abandonment Area") which was incorporated into PPM's Tuschenkomst mining operation

The mining area at the Wilgespruit Project comprises two mining blocks known as the Central and Eastern Blocks. The Central Block will be mined first from the surface via an open pit, and deeper ore zones will be accessed via underground mining after open pit mining is completed. At 110 m below surface a pre-defined boundary exists at which underground mining would start. The Eastern Block will only be subjected to underground mining. The underground production will reach a steady state once the open pit operations are complete.

The approved operations at the Wilgespruit Project are summarised in Table 1-1 and Figure 3-2. Mining operations commenced at the approved Wilgespruit Project in December 2021.

Table 3-6 Approved Infrastructure at the Wilgespruit Project (as per 2008 approved EMPr)

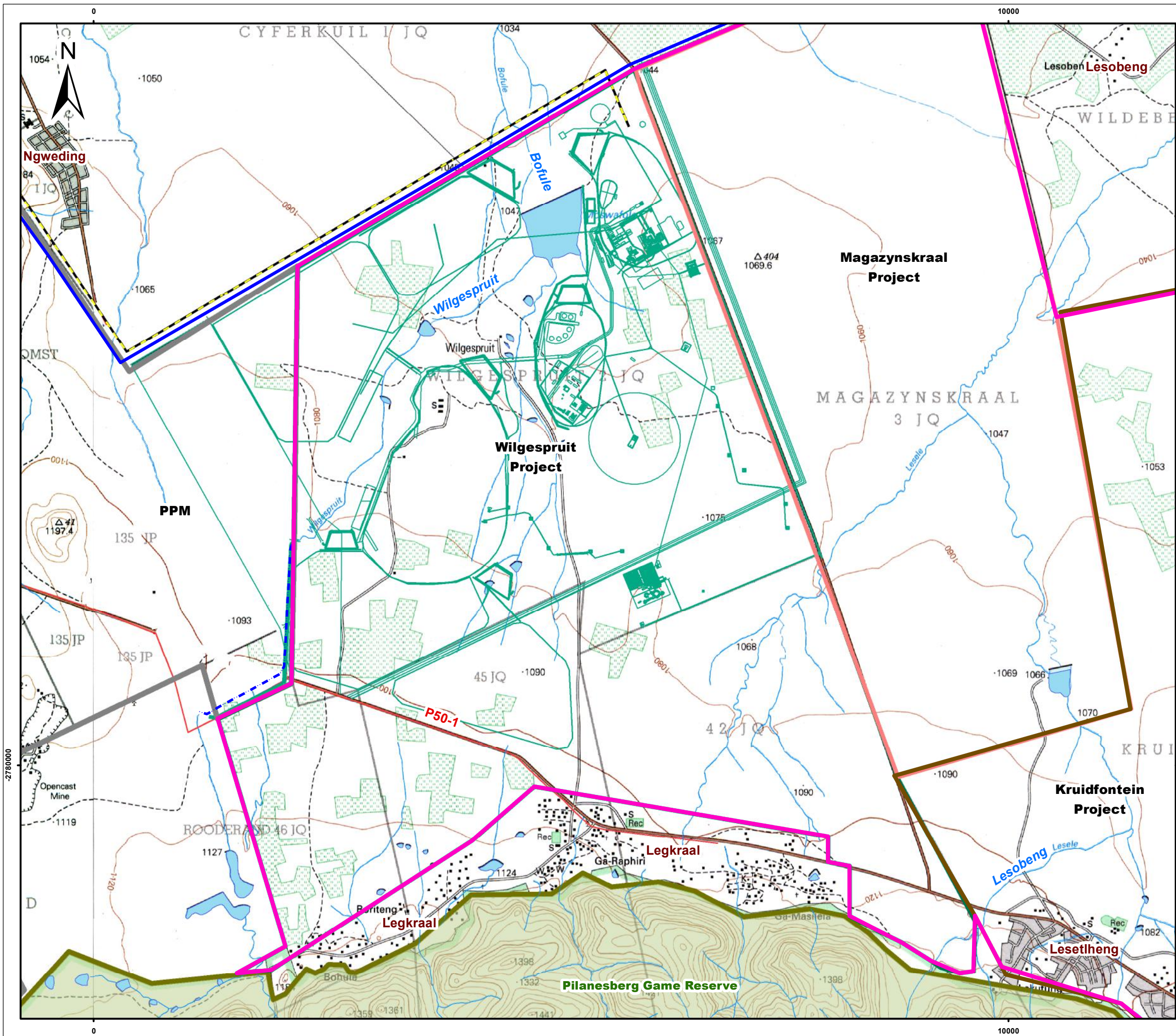
Aspect	Description	Approved Infrastructure
General		
Land clearance	The footprint that will be affected by the infrastructure.	Approximately 950ha
Resource Use	Water allowance from Magalies Water Board	15.2 ML/day
	Fresh water demand	Average of 9.7 ML/day
	Power demand - Construction	5 MVA temporary power will be reticulated on site from Eskom
	Power demand - Operational	66 MVA
Target minerals	Platinum, palladium, ruthenium, iridium, rhodium, osmium, gold, copper, nickel, cobalt and chrome.	
Mine lease area		Approximately 4 410 ha
Mineable area		Approximately 980 ha
Open pit mining – Central Block	Mineable area	170 ha
	Depth	170 m
	Length	2 180 m
	Width	1 000 m
	Ore contained in open pitshell	11.3 million tonnes of ore
	Waste contained in open pitshell	222.4 million tonnes of waste
	Strip ratio	19.7
	Blasting	Open pit operations will require at least one blast per week
Mining Blocks	Central and Eastern Blocks are roughly equal in size at 5 363 201 m ² and 4 442 392 m ²	
Strike lengths	<ul style="list-style-type: none"> Central block strike length increases from a few hundred meters at the outcrop of the reef (ore zone) to a maximum of 3.2 km at the deepest point. 	

Aspect	Description	Approved Infrastructure
	<ul style="list-style-type: none"> Eastern block has a smaller strike length than that of the Central Block. The strike length near the sub outcrop at ± 130 m below surface is 1 000 m but increases to 2 500 m at the deepest point. 	
Mining ratios	<ul style="list-style-type: none"> Underground: UG2 reef – 77% and Pseudo reef – 23% Open pit: UG2 reef – 58% and Pseudo reef – 42% 	
Underground mining - Central and Eastern Blocks	Access	The underground resources of the Central and Eastern Blocks will be accessed via the Central and Eastern Shafts respectively.
	Number of shafts and Raise-bore-holes (RBH)	The decline cluster will comprise of the following: <ul style="list-style-type: none"> conveyor decline 4 m high and 5 m wide; material or main access decline at 4 m high and 6m wide; and chairlift 3.5 m high and 4 m wide. Up cast and down cast RBH with a diameter of 3.2 m and an initial depth of 650 m and equipped with surface fans.
	Depth	Approximately 650 m
	Mineable area	Approximately 980 ha
	Resource estimation	Approximately 63.6 million tonnes
	Mining rate	Approximately 135 000 tpm UG2 and up to 40 000 tpm Pseudo (peaking at 55 000 tpm)
	Life of mine (LOM)	40 years
	Mine related surface area and associated surface infrastructure	Approximately 10 ha for each shaft complex and processing facility, 440 ha for WRDs, 150 ha for the TSF and 30 ha for topsoil stockpiles.
Underground blasting	Construction of the shaft portals as well as blasting associated with the underground operations will typically require one blast per day.	
Mineral Processing		
Mineral processing	Concentrator plant	<ul style="list-style-type: none"> Production rate and plant design remains unchanged (350 000 tonnes per month) A tailings scavenging and a chrome recovery plant

Aspect	Description	Approved Infrastructure
Mineralised Waste Facilities		
Mineralised waste disposal facilities	Dense Media Separation (DMS)	DMS waste, generated by the mineral processing plant, will be temporary stored on a DMS stockpile before being disposed onto the waste rock dumps at a rate of 40 000 tonnes per month.
Waste rock for open pit mining	Number of dumps	Three waste rock dumps to cater for all of the Wilgespruit Project and some of PPM waste rock. WRD 1 will be located in the same position as the approved WRD, but with a different design and two additional waste rock dumps (WRD 2 and WRD 3). WRD 1 has been designed to accommodate PPM waste rock.
	Storage capacity	Three WRDs combined storage capacity 158 million m ³) – Wilgespruit Project and PPM waste rock
	Footprint	Three WRDs combined: 398ha WRD1: 140 ha; WRD2: 113 ha; and WRD3: 145 ha.
	Final height (s)	60 m
Waste rock from underground mining	Number of dumps	Two WRDs. A WRD at each of the decline shaft complexes
	Design	The final capacity of the WRD associated with the central decline will be 3.5 million tonnes and 5.5 million tonnes for the WRD located at the eastern shaft. The final height of the underground WRDs is expected to be in the order of 30m. On closure the slopes of the WRD will be dozed down to a slope of 1:3 and the dump will then be capped with topsoil and vegetated.
	Location	Single TSF.
Tailings Storage Facility (TSF)	Embankment	60 million tonnes in total
	Storage capacity	17-30 years
	Production life	30 years at 150 000 tpm or 17 years at 300 000 tpm
	Deposition rate	40 m
	Height	150 ha

Aspect	Description	Approved Infrastructure
	Footprint	0.5 m of prepared black turf
	Liner	60 million tonnes in total
Mon-Mineral Waste Facilities		
Non-mineral waste facilities	General and hazardous waste management	<p>General and hazardous waste to be separated into streams at source for transfer to either of the following facilities within the waste management complex:</p> <ul style="list-style-type: none"> • general waste skips and transfer areas, from where waste is sorted for collection by an approved contractor for further processing or disposal at a registered site; • covered and bunded hazardous waste handling and storage areas, from where hazardous waste will be regularly removed by a licensed and approved contractor for disposal at a registered hazardous landfill site; • bioremediation site; and • recycling centre or salvage yard.
Sewage treatment plant (STP)		Treatment capacity of 900 m ³ /day to make provision for sewage from the Magazynskraal Platinum Mine and may be pumped to the Wilgespruit Project STP.
Additional Infrastructure		
Transport systems		<ul style="list-style-type: none"> • Construction phase: Approximately 30 taxi, 32 bus, 42 private vehicle and eight truck trips per day are expected during the construction phase. • Operational phase: Approximately 50 busses, 180 private vehicles, 40 taxi and 8 trucks are expected on a daily basis. • It is expected that four trucks per day will be utilised for transport of materials along the P54-1, R510, P50-1, D511 and site roads.
Water storage facilities and surface water control	<ul style="list-style-type: none"> • Control measures in compliance with GNR704. 	<p>The following dirty water containment facilities have been approved and will be constructed:</p> <ul style="list-style-type: none"> • TSF return water dam; • stormwater control dam for WRD1 (SWCD 1)), WRD2 (SWCD 2) and WRD3 (SWCD 3); • SWCD 4 at the Wilgespruit Project open pit; • SWCD 5 at the central decline shaft complex;

Aspect	Description	Approved Infrastructure
		<ul style="list-style-type: none">• SWCD 6 at the processing plant and Eastern decline shaft area;• dirty water control dam for the plant and shaft area;• pit settling dam at the open pit;• three settlement dams for the topsoil stockpiles; and• water diversion channels:• dirty water; and• clean water.



- Legend**
- Roads
 - Powerline
 - Watercourses
 - Dams
 - - - Wilgespruit River Diversion
 - Magalies Water Pipeline
 - Pipeline from Tuschenkomst Reservoir to Sedibelo / Magazynskraal Mining Projects
 - Pilanesberg National Park
- Mining Operations**
- Triple Crown Project Area
 - Kruidfontein Project MRA
 - Magazynskraal Project
 - Wilgespruit Project
 - Pilanesberg Platinum Mine
 - Approved Wilgespruit Project Infrastructure

0 500
Meters

Scale: 1:40 000 @ A3
Projection: Transverse Mercator
Datum: Hartebeeshoek, Lo27

Kruidfontein MRA and Triple Crown Project

Figure 3-2
Approved Wilgespruit Project Layout



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2022/07/18

3.3.1.2 Magazynskraal

Magazynskraal has an approved EMPr and Mining Right as summarised in Table 1-2.

Figure 3-5 shows what has been approved at Magazynskraal in terms of the Mining Right and approved EMPr. Currently no development has taken place at Magazynskraal.

3.4 PROPOSED ACTIVITIES

In support of the continuation of approved mining operations at the Wilgespruit Project (Table 3-6), the following two main activities are proposed:

- Kruidfontein Mining Right Application (C&L); and
- Consolidation of the Magazynskraal Mining Right and Kruidfontein Mining Right (should this be granted by the DMRE) into the approved Wilgespruit Project EMPr).

The activities and associated amendments are described in the following sections. Details on the proposed activities and associated amendments have been obtained from the Sedibelo-Magazynskraal PGM Project Feasibility Study undertaken by SRK Consulting (South Africa) (Pty) Ltd in 2019 and 2020.

A summary of the proposed projects and related applicants has been outlined in Table 3-1. As per Table 3-1 and Figure 3-1 the following is proposed as part of this application for EA:

3.4.1 Kruidfontein Project

A Mining Right is sought as part of this S&EIA process for the Kruidfontein Project. The proposed Kruidfontein MRA is located on the Remainder and Portions 1 and 2 of the farm Middelkuil 8 JQ, the farm Kruidfontein 40 JQ and the Remainder and Portions 1 and 2 of the farm Modderkuil 39 JQ (Figure 2-1).

Underground mining would be undertaken with access from underground from the adjacent Magazynskraal mining area. Further detail on the combined mining operation is included in Section 3.4.7.

No surface infrastructure is proposed at this stage at the Kruidfontein Project. All services and facilities needed to support the underground mining activities will be provided from the Wilgespruit Project.

3.4.2 Magazynskraal Project

The Magazynskraal Mining Right area is located on the farm Magazynskraal 3 JQ (Figure 2-1). The mining right over this area has been granted. No development has taken place at Magazynskraal to date whilst the approved EMPr remains applicable until amended (as proposed herein).

The proposed plan for the Magazynskraal Project is to access the underground ore reserves from the East Portal at the Wilgespruit Project (the East Block). Further detail on the combined mining operation is included in Section 3.4.7.

No surface infrastructure is proposed at this stage at the Magazynskraal Project. All services and facilities needed to support the underground mining activities will be provided from the Wilgespruit Project.

3.4.3 Wilgespruit Project

The following sections give some detail on the amendments proposed at the Wilgespruit Project.

3.4.4 East Portal and Decline Layout

The East Portal is situated on the farm Wilgespruit. The location of the portal will remain unchanged from what has been approved, but the orientation of the decline will change to support the updated underground mine plan.

The East Portal requires the same infrastructure as was approved in the 2015 EMPr Amendment; this infrastructure would be slightly reconfigured to support the alignment of the decline.

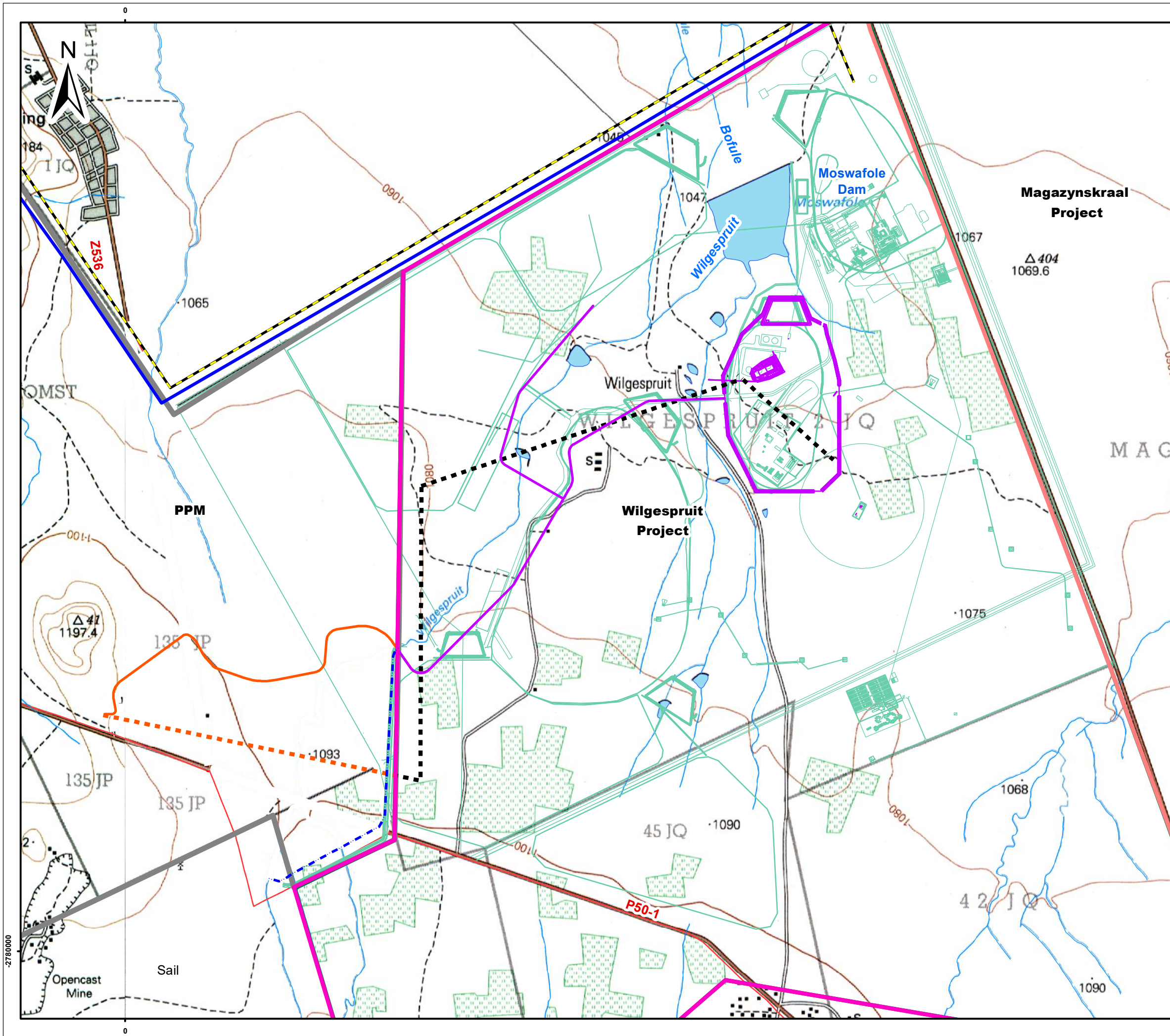
3.4.5 Transport of ore – haul roads and surface conveyors

Until such time as mining reaches steady state 45 tonne dump trucks would transport ore from the RoM pad at the East Portal to the PPM concentrator RoM ore pad. Approved haul roads with slightly revised routings and approved watercourse crossings (within the farm Wilgespruit) would be used.

Once steady state mining is achieved (after approximately 6 years), a RopeCon ore and waste transport system is proposed to be installed from the East Portal to the PPM concentrator plant's RoM Pad at PPM. A typical RopeCon is shown in Figure 3-3. The proposed alignment for the RopeCon is shown in Figure 3-4. The tower bases of the RopeCon are anticipated to be positioned within areas approved for surface disturbance as part of the approved Wilgespruit Project operations. The surface conveyor is proposed to be 6 000 m in length and will have 6 towers each with a fenced footprint area of 400 m². The final number of towers and the proposed height will be further defined in the EIA phase once finalised.



Figure 3-3 Typical RopeCon Section



- Legend**
- Roads
 - Powerline
 - Watercourses
 - Dams
 - Wilgespruit River Diversion
 - Magalies Water Pipeline
 - Pipeline from Tuschenkomst Reservoir to Sedibelo / Magazynskraal Mining Projects
- Mining Operations**
- Triple Crown Project
 - Magazynskraal Project
 - Wilgespruit Project
 - Approved Wilgespruit Project Infrastructure
 - Proposed Wilgespruit Project Infrastructure
 - Proposed Ropecon
 - Pilanesburg Platinum Mine
 - Proposed PPM Infrastructure (Separate Application)

0 300 600 Meters
 Scale: 1:30 000 @ A3
 Projection: Transverse Mercator
 Datum: Hartebeeshoek, Lo27

Kruidfontein MRA and Triple Crown Project

Figure 3-4
Proposed Wilgespruit Project with the Ropecon



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3.4.6 Support services and facilities

It is anticipated that the support services and facilities for the Wilgespruit Project will be developed in line with existing approvals, and therefore all thresholds/capacities would remain as per the approved EMPr, EA and WUL. This applies to power generation capacity within the site; power transmission capacity within the site; transportation of water, stormwater, sewage, effluent, process water, wastewater, return water; dam capacities; dangerous goods storage within the site, WRDs, roads dimensions, vegetation clearance, and sewage treatment capacity.

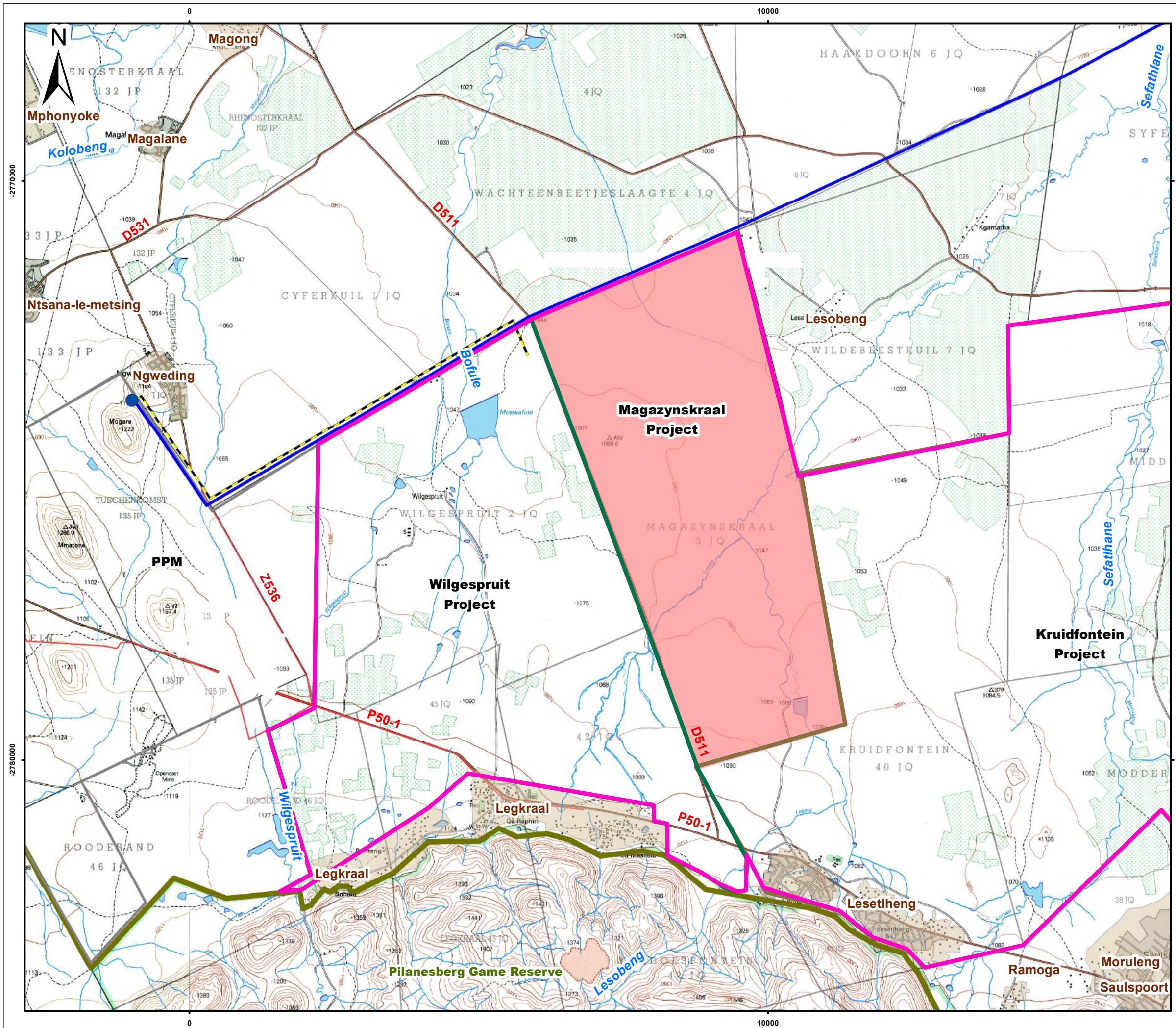
3.4.7 The Triple Crown Project

As mentioned previously the aim is to consolidate and operate a single mining operation under the Wilgespruit Project amended EMPr. Ongoing mine planning and synergy studies have resulted in an updated underground mine plan that incorporates the sequential mining of the Wilgespruit, Magazynskraal and Kruidfontein underground resource areas. The open pit mine plan on Wilgespruit remains unchanged.

The extent of the updated underground mine layout can be seen in Figure 3-6 showing the progression and depth of the underground workings from the west (on the farm Wilgespruit) to the east (at the Kruidfontein Project). Underground mining on the farm Wilgespruit starts at an average depth of 250 m below ground level (bgl) increasing to a depth of approximately 1 000 m bgl at the Magazynskraal Project area and 2 000 m bgl at the Kruidfontein Project area (Figure 3-6).

All ore would be removed from underground via the approved facilities at the Wilgespruit Project. All ore would be transported to the PPM mineral processing facilities. If and when additional mineral processing capacity is needed, then the approved concentrator plant at the Wilgespruit Project would be established.

Tailings from the mineral processing facilities would be disposed of at the PPM TSF until it reaches its full capacity, after which the approved Wilgespruit TSF would be constructed and used.



- Legend**
- Triple Crown Project Area
 - Kruidfontein Project MRA
 - Magazynskraal Project
 - Wilgespruit Project
 - Pilanesburg Platinum Mine
 - Water Reservoir
 - Magalies Water Pipeline
 - Pipeline from Tuschenkomst Reservoir to Sedibelo / Magazynskraal Mining Projects
 - Roads
 - Watercourses
 - Dams
 - Pilanesburg National Park (Including Black Rhino Game Reserve)

0 1 000
Meters

Scale: 1:64 000 @ A3
Projection: Transverse Mercator
Datum: Hartebeeshoek, Lo27

Kruidfontein MRA and Triple Crown Project

Figure 3-5
Approved Area For Magazynskraal Project



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3.4.8 Project Schedule

Construction of the East Portal is currently planned to take place starting mid 2023 for a period of 6 months with the sinking of the east decline taking place once the East Portal construction phase is complete.

The overall LOM is predicted to be approximately 40 years with mining on Wilgespruit reaching steady state in approximately 2030. It is anticipated that mining would cross into Magazynskraal around 2035, and then into the deeper Kruidfontein mining block around 2055.

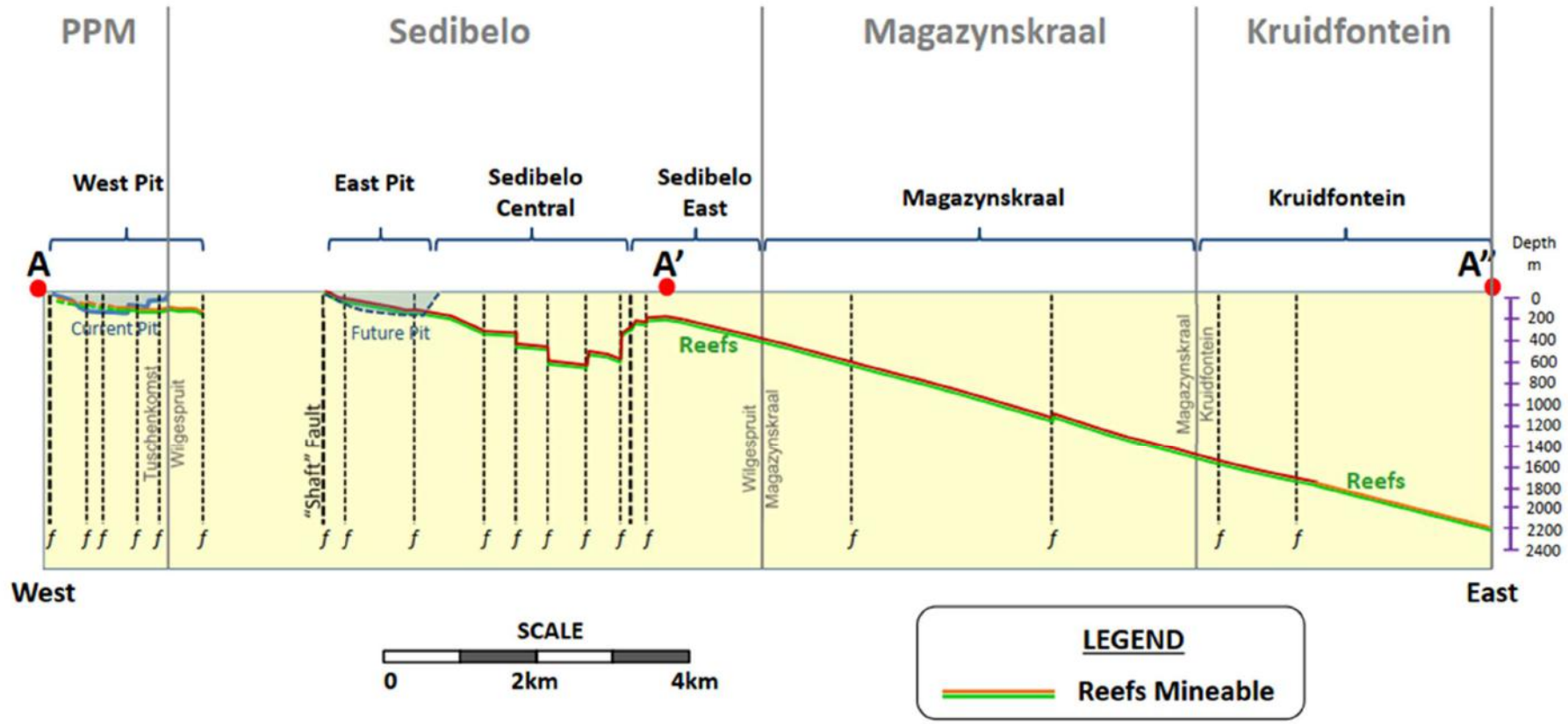


Figure 3-6 Cross Section Showing Underground Mining Across the Triple Crown Projects

4. POLICY AND LEGISLATIVE CONTEXT

This section outlines the applicable key legislative requirements being considered for the project (Table 4 1).

Table 4-1 Applicable Policy and Legislative Framework

Applicable legislation and guidelines used to compile the report	How does this development comply with and respond to the policy and legislative context
The South African Constitution, 1996	The proposed project must comply with South African constitutional and common law by conducting its construction and operational activities with due diligence and care for the rights of others. Section 24 (a) of the South African Constitution states that everyone has the right to an environment that is not harmful to their health and well-being. This provision supersedes all other legislation.
Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA) and Regulations, as amended.	<p>Authorisation is required from the DMRE in terms of Section 22 of the MPRDA for a Mining Right at Kruidfontein.</p> <p>Authorisation is also required from the DMRE in terms of Section 102 of the MPRDA to amend the existing Wilgespruit Mining Right and EMPr to incorporate both the Magazynskraal and Kruidfontein (should it be granted) Mining Rights.</p> <p>The Scoping, EIA and EMPr reports will support both applications.</p>
Mine Health and Safety Act, 1996 (Act No. 29 of 1996)(MHSA) and Regulations.	The proposed project will be governed by the MHSA and associated Regulations.
National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), as amended Environmental Impact Assessment Regulations, 2014 (EIA Regulations 2014, as amended by GN No. 517 of 11 June 2021) and Environmental Impact Assessment Regulations Listing notices 1, 2 and 3 published in terms of NEMA in Government Notices 982, 983, 984 and 985 of 4 December 2014 (as amended by Government Notices 324, 325, 326 and 327 of 7 April 2017)	The proposed project requires EA in terms of the 2014 NEMA EIA Regulations for Listed activities included in Listing Notice 1 of GNR 983 and Listing Notice 2 of GNR 984.
Regulations pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations, published in terms of NEMA in Government Notice 1147 of 2015 (as amended)	These regulations will inform the financial provisioning for the Project.
Guideline on the Need and Desirability, Department of Environmental Affairs, 2017	This guideline has been taken into account as part of project planning.

Applicable legislation and guidelines used to compile the report	How does this development comply with and respond to the policy and legislative context
Public Participation guideline in terms of NEMA EIA Regulations, Department of Environmental Affairs, 2017	This guideline has informed the public participation process for the project.
National Guideline on minimum information requirements for preparing Environmental Impact Assessments for mining activities that require EA, published in terms of NEMA in Government Notice 86 of 2018	This guideline has been taken into account as part of project planning.
National Water Act, 1998 (Act No. 36 of 1998) (NWA)	See WULA details in Table 3-5.
The regulations in terms of Section 21 of the Water Act, 1998 (Act No. 36 of 1998).	
The use of water for mining and related activities (GNR 704 of 4 June 1999)	A GNR 704 exemption may be required in terms of Regulation 4 for any facility within the 1:100 year flood-line or within a horizontal distance of 100 metres from any watercourse or estuary, borehole or well, excluding boreholes or wells drilled specifically to monitor the pollution of groundwater, or on water-logged ground, or on ground likely to become water-logged, undermined, unstable or cracked.
Hazardous Substances Act, 1973 (Act No. 15 of 1973) (HSA)	This Act will inform the planning, assessment and management of hazardous substances associated with the project.
National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEM:BA)	Biodiversity was taken into consideration as part of the proposed project. No additional clearing is, however, proposed as part of this project.
National Protected Areas Expansion Strategy 2008 (NPAES)	
South Africa Conservation Areas Database (SACAD, 2017)	
South Africa Protected Area Database (SAPAD, 2017)	
Mining and Biodiversity Guidelines (2013)	
North West Biodiversity Sector Plan (2015)	
Important Bird Areas (IBA's) (2015)	
According to the NEM:BA, Alien and Invasive Species list of July 2016	
National Heritage Resource Act, 1999 (Act No. 25 of 1999) (NHRA)	Heritage/cultural and paleontological resources were taken into consideration as part of the proposed project. It is important to note that the proposed project area is located within an area approved for development.
Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2013) (SPLUMA)	The Act, development plans, development frameworks and by-laws have informed project planning and the need and desirability of the project and will be taken into account in the assessment and mitigation of impacts.
National Development Plan 2030	

Applicable legislation and guidelines used to compile the report	How does this development comply with and respond to the policy and legislative context
National Spatial Development Plan (NSDP)	The principles of the NSDP state that spatial development should, if appropriate, accommodate and promote private economic ventures, which could support sustainable economic growth, relieve poverty, increase social investment, and improve service delivery
National Infrastructure Plan (NIP) (2012)	The South African Government adopted a National Infrastructure Plan in 2012. The primary objective of the Plan is to transform the country's economic landscape, while simultaneously creating significant numbers of new jobs, strengthening the delivery of basic services, and promoting integration with other African economies.
North West Provincial Spatial Development Framework (PSDF)	<p>The North West Provincial Spatial Development Framework (PSDF) sets out the key spatial challenges faced by the Province and the proposed spatial policies, which have been formulated to address these challenges. Five strategic objectives have been identified to provide foundation for spatial development strategies in North West. These objectives are outlined below:</p> <ul style="list-style-type: none"> • Focus development on regional spatial development initiatives, development corridors, development zones and nodes; • Protect biodiversity, water and agricultural resources; • Promote Infrastructure Investment; • Support economic development and job creation guiding the spatial development pattern of North West; and • Balance urbanisation and the development of rural areas within North West.
North West Development Corporation Strategic Plan 2015 - 2020	The vision of the strategic plan is to ensure that the North West province becomes the cornerstone of sustainable economic development and job creation. This would be achieved through the province's contribution to economic growth through sustained focus on agriculture, culture and tourism through villages, townships and small dorpias.
Bojanala Integrated Development Plan (IDP)	<p>The Bojanala Platinum District Municipality Integrated Development Plan is the principle strategic instrument guiding all planning, management, investment and development within the province in order to provide best solutions towards sustainable development. The IDP aims to realize the NDP, the North West PSDP by identifying the following priority issues and challenges within the district:</p> <ul style="list-style-type: none"> • Water and sanitation; • Roads and storm water; • Electricity; • Land and housing; • Economic development; • Institutional development;

Applicable legislation and guidelines used to compile the report	How does this development comply with and respond to the policy and legislative context
	<ul style="list-style-type: none"> • Municipality healthy; and • Social services. • Economic opportunities abound in mining and agriculture and can be exploited further when skills of the people are in line with economic and technological needs.
Moses Kotane Local Municipality IDP	<p>The MKLM IDP is the main instrument within the municipality that guides and informs all planning, budgeting, management and decision making relating to service delivery and infrastructure development. It aims to provide the following:</p> <ul style="list-style-type: none"> • Responsive, transparent and accountable leadership; • Create an environment for business growth and job creation; and • Providing sustainable services.
Environmental By-Laws	<p>Environmental by-laws for the Moses Kotane Local Municipality have been developed and promulgated. The core principles are:</p> <ul style="list-style-type: none"> • to provide for the prohibition, restriction and control of activities in the municipal area which are likely to have a detrimental effect on the environment; • to establish environmental rights and duties on the part of the municipality and members of its local communities; • to provide for the manner in which municipal environmental functions are exercised and performed; • to establish a simple and enabling framework for change and conduct in the jurisdiction of the Municipality that is conducive to environmental sustainability; • to establish a Code of Environmental Conduct for councillors and for Municipal staff members; and • to provide for matters connected therein within the broader framework of developmental local government.

5. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES

5.1 NEED AND DESIRABILITY GUIDELINE INTRODUCTION

The DFFE (formerly DEA) Guideline on Need and Desirability (GNR 891, 20 October 2014) notes that while addressing the growth of the national economy through the implementation of various national policies and strategies, it is also essential that these policies take cognisance of strategic concerns such as climate change, food security, as well as the sustainability in supply of natural resources and the status of our ecosystem services. In 2017, the DEA published an updated guideline, although this is yet to be formally gazetted. The 2017 guideline on ‘need and desirability’ provides that addressing the need and desirability of a development is a way of ensuring sustainable development – in other words, that a development is ecologically sustainable and socially and economically justifiable – ensuring the simultaneous achievement of the triple bottom-line.

When considering how the development may affect or promote justifiable economic and social development, the relevant spatial plans must be considered, including Municipal Integrated Development Plans (IDP), Spatial Development Frameworks (SDF) and Environmental Management Frameworks (EMF). The assessment reports need to provide information as to how the development will address the socio-economic impacts of the development, and whether there would be any socio-economic impact resulting from the development on people’s environmental rights. Considering the need and desirability of a development entails the balancing of these factors. Consistent with the aim and purpose of the EIA, the concept of “need and desirability” relates to, amongst others, the nature, scale, and location of the development being proposed, as well as the wise use of land and natural resources.

The National Strategy for Sustainable Development and Action Plan 2011 - 2014 (NSSD 1) (2011) states the following:

- In the first instance, it recognises that the maintenance of healthy ecosystems and natural resources are preconditions for human wellbeing. In the second instance, it recognises that there are limits to the goods and services that can be provided. In other words, ecological sustainability acknowledges that human beings are part of nature and not a separate entity.
- What is needed and desired for a specific area should primarily be strategically and democratically determined beyond the spatial extent of individual EIAs. The strategic context for informing need and desirability may therefore firstly be addressed and determined during the formulation of the sustainable development vision, goals, and objectives of Municipal IDPs and SDFs during which collaborative and participative processes play an integral part, and are given effect to, in the democratic processes at local government level.
- When formulating project proposals and when evaluating project specific applications, the strategic context of such applications and the broader societal needs and the public interest should be considered. In an effort to better address these considerations and their associated cumulative impacts, the NEMA also provides for the compilation of information and maps that specify the attributes of the environment in particular geographical areas, including the sensitivity, extent, interrelationship, and significance of such attributes which must be taken into account. Whether a proposed activity will be in line with or deviate from the plan, framework, or strategy per se is not the issue, but rather the ecological, social, and economic impacts that will result because of the alignment or deviation. As such, the EIA must specifically provide information on these impacts in order to be able to consider the merits of the specific application. Where a proposed activity

deviates from a plan, framework or strategy, the burden of proof falls on the proponent (and the EAP) to show why the impacts associated with the deviation might be justifiable. The need and desirability of the development must be measured against the abovementioned contents of the IDP, SDF and EMF for the area, and the sustainable development vision, goals and objectives formulated in, and the desired spatial form and pattern of land use reflected in, the area's IDP and SDF. While project-level EIA decision-making therefore must help us stay on course by finding the alternative that will take us closer to the desired aim/goal, it is through integrated development planning (and the SDF process) that the desired destination is firstly to be considered and the map drawn of how to get there.

The key components of the Need and Desirability Guideline are listed below and discussed in this section:

- Securing ecological sustainable development and use of natural resources; and
- Promoting justifiable economic and social development.

5.2 RATIONALE FOR THE PROPOSED PROJECT

As mentioned previously, to improve mining and processing efficiencies while minimising overall environmental and social impacts, SRL intends to consolidate and operate three mining projects as a single mining operation under the approved Wilgespruit Project EMPr. Ongoing mine planning and synergy studies have resulted in an updated underground mine plan that incorporates the sequential mining of the Wilgespruit, Magazynskraal and Kruidfontein underground resource areas and maximises the use of existing facilities at PPM.

5.3 ENSURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES

Due to the nature of mining projects, impacts on biodiversity and the role that it plays in the ecosystem are inevitable. The proposed project footprint is located within the Dwaalboom Thornveld and the Central Sandy Bushveld which are both considered Least Concern (LC) ecosystems and are currently Moderately Protected.

According to the North West Biodiversity Sector Plan (2015) (NW BSP), the MRA and associated focus area fall within a Critical Biodiversity Area (CBA2). CBAs are defined as irreplaceable sites where no other options exist for meeting targets for biodiversity features, as well as best-design sites which represent an efficient configuration of sites to meet targets in an ecologically sustainable way that is least conflicting with other land uses and activities. These areas need be maintained in the appropriate condition for their category. Furthermore, the MRA and associated development footprint also fall within an Ecological Support Area (ESA2). These areas are, therefore, required to be maintained in an ecologically functional state to support CBAs and/or Protected Areas. Due to the potential occurrence of floral and faunal species of conservation concern (SCC) as listed for the province (NW BSP) and by the South African Red Data List (RDL), permits may be required to move or destroy any SCC if identified on site.

Within the project footprint, according to National River Freshwater Ecosystem Priority Areas (NFEPA) database, numerous artificial wetlands are located within the study area. These range from channelled valley bottom wetlands, unchannelled valley bottom wetlands and wetland flats. These wetland features are, however, indicated as heavily to critically modified (Class Z3).

As part of the EIA process, independent biodiversity, aquatic and soils specialists have been appointed to assess any potential additional impacts to the approved footprint. As per the approved EMPr for the Wilgespruit Project, measures to avoid or minimise potential impacts on terrestrial biodiversity, aquatic habitat and soil resources must be implemented. In addition, as part of the Triple Crown Project no additional surface area will be impacted.

Again, it is important to note that the Wilgespruit and Magazynskraal Projects have approved EMPr's and the proposed activities are within this approved footprint. In addition to this no surface infrastructure is proposed at either the Magazynskraal or Kruidfontein Projects.

5.4 PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT

It must be noted that as the Wilgespruit Project is an already approved project, the Triple Crown Project only takes into account the potential additional benefits. The additional benefits are discussed in the following sections.

5.4.1 National Policy and Planning Framework

5.4.1.1 A Minerals and Mining Policy for South Africa, 1998

South Africa's mining and minerals industry is backed by a vast and diversified resource base, which since its inception, has been the cornerstone of South Africa's economy and at the forefront of developmental opportunities. In order for mining to continue to be a core contributor to the economy and in the pursuance of the sustainable development of the nation's mineral resources, it is necessary to identify new resources. A key intent of A Minerals and Mining Policy of South Africa, 1998 states that government will: "Promote exploration and investment leading to increased mining output and employment". The Policy further states the following:

- The South African mining industry, one of the country's few world-class industries, has the capacity to continue to generate wealth and employment opportunities on a large scale.
- Mining is an international business and South Africa has to compete against developed and developing countries to attract both foreign and local investment. Many mining projects in South Africa have tended to be unusually large and long-term, requiring massive capital and entailing a high degree of risk.
- South Africa has an exceptional minerals endowment, and in several major commodities has the potential to supply far more than the world markets can consume."

The proposed project is in alignment with the policy as the proposed expansion into underground resources will result in continued operations at both PPM and the Wilgespruit Project with the consequent prolonged economic benefits for the North West and South Africa in general.

5.4.1.2 National Development Plan, 2030

The NDP, 2030 provides the context for all growth in South Africa, with the overarching aim of eradicating poverty and inequality between people in South Africa through the promotion of development. The NDP, 2030 provides a broad strategic framework, setting out an overarching approach to confronting poverty and inequality based on the six focused and interlinked priorities. One of the key priorities is "faster and more inclusive economic growth".

In order to transform the economy and create sustainable expansion for job creation, an average economic growth exceeding 5% per annum is required. One of the approaches to achieve this includes increasing exports by focusing on areas where South Africa already has natural endowments and comparative advantage, such as mining.

Notwithstanding the above, it is also acknowledged that environmental challenges are in conflict with some of these development initiatives. As such, it is emphasised that there is also a need to:

- Protect the natural environment;
- Enhance the resilience of people and the economy to climate change;
- Reduce carbon emissions in line with international commitments;
- Make significant strides toward becoming a zero-waste economy; and
- Reduce greenhouse gas emissions and improve energy efficiency.

The NDP, 2030 identifies the “minerals and metals cluster” (which encompasses all mining and quarrying activities, supplier industries to the mining sector, and downstream beneficiation of mined minerals) as a sector with substantial potential for growth stimulation and/or employment. It is pointed out that South Africa must exploit its mineral resources to create employment and generate foreign exchange and tax revenue.

The proposed project directly relates to the exploitation of mineral resources thereby contributing to the minerals and mining industry and providing socio-economic benefits.

5.4.1.3 Department of Mineral Resources and Energy Strategic Plan, 2020-2025

The existence of the DMRE is based on its ambition of being a leader in the acceleration of South Africa’s economic growth through the sustainable development of its mining and energy sectors. In the foreword of the Executive Authority’s Statement contained in the DMRE Strategic Plan, 2020-2025, it notes that the DMRE’s ambition “will be operationalised by focussing on regulating, transforming and promoting the mining and energy sectors ... and ensuring that all South Africans derive sustainable benefit from the country’s mineral wealth”.

The proposed project will contribute directly to the mining and minerals sector through the provision of job and procurement opportunities.

5.4.1.4 New Growth Path, 2011

The New Growth Path, 2011 reflects the commitment of government to prioritise employment creation in all economic policies and sets out the key drivers and sectors for employment which will be the focus of government. The sectors identified for prioritisation include infrastructure, agriculture, mining, manufacturing, tourism and the green economy.

Employment and economic development have the potential to improve livelihoods of individuals living in the local area through increased disposable income for individuals and households and the flow of revenue into local services and support sectors. However, the aforementioned employment opportunities are subject to change.

5.4.2 Regional and Local Policy and Planning Framework

5.4.2.1 North West Provincial Spatial Development Framework, 2016

The North West PSDF, 2016 sets out the key spatial challenges faced by the province and the proposed spatial policies, which have been formulated to address these challenges. As such, it supports the spatial development vision to achieve the North West Development Plan, 2030.

Five strategic objectives have been identified to provide foundation for spatial development strategies in the North West. These objectives are outlined below:

- Strategic Objective 1: Focus development on regional spatial development initiatives, development corridors, development zones and nodes;
- Strategic Objective 2: Protect biodiversity, water and agricultural resources;
- Strategic Objective 3: Promote infrastructure investment;
- Strategic Objective 4: Support economic development and job creation guiding the spatial development pattern of the North West; and
- Strategic Objective 5: Balance urbanisation and the development of rural areas within the North West.

To achieve the high growth scenarios and strategic objectives above, seven development mechanisms were identified. These include land use planning and management, settlement planning, economic development, infrastructure investment, human resources development, facilitative governance and industrialisation. These mechanisms will ensure that the province enjoys high growth by shifting from social needs-based policy to infrastructure and economic growth-based policies.

The proposed project is considered to relate to the Strategic Objective 4. This is because the proposed project would support economic development through the provision of job and procurement opportunities within the region. Good environmental management on the site also supports Strategic Objective 2.

5.4.2.2 Bojanala Platinum District Municipality Integrated Development Plan, 2019-2020

The BPDM IDP, 2019-2020 is the principle strategic instrument guiding all planning, management, investment and development within the district in order to provide best solutions towards sustainable development. The vision of the BPDM IDP, 2019-2020, is to provide a model of cooperative governance for effective and efficient service delivery in partnership with local municipality and all stakeholders. In order to do so, the following priority issues and challenges within the district have been identified:

- Water and sanitation;
- Roads and storm water;
- Electricity;
- Land and housing;
- Economic development;
- Institutional development;
- Municipality health; and
- Social services.

The proposed project is considered to relate to the priority issue 5 as the proposed Triple Crown Project would support economic development through the provision of jobs and procurement opportunities within

the region. As indicated previously, employment and economic development have the potential to improve livelihoods of individuals living in the local area through increased disposable income for individuals and households and the flow of revenue into local services and support sectors. The degree to which this impact would benefit local people and communities depends on the number of new opportunities realised locally and the manner in which income is used to benefit households and individuals.

5.4.2.3 Moses Kotane Local Municipality Integrated Development Plan, 2021-2022

The MKLM IDP, 2021-2022, is the principle strategic instrument guiding all planning within the local municipality. The MKLM IDP, 2021-2022, identified recurring issues within the municipality, with the main focus of developing strategic objectives and aligning them to six Key Performance Areas. These Key Performance Areas are as follows:

- Basic Service Delivery and Infrastructure Development.
- Municipal Transformation and Organisational Development.
- Local Economic Development.
- Spatial Rationale.
- Good Governance and Public Participation.
- Municipal Financial Viability and Management.

The proposed project relates to Key Performance Area 3 as the proposed Triple Crown Project would support economic development through the provision of job and procurement opportunities within the region.

6. PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

The EA that is required for a period of 40 years based on the current anticipated LOM.

7. PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED ALTERNATIVE

7.1 MITIGATION HIERARCHY

Implementing the mitigation hierarchy is crucial when considering alternative sites and alternative infrastructure layouts.

The mitigation hierarchy is defined as:

- **Avoidance:** measures taken to avoid creating impacts from the outset, such as careful spatial or temporal placement of elements of infrastructure, in order to completely avoid impacts on certain components of biodiversity.
- **Minimisation:** measures taken to reduce the duration, intensity and / or extent of impacts (including direct, indirect, and cumulative impacts, as appropriate) that cannot be completely avoided, as far as is practically feasible.
- **Rehabilitation/restoration:** measures taken to rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and/ or minimised.
- **Offset:** measures taken to compensate for any residual significant adverse impacts that cannot be avoided, minimised and / or rehabilitated or restored, in order to achieve no net loss (NNL) or a net gain (NG) of biodiversity . Offsets can take the form of positive management interventions such as restoration of degraded habitat, arrested degradation, or averted risk, protecting areas where there is imminent or projected loss of biodiversity.

7.2 DETAILS OF ALL ALTERNATIVES CONSIDERED

This section describes land use or development alternatives, alternative means of carrying out the operation, and the consequences of not proceeding with the proposed Triple Crown Project.

The main project alternatives considered include:

- Locality;
- Site alternatives;
- Activity/ technology alternatives;
- Transportation of product; and
- The “no-go” alternative.

7.2.1 Location Alternatives

SRL through its operating subsidiaries (PPM, IBMR, C&L and Richtrau) already holds the Mining Rights for the area and as such locality alternatives were not considered. In addition, mining activities are constrained by the ore body and therefore the mine plan for the Kruidfontein Mining Right Application does not have significant possible alternatives.

7.2.2 Site Alternatives

The proposed changes relate to optimising and consolidating already approved mining operations and thus no additional sites were considered to minimise additional impacts. The layout of the East Portal has been amended to be better able to access the approved underground workings.

7.2.3 Activity/ Technology Alternatives

No alternatives have been considered as the proposed project relates to optimising and consolidating approved mining operations and incorporating adjacent contiguous underground mining areas. Approved mining methods remain as is.

7.2.4 Transportation Alternatives

The use of haul roads for the duration of the project were assessed against the installation of the RopeCon after a number of years once mining reaches steady state. Table 7-1 looks at the various advantages and disadvantages of each scenario.

Table 7-1 Alternative Transportation for Triple Crown Project

Scenario	Advantages	Disadvantages
Haul road for LOM	No additional construction required for the RopeCon.	Large fuel requirements. High cost of running the mining fleet. Traffic noise. Air emissions.
Haul road for approximately 6 years, then installation of RopeCon	Runs on electricity, requires smaller volumes of diesel than trucks. Low friction. Low maintenance at single maintenance point. Reduced noise. Minor spillage carry-over. Long belt life and accurate tracking.	Potential visual impacts. Potential bird impacts. Potential dust emissions.

Due to the high cost and associated impacts with using haul roads for the LOM, the installation of the RopeCon from the East Portal to the PPM RoM pad is the preferred option. The RopeCon systems will be delayed until full production is reached. Until then, surface trucking will be used.

7.2.5 The “No-Go” Alternative

The assessment of the “No-Go” alternative requires a comparison between the option of proceeding with the proposed Triple Crown Project or not proceeding, thus leaving the approved operations unchanged.

Leaving the approved operations unchanged means that additional mining at Kruidfontein would not go ahead and the Wilgespruit Project operations would not be optimised and create additional LOM and prolonged employment for local communities. In addition, the existing mineral processing facilities and services at PPM would not be maximised and the efficiency of shared services would not be realised.

The proposed Wilgespruit Project will be constructed within the already approved footprint and will not generate significant additional impacts to sensitive receptors.

In summary, the proposed Triple Crown Project would likely contribute positively to the livelihoods of the community through employment and skills development, while having relatively few significant impacts on sensitive receptors.

7.3 DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED

This section describes the public participation process (PPP) undertaken during the S&EIA. The PPP was undertaken in accordance with the requirements of Chapter 6 of the EIA Regulations. In addition to this, consideration was also given to the public participation guideline in terms of the NEMA (2017).

Table 7-2 PPP to be undertaken as part of the Scoping and EIA Process

Step	Detail
Pre-Application Phase	
DMRE Pre-application meeting	<p>Pre-application meeting was held with the DMRE via Microsoft Teams on 15 September 2020. The purpose of this meeting was:</p> <ul style="list-style-type: none"> • To provide information pertaining to the project; • To outline the motivation and alternatives considered; • To provide an overview of the environmental process relevant to the project; • To provide an overview of the existing status of the environment; • To outline and obtain input on the potential biophysical, cultural and socio-economic impacts; and • To outline and obtain input on the planned public participation process. • A copy of the pre-application meeting minutes is included in Appendix C.
EA Application Phase	
EA application submission	Submission of this NEMA EA application to the DMRE.
Notification of commenting authorities and I&APs undertaken to date	
Desktop social scan	The identification of I&APs was achieved by undertaking a desktop social scan. This consisted of an update to the existing I&AP database and verification of I&APs' and authority (competent and commenting) details through engagement with traditional authorities, ward councillors and mine community liaison officer.
Land claims commissioner consultation	<p>The Department of Rural Development and Land Reform (DRDLR) (Land Claims Commissioner) in North West has been contacted to confirm if there were any land claims on the farms Tuschenkomst 135 JP and Witkleifontein 136 JP. The Land Claims Commissioner has confirmed that as of 21 April 2022 no land claims could be found on the database.</p> <p>Refer to Appendix E for a copy of correspondence with the land claims commissioner.</p>
Focussed Meetings with the Commenting Authorities, Tribal Council and Ward Councillors.	<p>A meeting with the Royal Family took place on 21 June 2021 and during this meeting it was reiterated that the project leaders would visit the villages in order to avoid unrest in the community.</p> <p>A meeting with the BBK Traditional Committee/ Kgosanas took place on the 24th of June, however the meeting was derailed due to issues regarding local recruitment and procurement and a new meeting was</p>

Step	Detail
	scheduled for the 25th of August 2021 wherein the PPP was discussed and a plan devised in terms of how the public participation sessions.
Background Information Documents (BID)	<p>The BID (English and Setswana) was compiled by MTS and contained the following detailed information:</p> <ul style="list-style-type: none"> • Location and a project description; • Legislative process and requirements; • Specialist studies to be conducted; • A list of competent authorities; • Triggered listed activities in terms of NEMA; and • The consultation/registration process with contact details of the stakeholder engagement office and project team members' details. <p>These documents were distributed during community meetings on the 22 and 29 November 2021.</p>
Notification Letters	<p>A notification letter was emailed to all I&APs on 8 June 2021.</p> <p>An additional notification letter was sent to Kgosi Nyalala Pilane informing him of the project on 22 June.</p> <p>Further notification letters were resent on the 4th of May 2022 to I & APs.</p>
Site Notices	<p>Site Notices were placed in strategic locations as directed by the Tribal Authority on the 26th and 28th of April 2022. The locations are as follows:</p> <ul style="list-style-type: none"> • Segakwana • Dikwepi • Welgeval • Modderkuil • Magong • Motlhabe • Magalane • Ntswana-Le- Metsing • Nqweding • Legkraal • Moruleng
Newspaper advertisement	Newspaper Adverts were placed in the Rustenburg Herald and the Platinum weekly for the edition dated 13 May 2022.
Face to Face meetings	Public meetings with affected communities were held on the 22 and 29 November 2021 to introduce the PPP to I&APs in the following communities Disake, Dwarsberg, Mable A Podi, Ramoshibitswane and Seggakwana.
Electronic Communication	<ul style="list-style-type: none"> • Notification was sent by email to I&APs. • Supporting documents are hosted on the Web portal: mts-engage.co.za/sedibelo, where I &AP can register and download information. • I&APs can register by dialling *134*8624# via mobile phones.

Step	Detail
Planned Public Participation: Review of the Scoping and EIA Reports	
Community based Information booth	An information booth will be manned in a place that is easily accessible for I&APs (for a minimum of 4 days) with the distribution of FAQs and/or pamphlets and/or newsletters in both English and Setswana
30 Day public review – Scoping Report and Non- Technical Summaries (NTS)	<p>Digital Copies: The Scoping Reports will be made available on both the SLR and SRL websites or other Cloud Based Services. The Scoping Reports will also be made available for review on a website that is accessible from internet-capable mobile phones and other devices without data charges. The NTS (in English and Setswana) will also be available on the SLR, SRL and the data free website and could, on request, be sent directly via email or WhatsApp.</p> <p>Hard Copies: Hard copies of the Scoping Report will be delivered to TAs for their review. Hard copies of the Scoping Report will be placed at the following locations for review: Tribal Authority offices, Local Municipality Office and local library. Hard copies of the NTS will also be provided to TAs to disseminate to the community members as required. Hard copies of the NTS will be made available on request from I&AP – requests can be made via online communication channels for hard copies to be distributed.</p>
30 Day public review - Environmental Reports and Non-Technical Summaries (NTS)	<p>Digital Copies: The EIA Reports and specialist reports will be made available on both the SLR and SRL websites or other Cloud Based Services. The EIA Report and specialist reports will also be made available for review on a website that is accessible from internet-capable mobile phones and other devices without data charges. The NTS (in English and Setswana) will also be available on the SLR, SRL and the data free website and could, on request, be sent directly via email or WhatsApp.</p> <p>Hard Copies: Hard copies of the EIA Report will be delivered to TAs for their review. Hard copies of the Scoping Report will be placed at the following locations for review: Tribal Authority offices, Local Municipality Office and local library. Hard copies of the NTS will also be provided to TAs to disseminate to the community members as required. Hard copies of the NTS will be made available on request from I&AP – requests can be made via online communication channels for hard copies to be distributed.</p>

Step	Detail
Submission of the Scoping and EIA Reports to the DMRE for decision making purposes	
Final submission to the DMRE for decision making	Once all the PPP has been undertaken, a final report with all relevant information will be submitted to relevant authorities.
I&AP notification of DMRE decisions	
Notification of DMRE decisions	The decision of DMRE – and the reasons thereof – will be uploaded onto the SLR’s website, and all the registered I&APs will be informed via email, WhatsApp groups and other modes of communication as agreed upon.

7.3.1 Summary of the Issues Raised by I&APs

The issues and concerns raised by I&APs and regulatory authorities during the pre-application phase to date have been compiled into a Comments and Response Report (CRR) (see Appendix E. Also included in the CRR are responses to the questions or issues raised as well as where these have been/ will be addressed.

The main themes to come out of the PPP thus far are summarised below:

- Employment opportunities with the emphasis on the local villages (Sentiment is that locals are being overlooked in employment at the mine);
- Training for community members so that they can access employment at the mine with requisite skills required by PPM (Building of a training centre within the project area so people can be trained and access opportunities);
- Business Opportunities for local entrepreneurs and the development of these entrepreneurs;
- Need for Business Forum;
- Plan to assist women in the age group of 35-50 years of age in terms of employment opportunities at the mine (sentiment is that there is not enough representation of women at the mine);
- Road and Water infrastructure was raised as a concern and a need for the communities; and
- Functioning Health Care system/Clinic that caters to the needs of the community (with medication being available at that clinic/centre, without having to go to Mogwase to obtain the medication).

7.4 THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE PROJECT AND THE ALTERNATIVES

7.4.1 Biophysical Attributes

7.4.2 Climate

The Triple Crown Project falls within the Highveld Climatic Zone. Of the mean annual precipitation, 85% falls during summer thunderstorms. The thunderstorms generally occur every three to four days in summer and are of short duration and high intensity.

Rainfall for the site was considered from available South African Weather Services (SAWS) information and the Department of Water and Sanitation (DWS) stations. The mean annual precipitation (MAP) of 592 mm was recorded within the area in 2019. This MAP falls within the expected range of rainfall for an area such as the Pilanesberg where the elevated topography increases total rainfall. Evaporation records show a mean annual evaporation of 1 532.2 mm. Average evaporation figures exceed average rainfall figures by 940 mm.

These high evaporation figures indicate that the area is a water deficit area. When considering the duration and frequency of storm events, available data shows that the 1:50 year and 1:100 year 24-hour storm intensities of 151.5 mm and 169.2 mm, respectively, are close to the largest one day rainfall event recorded in 78 years, which was 145.8mm.

Temperatures in this climatic zone are generally mild, but low minima can be experienced in winter due to clear night skies. Between 2013 and 2015, temperatures recorded within PPM ranged from 1.1°C (in winter) to 34.6°C (in summer) with average temperatures of 19.5°C (SLR, 2019).

The prevailing wind direction is from the eastern sector. Strong winds can be experienced during the day from the east and north, with a decrease in the wind velocity during the night-time. During the summer months, stronger winds are recorded from east and east-northeast. The autumn and spring months show a similar pattern to summer months with prevailing winds from the eastern sector. During spring and winter months an increased frequency of strong winds are observed from the south-east and south-southeast. In general wind speeds are below 5.2 m/s and are not able to lift dust particles from the ground, however, this is dependent on the material type as fine dust and dust that is already airborne can be carried by wind speeds of less than 5.2 m/s (SLR, 2019).

7.4.3 Geology

Regional Geology

The Bushveld Complex (BC) is the world's largest known layered mafic igneous complex, with an exposed surface area of some 67 000 km². The BC is centred on the Limpopo Province and extends into the Mpumalanga, North West and Gauteng Provinces in South Africa. It is one of three layered igneous complexes in the world where PGE are currently mined as a primary product.

The BC is primarily subdivided into the more or less coeval (2055 Ma) Rustenburg Layered Suite (RLS) and Lebowa Granite Suite (LGS), which consist of ultramafic to mafic layered rocks and granitoids, respectively. The RLS is exposed in a series of lobes, namely the Western, far Western, Eastern, Northern and Southern (Bethal) lobes, which intruded the Proterozoic volcano-sedimentary rocks of the Transvaal Supergroup and overlying Rooiberg Lavas. The younger volcano-sedimentary sequence of the Paleozoic Karoo Supergroup overlies the central, northern and southern portion of the Complex.

The RLS reaches a maximum thickness in the order of 9 km in the north-eastern part of the complex, and is stratigraphically subdivided from the base upwards into the following zones:

- The Marginal Zone, which consists of contaminated norites, and is up to tens of metres thick where developed
- The ultramafic Lower Zone, which has a maximum thickness of approximately 1.7 km
- The ultramafic, chromitite-bearing Lower Critical Zone, which hosts large chromium reserves in the LG and MG series of chromitite layers
- The Upper Critical Zone, which consists of alternating norite, pyroxenite, anorthosite and chromitite layers, and has a thickness of up to 600 m. The Critical Zone is host to the two principal PGE-bearing layers, namely the UG2 chromitite and the Merensky Reef. The Merensky Reef lies near the top of the Critical Zone, close to the contact with the overlying Main Zone. The UG2 is situated in the footwall of the Merensky Reef, the vertical separation of the two reefs varying from 20 to 400 m

from one part of the Bushveld Igneous Complex (BIC) to another. In the north-western part of the Complex, the PGE-bearing Pseudo Reef package occurs between the UG2 and Merensky Reefs

- The noritic to gabbro-noritic Main Zone, which is up to 2 800 m thick and contains marker layers such as the Porphyritic Gabbro Marker, approximately 220 metres above the Merensky Reef, and the Main Mottled Anorthosite, approximately 500 metres above the Merensky Reef
- The ferrogabbro-noritic to ferrodioritic Upper Zone is up to 2 000 m thick. It contains in the order of 21 magnetite layers, the lowermost of which host the world's largest vanadium reserves.

Not all zones are necessarily present or fully developed at any given locality.

Local Geology

The western lobe of the BC can be geographically subdivided into two sectors, separated by the younger (1 382 Ma) Pilanesberg alkaline intrusive complex. There are significant facies differences between the northern (Swartklip) and southern (Rustenburg) sectors, specifically in terms of the Upper Critical Zone stratigraphy between the UG2 and Merensky Reefs. The Triple Crown Project is situated in the southern part of the Swartklip sector, immediately north of the Pilanesberg Complex.

In broad terms, the project area is underlain from west to east by progressively younger rocks of the RLS. The lowermost exposed unit is the Upper Critical Zone, near the top of which are the two important platinumiferous layers, the UG2 chromitite layer and the Merensky Reef. The Upper Critical Zone is overlain by the Main Zone, which suboutcrops over most of the project area.

7.4.4 Topography

The topography slopes gently towards the north-east of the study area. Topographic elevation varies between 1 060 to 1 100 metres above sea level (masl). The study area is relatively flat at an average elevation of 1 080 masl.

7.4.5 Groundwater

Groundwater is a valuable resource and is defined as water which is located beneath the ground surface in soil/rock pore spaces and in the fractures of lithologic formations. The geology of the area forms several hydraulic zones that are controlled by the lithological units, structural geology and surface water features. These zones include perennial river aquifer, weathered aquifer, weathering and fracturing of the topographical low-lying areas forming an important aquifer zone for the community water supply, fault and fracture zones forming major aquifers, weathered norite/gabbro, fractured soil bedrock aquifer; and dolerites that act as flow impediments.

Aquifer Classification

According to the South African Aquifer Management Classification system (Exigo, 2020), the alluvial aquifer can be classified as a Non Aquifer System, while the main local (upper) aquifer (weathered Norite- Gabbro) can be classified as a Non to Minor Aquifer System (< 1 L/s borehole yields) that does not contain large quantities of water, nonetheless, it is important in supplementing the water supply to local communities.

Localised Major Aquifer zones with yields greater than 5 L/s are possible in large scale fault/fracture zones such as the Frank Fault and the secondary faults interbedded throughout the area. These zones are targeted for the siting and development of the mine water supply boreholes.

Groundwater Levels and Flow

The groundwater is influenced by the non-perennial Wilgespruit, as well as the Motlhabe, Lesele, Bofule, and Lesobeng drainages. The groundwater flows from the southwest towards the northeast, away from the Pilanesberg complex (Figure 7-1).

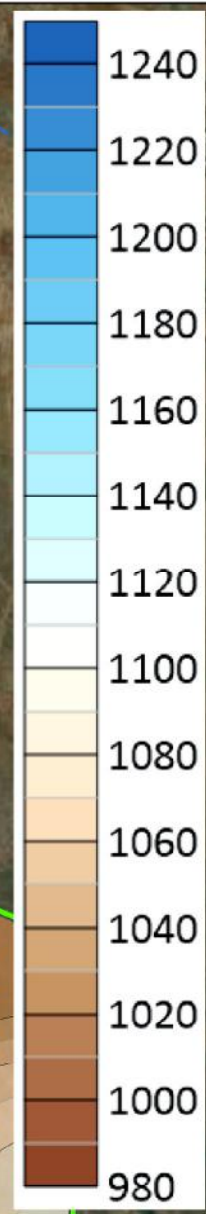
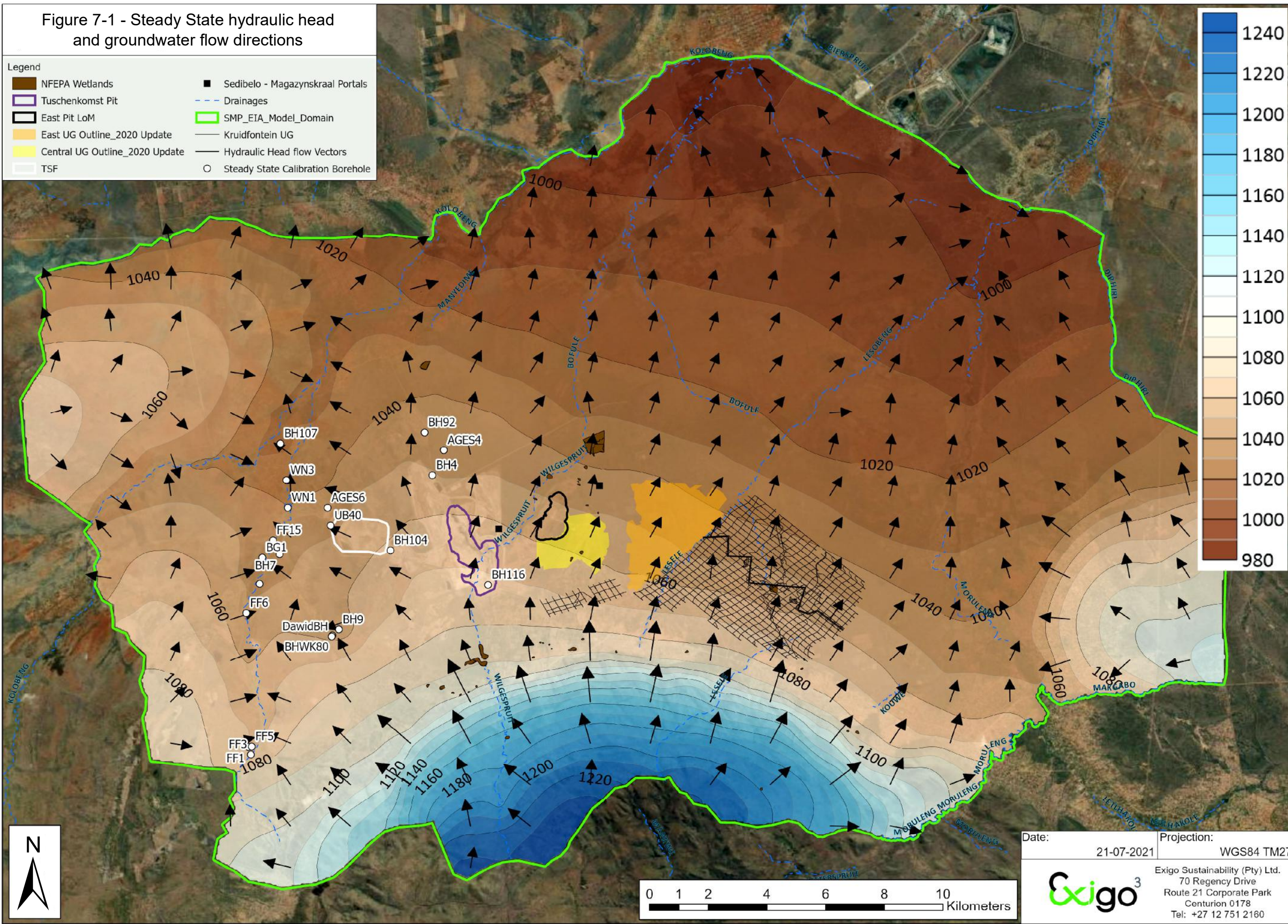
A total of 64 boreholes were used to conduct the statistical pre-mining baseline analysis of groundwater levels. A baseline P50 and P95 water level depth range was determined using groundwater level data pre-mining (2005 – 2009) shows:

- P05 depth to groundwater level at 9.69 metres bgl.
- P50 depth to groundwater level at 19.4 m bgl.
- P95 depth to groundwater level 38.5 m bgl.

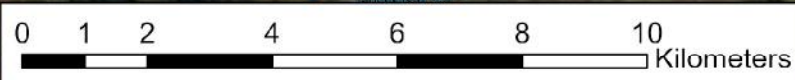
Figure 7-1 - Steady State hydraulic head and groundwater flow directions

Legend

- NFEPA Wetlands
- Tuschenkomst Pit
- East Pit LoM
- East UG Outline_2020 Update
- Central UG Outline_2020 Update
- TSF
- Sedibelo - Magazynskraal Portals
- Drainages
- SMP_EIA_Model_Domain
- Kruidfontein UG
- Hydraulic Head flow Vectors
- Steady State Calibration Borehole



Date: 21-07-2021	Projection: WGS84 TM27
Exigo Sustainability (Pty) Ltd. 70 Regency Drive Route 21 Corporate Park Centurion 0178 Tel: +27 12 751 2160	



Key aspects to note are:

- Regionally, water levels have remained constant, with the P50 time series levels showing a slight rise from 2008 to 2020. This is due to the severe drought conditions from 2004-2007.
- The P50 for the August 2020 water levels is 19.9 mbgl, 0.5 m higher than the original baseline P50 values. The water level rise and fall correspond well with wet and dry cycles determined by cumulative rainfall departures (CRDs). It is evident that recharge is active and has a notable influence on the rise of both the regional and local ground water levels.
- The P90 bandwidth of regional water levels is between 10 mbgl (P5) and 40 mbgl (P95).
- Water levels are skewed more to the P5 than P95 evidence for the influence of water supply abstractions at selected boreholes.

Hydrocensus

Boreholes are mainly distributed along perennial and non-perennial streams, local dykes and local faults. These are mainly concentrated to the western side of the Pilanesberg and the existing PPM. Boreholes within the area are largely used for monitoring and mining purposes as well as domestic and livestock watering (SLR, 2019).

A total of 98 boreholes and surface water locations were visited during the July 2020 hydrocensus and are summarised in Table 7-3. From these locations, a total of three were surface water locations and four were springs, located south of the site. Approximately 29 boreholes which account for 31% of the total boreholes visited were not in use, blocked, destroyed or unknown. A total of 33 boreholes (36%) visited were used for rural water supply (domestic, irrigation or livestock watering), and 9% of the boreholes were located inside the mine lease area and could not be visited.

Table 7-3 Summary of 2020 Hydrocensus Borehole Use

2020 Hydrocensus Borehole use	Total Boreholes	Total Boreholes (%)
Unknown	8	9%
Not in use/blocked/destroyed	21	23%
Monitoring - intermittent use	4	4%
Monitoring - borehole not in use	5	5%
Domestic and irrigation	14	15%
Livestock watering	2	2%
Rural water supply	17	19%
Inside Mine lease area (not able to visit)	8	9%
Mine Monitoring	12	13%
Total	91	100%

Based on historical data and the latest hydrocensus data, 354 locations (borehole, surface water and process water), were recorded between 2005 and 2020. The borehole density amounts to approximately 0.4 boreholes/km².

Groundwater quality

The monitoring at PPM provides a long-term indication of the water quality in the area with a 15-year record. An integrated baseline analysis was done for the mine process water, surface and groundwater environment and springs.

A total of 95 locations were sampled as part of the monitoring programme. The samples were analysed against 69 parameters. It was found that 31 (45%) of the total parameters have a SANS 241:2025 drinking water limit and 16 of these limits (52%) have been exceeded at least once. A test to trace elements and metals was completed. It was found that, Cl (Chlorine), Na (Sodium) NO₂-N (Nitrite nitrogen), pH, Al (Aluminium), Cr (Chromium), Fe (Iron) and Ni (Nickel) had low exceedance rates of less than 10% and therefore are not considered significant. The average F (Fluorine) concentration is 0.9 mg/L, which is just below the drinking water limit of 1 mg/L. The fluoride originates from the fluoride-rich geological environment (rhyolite and foyaite) upstream in the Pilanesberg-Intrusive Complex (PIC). Only the P95 statistical value exceeds either baseline or SANS 241:2015.

Spring Water Quality

There are four perennial springs located approximately 4km southwest of the project area (Figure 7-1). These springs formed because of a dyke compartmentalising groundwater and channelling baseflow to the surface as hydraulic pressure builds up upstream of the dykes. The following observations were made concerning the 2019/2020 water quality results for the springs:

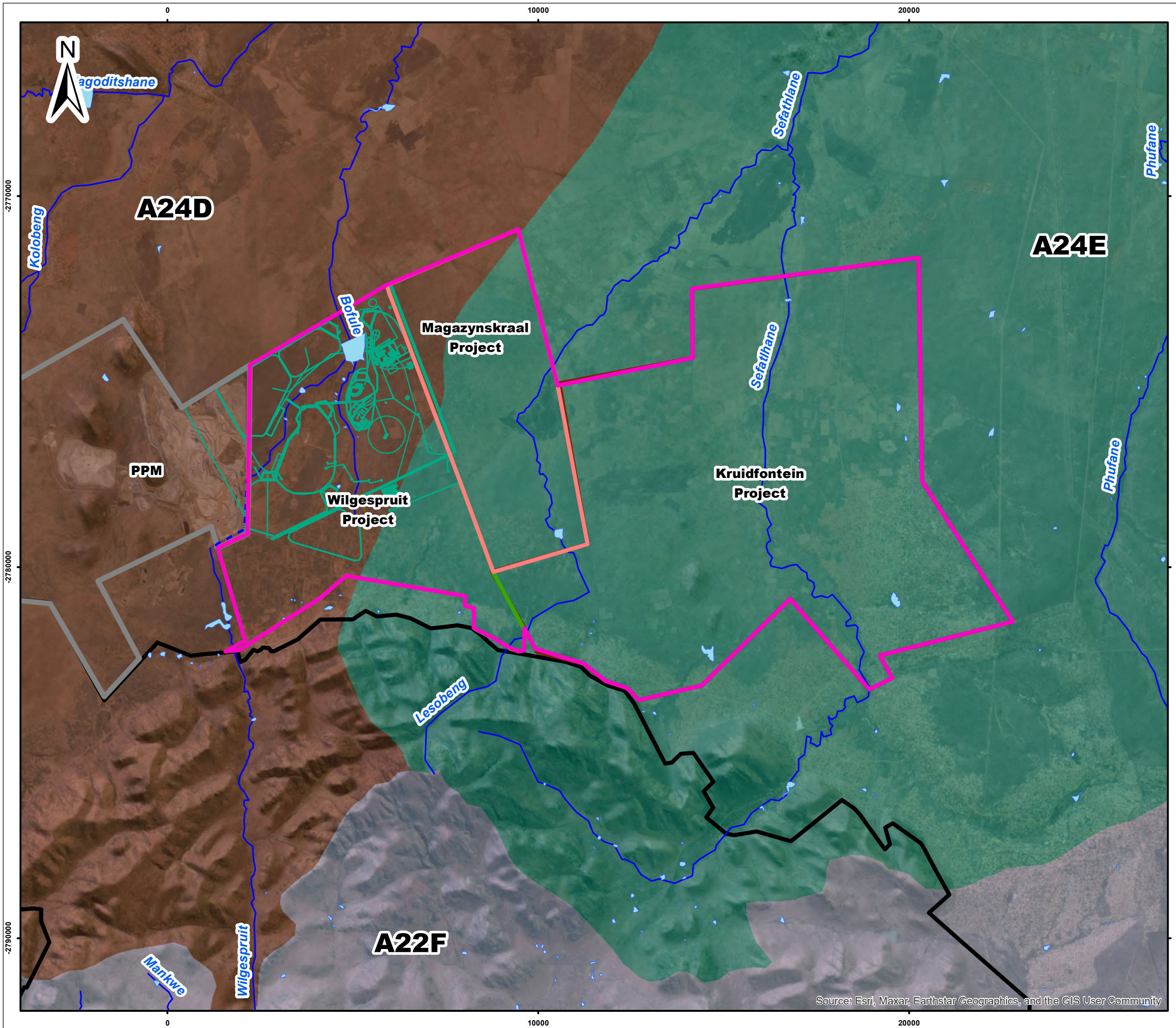
- A total of four locations were sampled.
- From the 53 parameters analysed, 28 (53%) have a SANS 241:2015 drinking water limit, 13 of these limits (46%) have been exceeded at least once.
- A total of nine parameters exceeded SANS 241:2015 limit in more than 60% of the samples taken. Of these nine, only the mean concentration of four (Cl, Na, EC, and TDS) parameters exceed their respective baseline concentrations. In almost all cases (except for SO₄), the baseline concentrations are higher than the SANS 241:2015 drinking water standard limits.
- The mean fluoride concentration of 48 mg/L is extremely high and originates from the fluoride-rich geological environment (rhyolite and foyaite) upstream in the PIC. The water from these springs is toxic and not fit for any human or animal use.
- The elevated Cl, Na, and Al is associated with alkaline geology of the PIC containing chlorides and feldspars. The TDS is resultant of the elevated parameters (Cl, Na and Al) while the Fe is associated with the Syenite intrusions.
- Mn is encountered in minor concentrations, with some sample occurrences above SANS 241:2015 limits. It is found as a free element in nature, and as a regularly occurring constituent in majority of soil types.
- Arsenic (As) was only detected in one of 12 samples, in which it equalled the SANS 241:2015 limit. This is not significant.
- Total Organic Carbon (TOC) and Turbidity also exceed their respective limits, but this can be attributed to accumulation of animals at these locations.

7.4.6 Surface Water

The proposed Triple Crown Area falls within the Crocodile West and Marico Water Management Area (WMA) with the major river catchment being the Crocodile River. The project falls within quaternary catchment A24D and A24E (Figure 7-2).

The Wilgespruit River which traverses the project area is influenced by the Pilanesberg mountain range and various smaller rocky outcrops. The river originates south of the project area and flows in a northerly and north easterly direction towards the Bofule River. The Bofule River flows into the perennial Bierspruit which then flows into the Lower Crocodile River to the west of Thabazimbi (Figure 7 3).

Surface water use by the communities locally is not an option as the Motlhabe to the west, Wilgespruit, as well as the Lesele, Bofule, and Lesobeng Rivers only flow periodically during wetter periods and the water quality is poor with elevated naturally occurring high fluoride.



- Legend**
- Pilanesberg National Park
 - Dams
 - Wilgespruit River Diversion
 - Rivers
- Quaternary Catchments**
- A22F
 - A24D
 - A24E
- Mining Operations**
- Triple Crown Project Area
 - Kruidfontein Project MRA
 - Magazynskraal Project
 - Wilgespruit Project
 - Approved Wilgespruit Project Infrastructure
 - Pilanesburg Platinum Mine

0 1 500
 Meters
 Scale: 1:100 000 @ A3
 Projection: Transverse Mercator
 Datum: Hartebeeshoek, Lo27

Kruidfontein MRA and Triple Crown Project

Figure 7-2

Regional Drainage



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720.19080.00006

2022/07/18

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

7.4.7 Terrestrial Biodiversity

A desktop analysis established that the study area has a high terrestrial sensitivity which is likely triggered by several attributes of the area which include an important CBA2, ESA2, freshwater ecosystem priority area quinary catchments, focus areas for land-based protected areas expansion and South African Protected Areas.

During the desktop analysis, several plant species, that are protected under Schedule 2 (Protected Species) of the North West Nature Biodiversity Management Act, 2009 (Act No. 9 of 2009) (NWBMA), were identified as having the potential to be located within the study area.

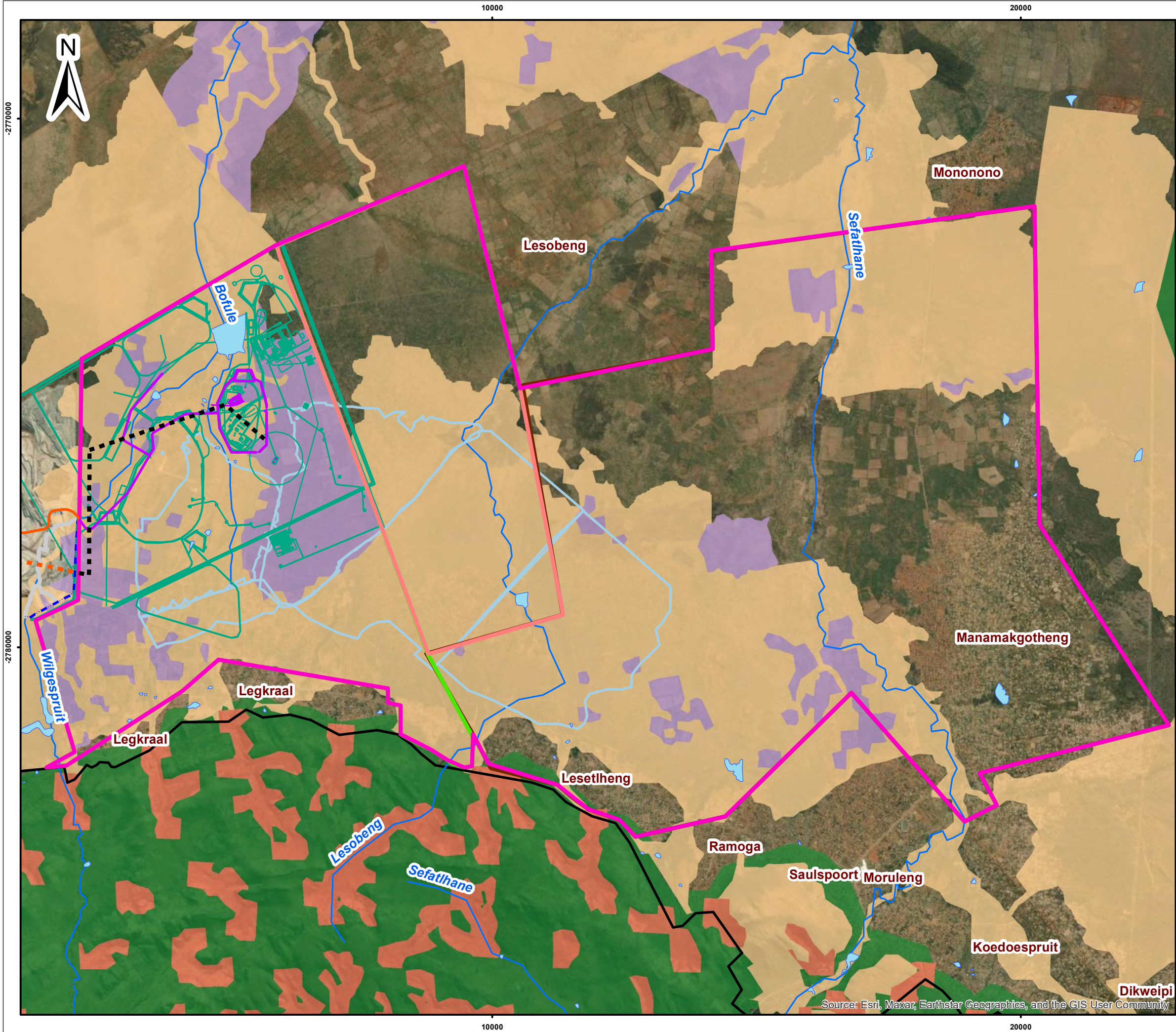
The study area is situated within the Central Bushveld Bioregion of the Savanna Biome. Two main vegetation types are found in the area: Dwaalboom Thornveld and the Central Sandy Bushveld.

- Dwaalboom Thornveld: Plains with layers of scattered, low to medium high, deciduous microphyllous trees and shrubs with a few broad-leaved tree species, and an almost continuous herbaceous layer dominated by grass species. *Vachellia tortilis* and *V. nilotica* dominate on the medium clays (at least 21% clay in the upper soil horizon but high in the lower horizons). On particularly heavy clays (>55% clay in all horizons) most other woody plants are excluded and the diminutive *V. tenuispina* dominates at a height of less than 1 m above ground. On the sandy clay loam soils (with not more than 35% clay in the upper horizon but high in the lower horizons) *Senegalia erubescens* is the most prominent tree. The alternation of these substrate types creates a mosaic of patches typically 1–5 km across, for example in the unit west of Thabazimbi.
- Central Sandy Bushveld: Low undulating areas, sometimes between mountains, and sandy plains and catenas supporting tall, deciduous *Terminalia sericea* and *Burkea africana* woodland on deep sandy soils (with the former often dominant on the lower slopes of sandy catenas) and low, broad-leaved *Combretum* woodland on shallow rocky or gravelly soils. Species of *Acacia*, *Ziziphus* and *Euclea* are found on flats and lower slopes on eutrophic sands and some less sandy soils. *A. tortilis* may dominate some areas along valleys. Grass-dominated herbaceous layer with relatively low basal cover on dystrophic sands.

Both the Dwaalboom Thornveld and the Central Sandy Bushveld are of LC. LC ecosystems have not experienced a significant loss of natural habitat or deterioration in condition.

Several faunal SCC have distribution ranges which encompass the study area, however, it is considered unlikely that any faunal SCC will permanently utilise the study area, due to the location of the study area within an existing mine setting and the limited habitat and food resources necessary to support faunal SCC.

The study area is located within a 10km radius of the Pilanesberg National Park Bird Area.



- Legend**
- Triple Crown Project
 - Kruidfontein Project MRA
 - Magazynskraal Project
 - Wilgespruit Project
 - Approved Wilgespruit Project
 - Proposed Wilgespruit Project
 - Proposed Ropecon
 - Proposed Underground Mining
 - Dams
 - Proposed PPM Infrastructure (Separate Application)
 - Rivers
 - Wilgespruit River Diversion
 - Pilanesberg National Park
- North West Critical Biodiversity Areas
- Critical Biodiversity Area
 - Critical Biodiversity Area
 - Ecological Support Area
 - Ecological Support Area

0 1 000
Meters
Scale: 1:70 500 @ A3
Projection: Transverse Mercator
Datum: Hartebeeshoek, Lo27

Kruidfontein MRA and Triple Crown Project

Figure 7-3
Biodiversity Importance of the Study Area in Accordance with the North West Biodiversity Sector Plan (2015)



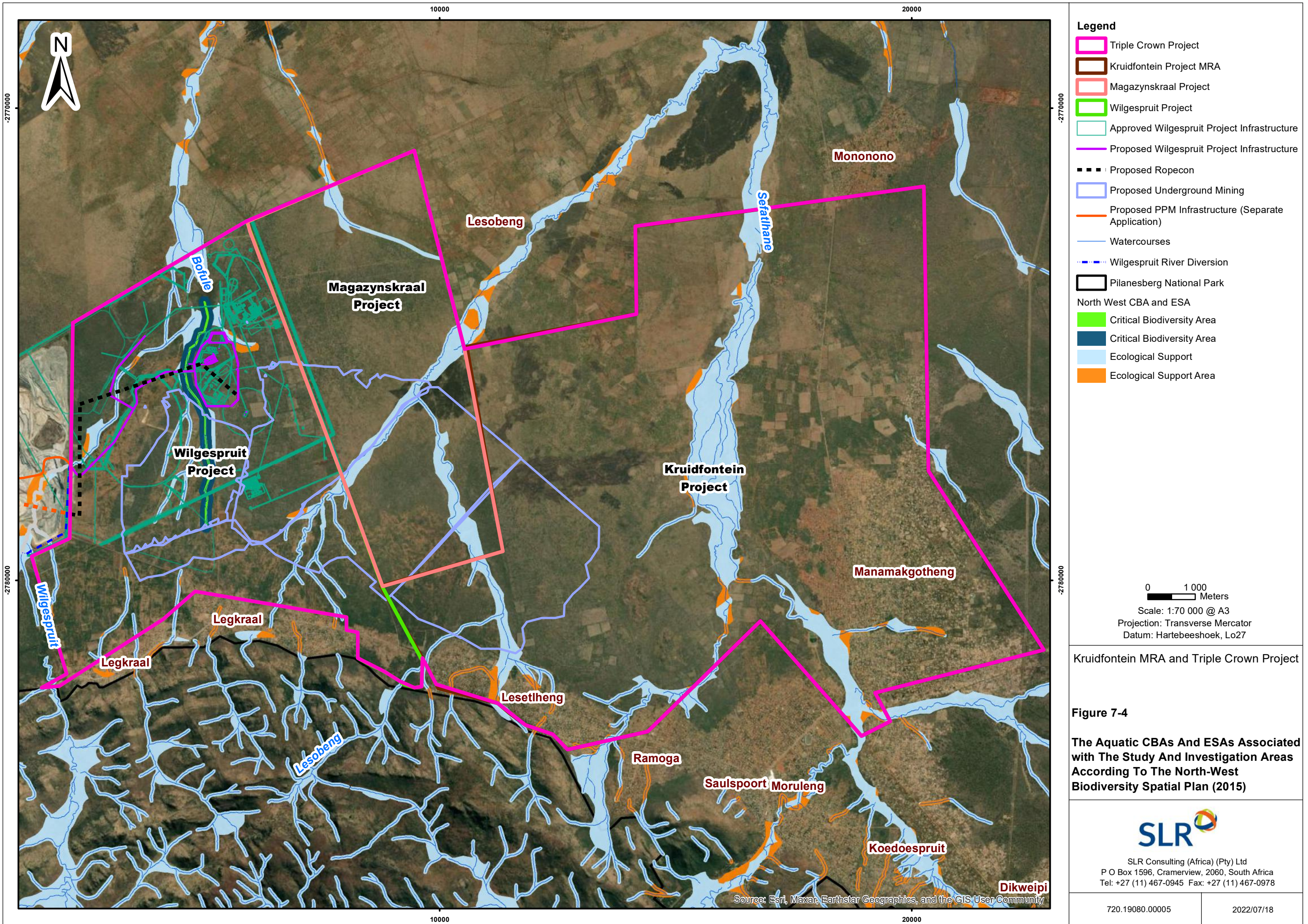
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Tel: +27 (11) 467-0945 Fax: +27 (11) 467-0978

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

7.4.8 Aquatic Biodiversity

According to the National River Freshwater Ecosystem Priority Areas (NFEPA) (2011) database, five rivers traverse the study areas (SAS, 2021). These are the Wilgespruit, Sefathlane, Lesobeng, Kolobeng and Bofule Rivers (Figure 7-2). The Wilgespruit is situated towards the south-west of the study area, specifically within the Wilgespruit Project area and confluences with the Bofule River towards the north of the study area. The Wilgespruit and the Bofule River are classified as largely natural (class B) according to the Present Ecological State (PES) (1999) database, however, the NFEPA (2011) database classifies the rivers as natural to largely natural (class AB) and moderately modified (class C) for both rivers. Digital satellite imagery, however, indicates that the rivers have been impacted (Wilgespruit has been diverted by historic mining activities) and therefore, the databases may not be an accurate reflection of the current ecological integrity. The Lesobeng River is situated within the central portion of the study area within the Magazynskraal Project area and drains in a south-west to north-eastern direction. According to the PES 1999 database, the Lesobeng River is classified as largely natural (class B), however, the NFEPA (2011) database classified the river as moderately modified (class C). The Sefathlane River is situated within the eastern portion of the study area within the Kruidfontein Project area and drains in a south to north direction. According to the PES 1999, the Lesobeng River is largely natural (class B), however, according to the NFEPA (2011) database, the river is moderately modified (class C). The Kolobeng River is situated approximately 6.7 km north-west of the investigation area. The Kolobeng River was classified as largely natural (class B) according to the Present Ecological State (PES) 1999, whilst NFEPA (2011) classifies the river as moderately modified (class C).

According to the NFEPA database (2011) there are numerous artificial wetlands that are located within the study area. These range from channelled valley bottom wetlands, unchannelled valley bottom wetlands and wetland flats. These wetland features are indicated as heavily to critically modified (Class Z3). Furthermore, three artificial seeps and one artificial channelled valley bottom are indicated within the investigation area and are indicated as heavily to critically modified (Class Z3).



7.4.9 Soils and Land Capability

The lithology of the Triple Crown Project area largely comprises of Gabbro rock formations whereas the small south eastern portion of the area located in the Kruidfontein Project Area is comprised of Granite rock formations. The landform type occurring is classified as a Plain Landform (LP), which means the terrain is suitable for agricultural activities (Zimpande, 2021).

The Soil and Terrain (SOTER) database indicates that the eastern part of the Project area comprises of Ferric Luvisols (clay mobilization) and Epipetric-Plinthosols (iron rich) whereas the western portion largely comprises of Calcic Vertisols (high in clay) (Figure 7-5). The dominant soils associated with the Triple Crown Project area are very high in clay and in some instances shallow soils with some rock outcropping. The high clay luvisols, plinthosols and vertisols may restrict root growth and promote waterlogging due to their high-water holding capacity, whereas the shallow leptosols have a lower water holding capacity due to the lack of a soil medium. These inherent soil characteristics render the soils to be of low agricultural potential without any supplementary irrigation, thus rendering the soils more suitable for cultivation under intensive management.

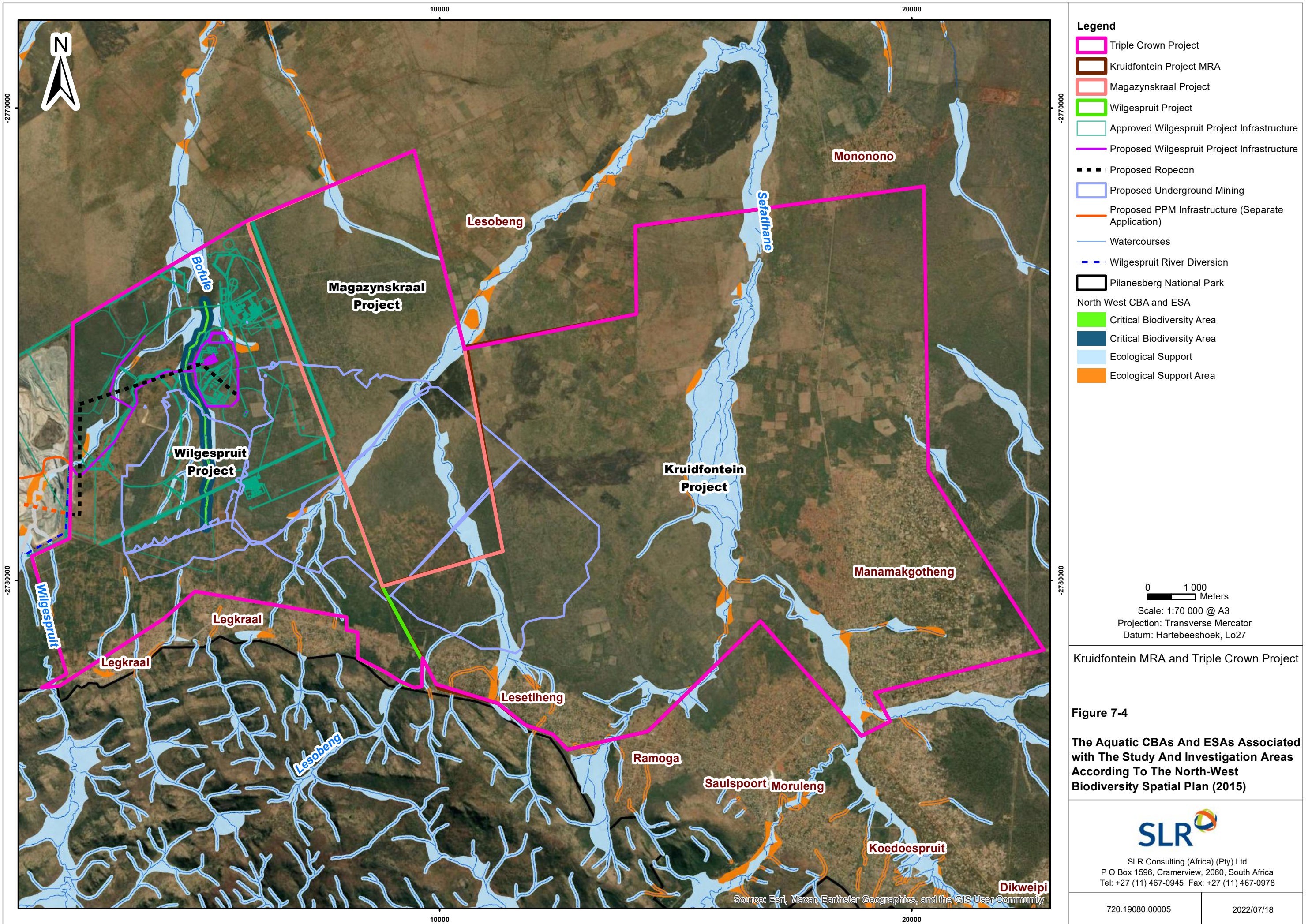
The land capability of the soils within the Triple Crown Project area is considered as marginal potential arable land (Class IV) and the remaining south eastern portion is moderate potential arable land (Class III).

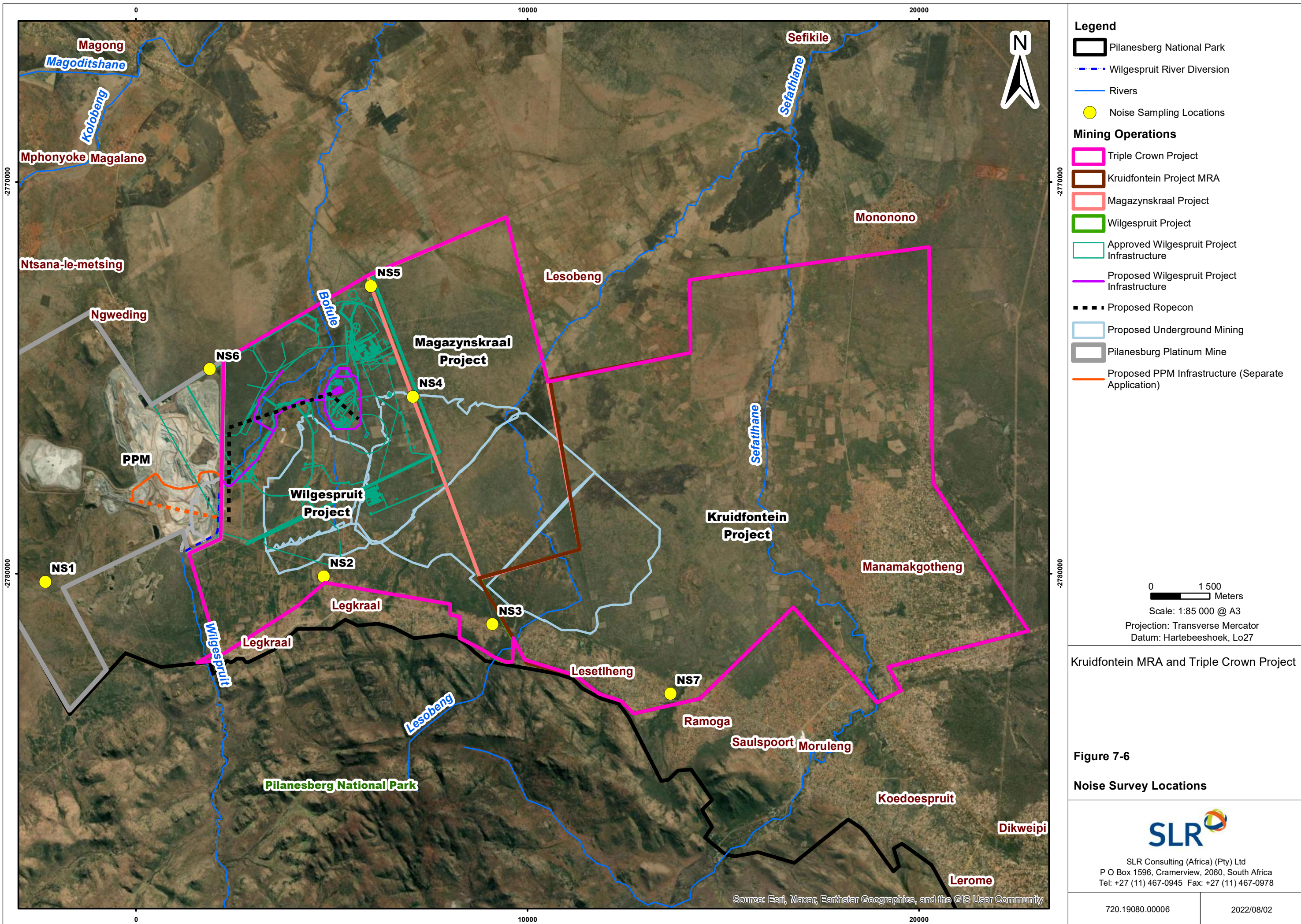
According to the Agricultural Geo-Referenced Information System (AGIS) database, the livestock grazing capacity potential is estimated to be approximately 5 hectares per large animal, which is considered not ideal for commercial grazing.

7.4.10 Noise

An environmental noise survey was conducted by Airshed between 19 and 21 May 2021. Environmental noise was sampled at seven locations as shown in Figure 7-6. The acoustic climate in the area is mainly influenced by localised activities such as birds and insects, domestic animals, livestock, vehicle traffic, mining activities and community noise (such as talking, whistling, music etc).

Day- and night-time noise survey results indicate that the acoustic climate in the study area is typical of rural environments, with slightly higher sound pressure levels recorded at the sampling locations close to busy roads with lots of vehicle traffic.





7.4.11 Air Quality

Air quality sampling currently undertaken at the neighbouring PPM includes dust fallout sampling at three residential locations, ten non-residential locations and directional dust fallout sampling at nine locations. In addition to the above, PM₁₀ concentrations are monitored at the Plant and Teeke sampling locations, while PM_{2.5} is monitored at the Mine offices. Dust fallout and particulate matter (PM) sampling locations are shown in Figure 7-7.

During 2019, the latest year with available data, one exceedance of the A NAAQS) limit value of 75 µg/m³ was recorded at the Teeke sampling location while no exceedances were recorded at the Plant sampling location. One exceedance of the NAAQS daily limit value for PM_{2.5} (40 µg/m³) was recorded at the Mine sampling location. The SA NAAQS allows for four exceedances per calendar year of the limit values, thus measured daily PM₁₀ and PM_{2.5} concentrations at all three sampling locations are in compliance with the SA NAAQS.

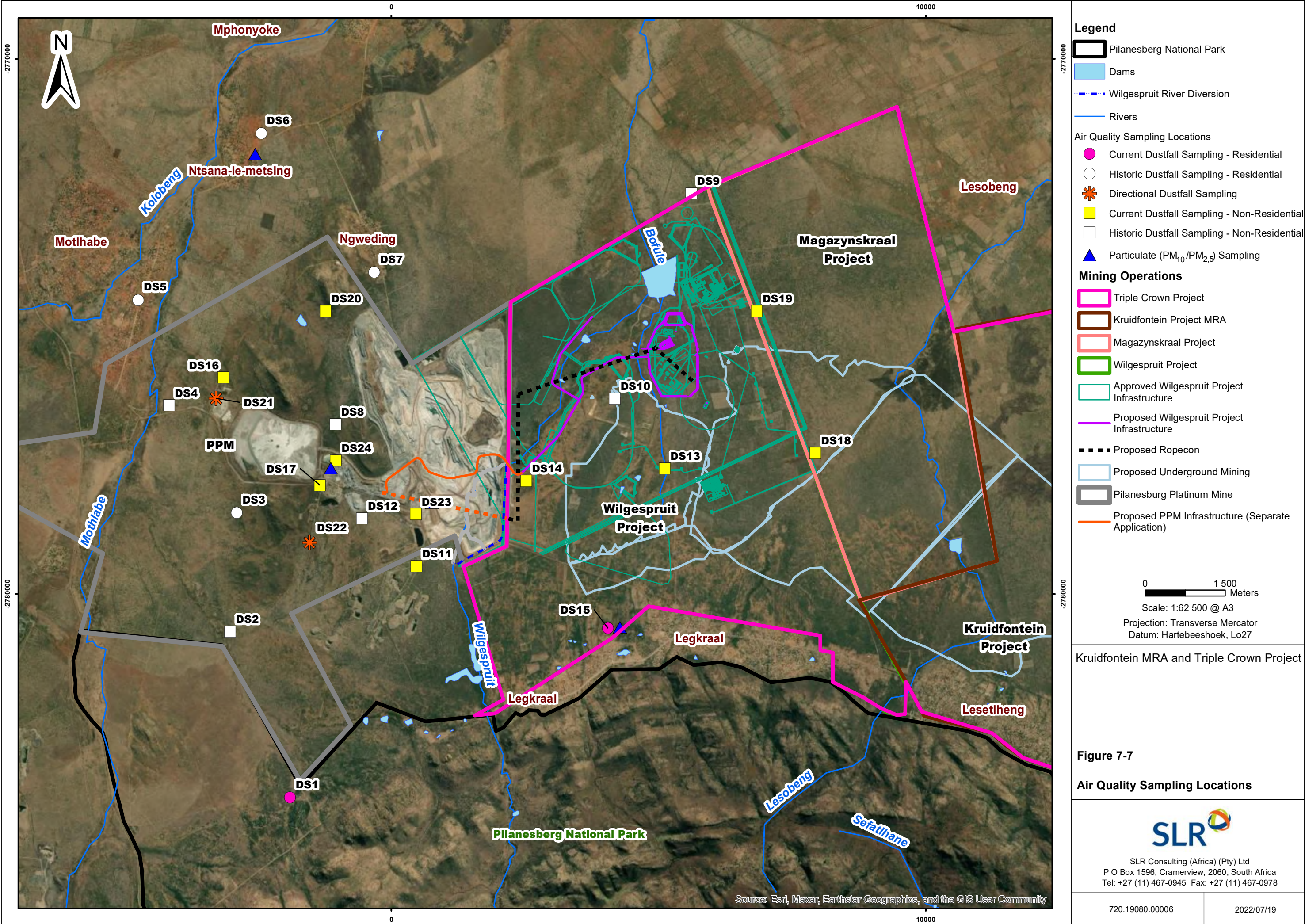
The sampled annual average PM₁₀ concentrations at the Plant and Teeke sampling locations during 2019 were 26.6 µg/m³ and 15.8 µg/m³ respectively, both of which are in compliance with the SA NAAQS of 40 µg/m³. The sampled annual average PM_{2.5} concentration recorded at the Mine monitoring location during 2019 was 15.3 µg/m³.

Sampled dust fallout rates at the three residential locations with adequate sampling results during 2020 exceeded the South African National Dust Control Regulations (SA NDCR) residential limit of 600 mg/m²/day at all three sampling locations. The SA NDCR allows for two non-consecutive exceedances of the limit per calendar year; recorded dust fallout at DS3 exceeded the residential limit during four months of the year while dust fallout recorded at DS5 and DS6 exceeded the limit for three months each.

While single monthly exceedance of the non-residential limit of 1 200mg/m²/day were recorded at five of the non-residential sampling locations during January 2020, sampled dust fallout at all five of these locations were still below the NDCR standard, as the NDCR allows for two non-consecutive exceedances of the limit value per year.

Existing sources of air pollution in the study area include mining and processing emissions from the current PPM operations, as well as stack vent and fugitive emissions from other mining activities in the area, including Ruighoek Chrome to the southwest, Union Platinum mine to the northeast as well as various other exploration phase mining operations in the area.

Other sources of emissions include household fuel combustion, biomass burning (veld fires), agricultural activities, wind erosion from open areas, dust entrainment from paved and unpaved roads, vehicle tailpipe emissions as well as other smaller emission sources.



Kruidfontein MRA and Triple Crown Project

Figure 7-7
Air Quality Sampling Locations



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Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

7.4.12 Socio-economic Attributes

7.4.13 Visual Resource, Landscape Sensitivity and Sense of Place

The northern part of the proposed study area is covered with various Acacia species and other woody species in varying densities associated with Dwaalboom Thornveld. Due to the clay soils, however, most tree species are stunted. The deterioration which is probably due to overgrazing of the grass sward has caused an increase in cover of the woody species, giving the study area north of the Pilanesberg its low bushveld or savannah character.

A series of small hills or koppies are distributed in the general arc west and north-west of the Pilanesberg. The vegetation on the koppies comprises mostly of mixed bushveld tree species with a relatively dense cover and are seemingly in better condition than the plain vegetation. The combination of topographic relief and healthy vegetation cover gives these hills an aesthetic appeal that contributes positively to the sense of place of the study area. The PPM mine is set amongst a series of three of these koppies as indicated in Figure 7-8.

Hills to the south, south-east and south-west of the site are associated with the Pilanesberg National Park. These are the dominant natural features in the area and can be seen from over 10 kilometres away due to the surrounding flat plains. Their obvious scenic beauty also contributes to the sense of place of the Triple Crown Project study area.

The Triple Crown Project site has a moderate to low scenic value rating due to its location within the 'degraded Dwaalboom Thornveld' and 'cultivated land' landscape character types as illustrated in Figure 7-8. When the full extent of the study area is considered (i.e. a visual envelope that incorporates most landscape types in any given view) a moderate to a high value is assigned with a relatively strong sense of place, due primarily to the presence of the Pilanesberg hills and koppies that protrude above the plain. The original natural beauty of the area has, however, been compromised by the existing mining and settlement activities. The impact of these (particularly the mining activities) is particularly evident at night when the bright lights are noticeable against the night sky.

Whilst the natural hills of the Pilanesberg National Park and their associated side slopes are considered to have a high visual quality, the conserved Dwaalboom Thornveld plains tend to be moderate in their scenic quality rating, due to the lack of topographic relief. The lowest rated landscape character type is mining and its associated infrastructural activities. The overall scenic quality of the study area is moderate to high.

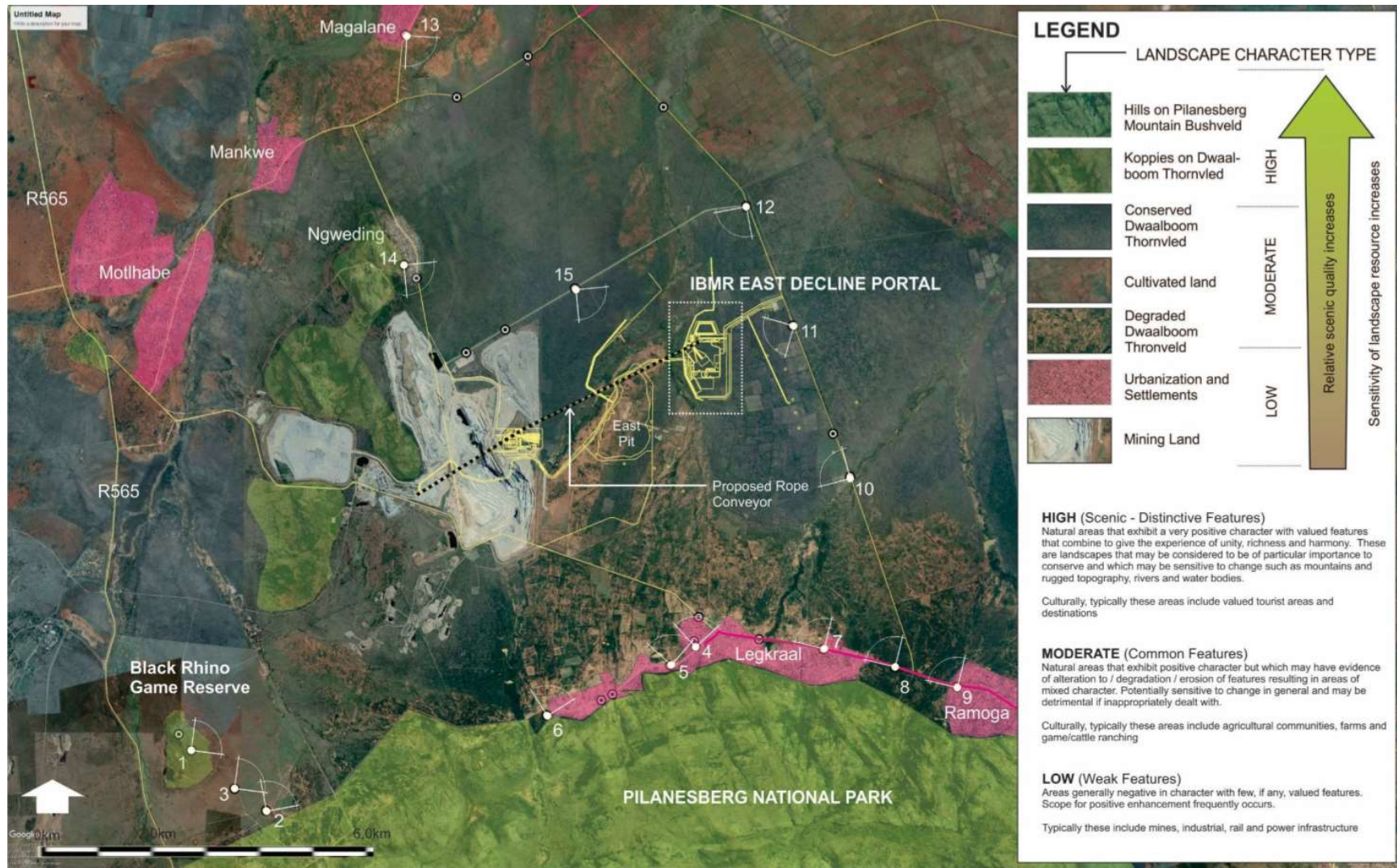


Figure 7-8 Landscape Character and Sensitivities of the Site (Source: GYLA, 2021)

7.4.14 Social Demographics

Baseline Context

Approximately 65% of North West residents live in rural areas, and the majority of residents speak Setswana as a first language, with English primarily spoken as second language. Mahikeng is the province’s capital, and other larger towns include Brits, Klerksdorp, Lichtenburg, Potchefstroom and Rustenburg. The province has four districts, each administering a number of local municipalities: Bojanala District (also sometimes referred to as Bojanala Platinum District), Ngaka Modiri Molema District, Dr Ruth Segomotsi Mompati District, and Dr Kenneth Kaunda District.

The main economic driver in the province is mining, which generates more than half of the province’s Gross Domestic Product (GDP) and provides jobs for a quarter of its workforce. Gold is mined at Klerksdorp and Orkney; uranium is mined at Klerksdorp; platinum is mined at Rustenburg and Brits (94% of the country’s platinum is mined in the vicinity of Rustenburg and Brits); and diamonds are mined at Lichtenburg, Christiana and Bloemhof. Other materials mined include granite, marble and fluorspar. Other prominent industries in the province are, sheep, cattle, game, maize, sunflower, tobacco, cotton, and citrus farming.

Tourist attractions include Pilanesberg Game Reserve, one of the country’s larger national parks; Magalies River Valley, Hartbeespoort Dam, Magaliesberg mountain range, and Sun City, one of the world’s largest entertainment centres. Sun City is located next to Pilanesberg Game Reserve.

Important historical sites in the province include:

- Mahikeng, the traditional capital of the Barolong people, where a British garrison was placed under siege by Afrikaners during the Boer War (1899–1902);
- Lotlamoreng Cultural Village near Mahikeng, which re-creates a traditional African village; and
- Boekenhoutfontein, the farm of Paul Kruger, who was the last president of the South African Republic, from 1883 to 1902.

Demographics of the Area of Influence

The MKLM covers an area of approximately 5 719 km² and is mostly rural in nature, comprising 107 villages and the two towns of Mogwase and Madikwe. It has an estimated population of 242 554 (according to 2011 census data), with its headquarters based in Mogwase.

The economy of MKLM is mainly characterized by mining, tourism and agriculture, and two of the province’s main tourist attractions, Pilanesberg and Sun City, are located in this municipality. The N4 Corridor, which is the east-west bound road connecting Rustenburg and Pretoria, runs to the south of the municipality.

Table 7-4 summarises the demographic profile of the MKLM.

Table 7-4 Summary of the Demographic Profile of the MKLM

Area	Moses Kotane LM	Unit
Population	242 553	Persons
Households	79 558	Households
Average household size	3,0	Persons per household

Area	Moses Kotane LM	Unit
Household density		Households per square km
Age profile	33.2%	Younger than 15
	33.2%	Working Age (15-64)
	10.9	Elderly (older than 65)
Age dependency ratio ²	58.6%	Per 100 persons
Education profile	13 738	No schooling
	25 178	Some primary
	7 997	Complete primary
	51 791	Some secondary
	40 321	Grade 12/ National Senior Certificate
	7 860	Higher
Employment profile	45 839	Employed
	28 147	Unemployed
Household income profile	50 289	Average income (Rands – ZAR)

According to the MKLM Final IDP/Budget for the Financial Year 2017/2022, the unemployment rate in the municipality is 51%, which is a significant increase from the 2011 rate, and also significantly higher than the national rate of 30.1%. The average household income doubled from 2001 (R22 358 per year) to 2011 (R50 258 per year). Although the average yearly income has increased, the municipality still experiences high levels of poverty.

Access to Basic Services

The provision of basic services such as water and sanitation, electricity and refuse and waste removal are a critical function of the municipalities. The individual’s right to basic services includes the right to an environment that is not harmful to human health or well-being.

The proportion of households using electricity as the main source of energy for lighting, heating and cooking increased significantly over the period 1996 to 2016. Access to further services such as piped water, refuse removal and different types of toilet facilities has also increased, indicating that progress is being made by the municipality in increasing the supply of services to residents. 84,7% of the residents in the MKLM have access to safe drinking water and 15,3% do not have access to safe drinking water.

Directly Affected Communities

The communities that will be directly affected by the proposed mining development are located within the Bakgatla-ba-Kgafela Tribal Authority (BBKTA). The affected communities include: Moruleng, Ramoga, Lekutung, Lesetlheng, Legkraal, Ramasedi, Ngweding, Mothlabe, Lesobeng, Kgamatha, Ntswana-le-Metsing, Mphonyoke, Magalane, Magong, Manamakhotheng, Makgope, Mononono and Sefikile.

² a measure of the degree to which the economically active person is relied upon to provide for and support the youth and elderly segments of the population.

7.4.15 Heritage/ Cultural Resources

Regional Cultural/ Heritage Resources

The Pilanesberg is a unique natural landmark and it forms part of South Africa's natural heritage. This complex of mountains consists of an eroded circular alkaline volcanic structure, 1 250 million years old, in the low-lying BC. This extinct volcano is 27 km in diameter and it is surrounded by six rings of mountains. The result is a circular mountainous region which stands in stark contrast to the surrounding open plains, creating a unique enclave for human occupation and utilisation from the earliest times. The Stone Age in the Pilanesberg has not yet been investigated thoroughly. However, it is known that access to the Pilanesberg during the Iron Age was controlled by well-positioned and extensive stone walled settlements near the periphery of this circular mountain range. These settlements were particularly concentrated close to some of the entrances leading to the broad valleys which criss-cross the central part of the Pilanesberg.

The main types and ranges of heritage resources in the area comprise stone walled sites dating from the Late Iron Age. These sites are limited to the presence of outcrops of syenite as the building material for these sites was derived from stones from these kopjes. Whilst the majority of sites are small some extensive clusters with settlements also occur. Other heritage resources include a few informal graveyards as most of the local population make use of formalised graveyards located with the various towns around the mine.

Local Cultural/ Heritage Resources

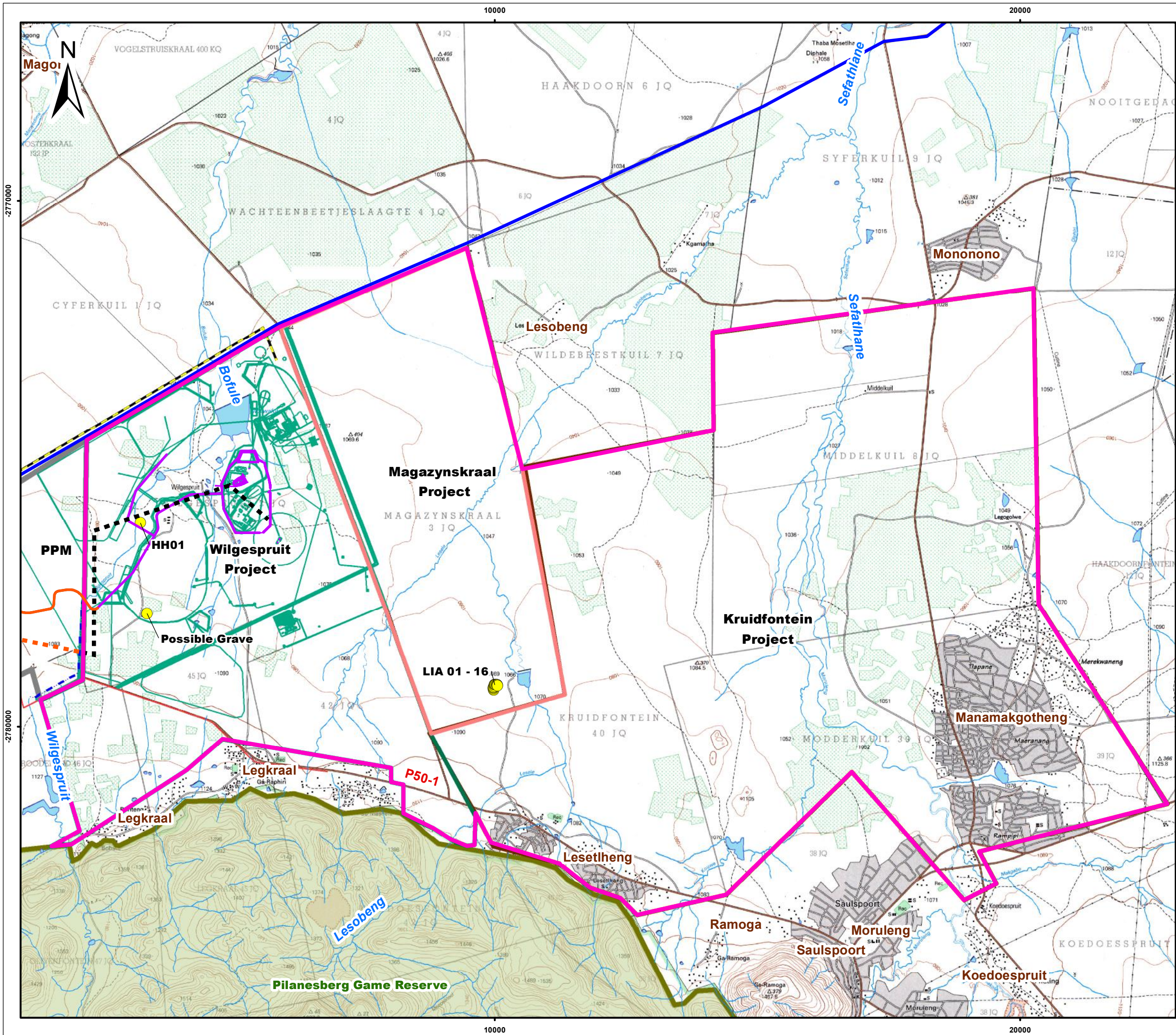
Heritage surveys conducted in the Triple Crown Project area indicated the presence of the following types of heritage resources (Figure 7-9):

- A possible grave and remains of a historical dwelling on Wilgespruit 2JQ.
- A Late Iron Age site on Magazynskraal 3JQ; and
- Late Iron Age sites on Kruidfontein 40JQ.

The possible grave dates from the recent past and has no heritage significance. However, all graves, whether historical or from the recent past are considered of high significance.

The Historical House (HH01) is sixty years old or is approaching this age. This structure is therefore protected by Section 34 and Section 38 of the National Heritage Resources Act (No 25 of 1999).

The Late Iron Age sites remains comprise archaeological remains which are older than sixty years and therefore are protected by the National Heritage Resources Act (No 25 of 1999). Both the Late Iron Age sites on Magazynskraal 3JQ and Kruidfontein 40JQ can be rated as of medium to high significance.



Legend

- Roads
- Powerline
- Watercourses
- Dams
- Wilgespruit River Diversion
- Magalies Water Pipeline
- Pipeline from Tuschenkomst Reservoir to Sedibelo / Magazynskraal Mining Projects
- Water Reservoir
- Pilanesberg National Park (including Black Rhino Game Reserve)
- Heritage Resources

Mining Operations

- Triple Crown Project
- Kruidfontein Project MRA
- Magazynskraal Project
- Wilgespruit Project
- Approved Wilgespruit Project Infrastructure
- Proposed Ropecon
- Proposed Wilgespruit Project Infrastructure
- Pilanesberg Platinum Mine
- Proposed PPM Infrastructure (Separate Application)

0 1 000
Meters
Scale: 1:71 000 @ A3
Projection: Transverse Mercator
Datum: Hartebeeshoek, Lo27

Kruidfontein MRA and Triple Crown Project

Figure 7-9
Location of Heritage Resources

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7.4.16 Palaeontology

The rocks of RLS of the BC are of volcanic and plutonic origin and have been metamorphosed so they do not contain any fossils at all. Being older than the origin of body fossils and because of their origin they are non-fossiliferous (Bamford, 2020).

Kalahari sands, however, are young enough for plant and animal life but any fossil materials are rare. Since the sands mostly have been transported by wind or water, they only rarely preserve any fossils. Heavy fossils cannot be transported by wind but much smaller fragments might be. Water transported fossils and fragments would be out of context because they have been moved from the original source and separated from other fossils. The only possible in situ, and therefore scientifically important fossils assemblages in the Quaternary Kalahari Sands, would be those that have been trapped in the tufas of a palaeo-spring or the calcretes and silcretes of a palaeo-pan.

From the SAHRIS map used for the desktop study the area is indicated as moderately sensitive in the western section of the Wilgespruit Project with the rest of the study area rated as having no sensitivity.

7.4.17 Traffic

Based on the information gathered on the status-quo of the relevant road network adjacent to the Triple Crown Project, the following could be concluded:

- Access to and from the proposed project would be from Road D5111 (Figure 7-10). Two access intersections have been approved, one of which (Point B) would provide access to the approved staff accommodation area and the other (Point C) would serve as the main access to the mining activities. Road D5111 is currently a gravel road and as determined from the relevant manual traffic counts conducted, has a low volume of vehicles making use of this road. It is therefore anticipated that gaining access from Road D5111 would not have any additional constraints and that capacity along Road D5111 is available.
- The existing intersections evaluated as part of this study are currently performing at an acceptable Level of Service (LoS).
- Based on the vehicle traffic counts conducted, it could be concluded that vehicle reserve capacity is available along Roads P50-1 and D5111 to accommodate vehicle traffic that could potentially be generated by the proposed Triple Crown Project.

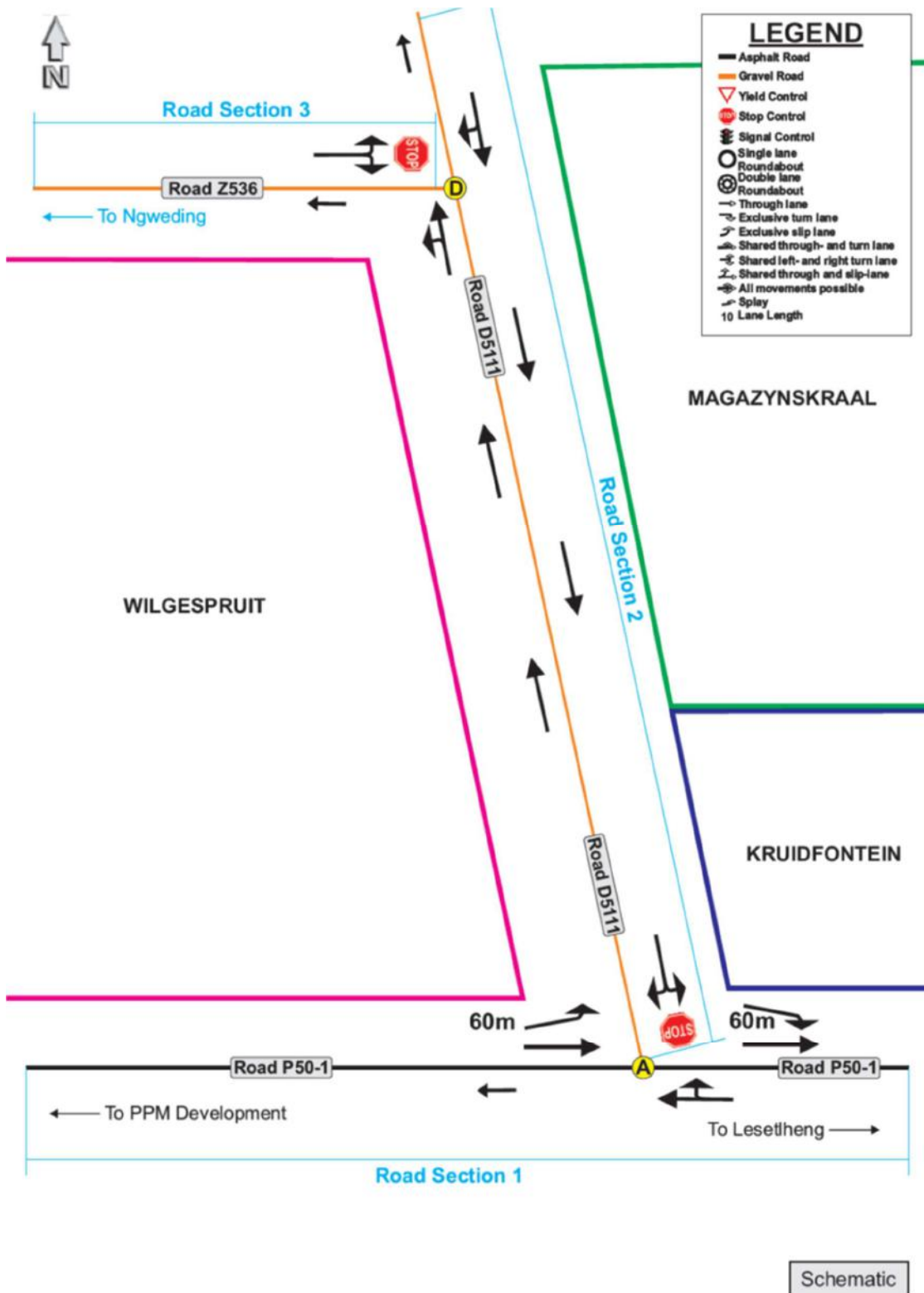


Figure 7-10 Existing Road Network Layout

7.5 DESCRIPTION OF THE CURRENT LAND USES

Although project related infrastructure will be developed within the approved Wilgespruit Project footprint, the establishment of additional infrastructure (although limited) and changes to the underground mine plan has the potential to affect land uses in the surrounding areas (through direct or indirect positive and/or negative impacts). Surrounding land uses include subsistence farming (livestock grazing and crops); formal (villages) and informal (livestock herders and farmers) residential; mining and conservation/eco-tourism activities associated with the Pilanesberg National Park.

7.5.1 Residential

The residential areas closest to the proposed project area include:

- Kgamatha
- Legkraal
- Lekutung
- Lesetlheng
- Lesobeng
- Magalane
- Magong
- Makgope
- Manamakhotheng
- Mononono
- Mothlabe
- Mphonyoke
- Ngweding
- Ntswana-le-Metsing
- SefikileRecreational

7.5.2 Facilities in the Vicinity

Recreational facilities within the vicinity include:

- Pilanesberg National Park located south of the proposed project area, including the following private lodges/park camps.
 - Black Rhino Private Game Reserve.
 - Bakgatla camp; and
 - Ivory Tree Lodge.
- Various lodges and resorts located in the southern section of the Pilanesberg National Park, including Manyane, Bakabung, Kwa Maritane, Tshukudu, Shepherd's Tree.
- Sun City, which lies on the southern edge of the Pilanesberg National Park, approximately 25km south of the proposed site.
- BBKTA cultural museum based in Saulspoort/Moruleng located south east of the proposed project area.
- Sports centre located in Saulspoort/Moruleng located south east of the proposed project area.
- Madikwe Game Reserve lies approximately 60km to the north west of the proposed site.

- Further afield there are several hotels, restaurants and sporting facilities located in and around the outskirts of Phokeng and Rustenburg some 60km to the south of the proposed project site.

7.5.3 Mining

Various mining operations are located and/or planned in the immediate vicinity of the proposed project and include:

- PPM is situated on the farms Tuschenkomst 135 JP, Witkleifontein 136 JP, Portion 3 of Rooderand 46JQ, various portions of Ruighoek 169 JP, a portion of Wilgespruit 2 JQ and a portion of Portion 1 of Rooderand 46 JQ.
- Sails Group mine is situated on Portion 2 and the remaining extent of the farm Rooderand 46 JQ.

Additional proposed mining interests in the immediate vicinity include:

- Bakgatla/Anglo interests, situated on Portion 2 of Rooderand 46 JQ.
- Sails Group (Portion RE of Rooderand 46 JQ).
- Rise Africa Mining and Exploration (various Portions of the farms Magazynskraal 3 JQ.
- Wildebeestkuil 7 JQ, Haakdoorn 6 JQ, Middelkuil 38 JQ, Syferkuil 9 JQ).

Other mining operations located further afield include:

- Rustenburg Minerals on the farm Groenfontein 138 JP.
- Chrome Corporation on the farm Ruighoek 169 JP.
- Merafe - Xstrata Horizon Mine on the farms Ruighoek 169 JP and Vogelstruisnek 17 JP.
- Siyanda (Union Section) on the farm Zwartklip 405 KQ.

7.5.4 Third Party Service Infrastructure

Power lines (and the associated Eskom servitudes) run along the southern boundary of the farm Wilgespruit 2JQ and along the eastern boundary within the farm Magazynskraal 3 JQ. The Sedibelo Substation is located on the eastern boundary of the farm Wilgespruit. There is a network of low voltage power lines and telephone lines which service the area. These lines usually follow roads before branching off to individual properties.

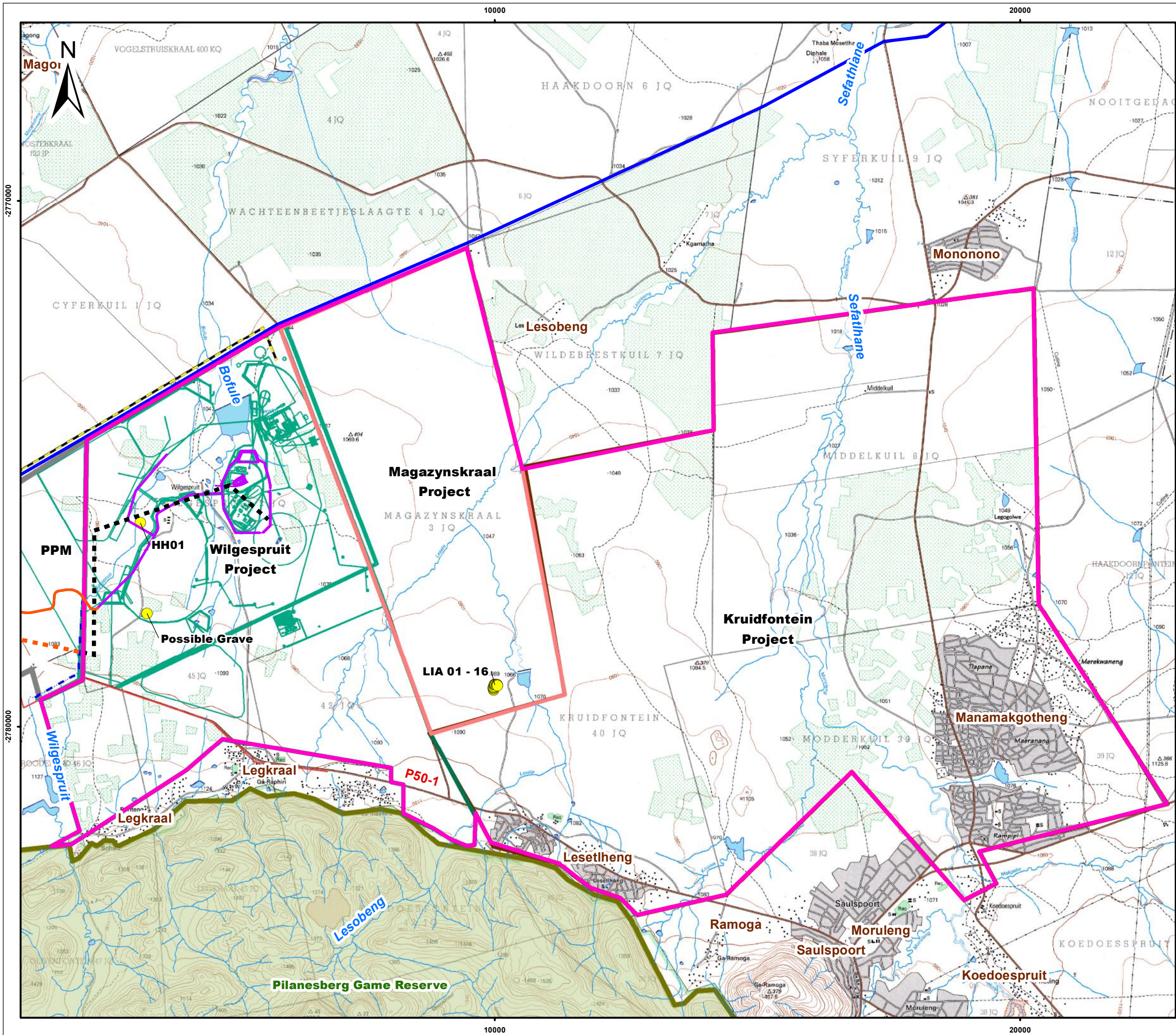
A Magalies Water pipeline runs in an east/west direction along the northern boundary of the farm Wilgespruit 2JQ. Land uses within the proposed project area are dominated by existing mining activities and associated infrastructure. Land uses immediately surrounding the proposed project area comprise mining, wilderness, ecotourism, livestock grazing, subsistence agriculture and community related activities. Further afield, there are a number of residential areas, recreational facilities and mining operations. Future land uses are important given the proposed Heritage Park.

7.6 DESCRIPTION OF THE SPECIFIC ENVIRONMENTAL FEATURES ON THE SITE

The environmental features and infrastructure within the proposed Triple Crown Project area are described in Sections 7.4 and 7.5 and shown in Figure 7-11.

7.7 ENVIRONMENTAL AND CURRENT LAND USE MAP

See Figure 7-11.



Legend

- Roads
- Powerline
- Watercourses
- Dams
- Wilgespruit River Diversion
- Magalies Water Pipeline
- Pipeline from Tuschenkomst Reservoir to Sedibelo / Magazynskraal Mining Projects
- Water Reservoir
- Pilanesberg National Park (including Black Rhino Game Reserve)
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- Proposed PPM Infrastructure (Separate Application)

0 1 000 Meters
 Scale: 1:71 000 @ A3
 Projection: Transverse Mercator
 Datum: Hartebeeshoek, Lo27

Kruidfontein MRA and Triple Crown Project

Figure 7-9
 Location of Heritage Resources

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7.8 ENVIRONMENTAL IMPACTS IDENTIFIED

This section provides a list of potential impacts on the biophysical, heritage/cultural and socio-economic aspects that have been identified in respect of each of the main project actions/activities and processes for each of the project phases. A discussion of each of the impacts identified is provided in Section 7.10. The preliminary ratings for consequence, probability and significance of each of the impacts in the unmitigated scenario (which assumes that no consideration is given to the prevention or reduction of biophysical and social impacts) are also provided in Table 7-5 in accordance with the DMRE report template. In this regard it must be noted that a conservative approach has been applied to these ratings in the absence of site specific studies. Once all the site specific studies have been completed the assessment and related ratings may change. The final ratings will be included in the EIA.

Table 7-5 shows impacts considered and risks for each project component.

Table 7-5 Preliminary List of Impacts Identified for the Proposed Project

C – Construction, O – Operations, D – Decommissioning, CI – Closure

	Potential impact	Alternative	Main project activity	Project phase	Consequence			Probability	Unmitigated Significance	Degree to which impact		
					Intensity	Duration	Spatial scale			Can be reversed	Causes irrereplaceable loss of resources	Can be avoided/Managed/Mitigated
Potential biophysical impacts												
1	Reduced groundwater quantity and quality, affecting downstream and third-party users	All	Dewatering Site preparation Earth works	O, CI	M	M	L	VH	M	Possible	Possible	Managed/Mitigated
2	Reduced groundwater quantity due to dewatering – impact on 3 rd party groundwater users	All	Dewatering	O	M	M	L	VH	M	Possible	Possible	Managed/Mitigated

	Potential impact	Alternative	Main project activity	Project phase	Consequence			Probability	Unmitigated Significance	Degree to which impact		
					Intensity	Duration	Spatial scale			Can be reversed	Causes irrereplaceable loss of resources	Can be avoided/Managed/Mitigated
3	Reduced surface water quantity and quality – impact on 3 rd party water users	All	Site preparation Earthworks Transport systems General site management Rehabilitation	C, O	L	L	L	L	VL	Largely	Possible	Managed/Mitigated
4	Physical loss or general disturbance of terrestrial biodiversity	All	Earthworks and site clearance Dust generation on haul roads General site management	C, O	M	H	L	L	L	Possible	Possible	Managed/Mitigated
5	Loss or disturbance of aquatic ecosystems	All	Earthworks and site clearance Dust generation on haul roads General site management	C, O, D	H	H	M	L	M	Largely	Possible	Managed/Mitigated
6	Loss of soils and land capability through contamination and physical disturbance	All	Earthworks and site clearance Dust generation on haul roads General site management	C,O,D,CI	M	H	L	M	L	Largely	Unlikely	Mitigated/Managed

	Potential impact	Alternative	Main project activity	Project phase	Consequence			Probability	Unmitigated Significance	Degree to which impact		
					Intensity	Duration	Spatial scale			Can be reversed	Causes irreparable loss of resources	Can be avoided/Managed/Mitigated
7	Increase in ambient noise levels	All	Earthworks Site preparation RopeCon	C,O,D	VL	H	L	H	L	Fully	Unlikely	Mitigated/Managed
8	Reduced air quality due to emissions	All	Earthworks and site clearance Dust generation on haul roads General site management	C,O, D	L	H	M	L	L	Partially	Possible	Mitigated/Managed
Potential socio-economic impacts												
9	Negative visual impacts	All	Earthworks and site clearance Dust generation on haul roads General site management	C,O,D	M	H	L	M	L	Fully	Unlikely	Mitigated/Managed
10	Reduced road safety due to project related traffic	All	Site establishment	C, O, D	L	H	L	VL	VL	Fully	Unlikely	Mitigated/Managed
11	Positive socio-economic changes due to increased investment and job creation	All	Throughout all phases of mining due to investment in the local economy and local employment.	C,O	L	H	H	H	M+	N/A	N/A	Can be managed to enhance positive impact

	Potential impact	Alternative	Main project activity	Project phase	Consequence			Probability	Unmitigated Significance	Degree to which impact		
					Intensity	Duration	Spatial scale			Can be reversed	Causes irrereplaceable loss of resources	Can be avoided/Managed/Mitigated
12	Negative socio-economic impacts due to influx and reduced security	All	Outside workforce Safety and security issues Health impacts	C,O,D	M	H	L	M	M	Possible	Possible	Mitigated/Managed
13	Loss of or damage to cultural heritage and/or paleontological resources	All	Site preparation Earthworks	C	H	VH	VL	L	M	Possible	Possible	Mitigated/Managed

7.9 METHODOLOGY USED IN DETERMINING THE SIGNIFICANCE OF ENVIRONMENTAL IMPACTS

The following methodology is used for assessing the significance of potential impacts (Table 7-6).

Table 7-6 Impact Assessment Methodology

PART A: DEFINITIONS AND CRITERIA*		
Definition of SIGNIFICANCE		Significance = consequence x probability
Definition of CONSEQUENCE	of	Consequence is a function of intensity, spatial extent and duration
Criteria for ranking of the INTENSITY of environmental impacts	VH	Severe change, disturbance or degradation. Associated with severe consequences. May result in severe illness, injury or death. Targets, limits and thresholds of concern continually exceeded. Substantial intervention will be required. Vigorous/widespread community mobilization against project can be expected. May result in legal action if impact occurs.
	H	Prominent change, disturbance or degradation. Associated with real and substantial consequences. May result in illness or injury. Targets, limits and thresholds of concern regularly exceeded. Will definitely require intervention. Threats of community action. Regular complaints can be expected when the impact takes place.
	M	Moderate change, disturbance or discomfort. Associated with real but not substantial consequences. Targets, limits and thresholds of concern may occasionally be exceeded. Likely to require some intervention. Occasional complaints can be expected.
	L	Minor (Slight) change, disturbance or nuisance. Associated with minor consequences or deterioration. Targets, limits and thresholds of concern rarely exceeded. Require only minor interventions or clean-up actions. Sporadic complaints could be expected.
	VL	Negligible change, disturbance or nuisance. Associated with very minor consequences or deterioration. Targets, limits and thresholds of concern never exceeded. No interventions or clean-up actions required. No complaints anticipated.
	VL+	Negligible change or improvement. Almost no benefits. Change not measurable/will remain in the current range.
	L+	Minor change or improvement. Minor benefits. Change not measurable/will remain in the current range. Few people will experience benefits.
	M+	Moderate change or improvement. Real but not substantial benefits. Will be within or marginally better than the current conditions. Small number of people will experience benefits.
	H+	Prominent change or improvement. Real and substantial benefits. Will be better than current conditions. Many people will experience benefits. General community support.
	VH+	Substantial, large-scale change or improvement. Considerable and widespread benefit. Will be much better than the current conditions. Favourable publicity and/or widespread support expected.
Criteria for ranking the DURATION of impacts	VL	Very short, always less than a year. Quickly reversible
	L	Short-term, occurs for more than 1 but less than 5 years. Reversible over time.
	M	Medium-term, 5 to 10 years.
	H	Long term, between 10 and 20 years (likely to cease at the end of the operational life of activity).
	VH	Very long, permanent, +20 years (Irreversible, Beyond closure).
Criteria for ranking the EXTENT of impacts	VL	A part of the site/property.
	L	Whole site.
	M	Beyond the site boundary, affecting immediate neighbours.

	H	Local area, extending far beyond site boundary.
	VH	Regional/National

PART B: DETERMINING CONSEQUENCE							
INTENSITY = VL							
DURATION	Very long	VH	Low	Low	Medium	Medium	High
	Long term	H	Low	Low	Low	Medium	Medium
	Medium term	M	Very Low	Low	Low	Low	Medium
	Short term	L	Very low	Very Low	Low	Low	Low
	Very short	VL	Very low	Very Low	Very Low	Low	Low
INTENSITY = L							
DURATION	Very long	VH	Medium	Medium	Medium	High	High
	Long term	H	Low	Medium	Medium	Medium	High
	Medium term	M	Low	Low	Medium	Medium	Medium
	Short term	L	Low	Low	Low	Medium	Medium
	Very short	VL	Very low	Low	Low	Low	Medium
INTENSITY = M							
DURATION	Very long	VH	Medium	High	High	High	Very High
	Long term	H	Medium	Medium	Medium	High	High
	Medium term	M	Medium	Medium	Medium	High	High
	Short term	L	Low	Medium	Medium	Medium	High
	Very short	VL	Low	Low	Low	Medium	Medium
INTENSITY = H							
DURATION	Very long	VH	High	High	High	Very High	Very High
	Long term	H	Medium	High	High	High	Very High
	Medium term	M	Medium	Medium	High	High	High
	Short term	L	Medium	Medium	Medium	High	High
	Very short	VL	Low	Medium	Medium	Medium	High
INTENSITY = VH							
DURATION	Very long	VH	High	High	Very High	Very High	Very High
	Long term	H	High	High	High	Very High	Very High
	Medium term	M	Medium	High	High	High	Very High
	Short term	L	Medium	Medium	High	High	High
	Very short	VL	Low	Medium	Medium	High	High
		VL	L	M	H	VH	
		A part of the site/ property	Whole site	Beyond the site, affecting neighbours	Extending far beyond site but localised	Regional/ National	
		EXTENT					

PART C: DETERMINING SIGNIFICANCE							
PROBABILITY (of exposure to impacts)	Definite/ Continuous	VH	Medium	Medium	High	Very High	Very High
	Probable	H	Low	Medium	Medium	High	Very High
	Possible/ frequent	M	Low	Low	Medium	Medium	High
	Conceivable	L	Very Low	Low	Low	Medium	Medium
	Unlikely/ improbable	VL	Negligible	Very Low	Low	Low	Medium
			VL	L	M	H	VH
CONSEQUENCE							

PART D: INTERPRETATION OF SIGNIFICANCE	
Significance	Decision guideline
Very High	Potential fatal flaw unless mitigated to lower significance.
High	It must have an influence on the decision. Substantial mitigation will be required.
Medium	It should have an influence on the decision. Mitigation will be required.
Low	Unlikely that it will have a real influence on the decision. Limited mitigation is likely required.
Very Low	It will not have an influence on the decision. Does not require any mitigation
Negligible	Inconsequential, not requiring any consideration.

7.10 POSITIVE AND NEGATIVE IMPACTS OF THE PROPOSED ACTIVITY AND ALTERNATIVES

Potential biophysical, cultural and social impacts that were identified during the scoping process, in consultation with I&APs, are discussed under environmental component headings in this section. These discussions should be read with the corresponding descriptions of the baseline environment. In accordance with the DMRE report template this section requires a discussion of the potential impacts taking into consideration all project related alternatives. The potential impacts associated with the project phases (construction, operations, decommissioning and closure) have been identified and described. The following section also references studies/investigations that are required to provide the necessary additional information. In the absence of specialist studies the assessment conclusions are conservative. It follows that the assessment provided is a preliminary assessment which will be refined in the EIA and EMP with specialist input, as appropriate.

Impacts assessed for the proposed Triple Crown Project are in the context of the current operations at PPM and the approved but not yet operating Wilgespruit and Magazynskraal Projects. Impacts assessed in this Scoping Report are therefore related to additional/ amended activities ONLY.

7.10.1 Biophysical Impacts

7.10.1.1 Geology

No additional impacts expected. No additional work is required and the impact has been scoped out.

7.10.1.2 Groundwater

Issue: Reduced groundwater quantity and quality, affecting downstream and third-party users.

Mining projects have the potential to negatively impact on water resources through dewatering activities, contamination and alteration of drainage patterns through the sinking of the East Portal decline and expansion of the underground workings, infrastructure placement and stormwater controls, regardless of the alternatives that are selected. Mining projects also present a number of effluent sources that can have a negative impact on water quality. Contaminants from the project are expected to include construction related consumables, silt, fuels, hydrocarbons, residues and hazardous wastes.

A groundwater flow and mass transport model will be developed to simulate the potential impacts on the groundwater quantity and quality and to provide recommendations on monitoring and management measures. The purpose of the model is to determine the groundwater flows due to the optimised underground activities, as well as the zone of influence (ZOI) from the dewatering of the consolidated underground mining area. The mass transport model will also be updated to assess the potential additional mass migration plumes and possible mitigation measures for the revised mine plan for the operational and post operational phases.

The regional area is serviced by Magalies Water, but boreholes are important in supplementing supply or as a sole source in some communities. A total of 47% of all the boreholes in the region were used for domestic water supply between 2005 and 2020. The 2020 percentage (21%) is inferred to be lower due to the provision of Magalies Water to more communities surrounding the site. Water level trends show a slight

rise in water levels of +5.5 m in recent years. The deepest water levels in the region are associated with abstraction for water supply to the local communities. The impact on the local springs upstream of the Triple Crown Project will be determined and assessed in the EIA. In terms of water quality, the likelihood of poor-quality water potentially decanting at the surface of the East Portal entrance is expected to be moderate prior to mitigation. The overall, impacts on groundwater quantity will vary over time, however, impacts are expected to be moderate-low prior to mitigation and can be reduced to low-negligible with good site management. The impact on groundwater quality is expected to be very low prior to mitigation due to no additional sources being proposed as part of the Triple Crown Project. Continuous monitoring is important and needs to be undertaken alongside the proposed mitigation measures.

The additional work required to address this issue is described in Section 8.3 of this Scoping Report.

7.10.1.3 Surface Water

Issue: Reduced surface water quantity and quality, affecting downstream and third-party users.

The construction of additional surface infrastructure such as the RopeCon, vent shafts and haul roads that may fall outside of the approved footprint area have the potential to present additional sources of surface water contamination and further impact surface water runoff. The short term impact due to this is likely to be of Very Low significance and can be reduced to negligible provided the approved EMPr and mitigation measures are implemented.

The additional work required to address this issue is described in Section 8.3 of this Scoping Report.

7.10.1.4 Terrestrial Biodiversity

Issue: Physical loss or general disturbance of terrestrial biodiversity

The placement of additional infrastructure and activities in general have the potential to further impact terrestrial biodiversity through the physical loss of specific biodiversity areas, loss of linkages between biodiversity areas and related species (flora and fauna) which are considered to be significant because of their status, and/or the role that they play in the ecosystem.

Although the proposed Triple Crown Project takes place within an area classified as CBA2 and ESA2, minimal additional development is proposed outside of the approved footprint. The potential additional area for clearance will be assessed during the EIA phase, however, the potentially impacted footprint is likely to be very small in comparison to the already approved area for development. The more likely impacts, which will be further assessed, include potential bird collisions with the RopeCon and dust impacts due to the haul roads on nearby vegetation. Considering the additional impacts due to the Triple Crown Project, the overall impact is likely to be Low prior to mitigation and Very Low with mitigation. As discussed previously, no additional clearing is required at the Magazynskraal and Kruidfontein Projects.

The additional work required to address these issues is described in Section 8.3 of this Scoping Report.

7.10.1.5 Aquatic Biodiversity

Issue: Loss or disturbance of aquatic ecosystems

Undermining of the Wilgespruit, Bofule and Lesobeng River is likely to occur, this was however assessed as part of the already approved Wilgespruit Project.

Additional site clearing for the proposed ventilation shafts and RopeCon towers may result in the potential for increased runoff and erosion, thus leading to increased sedimentation of the watercourses and possible impacts on instream biota within the receiving environment. Should site clearing be undertaken without the implementation of the relevant mitigation measures, the intensity of impacts pre-mitigation is likely to be of Medium significance. The impacts of site clearing are anticipated to be relatively localised, however, any impacts on the freshwater ecosystem are considered likely to affect the neighbouring areas further downstream and impacts are considered to affect the watercourses on a short to medium term basis. The use of mitigation measures are considered likely to reduce the impact significance on the affected watercourses, post-mitigation. As such, recommendations for the use of mitigation measures include ensuring that all infrastructure must remain out of the delineated freshwater ecosystems and associated zones of regulation in line with the requirements of GN 704 and GN 509 of the NWA, 1998.

The operation and maintenance of proposed infrastructure including the additional sections of haul road, RopeCon and the ventilation shafts may result in impacts such as increased risk of contamination of surface water, increased risk of sediment transport in surface runoff from impermeable surfaces, altered vegetation community composition, increased risk of erosion and altered runoff patterns within the landscape. The impacts are considered to be of a Medium impact significance and to occur on a local scale.

The consolidated underground mining activities could result in some impact to the watercourses. This will need to be considered during the EIA phase. Impacts could potentially have a Medium significance and could affect neighbouring downstream areas.

The additional work required to address these issues is described in Section 8.3 of this Scoping Report.

7.10.1.6 Soils and Land Capability

Issue: Loss of soil and land capability through contamination and physical disturbance

The Triple Crown Project area is dominated by calcic vertisols (high in clay) and ferric luvisols (clay mobilization) which can be characterised as marginal to low agricultural potential soils. However, topsoil material is crucial as it contains more nutrients and thus is important for indigenous vegetation which facilitates the grazing capacity of the Project Area. The proposed footprint areas are surrounded by active mining related activities and are isolated from any large scale agricultural activities in the area. The proposed footprint has largely been previously approved for the development of the Wilgespruit Project and the proposed amendments are not anticipated to significantly increase the extent of soils to be impacted or cause a significant cumulative impact. The significance of impact is thus anticipated to be Low without mitigation and Very Low post mitigation. Due to the low inherent agricultural potential of the area the impact is expected to be Very Low prior to mitigation.

The additional work required to address these issues is described in Section 8.3 of this Scoping Report.

7.10.1.7 Noise

Issue: Increase in ambient noise levels

Potential noise sources associated with the Triple Crown Project include haul vehicles and other mobile equipment, the proposed RopeCon and loading and unloading of material. Given the distance to nearby potential noise sensitive receptors (NSRs), it is unlikely that proposed activities will have a significant effect on environmental noise levels at these locations. In addition, the impact of noise has already been assessed for the approved mine development and additional noise impacts are likely to be Very Low and mostly associated with the RopeCon in the long term and haulage to PPM in the short term. The cumulative impact will, however, be assessed.

Given the above, it is unlikely that significant mitigation measures, over and above those included in the design of the project and approved EMPr, such as regular maintenance and servicing of the mobile fleet, will be required to ensure compliance with the SANS 10103 limits at nearby NSRs. The significance of this is expected to be Low prior to mitigation and Very Low with management measures in place.

However, the additional work required to address these issues is described in Section 8.3 of this Scoping Report.

7.10.1.8 Air Quality

Issue: Reduced air quality

Particulate emissions, specifically fugitive dust emissions, present the main pollutant of concern from the proposed changes to the approved operations. Gaseous emissions, most notably those arising from vehicle exhaust, present a lesser concern, but emissions of these pollutants will be included in the emissions inventory and dispersion modelling. Existing sources of air pollution in the study area include mining and processing emissions from the current PPM operations, as well as stack vent and fugitive emissions from other mining activities in the area, including Ruighoek Chrome to the southwest, Union Platinum mine to the northeast as well as various other exploration phase mining operations in the area. Other sources of emissions include household fuel combustion, biomass burning (veld fires), agricultural activities, wind erosion from open areas, dust entrainment from paved and unpaved roads, vehicle tailpipe emissions as well as other smaller emission sources.

Potential emission sources associated with the Triple Crown Project include dust entrainment from haul vehicles and other mobile equipment, fugitive emissions from loading and unloading of material, windblown dust from the RopeCon and dust emissions from potential land clearing activities, particularly during the construction phase. While vehicles and equipment will result in gaseous exhaust emissions, the impact thereof is expected to be insignificant compared to the impact of particulate emissions from the proposed project. Again, the impact of reduced air quality has previously been assessed and included in the approved EMPr for the Wilgespruit Project, the cumulative impact will, however, be assessed to include the proposed RopeCon and short term haulage to PPM.

The impact from the proposed additional infrastructure is likely to be Low, however, given the measured impact from current activities at PPM at the monitoring stations and nearby potential sensitive receptor locations, the possibility exists that, if left unmitigated, the proposed activities could result in exceedances of the SA NAAQS and NDCR limits at sensitive receptor locations. If proper mitigation and housekeeping measures are applied, it is likely that the impact would be considered as Very Low significance.

The additional work required to address these issues is described in Section 8.3 of this Scoping Report.

7.10.2 Socio-economic Impacts

7.10.2.1 Visual Resource, Landscape Sensitivity and Sense of Place

Issue: Negative visual impacts

An impact on the visual environment is assessed by considering the change to the visual landscape as a result of project related infrastructure and activities. The visual landscape is determined by considering landscape character, sense of place, scenic quality, sensitivity of the visual resource and sensitive views. Most of the study area's scenic quality has been rated moderate to high within the context of the sub-region, and sensitive viewing areas and landscape types identified indicating potential sensitivity to the Triple Crown Project. The site itself is, however, in a landscape type rated as low.

As operations at the Wilgespruit Project have already been approved it is not likely that the proposed Triple Crown Project with associated amendments would have a significant visual impact.

The Project's visibility could, however, be negatively influenced due to the addition of the RopeCon system proposed to be constructed after approximately 6 years once steady-state mining is achieved. This would primarily concern the potential negative effect of night lights. The final height of the RopeCon will be confirmed during the EIA Phase

Given this context, the additional negative effect of the proposed Project activities would be relatively small when compared with the existing and approved mining operations in the area. Views, during the day, to the site from the Black Rhino Game Reserve and its associated game-viewing roads would be blocked by topography (a small ridge line between the reserve and the Project site), as well as existing mining operations (WRD, etc.). At night light glow would be visible above the ridge line. The additional glow from lights associated with the RopeCon could potentially have a cumulative negative effect on these areas.

Ground-level views from nearby villages south of the Project site i.e. Legkraal, Lekutung, and Lesethleng, and Mothlabe, Magalene, and Ngweding north of the site would mostly be blocked by existing thornveld vegetation, southeast, and west of the Project site but lights at night would create a glow that would be visible from these areas.

The most 'open' views of the Project would originate along the P50 road running south of the mine and past Legkraal. However, views from the road would be partially or completely obstructed by topography, and trees.

The impact of lights at night is a sensitive issue associated with mines, specifically when they can be seen from tourist and residential sites and when the impact would continue for the life of the mine. Although the impact due to the RopeCon alone would likely be considered Low prior to mitigation, the cumulative impact is important and will need to be clearly understood.

The additional work required to address these issues is described in Section 8.3 of this Scoping Report.

7.10.2.2 Socio-economic

Issue: Positive and negative socio-economic impacts

As with all the other impacts being considered in this scoping study, the socio-economic impacts need to be understood in the context of the approved mining activities at the Wilgespruit and Magazynskraal Projects and the already assessed positive and negative impacts associated with those relative to the potential positive and negative impacts associated with the additional proposed activities for the Triple Crown Project.

The Triple Crown Project is unlikely to have a significant positive or negative impact in terms of creating employment other than that the period over which people may be employed would be prolonged should the Kruidfontein Mining Right be approved, thus extending the LOM and the possibility of employment. This would in turn extend the potential positive indirect impacts such as procurement and local investment. As no surface infrastructure is planned at the Magazynskraal and Kruidfontein Projects, potential impacts will be limited to those associated with consolidating the underground mining activities. The potential positive impacts could be rated as Medium positive and with the implementation of enhancement measures could potentially be of a High significance.

However, the extension of the LOM would also mean that negative impacts would be extended. Although the associated impacts with the RopeCon are likely to be Very Low, the long term impacts related to mining activity in the area would also continue until mining ends and possibly even afterwards and would likely have a Medium negative significance. With mitigation these impacts could potentially be reduced to a Low negative impact.

In addition, expectations in terms of job creation are generally high in light of the high unemployment figures prevalent in the country. The mine must ensure that expectations that cannot be met, are not created. Maximising the number of employment opportunities for locals and being accessible when concerns are expressed (and addressing those concerns effectively and timeously) will contribute to a positive relationship with the community.

The cumulative impacts of the Triple Crown Project together with those of PPM will be addressed in the EIA Phase for a clear understanding of potential impacts and benefits.

The additional work required to address these issues is described in Section 8.3 of this Scoping Report.

7.10.2.3 Heritage/ Cultural Resources

Issue: Loss of or damage to cultural heritage and/or paleontological resources

The Historical House (HH01) that has been identified in close locality to the proposed RopeCon route is 60 years old or is approaching this age and is therefore, protected by Section 34 and Section 38 of the NHRA (No 25 of 1999). According to relevant literature, the historical house can be rated to be of Medium to High significance.

Should the RopeCon impact on the historical house the impact significance would be rated as Medium to High. However, should mitigation measures be implemented whereby the impact can be avoided the significance can be reduced to Very Low to Insignificant.

Other cultural or heritage resources identified in the area are not likely to be impacted on by the proposed Triple Crown Project and the impacts are rated as Insignificant assuming any impacts have previously been assessed with mitigation included in the approved EMPr.

In terms of palaeontology, the Kruidfontein Project area is on non-fossiliferous rocks of the RLS so no further palaeontological impact assessment is required. The same applies to the eastern half of the Wilgespruit and Magazynskraal Project areas.

The western half of the Wilgespruit Project area is on moderately sensitive rock. However, it is unlikely that any fossils would be preserved in the surface windblown sands of the Quaternary Kalahari Group. No pan or spring features are evident. The impact on palaeontology of the area is thus considered to be Insignificant.

No additional work is required and the impact has been scoped out. A Chance Find Protocol will, however, be included in the EMPr.

7.10.2.4 Traffic

Issue: Reduced road safety due to project related traffic

As operations at the Wilgespruit Project have already been approved it is not likely that the proposed Triple Crown Project with associated amendments would have a significant impact on traffic volumes. However, the prolonged LOM would likely extend the duration of the impact and therefore increase the likelihood of dust generation (which could affect the health and safety of other road users due to reduced visibility) thus potentially resulting in vehicle and/ or pedestrian collisions over the longer period.

In addition, the current proposed project may result in some increased traffic during the construction phase but is unlikely to have a long term impact and therefore the potential additional impact on health and safety is likely to be Low and could be reduced to Very Low with the implementation of mitigation measures.

It is, however, envisaged that due to the current low vehicle volumes, as well as the low number of additional vehicles as part of the Triple Crown Project on the relevant existing road network sections under

investigation (as determined from the manual vehicle traffic counts and the available reserve capacity), that the existing road network would be able to accommodate any additional vehicle trips.

The additional impact on road safety due to the Triple Crown Project prior to mitigation is expected to be Very Low, with mitigation the impact can be reduced to Insignificant.

The additional work required to address these issues is described in Section 8.3 of this Scoping Report.

7.10.3 Cumulative Impacts

The potential cumulative impacts due to the Triple Crown Project need to be understood in the context the approved Wilgespruit Project, the approved Magazynskraal Project and the neighbouring operations at PPM. These cumulative impacts will be considered and assessed in the EIA.

7.11 THE POSSIBLE MITIGATION MEASURES AND THE LEVEL OF RESIDUAL RISK

Table 7-7 provides a list of the impacts identified by the EAP or raised by I&APs, as well as the possible management and mitigation measures. The level of residual risk after management or mitigation is also estimated. This will be refined during the EIA phase with specialist input as appropriate.

These mitigation measures are in alignment with the existing Wilgespruit Project EMPr.

Table 7-7 Possible Mitigation Measures and Anticipated Level of Residual Risk (this assumes mitigation measures for the approved Wilgespruit Project EMP are implemented)

Potential impact	Activity	Possible mitigation	Potential for residual risk
Biophysical Impacts			
Reduced groundwater quality due to contamination	Earthworks and construction and operational activities associated with the RopeCon Access roads General site management Rehabilitation	<ul style="list-style-type: none"> • Monitor groundwater levels in boreholes on a monthly basis. • Effective equipment and vehicle maintenance. • Fast and effective clean-up of spills. • Effective waste management. • Infrastructure that has the potential to cause groundwater contamination will be identified and included in a groundwater pollution management plan which will be implemented as part of the operational phase. • Monitor all potential impact zones to track pollution and mitigation impacts. • Where monitoring results indicate that third party water supply has been polluted by the operations, PPM will ensure that an alternative equivalent water supply will be provided. 	Very Low
Reduced groundwater quantity due to dewatering – impact on 3 rd party groundwater users	Dewatering	<ul style="list-style-type: none"> • Ensure all potentially affected third party boreholes are included in the groundwater monitoring program to ensure that changes in water depths can be identified, where possible. • Provide alternative water, of equivalent quality, to third parties if it is found and proved that neighbouring water levels and yields are affected. • Establish a joint water monitoring forum between the local mining companies where data is shared and impacts on third party groundwater users are addressed. • Ensure geophysical surveys are conducted to locate and characterise the inferred dyke near the Pilanesberg springs. Additional shallow and deep drilling as well as aquifer testing with isotope analyses should be conducted to determine the permeability of the inferred dyke. The numerical model should be update accordingly. • Update the groundwater model every two years. 	Low

Potential impact	Activity	Possible mitigation	Potential for residual risk
		<ul style="list-style-type: none"> Records should be kept on bulk water supply efficiency to correctly classify aquifers i.e. groundwater use in and around villages. Ensure the procedures are implemented for the sealing of discrete fractures to reduce the ingress of groundwater in the underground mines. Ensure the volume of groundwater seeping into the open pit and underground mines is licensed and used in the flow model with the detailed post closure underground mine voids and the time to flood the underground mine voids should be simulated. A detailed geochemical assessment should be conducted to determine the water quality in the flooded underground mines. 	
Reduced surface water quantity and quality – impact on 3 rd party water users	Earthworks and construction and operational activities associated with the RopeCon Access roads General site management Rehabilitation	<ul style="list-style-type: none"> Maintain vehicles and equipment in good working order and repair oil or fuel leaks immediately upon detection in a dedicated vehicle maintenance area. Keep spill kits on hand to clean up hazardous or hydrocarbon spills. Once used, this material will be treated as hazardous waste and disposed of at a permitted hazardous landfill site. Concrete will not be mixed directly on the ground. Plastic liners and mixing trays will be used at all times. Waste concrete and sediment sludge will be scraped off the site of the batching plant and removed to an appropriately designated area in order to prevent contamination during times of rain. Cement contaminated water will be collected within the mine dirty water collection system. Apply and operate in line with a WUL. The designs of any permanent and potentially polluting structures will take account of the requirements for long term surface water pollution prevention. PPM will establish a water management committee to ensure that water consumption, recycling and re-use targets are established, monitored and optimised on a quarterly basis. This committee should furthermore identify and implement synergies and initiatives across the operations to minimise bulk water intake. 	Very low

Potential impact	Activity	Possible mitigation	Potential for residual risk
		<ul style="list-style-type: none"> PPM will monitor the water quality in all potentially affected surface water resources and use the monitoring results to implement appropriate mitigation measures to achieve the surface water quality objectives. Where monitoring results indicates that third party water supply has been polluted by the operations, PPM will ensure that appropriate compensation such as an alternative equivalent water supply will be provided. 	
Physical loss or general disturbance of terrestrial biodiversity	Earthworks and construction and operational activities associated with the RopeCon Access roads General site management Rehabilitation	<ul style="list-style-type: none"> The use of light must be kept to a minimum, and where it is required, yellow lighting should be used where possible and aimed downward. Vertebrates should be kept away from the illuminated areas with appropriate fencing where feasible. Internal power lines and RopeCon may be equipped with bird deterrent measures to prevent bird kills where deemed necessary. There should be training for workers on the value of biodiversity and the need to conserve the species and systems that occur within the proposed project areas. There is zero tolerance of the killing or collecting of any biodiversity by anybody working for or on behalf of the mine. Traffic calming measures to be implemented in order to reduce the incidence of road kills. Strict speed control measures will be used for any vehicles driving within surface use areas. Noisy and/or vibrating equipment will be well maintained to control noise and vibration emission levels. All permanent water dams will be fenced off to prevent access by larger animals. Dust control measures will be implemented. Soil management plan to be implemented. Soil contamination and litter prevention measures will be implemented. 	Very Low

Potential impact	Activity	Possible mitigation	Potential for residual risk
		<ul style="list-style-type: none"> • Alien plant species proliferation, which may affect floral and faunal diversity, will be controlled in accordance with legislation and in a manner that no additional loss of indigenous plant species occurs. • Implementation of an alien/invasive/weed management programme to control the spread of these plants onto and from disturbed areas through active eradication, establishment of natural species and through on-going monitoring and assessment. In this regard, the use of herbicides will be limited and will only be used under strict controls if alternative less intrusive eradication methods are not successful. 	
Loss or disturbance of aquatic ecosystems	Earthworks and construction and operational activities associated with the RopeCon Access roads General site management Rehabilitation	<ul style="list-style-type: none"> • Erosion protection measures to be implemented along the Wilgespruit and Bofule systems, to prevent erosion occurring. • Adequate dust control strategies should be implemented to minimise dust deposition and at the same time minimise associated water use. • Adequate sedimentation control measures at river crossings, if required. • Utilise existing roads as far as possible. • Monitor the aquatic environment of all potentially affected surface water resources and use the results of the monitoring to implement any other surface water related interventions as deemed appropriate to achieve the mitigation objectives. • Monitor potential impacts on the endorheic pans ('pannetjies') and springs and implement mitigation should water levels change. • Ongoing monitoring of the affected rivers to ensure no deterioration. 	Low
Loss of soils and land capability through contamination and physical disturbance	Earthworks and construction and operational activities associated with the RopeCon Access roads General site management Rehabilitation	<ul style="list-style-type: none"> • Conduct all potentially polluting activities in a manner that they do not pollute soils. • Maintain vehicles and equipment in good working order and repair oil or fuel leaks immediately upon detection in a dedicated vehicle maintenance area. • Keep spill kits on hand to clean up hazardous or hydrocarbon spills. Once used, this material will be treated as hazardous waste and disposed of at a permitted hazardous landfill site. 	Very Low

Potential impact	Activity	Possible mitigation	Potential for residual risk
		<ul style="list-style-type: none"> Implement a soil management plan. Implementation of a soil monitoring programme. 	
Increase in ambient noise levels	Earthworks and construction and operational activities associated with the RopeCon Access roads General site management Rehabilitation	<ul style="list-style-type: none"> All vehicles and equipment will be maintained in good working order to restrict noise emissions. Regular scheduled maintenance must include the checking and replacement, if necessary, of intake and exhaust silencers. The sound of reverse hooters will be engineered in such a manner to limit audibility in the surrounding environment. Ventilation equipment will be designed in such a manner to minimise the generation of noise and will be fitted with silencer systems. All noise complaints will be documented, investigated and reasonable efforts made to address the area of concern. Options available for reducing noise impacts include but are not limited to: <ul style="list-style-type: none"> changing operating hours; equipping noise sources with silencers; construction of noise attenuation measures; and consulting a noise specialist for mitigation advice. Regular noise monitoring will be undertaken by an independent contractor. 	Very Low
Reduced air quality due to emissions	Earthworks and construction and operational activities associated with the RopeCon Access roads General site management Rehabilitation	<ul style="list-style-type: none"> Implementation of an air quality management plan. Reduction of emissions and windblown dust through the implementation of engineering controls and wet suppression techniques. Maintenance of all vehicles and equipment to achieve optimal exhaust emissions. Ongoing air quality monitoring at nearby sensitive receptors. 	Low - Medium
Socio-economic Impacts			
Negative visual impacts	Site preparation Earthworks West portal infrastructure RopeCon	<ul style="list-style-type: none"> Install light fixtures that provide precisely directed illumination to reduce light “spillage” beyond the immediate surrounds of the site i.e. lights (spotlights) are to be aimed away from sensitive viewing areas. 	Very Low

Potential impact	Activity	Possible mitigation	Potential for residual risk
		<ul style="list-style-type: none"> • Avoid high pole top security lighting along the periphery of the site and use only lights that are activated on illegal entry to the site. • Minimise the number of light fixtures to the bare minimum, including security lighting. • Limit the clearing of vegetation. • Limit the emission of visual air emission plumes (dust emissions). • Use of visual screening berms in areas where there are sensitive visual receptors. • The use of lighting will be limited to project requirements and measures will be implemented to limit light pollution impacts on surrounding areas. In this regard, night lighting will be fitted with fixtures to prevent light spillage and focus the light on precise activities and infrastructure, fitted as low to the ground as is practicable, and most security lights will be activated with movement sensors; • On-going vegetation establishment on rehabilitated areas. 	
Positive socio-economic changes due to increased investment and job creation	Extension of mining due to inclusion of Kruidfontein.	<ul style="list-style-type: none"> • PPM (and its contractors) will hire local people from the closest communities where possible. In order to be in a position to achieve this, a skills register of people within the closest communities will be maintained. • No ad hoc hiring of temporary casual labour will be allowed. A sign clearly indicating that there will be no recruitment at the construction site will be erected at the entrance to the site. Also, a list of available temporary workers in the area will be drawn up and kept by PPM in the event that temporary labour is required. • The precise number of job opportunities (permanent and temporary) will be made public together with the required skills and qualifications. The duration of temporary work should be clearly indicated and employees provided with regular reminders and revisions throughout the employment period. 	High Positive

Potential impact	Activity	Possible mitigation	Potential for residual risk
		<ul style="list-style-type: none"> • Good communication with all job seekers will be maintained throughout the recruitment process. The process must be seen and understood to be fair and impartial by all involved. • Notifying unsuccessful job seekers once the recruitment process is complete. • Disclose any social investment plans for the area that may lead to jobs. • Investigate skills development opportunities and needs in preparation for mine closure to sustain employees post mine closure. • PPM will extend its formal bursary and skills development programmes to the closest communities to increase the number of local skilled people and thereby increase the potential local employee base. • PPM will procure local goods and services from the closest communities, where possible. • PPM will implement a procurement mentorship programme which provides support to local business from the enquiry to project delivery stages. • PPM will incorporate economic considerations into its closure planning from the outset. These closure planning considerations will cover the skilling of employees for the downscaling, early closure and long term closure scenarios. • PPM will identify and develop sustainable business opportunities and skills, independent from mining, for members of the local communities to ensure continued economic prosperity beyond the life of mine. 	
Negative socio-economic impacts due to influx and reduced security	Outside workforce Safety and security issues Health impacts	<ul style="list-style-type: none"> • PPM will work closely with its neighbours, local authorities and law enforcement officials to monitor and prevent the development of informal settlements near the proposed project area and to assist, where possible, with crime prevention within surrounding area. • PPM will implement a health policy on HIV/ADS and tuberculosis. This policy will promote education, awareness and disease management both in the workplace and in the home so that the initiatives of the workplace have a positive impact on the communities from which employees are recruited. 	Low

Potential impact	Activity	Possible mitigation	Potential for residual risk
		<p>Partnerships will be formed with local and provincial authorities to maximise the off-site benefits of the policy.</p> <ul style="list-style-type: none"> • PPM will work closely with the local and regional authorities, the BBKTA and other mines/industry in the area to be part of the problem solving process that needs to address social service constraints. • PPM will implement a stakeholder communication, information sharing and grievance mechanism to enable all stakeholders to engage with PPM on both socio-economic and environmental issues. In this regard, quarterly stakeholder meetings will be held with surrounding communities and I&APs. 	
Loss of or damage to cultural heritage and/or paleontological resources	Site preparation Earthworks West portal infrastructure RopeCon	<ul style="list-style-type: none"> • PPM will ensure that all workers (temporary and permanent) are educated about heritage and cultural resources that may be encountered and about the need to conserve these. • In the event that new heritage and/or cultural and/or paleontological resources are discovered, the mine will follow a chance find emergency procedure, which includes the following: <ul style="list-style-type: none"> • all work at the find will be stopped to prevent damage; • an appropriate heritage specialist will be appointed to assess the find and related impacts; and • permitting applications will be made to SAHRA, if required. • In the event that any graves are discovered during the construction, operational or decommissioning phases, these will be avoided and preserved as a first priority. If damage is unavoidable, prior to damaging or destroying any identified graves, permission for the exhumation and relocation of graves must be obtained from the relevant descendants (if known) and the relevant local and provincial authorities. The exhumation process must comply with the requirements of the relevant Ordinance on Exhumations, and the Human Tissues Act, 65 of 1983. If the graves are older than sixty years SAHRA must issue a permit for the exhumation of the graves whilst a social consultation process and 60-day statutory waiting period have to be followed before the graves can be exhumed. 	Very Low

Potential impact	Activity	Possible mitigation	Potential for residual risk
Reduced road safety due to project related traffic	Site establishment Mining activities Transport systems	<ul style="list-style-type: none"> The following is proposed to upgrade the intersection at the P50-1 and D511 roads: <ul style="list-style-type: none"> South bound traffic along the D511 to be stop controlled at the intersection with the P50-1 (as is the current practise). East and west bound traffic along the P50-1 will be free-flow (as is the current practise). Dedicated right and left turns to be established on the P50-1 for vehicles turning onto the D511. A road maintenance plan needs to be prepared in conjunction with the relevant road authorities on public roads where trucks and buses will operate. PPM will implement a transport safety programme to achieve the mitigation objectives. Key components of the programme include education, training, awareness, and transport system maintenance. PPM will implement the measures listed below during the construction phase in order to provide safe access to the site for all project phases. These measures will be maintained for the life of the project: <ul style="list-style-type: none"> Traffic and information signs and road markings will be provided where relevant; Traffic calming measures will be implemented; Dedicated pedestrian routes will be identified and implemented; Dedicated public transport loading and offloading area will be provided on the property; Road traffic safety will be included in the general awareness training programmes for employees, which includes contractors; Evaluate the relevant intersections and road sections on a regular basis as part of the risk and safety management process; Mine and contractor vehicles to be inspected on a regular basis for roadworthiness; Vehicles must use established access and haul roads; No off road driving will be allowed; and 	Very Low

Potential impact	Activity	Possible mitigation	Potential for residual risk
		<ul style="list-style-type: none">All drivers to adhere to the site speed limits.Should sections of the D511 be upgraded to paved road for mine access in the future, a dedicated right turn lane for north bound traffic must be provided as part of the intersection layout.	

7.12 THE OUTCOME OF THE SITE SELECTION MATRIX

Due to the location of the underground resource at the Triple Crown Project (Wilgespruit, Magazynskraal and Kruidfontein Projects) and that the footprint for the surface infrastructure at the Wilgespruit Project has already been approved, in order to minimise additional impacts to the biophysical and social environment the additional footprint has been minimised with proposed activities remaining within this footprint as far as possible.

Varying modes of transporting the RoM were considered, but a mix of haul road and RopeCon is considered the preferred option when considering both the cost as well as the potential impacts from long term trucking between the East Portal (at the Wilgespruit Project) and the RoM pad at PPM.

7.13 MOTIVATION WHERE NO ALTERNATIVES WERE CONSIDERED

See Section 7.12.

7.14 THE PREFERRED ALTERNATIVE

Due to the minor amendments to the footprint that are proposed as part of the Triple Crown Project the preferred alternative was to keep any amendments within the approved footprint, thereby minimising an additional impacts.

In terms of RoM transport from the East Portal to the PPM RoM pad, a mix of trucking using new haul roads and the installation of the RopeCon once steady state mining is achieved (after approximately 6 years) was decided on as this requires the least additional clearing for the construction of the towers and will limit emissions from the trucks and the high cost associated with the running of these vehicles.

8. PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT

The main objectives of the EIA phase are to:

- Assess the potential impacts associated with the preferred project alternatives.
- Identify and describe procedures and measures that would enhance potential positive impacts and avoid, minimize, remedy or compensate potential negative impacts.
- Liaise with relevant government departments on issues relating to the proposed development to ensure compliance with existing guidelines and regulations.
- Undertake consultation with I&APs and provide them with an opportunity to review and comment on the outcomes of the EIA process and acceptability of mitigation measures.
- Develop an EMPr and a conceptual closure/decommissioning plan.
- Provide measures for ongoing monitoring (including environmental audits) to ensure that the project plan and proposed mitigation measures are implemented as outlined in the detailed EIA report.

This chapter describes the nature and extent of further investigations to be conducted in the EIA and sets out the proposed approach to the EIA phase.

8.1 ALTERNATIVES TO BE CONSIDERED

The alternatives considered and the preferred site layout alternatives are provided in Section 7.2 and Section 7.14.

8.2 ASPECTS TO BE ASSESSED BY THE EAP

No aspects are being assessed by the EAP.

8.3 ASPECTS TO BE ASSESSED BY THE SPECIALISTS

The aspects to be assessed by the various specialists are included in Table 8-1. Each specialist study will undertake the following steps:

- Identify specific issues of concern through an understanding of the project and the sensitivity of the affected environment as well as a review of all issues raised by stakeholders;
- Interact with other specialists, where required, to ensure the integration of issues of concern and appropriate assessment;
- Define relevant laws and regulations that apply to the specific specialist study;
- Define the baseline environment through review of available information from past studies and additional field studies, where required;
- Assess the direct, indirect incremental impacts as a result of the proposed changes and cumulative impacts (as per Section 7.10.3);
- Update the approved EMPr where required for the additional impacts due to the Triple Crown Project; and
- Where required monitoring plans will be updated.

Table 8-1 Plan of Study: Aspects to be Assessed by Specialists

Specialist Study	Plan of Study
Groundwater	<p>The groundwater specialist study is being undertaken by Artesium (previously known as Exigo). The scope of work is to assess the additional impacts as a result of the Triple Crown Project and will focus on the following:</p> <ul style="list-style-type: none"> • Phase A: Hydrocensus, integration, and review of all mine water monitoring data: <ul style="list-style-type: none"> • Planning and completion of a hydrocensus of the area surrounding the mining areas to record existing surface- and groundwater users, borehole locations and depths, regional water levels and abstraction volumes, potential groundwater receptors. • Sampling and analysis of boreholes to assess the baseline groundwater quality. • Analysis and interpretation of existing and newly acquired water monitoring data including water levels and water quality and all previous hydrocensus data. • Determination and/or updating historical (pre-2009) and current (2020) baseline groundwater conditions for PPM, Wilgespruit Project, Magazynskraal Project, and Kruidfontein Project. • GIS spatial analysis and map compilation. • Compilation of a Hydrogeological Baseline Phase A Report. • Phase B: Integrated numerical groundwater flow and mass transport modelling <ul style="list-style-type: none"> • Numerical groundwater flow and mass transport modelling to determine groundwater impacts. • GIS spatial analysis and map compilation.
Terrestrial Biodiversity	<p>The terrestrial biodiversity specialist study is being undertaken by Scientific Terrestrial Services. The scope of work is to assess the additional impacts as a result of the Triple Crown Project and will focus on the following:</p> <ul style="list-style-type: none"> • Identify and consider all sensitive landscapes including rocky ridges, wetlands and/or any other special features. • Conducting a SCC assessment, including potential for species to occur within the study area. • Provide floral and faunal inventories of species that were encountered on site. • Describe the spatial significance with regards to surrounding natural areas. • Describe floral habitats, communities and ecological state of the proposed infrastructure development as is determined on site. • Identify dominant floral and faunal species for each habitat type. • Focus will be given to identifying areas of severe alien and invader encroachment and listing Category 1, 2 and 3 species in terms of GN No. 864 Alien and Invasive Species List, 2016: National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA). • Specific focus will also be given to establishing the presence of Red Data List (RDL) and protected fauna and flora as listed within the International Union for Conservation of Nature (IUCN) List.

Specialist Study	Plan of Study
	<ul style="list-style-type: none"> Establish relevant protected listed species in terms of the NWBSP, the National Forest Act, 1998, (Act No. 84 of 1998); and TOPS list of NEMBA.
Aquatic Biodiversity	<p>The wetland and aquatic biodiversity specialist study is being undertaken by Scientific Aquatic Services. The scope of work is to assess the additional impacts as a result of the Triple Crown Project and will focus on the following:</p> <ul style="list-style-type: none"> A background study of relevant national, provincial and municipal datasets (such as the National Freshwater Ecosystem Priority Areas [NFEPA] 2011 database; the Department of Water and Sanitation Research Quality Information Services [DWS RQIS PES/EIS], 2014 database, the North-West Biodiversity Sector Plan (NWBSP), 2015 and a National Biodiversity Assessment (NBA) 2018 will be undertaken to aid in defining the PES and EIS of the freshwater ecosystems. All freshwater ecosystems within the investigation area will be delineated using desktop methods in accordance with GN509 of 2016 as it relates to activities as stipulated in the NWA and verified where possible according to the “Department of Water Affairs and Forestry (DWAF) (2005): A practical field procedure for identification of wetlands and riparian areas”. Aspects such as soil morphological characteristics, vegetation types and wetness will be used to verify the freshwater ecosystems, where required. A freshwater ecosystem classification assessment will be undertaken according to the Classification System for Wetlands and other Aquatic Ecosystems User Manual: Inland systems (Ollis et al., 2013), where required. The EIS of the freshwater ecosystem will be determined according to the method described by Rountree and Kotze (2013). The services provided by the watercourses associated with the study area and 500 m investigation area must be assessed according to the method of Kotze et al (2009) in which services to the ecology of the study area as well as services to the people of the area are defined. The PES of the freshwater ecosystem will be assessed according to the resource directed measures guideline as advocated by Macfarlane et al. (2008) or DWAF (2007) as applicable. Watercourses should be mapped according to the ecological sensitivity of each hydrogeomorphic unit in relation to the study area. In addition to the watercourse boundary, buffers will be generated and the applicable zones of regulation will be refined and depicted, where applicable <p>The PES, EIS, and ecological service provision of the watercourses should be highlighted, and expected impacts on the systems must be assessed according to the impact assessment methodology.</p>
Soils and Land Capability	<p>The agricultural agro-ecosystem specialist study is being undertaken by Zimpane Research Collaborative. The scope of work is to assess the additional impacts as a result of the Triple Crown Project and will focus on the following:</p> <ul style="list-style-type: none"> Analysis of field results considering the various soil types. Data analysis will include a description of physical soil properties, as well as the following parameters: <ul style="list-style-type: none"> Terrain morphological unit (landscape position) description. Diagnostic soil horizons and their respective sequence.

Specialist Study	Plan of Study
	<ul style="list-style-type: none"> • Texture estimated as % clay according to the in-situ hand feel method. • Depth of identified soil horizons. • Soil form classification name(s). • Observed land capability limitations of the identified soil forms; and • Depth to saturation (water table), if encountered. <ul style="list-style-type: none"> • Group uniform soil patterns into map units, according to observed limitations. • Analyse and interpret soil analysis data to assess the contamination risk or impacts. <p>Compile soil, land use and land capability report under current on-site conditions based on the field finding data.</p>
Noise	<p>The noise specialist study is being undertaken by Airshed Planning Professionals. The scope of work is to assess the additional impacts as a result of the Triple Crown Project and will focus on the following:</p> <ul style="list-style-type: none"> • The legal requirements pertaining to environmental noise, with reference made to SANS and International Finance Corporation (IFC) requirements. • Baseline noise survey to measure environmental noise in the study area. • Analysis of the baseline survey results, including analysis of average, minimum and maximum baseline noise levels, ground attenuation potential and existing sources of environmental noise. • Study of the physical environment and attenuation potential in the study area, with specific reference to meteorology, land use and topography. • Compilation of a source inventory, detailing all significant noise sources associated with the Triple Crown Project. • Propagation simulation of quantified noise sources using the CadnaA model. • Calculation and assessment of simulated ambient noise levels as a result of the project, both as an effective change from baseline levels as well as the cumulative impact from the project together with background activities. • Compilation of a noise management plan, including recommendations for mitigation and monitoring.
Air Quality	<p>The air quality specialist study is being undertaken by Airshed Planning Professionals. The scope of work is to assess the additional impacts as a result of the Triple Crown Project and will focus on the following:</p> <ul style="list-style-type: none"> • Study the legal requirements pertaining to air quality, with reference made to emission limits and ambient air quality standards and guidelines. • Desktop review of all available project and associated data, including: <ul style="list-style-type: none"> • On-site meteorological for the period available. • Weather Research and Forecasting Model (WRF) meteorological data for the site for a period of three (3) years (2017-2019). • assess the results from ambient air quality and dust fallout sampling to date. • Compilation of an emissions inventory including the identification and quantification of all emissions associated with the proposed mining, transporting and processing operations. • Pollutants quantified will be limited to particulate matter (TSP, PM₁₀ and PM_{2.5}) and gaseous emissions (SO₂, NO₂ and CO). Engineering design parameters, design emission standards, emissions factors published by the

Specialist Study	Plan of Study
	<p>United States Environmental Protection Agency (US EPA) and Australian National Pollutant Inventory (NPI) will be used.</p> <ul style="list-style-type: none"> • Atmospheric dispersion simulations of all PM₁₀, PM_{2.5} and dust fallout, and gaseous pollutants for the operations reflecting highest hourly, daily and annual average concentrations due to routine and upset emissions from the proposed operations. • International approved US EPA AERMOD dispersion model will be used. • Impact assessment by comparing ambient pollutant concentration levels to the National Ambient Air Quality Standards and National Dust Control Regulations. • Identification of air quality management and mitigation measures based on the findings of the compliance and impact assessment. • Quantification of carbon footprint from all proposed operations will be conducted. This includes the quantification of greenhouse gasses from all direct sources of emission associated with the various processes. Internationally published emission factors will be used in the quantification of carbon dioxide (CO₂), nitrous oxide methane (CH₄), nitrous oxide (N₂), hydrofluorocarbons (HFCs), perfluorocarbons (PFC's) and sulphur hexafluoride (SF₆). All emissions will be reported on as CO₂-eq. Reports published by the Intergovernmental Panel on Climate Change (IPCC) will be referenced for approved methodologies on quantifying GHG inventories. In addition, reference will be made to literature such as the World Business Council for Sustainable Development protocol for CO₂.
<p>Visual</p>	<p>The visual specialist study is being undertaken by Graham A Young Landscape Architect (GYLA). The scope of work is to assess the additional impacts as a result of the Triple Crown Project and will focus on the following:</p> <ul style="list-style-type: none"> • Determine visual intrusion. <ul style="list-style-type: none"> • Photographs taken during the site visit will be digitally manipulated to simulate the physical presence and nature of the visual intrusion of the proposed Triple Crown Project components from critical viewing areas. These simulations will model the Project and associated infrastructure within the landscape context and would illustrate the ability/inability of the landscape to absorb the 'intrusion'. They will also simulate the various mitigation options. • Determine visibility and visual exposure. <ul style="list-style-type: none"> • Visibility is determined by conducting a view shed analysis. A semi-quantitative digital terrain model (DTM) which consists of features that normally occur on 1:50 000 maps, such as roads and settlements, will be "draped" over contours (derived from 1:50 000 maps) to generate an analysis that determines all potential observation sites (the view shed) from which Triple Crown Project components would be visible. • Describe and rate the visual impact. <ul style="list-style-type: none"> • The significance of impact will be rated in terms of accepted local and international industry standard criteria and GYLA's approach and will also refer to the SLR's impacts rating.

Specialist Study	Plan of Study
Socio-economic	<p>The economic specialist study is being undertaken by Hilda Bezuidenhout. The scope of work is to assess the additional impacts as a result of the Triple Crown Project and will focus on the following:</p> <ul style="list-style-type: none"> • The Social Impact Assessment (SIA) will provide a baseline description of the study area, specifically focussing on the communities living and working in close proximity to the development. • The potential impacts of the development on the social environment will be identified and assessed in terms of an agreed assessment methodology. • Mitigation measures will be proposed to enhance the positive impacts and reduce the significance of the negative impacts. • In addition to information obtained from interviews with key stakeholders, the SIA will draw from comments received during the PPP. Although the SIA and the PPP are two separate distinct processes, some of the consultation will take place on the same occasions.
Cultural Heritage	<p>The cultural heritage specialist study is being undertaken by Dr Julius CC Pistorius. The scope of work is to assess the additional impacts as a result of the Triple Crown Project and will focus on the following:</p> <ul style="list-style-type: none"> • Establish whether any of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) occur within the footprint of the proposed West portal and associated facilities. • Determine the significance of these heritage resources. • Make recommendations regarding the mitigation and/or the conservation of any significant heritage resources that may be affected by the proposed development of the PPM Project and associated facilities.
Traffic	<p>The traffic specialist study is being undertaken by Siyazi Gauteng Consulting Services. The scope of work is to assess the additional impacts as a result of the Triple Crown Project and will focus on the following:</p> <ul style="list-style-type: none"> • Assess all vehicle traffic related data for the identified intersection that could potentially be affected by the proposed by Triple Crown Project. • Gather all information for the proposed Triple Crown Project in terms of potential increase in production, staff compliment, timeline and mining phases. • Conduct calculations to determine the potential number of vehicle trips anticipated to be generated due to proposed Triple Crown Project during identified vehicle peak times. • Conduct detailed intersection performance evaluations for the identified intersection (Micro simulation).

8.4 METHOD OF ASSESSING THE ENVIRONMENTAL ASPECTS

Refer to Section 7.9.

8.5 METHOD OF ASSESSING DURATION SIGNIFICANCE

Refer to Section 7.9.

8.6 CONSULTATION WITH THE COMPETENT AUTHORITY

A pre-application meeting was held with the DMRE via Microsoft Teams on 15 September 2020 to provide information pertaining to the project. In addition, the Scoping Report including all comments received during the I&AP review process will be prepared and submitted to the DMRE for their review and decision-making. A site visit and meeting will be held, if requested.

8.7 THE PUBLIC PARTICIPATION PROCESS IN THE EIA

8.7.1 Notification of Interested and Affected Parties

All registered I&APs included on the project database will be involved in the EIA process of the project. Notifications will be in the form of emails, WhatsApp groups, bulk SMS notifications and other modes of communication which will be agreed upon with the I&APs. The relevant I&APs identified for the project are listed below:

- Competent authority: DMRE- North West Province.
- Commenting authorities:
 - Department of Agriculture and Rural Development (DARD);
 - Department of Water and Sanitation (DWS);
 - Department of Transport (DoT); and
- Local (including ward councillors, municipal offices and community leaders)
- Landowners/residents, lawful occupiers, land users (within and adjacent to the application area);
- Traditional authorities, directly affected (such as Bakgatla ba Kgafela Traditional Authority);
- Communities (surrounding communities, forums and action groups);
- Non-Government Organisations and associations and Non-Profit Companies working in the area;
- Businesses in the area;
- Parastatals;
- Industries surrounding the mining area;
- Tourism , associations and organisations focussed on tourism related activities;
- Service Providers; and
- Other key stakeholders

8.7.2 Details of the Engagement Process to be Followed

Table 8 2 outlines the details of the public participation process that will be followed during the EIA phase of the project.

Table 8-2 Details of the Public Participation Process to be Followed During the EIA Phase

Task	Description
Scoping Report DMRE Decision	
Notification of DMRE decision on the Scoping Report	All I&APs will be notified via email and SMS notifications of the DMRE’s decision of the Scoping Report. Once the Scoping Report is accepted, the EIA phase can be initiated.
Review of the EIA and EMPr	
I&APs review of the EIA and EMPr	Digital Copies: The EIA Reports and specialist reports will be made available on both the SLR and SRL websites or other Cloud Based Services.

Task	Description
	<p>The EIA Report and specialist reports will also be made available for review on a website that is accessible from internet-capable mobile phones and other devices without data charges.</p> <p>The Non-Technical Summary (in English and Setswana) will also be available on the SLR, SRL and the data free website and could, on request, be sent directly via email or WhatsApp.</p> <p>Hard Copies: Hard copies of the EIA Report will be delivered to TAs for their review.</p> <p>Hard copies of the Scoping Report will be placed at the following locations for review: Tribal Authority offices, Local Municipality Office and local library.</p> <p>Hard copies of the Non-Technical Summary will also be provided to TAs to disseminate to the community members as required.</p> <p>Hard copies of the Non-Technical Summary will be made available on request from I&AP – requests can be made via online communication channels for hard copies to be distributed.</p>
<p>Submission of the EIA and EMPr to the DMRE.</p>	<p>The EIA and EMPr will be updated to include any comments received during the review of the report by I&APs. The updated report will be uploaded onto SAMRAD for consideration by the DMRE.</p>
<p>Notify I&APs of the DMRE's decision.</p>	<p>Notify I&APs of the decision taken by DMRE and applicable appeals processes.</p>

8.7.3 Information to be Provided to Registered and Affected Parties

The following information will be included in the EIA report and made available for public review:

- Detailed description of the current biophysical, cultural and socio-economic environments;
- Detailed description of the project including information pertaining to the scale, extent and duration of the project activities;
- Details of authorisations required in terms of the MPRDA, NEMA and NEM:WA;
- Responses to issues and comments received from I&APs;
- Copies of the specialist reports undertaken for the proposed project;
- An assessment of the biophysical, cultural and socio-economic impacts identified during the EIA process, with input from I&APs and specialists.
- An EMPr, with detailed management measures and mitigation to reduce and control identified impacts.
- As part of the review of the EIA report a NTS of the EIA report would be provided to I&APs in both English and Setswana.

Once the DMRE has issued a decision on the application, SLR would, on behalf of the applicant, inform registered I&APs of the decision and the opportunity for appeal.

8.8 TASKS TO BE UNDERTAKEN DURING THE EIA

A description of the tasks that would be undertaken during the EIA phase is provided in Table 8-3. A preliminary schedule for the EIA phase that aligns with regulatory timeframes is included.

Table 8-3 EIA Tasks and Timing

Phase	EAP Activity	Opportunities for Consultation and Participation		Schedule (high level indication)
		Competent Authority	I&APs	
Specialist Assessment and Input	EAP to manage specialist activities and receive inputs for EIA. Specialists to be kept informed of issues raised throughout the EIA process.			August – September 2022
EIA Phase	Compile EIA report	N/A	N/A	September – November 2022
	Distribute EIA for review	Provide copy to DMRE for records	Review of EIA (30 days), Comments to EAP	December 2022 – January 2023
	I&AP consultations	N/A	Consultation with I&APs	Ongoing
	Collate and respond to comments and finalise EIA report	N/A	N/A	January – February 2023
	Submit EIA to DMRE	N/A	N/A	February – March 2023
Competent authority review and decision-making	EIA report to DMRE (106 days from acceptance of Scoping Report).	DMRE Acknowledge Receipt of EIA (10 days).	Notify I&APs of final report submission	March – April 2023
		DMRE Review (107 days)	N/A	March – July 2023
		EA Granted / Refused	N/A	June – July 2023
Decision	Notify registered I&APs of decision (within 14 days of date of decision)	N/A	N/A	July – August 2023
Appeal Phase	EAP to provide information on appeal process as and when required.	Consultation during processing of appeal if relevant.	Submit appeal in terms of National Appeal Regulations, 2014	After decision received from DMRE

8.9 MEASURES TO AVOID, REVERSE, MITIGATE OR MANAGE IDENTIFIED IMPACTS

See Table 7-7 in Section 7.11. It should be noted that this table has been compiled with the information available at present and will be refined during the EIA phase.

9. OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

No additional requests for information have been received to date.

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

No other matters are required in terms of Section 24(4)(A) and (B) of the act.

11. UNDERTAKING BY THE EAP


I, Katherine de Courcy Hamilton, the Environmental Assessment Practitioner responsible for compiling this report, undertake that:

- the information provided herein is correct;
- the comments and inputs from stakeholders and I&APs have been correctly recorded;
- information and responses provided to stakeholders and I&APs by the EAP is correct to the best of SLR's knowledge at the time of compiling the report; and
- the level of agreement with I&APs and stakeholders has been correctly recorded and reported.



Signature of the EAP

Date: 1 August 2022



Commissioner of Oaths

Date: 1 August 2022



COMMISSIONER OF OATHS
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Ex Officio - Professional Accountant (S.A.)
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