

RICHTRAU No.123



global environmental solutions

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PROPOSED ESTABLISHMENT OF AN UNDERGROUND PLATINUM MINING OPERATION AND RELATED SURFACE INFRASTRUCTURE - MAGAZYNSKRAAL PLATINUM MINE

SCOPING REPORT

Submitted with due regard to

consultation with communities and interested and affected parties

as required in terms of Regulation 49 of the Mineral and Petroleum Resources Development Act (Act 28 of 2002), and in accordance with the standard directive for the compilation thereof as published on the official website of the Department of Mineral Resources

and

as required in terms of Regulation 28 of the National Environmental Management Act (Act 107 of 1998).

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OPERATION AND RELATED SURFACE INFRASTRUCTURE - MAGAZYNKRAAL
PLATINUM MINE**

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ACRONYMS AND ABBREVIATIONS

Below a list of acronyms and abbreviations used in this report.

Acronyms / Abbreviations	Definition
%	Percentage
AGES	Africa Geo-Environmental Services
Al	Aluminium
BIC	Bushveld Igneous Complex
BID	Background information document
BBKTA	Bakgatla-Ba-Kgafela Tribal Authority
BPDM	Bojanala Platinum District Municipality
Ca	Calcium
Cd	Cadmium
CEC	Cation exchange capacity
Cl	Chloride
DAFF	Department of Agriculture, Forestry and Fisheries
dBA	A-weighted decibel
DEA	Department of Environmental Affairs
DEDECT	Department of Economic Development, Environment, Conservation and Tourism
DMR	Department of Mineral Resources
DRDLR	Department of Rural Development and Land Reform
DWA	Department of Water Affairs
DWEA	Department of Water and Environment Affairs
EAP	Environmental Assessment Practitioner
EAPSA	Environmental assessment practitioner of Southern Africa
EC	Electrical conductivity (EC)
EIA	Environmental impact assessment
EMP	Environmental management programme
ESIA	Environmental Social Impact Assessment
ESS	Earth Science Solutions
Fe	Iron (Fe)
GDP	Gross domestic profit
IAPs	Interested and/or affected parties
IBA	Important Bird Area
IBMR	Itereleng Bakgatla Mineral Resources (Pty) Ltd
ICB	Interim Certification Board
IDP	Integrated Development Plan
IWWULA	Integrated Waste and Water Use License Application
K	Potassium
km ²	Square kilometres
LOM	Life of mine
l/s	Litres per second
m	Metres
mamsl	Metres above mean sea level
m/s	Metres per second
m ²	Square metre
m ³	Cubic metre
MAR	Mean annual runoff
mbgl	Metres below ground level
Mg	Magnesium
MKLM	Moses Kotane Local Municipality
MI	Megalitre (1 million litres)

Acronyms / Abbreviations	Definition
mm	millimetres
Mn	Manganese
MPRDA	Mineral and Petroleum Resources Development Act
MVA	Megavolt ampere
MW	Megawatts
N	Nitrogen
NAAQS	National Ambient Air Quality Standards
Na	Sodium (Na)
NEMA	National Environmental Management Act
NEMA:BA	National Environmental Management: Biodiversity Act
NEMA: WA	National Environmental Management: Waste Management Act
Ni	Nickel
NLA	Newton Landscape Architects
NO ₂	Nitrous oxide
NWEF	North West Eco Forum
NWPTB	North West Parks and Tourism Board
°C	Degrees Celsius
PM10	Particulate matter with a fraction smaller than 10µm (microns)
PM ₁₀	Particulate matter
PPM	Pilanesberg Platinum Mines
PrSciNat	Registered professional in natural science
Richtrau	Richtrau No 123 (Pty) Ltd
ROM	Run-of-mine
RWD	Return water dam
SACNSP	South African Council for Natural Scientific Professionals
SAHRA	South African Heritage Resources Agency
SANBI	South African National Botanical Institute
Se	Selenium
Sedibelo	Sedibelo Platinum Mine
SDF	Standard Design Flood
SO ₂	Sulphur dioxide
SO ₄	Sulphate (SO ₄)
TDS	Total dissolved solids
TSS	Total suspended solids
TSF	Tailings storage facility
TSP	Total suspended particles
WMA	Water Management Area

INTRODUCTION

Introduction to the proposed project

Richtrau No. 123 (Pty) Ltd (Richtrau) is owned by Pallinghurst Resources Limited, the Bakgatla-Ba-Kgafela Tribe and Anglo Platinum Limited. Richtrau currently hold the prospecting rights for platinum group metals (PGMs) (NW 30/5/1/1/2/1334 PR now NW 30/5/1/1/2/10723 PR) and Base minerals (NW 30/5/1/1/2/1680 PR) on the farm Magazynskraal 3 JQ, immediately north of the Pilanesberg National Park in the Moses Kotane Local Municipality, of the Bojanala Platinum District Municipality in the North West Province – refer to Figure 1 and Figure 2 respectively for the regional and local settings. Richtrau proposes to develop an underground platinum mining operation and establish related surface infrastructure to support the mining operation. The proposed surface infrastructure that could be established as part of the Magazynskraal Platinum Mine include:

- two shaft complexes and associated ventilation shafts;
- mineral processing plant;
- waste rock dumps;
- topsoil stockpiles;
- tailings storage facility;
- reef transport facility;
- waste disposal facility; and
- a wide range of support services and infrastructure (e.g. roads, power supply, water supply).

As part of a joint venture agreement, Richtrau, Pilanesberg Platinum Mines (Pty) Ltd (PPM) and the Itereleng Bakgatla Mineral Resources (Pty) Ltd (IBMR), are proposing to develop three separate projects which are situated on neighbouring farms that could function as a combined mining operation (see Figure 2). In addition to the above-mentioned Magazynskraal Platinum Mine, the combined mining operation would also include:

- PPM, an existing open pit platinum mining operation which currently operates on the farms Tuschenkomst 135 JP and Witkleifontein 136 JP. It is proposed that the existing open pit on the farm Tuschenkomst be extended onto the farms Wilgespruit 2 JQ and Rooderand 46 JQ.
- Sedibelo Platinum Mine (Sedibelo), a developing mine owned and operated by the IBMR, located on the farms Wilgespruit 2 JQ, Portion 1 of Rooderand 46 JQ, Legkraal 45 JQ and Koedoesfontein 42 JQ. In broad terms, the approved Sedibelo operation comprises open pit and underground mining, and associated surface infrastructure. It is proposed that the approved infrastructure be repositioned and new infrastructure be established to better suit the proposed combined mining operation.

These three developments are the subject of three separate EIAs, therefore this Scoping Report only addresses the proposed Magazynskraal Platinum Mine.

Prior to the commencement of the proposed project, an environmental impact assessment (EIA) is required in terms of the Mineral and Petroleum Resources Development Act, 28 of 2002 (MPRDA), the National Environmental Management Act, 107 of 1998 (NEMA), and the National Environmental Management: Waste Act, 59 of 2008 (NEMWA).

SLR Consulting (Africa) (Pty) Ltd (SLR), an independent firm of environmental consultants (previously known as Metago Environmental Engineers (Pty) Ltd), has been appointed to manage the environmental process.

The EIA process comprises two phases: the scoping phase and an EIA / environmental management programme (EMP) phase. This report describes the scoping phase for the proposed project. The main purpose of this scoping report is to set out all project-related environmental issues; to identify and outline what investigations need to be conducted; and to detail how these investigations will be performed. The terms of reference generated for the EIA will enable the meaningful assessment of all relevant environmental and social issues.

Brief project motivation (need and desirability)

Based on the exploration work conducted on the farm Magazynskraal 3 JQ, Richtrau believes there is a feasible ore body that is worth developing using underground mining methods. The proposed ore body has an expected life of mine (LoM) of 30 years, which could be extended to 60 years. Direct economic benefits will be derived from wages, taxes and profits. Indirect economic benefits will be derived from the procurement of goods and services and spending power of employees.

The costs associated with transporting domestic, industrial and hazardous wastes from site to an off-site disposal facility are high. As such, it is proposed that an on-site waste disposal facility be established on the farm Magazynskraal 3 JQ.

Legal Framework

Prior to the commencement of the proposed project, environmental authorisation is required from key government departments. These include:

- environmental authorisation from the North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT) in terms of NEMA. The proposed project incorporates several listed environmental activities. An application was submitted by SLR to DEDECT and was accepted by the department (Appendix A). The EIA regulation being followed for this project is Regulation 543 (2010 EIA Regulations);

- an environmental decision from the Department of Mineral Resources (DMR) in terms of the MPRDA in the form of an approved Environmental Impact Assessment and Environmental Management Programme (EIA and EMP) report;
- Waste license for waste-related activities from the Department of Environmental Affairs (DEA) in terms of NEMA: Waste Act, 59 of 2008. An application will be submitted to DEA in due course; and
- A water use license from the Department of Water Affairs (DWA) in terms of the National Water Act (NWA) 36 of 1998.

It is expected that any additional approvals/permits needed for the project will be identified during the course of the environmental assessment process. A detailed list will be provided in the EIA and EMP report.

This document has been prepared strictly in accordance with the DMR Scoping Report template format, and was informed by the guidelines posted on the official DMR website. This is in accordance with the requirements of the MPRDA. In addition, this report complies with the requirements of the National Environmental Management Act (NEMA) (Act 107 of 1998). The relevant criteria are indicated in Table 1.

TABLE 1: LEGAL FRAMEWORK

Reference in Scoping Report	Mining Regulation 49 of Regulation 527 of 23 April 2004	NEMA Regulation 28 of Regulation 543 of 18 June 2010
Introduction	-	Details of the environmental practitioner who prepared the report, including relevant expertise to carry out scoping procedures.
Introduction	-	Identify all legislation and guidelines that have been considered in preparing the scoping report.
Section 1	Describe the methodology applied to conduct scoping.	-
Section 1, Appendix B, Appendix C, and Appendix D	Describe the process of engagement of identified interested and affected parties (IAPs), including their views and concerns.	Details of the public participation process conducted in terms of Regulation 28(a), including: notification of IAPs, proof of notification, IAP register/database, summary of issues raised by IAPs.
Section 2	Describe the existing status of the environment prior to the mining operation.	Description of the environment that may be affected by the activities.
Section 3.1	Describe the most appropriate procedure to plan and develop the proposed operation.	A description of the proposed activities, a description of the property on which the activity is to be undertaken, and the location of the activity on the property.
Sections 4.1 and 4.5	Identify and describe reasonable land use or development alternatives to the proposed operation. Describe the consequences of not proceeding.	A description of any feasible and reasonable alternatives that have been identified.

Reference in Scoping Report	Mining Regulation 49 of Regulation 527 of 23 April 2004	NEMA Regulation 28 of Regulation 543 of 18 June 2010
Section 3	Identify and describe the anticipated environmental, social and cultural impacts, including cumulative effects where applicable.	A description of the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activities. A description of environmental issues and potential impacts, including cumulative impacts.
Section 6	Describe the nature and extent of further investigations required in the environmental impact assessment report.	Information on the methodology that will be adopted in assessing the potential impacts that have been identified. A plan of study for EIA, including: tasks to be undertaken, specialist reports and processes, consultation of authorities, method of assessing environmental issues and alternatives, the option of not proceeding, proposed public participation process, other information required by the authorities.

Scoping phase objectives

The objectives of the scoping phase are to understand the proposed project, identify and describe potential environmental and social impacts, and to set out any related terms of reference for further investigations that will enable the meaningful assessment of all relevant environmental and social issues. The terms of reference for further investigations are included in Section 6.1.

Scoping team

SLR Consulting (Africa) (Pty) Ltd (SLR), previously known as Metago Environmental Engineers (Pty) Ltd, is the independent firm of consultants that has been appointed by the applicant company to undertake the environmental assessment. Fiona Bolton (project manager) has six years of relevant experience. Brandon Stobart (project reviewer) has fourteen years of relevant experience and is registered Environmental Assessment Practitioner (EAPSA) with interim certification board (ICB).

The environmental scoping team includes:

- Brandon Stobart / Alex Pheiffer – Project reviewer;
- Fiona Bolton – Project manager;
- Caitlin Pringle – Project assistant;
- Ntsako Baloyi – Public consultation assistant.

Technical input was provided by:

- Dean Riley – Project manager
- Richard Viring – Richtrau representative

Neither Fiona, Alex, Brandon or SLR has any interest in the project other than fair payment for consulting services rendered as part of the environmental assessment process.

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FIGURE 1: REGIONAL SETTING

FIGURE 2: LOCAL SETTING

1 THE METHODOLOGY APPLIED TO SCOPING

The scoping process was conducted in accordance with the requirements of the legal framework outlined in Table 1 of the Introduction to this report and involved the following steps:

- key team members conducted a site visit to the proposed project site;
- available studies and reports covering the Magazynskraal project area were reviewed;
- a project description was drafted in consultation with the applicant;
- potential positive and negative impacts were identified by considering the project description and site conditions;
- interested and affected parties (IAPs) were identified, notified of the proposed project and consulted (the consultation process is outlined in Section 5 of this report);
- the relevant authorities were identified, notified of the proposed project and consulted (the consultation process is outlined in Section 5 of this report);
- the SLR environmental team identified the investigations required to assess the potential positive and negative impacts (the terms of reference are included in Section 6 of this report); and
- a Scoping Report was compiled.

The main sources of information used to develop this report are listed below:

- Earth Science Solutions (September 2011) [v1.2]: *Magazynskraal PGM Project, Specialist soils and land capabilities study.*
- Metago Environmental Engineers (Pty) Ltd (April, 2007): *Pilanesberg Platinum Mines - Environmental impact assessment/management programme for a proposed platinum mine.*
- Metago Environmental Engineers (Pty) Ltd (June, 2009): *Environmental impact assessment and environmental management programme for the proposed closure of a provincial road and changes to surface infrastructure at Pilanesberg Platinum Mine.*
- Natural Scientific Services (April 2010): *Desktop ecological assessment: The Magazynskraal Mining Project.*
- North West Parks and Tourism Board (NWPTB) (April 2002): *Heritage park Concept Plan second edition.*
- personal communications with Black Rhino representatives (7 March 2012).
- Pistorius, J (August 2010): *A Phase I Heritage Impact Assessment for the farm Magazynskraal 3 JQ near the Pilanesberg National Park in the North West Province of South Africa.*
- Rubidge, B (February 2011): *Magazynskraal project – Palaeontological Impact Assessment.*
- topographical maps (1:50 000 scale) (2527AA, 2527AB2526BB, 2426DD, 2427CD and 2427CC).
- WR2005, 2009, *Water Resources of South Africa, 2005 Study (WR2005).*

1.1 HISTORICALLY DISADVANTAGED COMMUNITIES

The historically disadvantaged communities as defined in the DMR Guideline are detailed below.

With reference to Figure 1 and Figure 2, the communities closest to the proposed Magazynskraal project area include:

- livestock herders and subsistence farmers located on the farm Magazynskraal 3 JQ as well as on the neighbouring farm (Wilgespruit 2 JQ);
- Lesobeng / Kgamatha (located 1km and 4km respectively from the project boundary on the farm Wildebeestkuil 7 JQ);
- Legkraal (including Bofule and Ramasedi [previously known as Ga Masilela]) (located 1.5km from the project boundary on the farm Koedoesfontein 42 JQ);
- Lekutung (located 2km from the project boundary on the farm Kruidfontein 40 JQ); and
- Lesetlheng (located 3km from the project boundary on the farm Kruidfontein 40 JQ).

1.2 HISTORICALLY DISADVANTAGED COMMUNITY LAND OWNERSHIP

Community land ownership is not applicable in this instance as the property on which the proposed project would be located is owned by the State (refer to Section 1.6).

1.3 DEPARTMENT OF LAND AFFAIRS INTEREST

The farm Magazynskraal 3 JQ is owned by the Republic of South Africa (care of the Department of Rural Development and Land Reform [DRDLR], previously the Department of Land Affairs). As such, the DRDLR has been identified as an interested and affected party (IAP) and has been consulted. Proof of consultation is attached in Appendix C.

1.4 LAND CLAIMS

Neither SLR nor Richtrau are aware of a land claim on the farm Magazynskraal 3 JQ. This will be confirmed with the Department of Rural Development and Land Reform for the purposes of the EIA and EMP report.

1.5 RELEVANT TRADITIONAL AUTHORITY

The Bakgatla-Ba-Kgafela is the relevant traditional authority for the proposed project area. During the public consultation process it was noted that some of the communities are challenging this leadership. In this regard, refer to Appendix C for minutes of the scoping meetings and correspondence received by SLR, and Appendix D for the Comments and Response Report.

1.6 LANDOWNERS

The farm on which the proposed project will take place (if approved) is owned by the Republic of South Africa. Details of the title deed are listed in Table 2.

TABLE 2: LAND OWNERS IN THE PROJECT AREA

Farm Name	Portion number	Title deed number	Surface owner (provided by applicant)
Magazynskraal 3 JQ	The farm	T56447/2000	Republic of South Africa

1.7 LAWFUL OCCUPIERS

There are currently livestock herders and subsistence farmers that occupy the farm Magazynskraal 3 JQ.

1.8 OTHER PARTIES THAT MAY BE DIRECTLY AFFECTED

This section briefly discusses whether or not other persons (including on adjacent and non-adjacent properties) socio-economic conditions will be directly affected by the proposed mining operation.

Other affected parties that may be directly affected include the landowners and land users on the adjacent properties (as listed in Table 3 below).

TABLE 3: LANDOWNERS ADJACENT TO THE PROJECT AREA

Farm Name	Portion number	Title deed number	Surface owner(s) as per title deeds search (February 2012)
Wilgespruit 2 JQ	0	T1230/1919BP	Bakgatla-Ba-Kgafela Tribe
Wildebeestkuil 7 JQ	0	T4278/1921BP	
Kruidfontein 40 JQ	0	T4028/1898BP	
Cyferkuil 1 JQ	1	T5284/1937BP	Republic of South Africa
Wachteenbeetjeslaagte 4 JQ	0	T2403/1948BP	
Haakdoorn 6 JQ	0	T5990/1937BP	
Koedoesfontein 42 JQ	0	T5841/1919BP	Tchinangoe Pilane (1/6 share); Samuel Tilimane Pilane (1/6 share); Noel Pilane (1/6 share); and Bakgatla Tribe (3/6 share)

Other affected parties identified to date that may be affected by the project include:

- Pilanesberg National Park (including Black Rhino Game Reserve);
- North West Parks and Tourism Board (NWPTB);
- downstream water users;
- surrounding mining operations; and
- surrounding communities on non-adjacent properties (including land owners and land users).

Details on the relevant parties that will be directly affected by the proposed project will be identified during the EIA process, and the information will be included in the EIA and EMP report.

1.9 RELEVANT LOCAL MUNICIPALITY

The Moses Kotane Local Municipality (MKLM) is the relevant local municipality.

1.10 OTHER STAKEHOLDERS

The relevant government departments, agencies and institutions responsible for the various aspects of the environment, land and infrastructure that may be affected by the proposed project are listed below:

- Regulatory authorities:
 - Department of Mineral Resources (DMR);
 - Department of Economic Development, Environment, Conservation and Tourism (DEDECT);
 - Department of Environmental Affairs (DEA);
 - Department of Water Affairs (DWA);
 - South African Heritage Resource Agency (SAHRA);
 - Department of Agriculture, Forestry and Fisheries (DAFF);
 - Department of Rural Development and Land Reform (DRDLR) (previously the Department of Land Affairs);
 - Department of Public Works, Roads and Transport (DPWRT);
 - North West Parks and Tourism Board (NWPTB);
 - Moses Kotane Local Municipality (MKLM);
 - Bojanala Platinum District Municipality (BPDM);
 - Ward councillors;
- Non-governmental Organisation (NGO):
 - Federation for a Sustainable Environment (FSE) (formerly North West Ecoforum);
- Parastatals:
 - Eskom;
 - Magalies Water;
- Other:
 - Pilanesberg National Park (including Black Rhino Game Reserve).

1.11 NOTIFICATION OF LANDOWNERS, LAWFUL OCCUPIERS AND IAPS

Proof that the landowners, lawful occupiers and IAPs were notified of the project is provided in Appendix C.

2 DESCRIPTION OF THE EXISTING STATUS OF THE ENVIRONMENT

This section has been compiled using studies carried out by various specialists to date, as well as information from the recent site visits by SLR personnel. This baseline information is aimed at giving the reader perspective on the existing status of the cultural, socio-economic and biophysical environment. Detailed information will be provided in the EIA and EMP report.

2.1 AGREEMENT ON EXISTING STATUS OF ENVIRONMENT

Information on the existing status of the environment was provided to IAPs during the scoping meetings, as per the minutes attached in Appendix C. No objections were raised about the information on the existing environment during the scoping meetings, however additional information was provided regarding groundwater use by animals in the Pilanesberg National Park. IAPs will also have the opportunity to review this scoping report which includes details of the existing status of the environment.

2.2 EXISTING STATUS OF THE CULTURAL ENVIRONMENT

The existing status of the cultural environment that may be affected by the proposed project is described in the section below. The term 'cultural resource' is a broad, generic term covering any physical, natural and spiritual properties and features adapted, used and created by humans in the past and present. Cultural resources are the result of continuing human cultural activity and embody a range of community values and meanings. These resources are non-renewable and finite. Cultural resources include traditional systems of cultural practise, belief of social interaction. They can be, but are not necessarily identified with defined locations. Heritage resources are considered to be cultural resources, therefore these resources are dealt with together in the section below.

2.3 EXISTING STATUS OF THE HERITAGE ENVIRONMENT

This section describes the existing status of the heritage and cultural environment that may be affected by the proposed project. The various natural and cultural assets collectively form the heritage. These assets are known as cultural and natural resources. Heritage (and cultural) resources include all human-made phenomena and intangible products that are the result of the human mind. Natural, technological or industrial features may also be part of heritage resources as places that have made an outstanding contribution to the cultures, traditions and lifestyles of the people or groups of people of South Africa.

A Phase I Heritage Impact Assessment has been conducted as part of the proposed project (Pistorius, 2011). Heritage and cultural resources that have been identified in the project area include:

- remains from the Late Iron Age, Historical Period and Recent Past:
 - upright stones demarcating the foundations of dwellings which are clustered together (rated as having a medium significance);

- potsherds which are scattered across an open piece of veldt (rated as having a low significance);
- heaps of stones from the recent past (rated as having low or no historical significance).

It is not considered likely that paleontological resources exist within the project area due to the geology of the area (Rubidge, 2011). The project area is underlain by igneous rocks of the Rustenberg Layered Suite of the Bushveld Igneous Complex (BIC) that is exposed only in places. This Complex is an intrusive igneous body comprising a series of ultramafic-mafic layers and a suite of associated granitoid rocks. As these rocks are Precambrian in age and are of igneous origin it is highly unlikely that fossils will be affected by the proposed subsurface mining development. Overlying the rocks of the Rustenberg Layered suite, the entire area is covered by unconsolidated Quaternary sand deposits. These are the only sedimentary deposits in the area to be affected by mining activities, and as the deposits are not consolidated it is very unlikely that any fossils will be present (Rubidge, 2011).

2.4 EXISTING STATUS OF THE SOCIO-ECONOMIC ENVIRONMENT

This section describes the existing status of current land uses and the socio-economic environment that may be affected by the proposed project.

2.4.1 CURRENT LAND USES AND THE SOCIO-ECONOMIC ENVIRONMENT

The relevant land uses and socio-economic factors that may be affected are listed below, and the socio-economic environment is detailed in Section 2.4.4:

- subsistence agriculture (livestock grazing and crops); and
- informal residential (livestock herders and farmers).

Persons on the relevant property and surrounding properties may be impacted upon by the proposed project. Attempts were made by SLR to inform the land users of Magazynskraal 3 JQ of the proposed project through a social scan process. This involved site visits where SLR personnel tried to meet with these land users directly and attempted meetings with the 'Dibeso' (community elders). These attempts were however unsuccessful with the land users not being willing to discuss the project with SLR personnel due to disputes between these communities and the BBKTA. SLR will continue to engage with the BBKTA structures during the EIA in order to consult with these land users. Further detail on the public consultation process is provided in Section 5.1.4.

The potential positive and negative impacts are described in Section 3.10 of the scoping report.

2.4.2 MINERAL/PROSPECTING RIGHTS

Richtrau holds the prospecting rights for platinum group metals (PGMs) (DMR reference number NW30/5/1/1/2/1334PR) and associated minerals including, gold, silver, nickel, copper, cobalt and chrome (DMR reference number NW30/5/1/1/2/1680PR) on the farm Magazynskraal 3 JQ.

2.4.3 PRE-PROJECT LAND USE

The farm Magazynskraal 3 JQ is currently used for community activities, such as livestock grazing and subsistence farming.

2.4.4 SOCIO-ECONOMIC PROFILE

The regional setting is illustrated in Figure 1. Information provided below is based on the 1996 and 2001 census data from Statistics SA (Stats SA) and 2009/2010 Quantec Data (Quantec Research (Pty) Ltd).

2.4.4.1 Provincial Level – North West Province

- **Population** – The North West Province has a population of approximately 3.2 million residents, with an average household size of 3.6.
- **Economic Activity** – Provincially it was estimated that, in 2009, the most dominant sector contributing to the North West Province's economy was the Mining industry. This was demonstrated by 25% of the economically active population¹ being employed in this industry. The sectors with the smallest contributions to the province's Gross Geographic Product (GGP) were Electricity and Water, as well as the Transportation industry.
- **Unemployment** – It was estimated that the unemployment rate of the North West Province in 2009 was 26% (presenting a similar profile to South Africa as a whole – with an unemployment rate of 25% in the same year).
- **Education** – Ten percent of the working age population has had no formal education. Furthermore, only 18% of the total population in the province obtained a grade 12/matric education.
- **Basic Services** – The majority of the population's households have access to piped water, with only eight percent using alternate water sources (for example, boreholes, water vendors, wells, tankers, dams, rivers, streams). Approximately 46% of households with toilet facilities utilise pit or bucket latrines. Eight percent have no toilet facilities. In terms of households' dominant energy source, 86 % use electricity as the primary means for lighting. Refuse removal services are provided to most households, with a small percentage of the population (an estimated nine percent) not having any refuse disposal facilities.

¹ *Economically active population*: consists of both those who are employed and those who are unemployed (as defined by Statistics South Africa) within the *working age population* (includes all those aged between 15 and 65)

- **Housing** – Within the North West Province, it is estimated that 22% of the population reside in informal dwellings (with 15% of the population living in informal settlements and 7% in backyards).
- **HIV Status** – Those with a tested HIV positive status account for approximately 13% of the North West Province population. In 2010, one percent of the entire province's residents died of AIDS related illness.

2.4.4.2 Municipal Level – Moses Kotane Local Municipality (MKLM)

- **Population:** Approximately 100 000 people reside in the MKLM area. Of this approximately 80% are of a working age between 19 and 65 years and 17% are below 19 years.
- **Education:** As is the case for the province, the local level of education in the people that comprise the workforce age (19 to 65 years) is poor. Of these people only 18% have completed secondary education and only 6% have received education higher than secondary level.
- **Economy/employment:** Excluding the informal sector, the unemployment/not economically active rate is high at an estimated 75% of the economically active age. Mining, construction and the wholesale retail trade are the major employment providers. Income statistics indicate that 52% of the working population receive under R1 600 per month and 40% receive between R1 600 and R6 400 per month.
- **Housing and services:** 75% of residents reside in brick structures but only 9% of residents of the 75% utilise flush toilets and only 8% receive reticulated water in their dwellings.

2.4.4.3 Local Level (local villages)

This information is relevant to Motlhabe, Ntsana-Le-Metsing, Ngweding and Legkraal. Information on the broader community network will be included in the EIA and EMP report.

- **Population:** Approximately 6000 people reside in the villages surrounding the proposed project. It is estimated that 58% of the population is of working age (between 19 and 65 years).
- **Education:** Compared to provincial and local municipality figures, the local level of education in the people that comprise the workforce age (19 to 65 years) is poor with only 4-5% of people with education levels higher than secondary level and only 18% of people having completed secondary education.
- **Economy/employment:** Excluding the informal sector, the unemployment and/or not economically active rate is high at an estimated 80% of the economically active age. Mining is considered to be the major formal employment provider. Income statistics indicate that 3% of households received no income, 69% of households received less than or equal to R1600 per month, and 28% of households received between R1601 and R6400 per month.
- **Housing and services:** 89% of residents reside in brick structures, but only 1% of residents of the 89% utilise flush toilets and only 1% receive reticulated water in their dwellings.

2.4.4.4 Local level (Magazynskraal project site)

The project area population is largely characterised by livestock owners and herders and subsistence farmers. A survey will be conducted to determine the number of people residing on the farm (if any), what they use the land for, and what basic services they have access to. More information will be provided in the EIA in this regard.

2.5 EXISTING STATUS OF RELEVANT INFRASTRUCTURE

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

2.5.1 COMMUNITIES AND COMMUNITY STRUCTURES IN THE VICINITY

Various informal homesteads are located within and adjacent to the Magazynskraal project area. These include the land users on the proposed project area (Magazynskraal 3 JQ), and on neighbouring farms such as Wilgespruit 2 JQ and Wildebeestkuil 7 JQ. More information on the land dwellers and the infrastructure will be provided in the EIA and EMP report.

Villages surrounding the proposed project area include:

- livestock herders and subsistence farmers (located on the farm Magazynskraal 3 JQ);
- livestock herders and subsistence farmers (located adjacent to the project area on the farm Wilgespruit 2 JQ)
- Lesobeng and Kgamatha (\pm 1km east of the project boundary);
- Legkraal (\pm 1.5km south west of the project boundary)
- Lekutung (\pm 2km south of the project boundary);
- Lesetlheng (\pm 3km south east of the project boundary);
- Saulspoort (\pm 6.5km south east of the project boundary);
- Manamakgoteng (\pm 7km east of the project boundary);
- Mononono (\pm 8.5km north east of the project boundary);
- Sefikile (\pm 9.5km north east of the project boundary);
- Magalane (\pm 6km north of the project boundary);
- Magong (\pm 8.5km north east of the project boundary);
- Ngweding (\pm 6.5km north west of the project boundary);
- Ntswana-le-Metsing (\pm 9km north west of the project boundary);
- Motlhabe (\pm 10.5km north west of the project boundary).

2.5.2 OTHER MINING OPERATIONS IN THE VICINITY

Various other mining operations are located in the immediate vicinity of the proposed project and include:

- Sedibelo is situated on the farms Wilgespruit 2 JQ, Portion 1 of Rooderand 46 JQ, Legkraal 45 JQ and Koedoesfontein 42 JQ;
- PPM is situated on the farms Tuschenkomst 135 JP, Witkleifontein 136 JP, Portion 3 of Rooderand 46 JQ, various portions of Ruighoek 169 JP, a portion of Wilgespruit 2 JQ and a portion of Portion 1 of Rooderand 46 JQ;
- Chrometco chrome 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:

- Platinum Australia (Atla Mining), situated on portion 2 of Rooderand 46 JQ;
- Nkwe Platinum (portion RE of Rooderand 46 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;
- Rustenburg Platinum Mines (Union Section) on the farm Zwartklip 405 KQ.

2.5.3 RECREATIONAL FACILITIES WITHIN THE VICINITY

Recreational facilities within the vicinity include:

- Pilanesberg National Park located to the south of the project area;
- Black Rhino Private Game Reserve has been incorporated into the Pilanesberg National Park and is situated on the farm Zandspruit 168 JP;
- Ivory Tree Lodge in the Pilanesberg National Park;
- Lebatlhane Nature Reserve located to the north of the project area;
- BBKTA cultural museum based in Saulspoort/Moruleng;
- Sports centre located in Saulspoort/Moruleng;
- Sun City, which lies on the southern edge of the Pilanesberg National Park, approximately 25km south of the proposed site;
- Madikwe Game Reserve lies approximately 60km to the north west of the proposed site;
- further afield there are a number of 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.

2.5.4 PROPOSED HERITAGE PARK CORRIDOR

The proposed heritage park corridor (HPC) (Figure 1 and Figure 2) is an initiative being put forward by the NWPTB where it is proposed that over 167 000ha will be incorporated into the corridor over a 20 year period to allow the joining of the Madikwe Game reserve and the Pilanesberg National Park. This is a piece of land that stretches north of the Pilanesberg towards Dwaalboom and then follows the Dwarsberg Mountain range west before joining the Madikwe Reserve at Molatedi. This initiative forms part of a larger initiative to establish a significant conservation area in the province approaching 1 000 000ha. The proposed concept will be to establish a core corridor that would have the potential to be expanded over time to increase the nature based tourism to the area and thus increase the socio-economic benefits to the area (NWPTB, 2002).

As part of the HPC, two different corridors are planned. The phase 1 corridor is the wider corridor which will be fenced off to contain non-dangerous game on the farms that form part of the southern part of the proposed Heritage Park. It is planned that non-dangerous game, community activities and mining activities would co-exist within this corridor. The phase 2 corridor is likely to be a narrower "Big Five" corridor that will be used exclusively for animal movement between Pilanesberg National Park and Lebatlhane Game Reserve (and ultimately the Madikwe Game Reserve), and it will exclude community and mining activities.

2.5.5 TRANSPORT INFRASTRUCTURE

A network of roads exists in the project area (refer to Figure 2). These include:

- the regional tarred R510 (along the eastern boundary of the Pilanesberg National Park);
- the provincial tarred P54-1 (along the western boundary of the Pilanesberg National Park);
- the provincial P50-1 (east / west alignment and connects the R510 to the P54-1);
- the D511 gravel road (north-west / south-east alignment that connects the P50-1 to Magong);
- the D531 gravel road (between Motlhabe and Ntswana-le-Metsing); and
- the Z536 gravel road running south from Ngweding (a section of this road has been closed due to PPM's open pit mining operation. There is a temporary fire break road that follows the eastern boundary of PPM's pit. PPM has applied for and been granted permission to close the Z536 and construct a new road along the northern boundary of the farm Wilgespruit 2 JQ [Metago, 2009]).

2.5.6 POWER LINES AND TELECOMMUNICATIONS

Significant power lines (and the associated Eskom servitudes) are situated approximately 11 km to the west of the proposed Magazynskraal project site in a north-south direction (refer to Figure 2) and along the northern and western boundaries of the Magazynskraal farm (not shown on map). 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. On the project site, there is a low voltage line that follows the internal road network on the farm Magazynskraal 3 JQ.

2.5.7 WATER PIPELINES

There is a Magalies Water pipeline that crosses the proposed project area in an east/west direction along the northern boundary.

2.6 EXISTING STATUS OF THE BIOPHYSICAL ENVIRONMENT

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

2.6.1 GEOLOGY

Magazynskraal is situated in the Bushveld Igneous Complex (BIC). The BIC is an intrusive igneous body, extending about 400 km from east to west and about 350 km from north to south. It comprises a series of ultramafic-mafic layers and a suite of associated granitoid rocks. There are four main limbs to the complex, namely the Northern Limb, the Eastern Limb, the Southern Limb and the Western Limb. Magazynskraal is located in the Western Limb. The target ore body for the proposed project is the Merensky and UG2 reefs.

The ultramafic-mafic rocks of the BIC are known as the Rustenburg Layered Suite. The stratigraphy of the Rustenburg suite is summarised as follows:

- upper zone consisting of norites, gabbros and diorites, magnetite seams;
- main zone consisting of norites and gabbros;
- critical zone consisting of pyroxenites, norities and anorthosites. It is within this layer that the platinum group metals are found;
- lower zone consisting of pyroxenities and harzburgities, chromitite seams; and
- marginal zone consisting of pyroxenites and norites.

2.6.2 TOPOGRAPHY

The topographic relief of the project area can be described as relatively gently sloping towards the north-east of the study area. Topographic elevation varies between 1040 to 1080 metres above mean sea level (mamsl). The study area is relatively flat, at an average elevation of 1060mamsl, with various non-perennial drainage lines crossing the site (see Figure 2). To the south of the proposed project is the Pilanesberg Mountain Range and the associated hills that vary between 1 330 and 1 534mamsl. Isolated

koppies are located approximately 8km to the west of the project site and vary between 1 211 and 1 266mamsl.

2.6.3 CLIMATE

2.6.3.1 Regional climate

The project area falls within the Highveld Climatic Zone, as defined by Schulze (1974). The average annual precipitation ranges from 500mm to 700mm (WRC, 1994). Rainfall is generally in the form of thunderstorms. These can be of high intensity with lightening and strong gusty south-westerly winds. Hail frequency is high, tending to occur 4-7 times per season. Temperatures in this climatic zone are generally mild, but low minima can be experienced in winter due to clear night skies. Frost characteristically occurs in the winter months. Generally winds are light, but south-westerly winds associated with thunderstorms are typically strong and gusty.

2.6.3.2 Weather stations

The nearest weather stations are in the Pilanesberg area, situated approximately 20km south east of the project area. Details of the weather stations are included in Table 4. Weather data will be sourced from the weather stations with the most reliable and longest record as required.

TABLE 4: SOUTH AFRICAN WEATHER SERVICE STATIONS IN THE VICINITY OF THE PROJECT

	South Africa Weather Stations			
	Pilanesberg A*	Pilanesberg B*	Pilanesberg - Pol	Saulspoort
Station number	0548290 7	0548375 A4	0548165 W	0548280 W
Latitude (South)	25° 20'	25° 15'	25° 14'	25° 09'
Longitude (East)	27° 10'	25° 13'	27° 06'	27° 10'
Elevation (mamsl)	1 043	1 085	1 280	1 095
Length of data record available	1961 to 1990 (<i>Rainfall, temperature and humidity data available</i>)	1993 to 2007 (<i>Rainfall data available</i>)	79 years (<i>24 hr rainfall and evaporation data available</i>)	38 years (<i>Evaporation data available</i>)
Elevation difference based on the mean 1 060 mamsl for the site	-17m	-25m	+220m	-35m
Distance and direction from the site	±25km south east	±20km south east	±15km south	±9km south east

* For this report, the two Pilanesberg stations have been labelled A and B for easy reference.

2.6.3.3 Rainfall and evaporation

Average rainfall data was sourced from three South African Weather Service stations mentioned above, namely Pilanesberg A (Station No. 0548290 7), Pilanesberg B (Station No. 0548375 A4) and Pilanesberg–Pol (Station No. 0548165 W).

The majority of the rainfall is during the summer months of October to March at which time approximately 90% of the annual rainfall occurs.

Evaporation figures recorded for the area are high and indicate that the area is a water deficit area. The average annual evaporation is 1990mm. Potential evaporation figures, therefore, exceed the mean annual precipitation (630 mm) by 1 360mm.

2.6.3.4 Temperature

Temperatures in the region tend to be warm to mild, with average maximum temperature of 27.9°C and an average minimum temperature of 11.8°C. Records from the Pilanesberg A Weather Station (Station No. 0548290 7) show that the area has experienced a maximum of 39.5°C in summer and a minimum of -5.0°C in winter over the last seven years the station was operational (1984 – 1990).

2.6.3.5 Wind

The predominant wind direction in the project area is from the south-south east. The general prevailing wind field is from the eastern sector, with less frequent winds from the south western and north western sectors. Calm conditions (wind speeds below 1m/s) are predicted to occur for approximately 15% of the time (Airshed Planning Professionals [Pty] Ltd as cited in Metago, 2009).

During the day-time, winds from the north eastern sector are more frequent, while at night-time, winds from the south eastern sector increase with winds from the south-south east occurring for more than 15% of the time. The day and night-time wind fields reflect the topographical induced flow patterns. The differential heating of slopes gives rise to anabatic (up-valley) flow during the day (increase in frequency of winds from the north-eastern sector) and katabatic (down-valley) flow during the night (increase in frequency of winds from the south-eastern sector).

Airflow varies significantly as the seasons change. The wind flow during the summer months is dominated by winds from the north- northeast with the flow associated with a high frequency of low to moderate wind speeds (1-5m/s). During autumn, a distinct shift in the prevailing airflow from summer is noted with winds being mainly from the south eastern sector. The predominant winds during winter are from the south-south east, and during spring the predominant winds are from the easterly sector.

2.6.4 SOIL AND LAND CAPABILITY

Information in this section was sourced from the soil and land capability study conducted by Earth Science Solutions (ESS) (2011) that is being conducted for this project.

The dominant soil forms on the site include Arcadia (Ar), with areas of deeper and less structure (lower clay content) Valsrivier (Va), Hutton (Hu) and Shortlands (Sd), with sub dominant materials that are made up of soil forms comprising Hutton (Hu), Tukulu (Tu), Oakleaf (Oa), Sepane (Se) and Rensburg (Rg). The land capability ranges from very low intensity grazing lands (poor quality) with little to no significant

economic potential, to highly sensitive wilderness or conservation status lands that will require better than average management if they are going to be impacted by the mine and its operations.

2.6.5 FLORA (NATURAL PLANT LIFE)

Information in this section was sourced from the desktop ecological assessment conducted by NSS for the Magazynskraal Mining Project (2010).

The project site is situated within the Dwaalboom Thornveld vegetation type and is currently being used for cattle grazing. Little evidence of past agricultural practices is evident. The study area is divided into four main vegetation units, which are present on distinctively different soil types, – the *Acacia* Savanna, *Acacia-Grewia* Mixed Savanna, *Acacia* Savanna on red soils and Riparian zones (NSS, 2010).

Acacia Savanna

The *Acacia* Savanna on turf soils was the predominant unit covering over 68% of the study area. At a 1:250 000 scale, this unit falls in the Ea70 Landtype, which is dominated by Arcadia soils. Soil type dictates the distribution of a number of plant species, for example certain species are dominant in turf soils such as *Ischaemum afrum* (Turf Grass). The presence of *Acacia* species such as *Acacia nilotica* (Scented Thorn) is also an indicator of clay soils as well as sweet veld. Within this unit, the tree layer is dominated by *Acacia nilotica*, *Acacia tortilis*, *Acacia melifera* and *Acacia karroo*, with shrub layer dominated by *Asparagus laricus*. A detailed species list will be included in the EIA and EMP report.

Acacia-Grewia Savanna

The *Acacia-Grewia* Mixed Savanna on the sandier transported materials are more diverse with a number of broad leaf species within the *Acacia* thicket. However, within large patches, *Dichrostachys cinerea* (Sickle Bush) has become a problem species.

Species identified during the brief site visit in April 2010 included:

- *Acacia tortilis* (Forssk.) Hayne subsp. *heteracantha* (Burch.) Brenan;
- *Asparagus cooperi* Baker;
- *Boscia* species;
- *Buddleja saligna* Willd;
- *Carissa bispinosa* (L.) Desf. ex Brenan;
- *Ehretia rigida* (Thunb.) Druce subsp. *rigida*;
- *Euclea crispa* (Thunb.) Gürke subsp. *crispa*;
- *Grewia flava* DC;
- *Grewia flavescens* Juss;
- *Gymnosporia buxifolia* (L.) Szyszyl;
- *Gymnosporia polyacanthus* (Sond.) Szyszyl;

- *Sarcostemma viminalis* (L.) R.Br. subsp. *viminalis*;
- *Searsia leptodictya* (Diels) T.S.Yi, A.J.Mill. & J.Wen forma *leptodictya*; and
- *Ximenia caffra* Sond. var. *caffra*.

A detailed species list will be included in the EIA and EMP report.

This area also holds habitat for a number of Conservation Important Species (CIS), which will be further investigated during a detailed summer field investigation.

Acacia Savanna on red soils

Initial indications are that the *Acacia* Savanna on the red soils (Landtype Ea64 dominated by Huttons) contains more open grassland patches and less tree cover as within the turfs. A detailed species list will be included in the EIA and EMP report.

Riparian Areas

Within the riparian zone, which includes non-perennial systems, tree structure changes to more broad-leaved species such as:

- *Tarchonanthus camphorates* (Wild Camphor Bush)
- *Searsia lancea* (Karee)
- *Carissa bispinosa* (L.) Desf. ex Brenan

A detailed species list will be included in the EIA and EMP report.

Conservation Important species

There is the potential for a number of Conservation Important Species (CIS) to occur on site. A population of the protected *Ammocharis coranica* (Ground Lily) was identified within the northern section of the project area. Other species which are protected and could be within the sandier soils to the south of the project area include *Orbeopsis lutea* (Yellow Carrion Flower), *Stapelias* and *Crinum*s. The detailed summer survey will investigate the possibility of these and other potential Red Data / protected species occurring on site. Further detail will be provided in the EIA and EMP report.

2.6.6 FAUNA (NATURAL ANIMAL LIFE)

Information in this section was sourced from an ecological assessment conducted by Natural Scientific Services (as cited in Metago, 2007), and the desktop ecological assessment for the Magazynskraal Mining Project (2010).

A large number of faunal species were determined to potentially occur on site. While the presence of only a few of these was confirmed during the initial site visit, the close proximity of the site to Pilanesberg

Nature Reserve suggested that many more species actually occur here. A detailed species list will be included in the EIA and EMP report.

The following Red Data species were identified as occurring or likely to occur on site:

Data deficient	Near Threatened	Vulnerable	Endangered	Critically endangered
Mammals				
Short-snouted Elephant-shrew	Honey Badger		White-tailed Mouse	Short-eared trident bat
Rock Dormouse	Serval	Ground Pangolin		
Single-striped Grass Mouse	Brown Hyena			
Bushveld Gerbil				
Reddish-grey Musk Shrew	South African Hedgehog			
Tiny Musk Shrew	Rusty Pipistrelle			
Lesser Red Musk Shrew	Darling's Horseshoe Bat			
Swamp Musk Shrew	Schreiber's Long-fingered Bat			
Lesser Grey-brown Musk Shrew				
Forest Shrew				
Greater Dwarf Shrew				
Sundevall's roundleaf bat				
Birds				
	Lanner Falcon	Lappet-faced Vulture	Saddle-billed stork	
	Black stork	Kori Bustard		
	Yellow billed stork	African Marsh-Harrier		
	Secretary bird	Cape Vulture		
	Red-billed Oxpecker	White-backed Vulture		
	Black-winged Pratincole	Tawny Eagle		
	Marabou Stork	Martial Eagle		
	Yellow-throated Sandgrouse	Blue Crane		
		Denham's Bustard		
		African Finfoot		
		Bateleur		
		African Grass Owl		
Snakes and Amphibians				
			Giant Bullfrog	
	Striped Harlequin Snake			

There are a number of conservation important reptile species which could potentially occur on site. These are included in the table below.

Shield-nose Snake	Drueden's/Beaked Burrowing Asp	Sundevall's Garter Snake	Rinkhals
Common Brown Water Snake	Two-striped Shovel-snout	Delalande's Beaked Blind Snake	Bribon's Blind Snake
Eastern Green Snake	Olive House Snake	Striped Harlequin Snake	Spotted Sandveld Lizard
Spotted Sand Lizard	Waterberg Girdled Lizard	Waterberg Flat Lizard	Northern Crag Lizard
Southern Rock Agama	Wahlberg's Velvet Gecko	Transvaal Thick-toed Gecko	Cape Thick-toed Gecko

2.6.7 HYDROLOGY (SURFACE WATER)

2.6.7.1 Drainage and water resources

The project site falls within the A2 sub-drainage region of the Crocodile River, a major tributary of the Limpopo River, and straddles the A24D and A24E quaternary catchments (WR2005). The project area is drained by the non-perennial Lesele River and its tributaries which flow into the non-perennial Lesobeng River downstream which ultimately flows into the perennial Bierspruit. The non-perennial water courses flow for a few days only after heavy rainfall periods. A breached dam is located in the southern section of the project area. A number of unused boreholes are located on the property and two functional boreholes with windmills.

2.6.7.2 Surface water quality

Surface water quality in the area generally reflects fluoride, manganese, aluminium and iron concentrations elevated above the recommended DWAF domestic use guidelines (DWAF Water Quality Guidelines, 1996) (Metago, 2007). Surface water quality in the proposed project area is expected to follow a similar trend.

2.6.7.3 Surface water users

Surface water in the area is used for limited domestic and agricultural use and ecosystem functioning due to the ephemeral nature of the watercourses. Downstream, surface water use may increase due to the perennial nature of watercourses such as the Bierspruit.

2.6.7.4 Wetlands and ecological status

There are limited areas where wetlands could occur on the site. These include the non-perennial river system that is present on the site. It should be noted that although the river system is non-perennial and ephemeral, the potential for wetlands still exist, especially after heavy rainfall events. The non-perennial system is considered largely natural (Class B) according to National Spatial Biodiversity Assessment (NSBA) and has been categorised as Vulnerable (NSS, 2010).

2.6.8 GROUNDWATER

2.6.8.1 Presence of groundwater

Aquifers in the project area have been classified by AGES (as cited in Metago, 2007) according to Parsons (1995) and the Minimum Requirements (DWAF). There are three possible types of aquifers within the project area as outlined below.

- **Minor aquifer:** The aquifers in the greater study area are classified as Minor Aquifers, which denotes aquifers with yields of less than 1l/s.
- **Minor to Major aquifer:** The fractured systems within the larger Minor Aquifers could form Minor to Major Aquifer zones.

- **Sole source aquifer:** some of the localised aquifers could be classified as sole source aquifers despite them being minor aquifers. The reason being that some communities rely on groundwater alone for their basic water requirements because there is currently no reticulation of surface water to the communities in the northern part of the proposed project area. This statement should be contextualised as water supply from Magalies Water to the local communities is planned. The timing of the pipeline is unknown.

The average water level in the area is 22.5m below ground level (mbgl), with water levels varying between 11.32 and 51mbgl.

Natural springs, known as the Legkraal Springs, are located within the northern wilderness section of the Pilanesberg National Park, approximately 8km south-west of the proposed project area on the farm Rooderand 46 JQ. Initial indications are that these springs are an essential water source for the animals in the Pilanesberg National Park, particularly in the winter months (Black Rhino representatives, pers. comm. 2012).

2.6.8.2 Groundwater quality

Groundwater quality in the area is generally close to or slightly above domestic use quality (DWA Water Quality Guidelines, 1996). Initial indications are that magnesium and fluoride concentrations in particular are elevated above the domestic use guidelines and that the water has an overall carbonate-magnesium character. Groundwater quality surrounding the proposed project area is expected to follow a similar trend.

2.6.8.3 Groundwater use

Initial observations from the geohydrological study (AGES, as cited in Metago, 2007) indicate that groundwater is an important resource for the local population, even though fluoride and magnesium concentrations are high. Communities rely on groundwater for basic water requirements and livestock watering. This statement should be contextualised as water supply from Magalies Water to the local communities is in progress.

The Legkraal Springs that are located in the Pilanesberg National Park are an important water source for animals, particularly in the winter months as this is the only natural water source in the northern section of the Park.

2.6.9 AIR QUALITY

Information in this section is sourced from Airshed (as cited in Metago, 2007).

Particulate matter (dust) less than 10 microns in size (PM₁₀)

Elevated PM₁₀ concentrations occur in the region.

Other sources of emissions in the region

Whereas vehicle tailpipe emissions vary, most industrial releases remain relatively constant throughout the year. Domestic coal burning, biomass burning and wind erosion emissions are characterized by significant temporal variations. Biomass burning is a seasonal source with its highest intensity between June and October. Household coal burning emissions increase distinctly during winter months due to the need for space heating. Windblown dust is noted to be greatest during spring months (August to October) due to the increase in wind speeds, and hence dust generation potentials, characteristic of this period.

The existing sources of air pollution within the region include:

- industrial operations such as platinum and chrome smelter operations;
- boiler operations;
- incineration operations;
- quarrying and mining operations;
- tailings dams;
- vehicle tailpipe emissions;
- household fuel combustion;
- biomass burning; and
- various miscellaneous fugitive dust sources including agricultural activities, wind erosion of open areas, vehicle entrainment of dust along unsurfaced roads.

Receptors within a 2km radius of the proposed project site

Potential receptors located within approximately a 2km radius of the proposed Magazynskraal project include:

- villages including: Lekutung, Lesetheng, Lesobeng, Kgamatha and Legkraal, as well as the land users on the farms Magazynskraal 3 JQ and Wilgespruit 2 JQ;
- the neighbouring Sedibelo Platinum Mine; and
- Pilanesberg National Park.

2.6.10 NOISE

The ambient noise level around the proposed project site is expected to be slightly higher than that of a typical rural environment due to existing mining activities, such as PPM and Chrometco, in the area. It should be noted that the IBMR is in the process of establishing an open pit and underground mining operation on the neighbouring property to the west of the proposed project area. The proposed development has the potential to influence ambient noise levels.

The noise sensitive receptors around the proposed Magazynskraal operations are the communities described in Section 2.5.1. The receptors within a 2km radius of the project boundary includes,

Lekutung, Lesobeng, Lesethheng, Kgamatha, Legkraal/Bofule and the land users on the farms Wilgespruit 2 JQ and Magazynskraal 3 JQ. In addition, the Pilanesberg National Park is considered a sensitive noise receptor, particularly the wilderness trails in the northern section of the park.

2.6.11 VISUAL ASPECTS

Due to the relatively flat terrain surrounding the proposed project area, it is expected that the project will be visible from the communities surrounding the project area (as described in Section 1.8) and road users. The proposed project is unlikely to be visible by the general public that visits the Pilanesberg National Park, but it is likely to be visible from viewpoints on the wilderness trails in the north of the Park.

2.7 RELEVANT ADDITIONAL INFORMATION

None.

3 IDENTIFICATION OF THE ANTICIPATED IMPACTS

Potential environmental, social or cultural impacts, including the cumulative impacts, where applicable, that were identified during the scoping process are discussed under environmental component headings in this section. These discussions should be read with the corresponding descriptions of the baseline environment in Section 2 of the scoping report.

The potential impacts associated with all the phases (construction, operations, decommissioning and closure) have been conceptually identified and described, and reference has been made to the studies/investigations that are required to provide the necessary additional information.

In order to understand the potential impacts, a description of the proposed project is provided below.

3.1 PROJECT DESCRIPTION

A description of the proposed project including a map showing the spatial locality of infrastructure, extraction area and any associated activities is given in the section below.

The main aim of the project is to exploit the platinum group metals (PGMs) and metals associated therewith (including gold, silver, nickel, copper, cobalt and chrome). Surface infrastructure that will be established to support the underground mining operation is listed in the relevant sections below.

At this stage in project planning two key alternatives are currently under consideration, namely:

- to establish a standalone mining operation on the farm Magazynskraal 3 JQ, which will include shaft complexes and associated infrastructure, a mineral processing plant, tailings storage facility (TSF), waste disposal facility, and a wide range of support infrastructure (Figure 3); or
- to combine the Magazynskraal project with either Sedibelo or PPM operations, and make use of the Sedibelo/PPM's facilities such as the mineral processing plant, TSF and support infrastructure. In this scenario, only the shaft complexes and limited support infrastructure would be established (Figure 4).

Depending on the chosen alternative, the scale and nature of the project could differ significantly. The alternatives are discussed in the sections below as part of the proposed project description.

3.2 CONSTRUCTION PHASE

3.2.1 CONSTRUCTION PHASE FACILITIES

Various facilities will be required during the construction phase of the mine in both the standalone and combined options that are currently under consideration. These could include:

- contractor's camps;
- workshop/maintenance area for servicing and maintaining equipment and vehicles;
- lay-down area;
- temporary waste collection and storage area;
- wash bay for washing equipment and vehicles;
- store for storing and handling fuel, lubricants, solvents, paints and construction substances;
- parking area for cars and equipment;
- mobile site offices;
- canteen;
- portable ablution facilities;
- clean water reservoir;
- change houses;
- temporary power generating infrastructure;
- soil and overburden/spoil stockpiles;
- water management infrastructure;
- explosive magazines;
- ventilation infrastructure including fans;
- portable air compressors for the sinking operations;
- settling ponds for the sinking operations;
- security and access control;
- haul roads;
- access roads; and
- first aid clinic.

These facilities would either be removed at the end of the construction phase or incorporated into the layout of the operational mine.

3.2.2 CONSTRUCTION PHASE ACTIVITIES

The following significant activities are expected to take place during construction:

- selective clearing of vegetation in areas designated for surface infrastructure in line with a biodiversity management plan and soil conservation procedure to be developed;
- stripping and stockpiling topsoil and sub-soil;
- digging foundations and trenches;

- sinking of shafts from surface for each shaft complex;
- blasting;
- preparing residue disposal areas;
- delivery of materials; and
- general building activities.

3.2.3 OTHER SUPPORT SERVICES

3.2.3.1 Construction phase workforce and housing

As a maximum, approximately 2 500 temporary employment opportunities will be created during the construction phase for a five year period. This workforce will be required for both alternatives that are currently under consideration, i.e. the standalone mining operation and the combined mining operation. The proposal for housing for construction workers is to provide workers with a housing allowance. Richtrau is considering means to ensure that the allowance is spent on accommodation that meets acceptable standards. A formal employment and housing policy will be developed for this issue.

3.2.3.2 Construction phase water supply

Water will be brought in by tankers until permanent water supply is established. Approximately 7m³ will be required per day during the construction phase. If the standalone mining operation is the chosen alternative, water will be sourced from Magalies Water and will be supplied to Newshelf 1101 (Pty) Ltd who will manage distribution of water to the Magazynskraal Platinum Mine.

Should the chosen alternative be a combined mining operation, water will be sourced from Magalies Water and will be supplied to Newshelf 1101 (Pty) Ltd who will manage distribution of water to the Magazynskraal Platinum Mine via the infrastructure at Sedibelo. It is expected that water supply infrastructure will be extended from the Sedibelo operation to the Magazynskraal project site. The route of the pipelines is not yet known, however it would be located on the mine-related areas and is expected to be the shortest route between infrastructure.

3.2.3.3 Construction phase power supply

Approximately 30MVA will be required during the construction phase. If the standalone mining operation is the chosen alternative, power will be supplied by Eskom from the Spitskop substation, located approximately 40km north of the Magazynskraal project site. This will be supplied to Newshelf 1101 (Pty) Ltd who will manage distribution of power to the Magazynskraal Platinum Mine.

Should the chosen alternative be a combined mining operation, it is expected that power will be supplied by Eskom from the Spitskop substation, located approximately 40km north of the Magazynskraal project site. This will be supplied to Newshelf 1101 (Pty) Ltd who will manage distribution of power to the combined mining operation.

3.2.3.4 Construction phase transport systems

Internal gravel roads will be established from the plant to each shaft complex, ventilation shaft, and the TSF (if established). Materials required for the construction phase will be brought to site via the existing road network that surrounds the proposed project (refer to Section 2.5.5 for details). Access to the Magazynskraal Project site will be off the D511 (Magong) gravel road.

3.2.3.5 Construction phase waste management

3.2.3.5.1 Sewage

Depending on the project alternative that is chosen, sewage could be dealt with as follows:

- if a standalone mining operation is established, mobile enclosed portable toilets will be placed at construction sites. The enclosed chemical toilets will be cleaned and serviced on a regular basis by a contractor. Sufficient toilets will be placed on site to cater for workers.
- if a combined mining operation is established, sewage would be collected in trucks and transported to the sewage works at Sedibelo. As part of a separate EIA process (currently in progress), Sedibelo is applying for a sewage treatment plant in terms of NEMWA on the farm Wilgespruit 2 JQ. This plant would be constructed to have sufficient capacity to cater for the sewage that is generated in the construction phase of the Magazynskraal Platinum Mine.

3.2.3.5.2 Non-mineralised waste

The types of waste that could be generated during construction include: hazardous industrial waste (such as packaging for hazardous materials, used oil, lubricants), general industrial waste (such as scrap metal and building rubble), medical waste (such as swabs, bandages) from the staff medical station, and domestic waste (such as packaging, canteen waste and office waste). These wastes would be generated regardless of whether a standalone or combined mining operation is established.

Depending on the chosen alternative, these wastes would be dealt with as follows:

- if a standalone mining operation is established, waste will initially be handled and temporarily stored on-site before being removed for recycling by suppliers, reuse by scrap dealers or final disposal at permitted waste disposal facilities. It is proposed that a waste disposal facility be established on-site. Waste from the construction phase will be disposed at this facility as soon as it has been constructed.
- if a combined mining operation is established, non-mineralised waste would be sent to the waste facilities at Sedibelo. Sedibelo holds a waste licence in terms of NEMWA for the handling of general and hazardous waste, and the disposal of general waste.

3.2.4 CONSTRUCTION PHASE TIMING

Provided that the relevant environmental authorisations are issued to Richtrau, the construction phase timing for each of the alternative project scenarios currently under consideration is described below.

Should a standalone mining operation be established, the construction phase of the Magazynskraal Project would commence by mid-2014.

Should a combined mining operation be established, it is expected that mining on the farm Magazynskraal 3 JQ will commence when underground mining at Sedibelo reaches the Wilgespruit / Magazynskraal farm boundary.

3.3 OPERATIONAL PHASE

3.3.1 SURFACE INFRASTRUCTURE

The establishment of surface infrastructure is directly linked to the project alternatives that are currently under consideration, i.e. standalone vs combined mining operation. In this regard, should the standalone mining operation be the chosen alternative, the following infrastructure (as shown on Figure 3) would be established:

- two shaft complexes and associated ventilation shafts;
- mineral processing plant;
- waste rock dumps;
- topsoil stockpiles;
- TSF;
- reef transport facility;
- waste disposal facility; and
- a wide range of support services and infrastructure (e.g. roads, power supply, water supply).

Should the combined mining operation be the chosen alternative, the following infrastructure (as shown on Figure 4) would be established:

- two shaft complexes and associated ventilation shafts;
- waste rock dumps;
- topsoil stockpiles;
- reef transport facility; and
- support services and infrastructure (e.g. roads, power lines, water pipelines). The route of service infrastructure (such as pipelines, power lines, roads, reef transport facility etc) is not yet known, however it would be located on the mining right areas and is expected to be the shortest route between infrastructure.

3.3.2 MINING METHOD

Due to the depth of the ore body on the Magazynskraal Project area, underground mining methods will be used. A conventional stoping method will be used with breast mining in blocks 210m wide on strike

and 245m on dip. Panels will be 25m long with in-stope pillars varying in size with depth from 4m by 4m at 30m below surface to 10m by 10m at 600m below surface. Hand held drills together with explosives will be used to break the rock. Ore will then be moved from the panels to the central raise rock passes via the advance strike gullies. From there, ore will be transported to the mineral processing facility either on-site or at Sedibelo/PPM.

FIGURE 3: PROPOSED INFRASTRUCTURE LAYOUT FOR A STANDALONE MINING OPERATION

FIGURE 4: PROPOSED SURFACE INFRASTRUCTURE LAYOUT FOR A COMBINED MINING OPERATION

3.3.3 OTHER SUPPORT SERVICES

3.3.3.1 Operational phase workforce and housing

The operational phase workforce and housing plan for the two key alternatives currently under consideration is provided below.

If a standalone mining operation is established, approximately 2 800 jobs will be created during the operational phase. The proposal for housing operational workers is to provide workers with a housing allowance. Richtrau is considering means to ensure that the allowance is spent on accommodation that meets acceptable standards. A formal employment and housing policy will be developed for this issue.

If a combined mining operation is established, the Magazynskraal area will extend the life of the underground mining operation at Sedibelo, and as a result the employment contracts of the Sedibelo employees will be extended. No additional employment opportunities will be created by the operational phase of the Magazynskraal operation. It is expected that employees from the Sedibelo mining operation will either be housed at the approved Sedibelo on-site accommodation facility, or will be provided with a housing allowance.

3.3.3.2 Operational phase water supply

It is estimated that 7Ml of make-up water will be required per day during the operational phase for both the standalone and combined mining operation scenario. Water will be sourced from Magalies Water and will be supplied to Newshelf 1101 (Pty) Ltd who will manage distribution of water to the Magazynskraal Platinum Mine. Should a combined mining operation be established, it is expected that water supply infrastructure will be extended from the Sedibelo operation to the Magazynskraal project site. The route of the pipelines is not yet known, however it would be located on the mine-related areas and is expected to be the shortest route between infrastructure.

3.3.3.3 Operational phase power supply

It is estimated that approximately 31MVA would be required during the operational phase for both the standalone and combined mining operation scenario. Power will be supplied by Eskom from the Spitskop substation, located approximately 40km north of the Magazynskraal project site. This will be supplied to Newshelf 1101 (Pty) Ltd who will manage distribution of power to the Magazynskraal project site.

3.3.3.4 Operational phase transport systems

Raw materials, employees and final product will be transported to and from site on the existing road network described in Section 2.5.5. Access to the Magazynskraal project site will be off the D511 (Magong) gravel road.

Depending on the two key project alternatives that are currently under consideration, the transport systems within the mine-related areas could differ significantly. In this regard, it is proposed that ore will be transported by conveyor/trucks from each of the shaft complexes to a processing plant, either on-site if a standalone mining operation is established, or at Sedibelo if a combined mining operation is established. The route of the transport system is not yet known, however it would be located on the mine-related areas and is expected to be the shortest route between infrastructure.

3.3.3.5 Operational phase waste management

3.3.3.5.1 Sewage

Depending on the project alternative that is chosen, sewage from the operation phase of the project could be dealt with as follows:

- if a standalone mining operation is established, an on-site sewage treatment facility will be established with a capacity of approximately 420m³/day.
- if a combined mining operation is established, sewage would be treated at the sewage treatment facility at Sedibelo. Ablutions will be established at the Magazynskraal project site and will be connected to the Sedibelo sewage works by a pipeline. The route of the sewage pipeline is not yet known, however it would be located on the mine-related areas and is expected to be the shortest route between infrastructure.

3.3.3.5.2 Non-mineralised waste

The types of waste that could be generated during the operational phase include: hazardous industrial waste (such as packaging for hazardous materials, used oil, lubricants), general industrial waste (such as scrap metal and building rubble), medical waste (such as swabs, bandages) from the staff medical station, and domestic waste (such as packaging, canteen waste and office waste). Depending on the chosen alternative, these wastes would be dealt with as follows:

- if a standalone mining operation is established, it is proposed that a waste disposal facility for general waste will be established on site (see Figure 3).
- if a combined mining operation is established, non-mineralised waste would be sent to the waste facilities at Sedibelo. Sedibelo holds a waste licence in terms of NEMWA for the handling of general and hazardous waste, and the disposal of general waste.

3.3.3.5.3 Mineralised waste disposal

Tailings disposal

Tailings will be disposed of at an appropriately designed facility. Depending on the chosen alternative for the project, tailings would be disposed as follows:

- if a standalone operation is established, tailings will be disposed on a formal above-ground green-fields TSF that will be established on Magazynskraal 3 JQ (see Figure 3);

- if a combined mining operation is established, tailings disposal options include off-site facilities on either Sedibelo's approved above-ground TSF or on PPM's existing above-ground TSF. Both of these off-site facilities have capacity for tailings from the Magazynskraal operation.

Waste rock disposal

A waste rock dump will be designed (as discussed in Section 6.1.7) for each shaft complex for the expected 30 year life of mine. The dumps will incorporate groundwater seepage protection and run-off collection facilities.

3.4 LIFE OF MINE

The planned life of mine for the Magazynskraal Project is estimated at 30 years. However, it should be noted that this could be extended to 60 years.

3.5 DECOMMISSIONING AND CLOSURE

The conceptual plan at this stage is to remove surface infrastructure and rehabilitate the disturbed areas. The TSF and waste rock dumps will remain in perpetuity and will be rehabilitated appropriately. The closure objective will be to return the land to pre-mining potential as discussed in Section 2.4.3.

Funding for mine closure is allowed for by Richtrau within their business case.

3.6 RELEVANT NEMA AND NEMWA LISTED ACTIVITIES

The relevant listed activities (in terms of the NEMA and NEMWA Regulations) which are relevant to the proposed project are listed in Table 5 and Table 6 respectively.

TABLE 5: RELEVANT NEMA LISTED ACTIVITIES

Activity Number	Listed Activity	Description of activity
Notice 544, 18 June 2010		
9	The construction of facilities or infrastructure exceeding 1 000 metres in length for the bulk transportation of water, sewage or storm water – (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more, excluding where: (a) such facilities or infrastructure are for bulk transportation of water, sewage or storm water or storm water drainage inside a road reserve; or (b) where such construction will occur within urban areas but further than 32 metres from a watercourse, measured from the edge of the watercourse.	Preliminary design information allows for pipelines longer than 1 000 metres that will be established on-site for the bulk transportation of water and sewage. The internal diameter of the pipelines will exceed 0.36 metres, and the peak throughput will exceed 120 litres per second.
10	The construction of facilities or infrastructure for the transmission and distribution of electricity – (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or (ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more.	Establishment of 33 kilovolt power lines within the project area for the transmission and distribution of electricity.
11	The construction of: (i) canals (ii) channels; (iii) bridges; (iv) dams; (v) weirs; (vi) bulk storm water outlet structures; (vii) marinas; (viii) jetties exceeding 50 square metres in size; (ix) slipways exceeding 50 square metres in size; or (x) buildings exceeding 50 square metres in size; or (xi) infrastructure or structures covering 50 square metres or more;	Bridges will be constructed over watercourses within the project area.

Activity Number	Listed Activity	Description of activity
	where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.	
12	The construction of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 19 of Notice R.545 of 2010.	Stormwater dams will be established on-site that will exceed 50 000 cubic metres.
22	The construction of a road, outside urban areas, (i) with a reserve wider than 13,5 metres or, (ii) where no reserve exists where the road is wider than 8 metres, or (iii) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Notice 545 of 2010.	Preliminary design information makes provision for the construction of internal haul roads of approximately 12 metres in width.
37	The expansion of facilities or infrastructure for the bulk transportation of water, sewage or storm water where: (a) the facility or infrastructure is expanded by more than 1 000 metres in length; or (b) where the throughput capacity of the facility or infrastructure will be increased by 10% or more-excluding where such expansion: (i) relates to transportation of water, sewage or storm water within a road reserve; or (ii) where such expansion will occur within urban areas but further than 32 metres from a watercourse, measured from the edge of the watercourse.	Preliminary design information suggests that infrastructure on the neighbouring property (Sedibelo Platinum Mine) could be extended to transport water and/or sewage.
Notice 545, 18 June 2010		
3	The construction of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres.	Preliminary design information indicates approximately 600m ³ of dangerous goods will be stored on site.
5	The construction of facilities or infrastructure for any process or activity which requires a permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent and which is not identified in Notice No. 544 of 2010 or 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 that Act will apply.	Various activities will require a Water Use License. At this stage, the anticipated water uses include: <ul style="list-style-type: none"> • the establishment of a TSF and waste rock dumps; • storage of dirty water; • dewatering of underground mining areas; and • watercourse crossings.

Activity Number	Listed Activity	Description of activity
15	Physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more; except where such physical alteration takes place for: (i) linear development activities; or (ii) agriculture or afforestation where activity 16 in this schedule will apply.	Preliminary design information indicates that the footprint of proposed surface infrastructure, including a TSF, processing plant area and shaft complexes, will exceed 20 hectares.
16	The physical alteration of virgin soil to agriculture, or afforestation for the purposes of commercial tree, timber or wood production of 100 hectares or more.	As part of the social and labour plan (SLP) that is required in terms of the Mineral and Petroleum Resources Development Act, 28 of 2002 (MPRDA), Richtrau is considering the possibility of developing the existing subsistence agricultural activities on the farm Magazynskraal 3 JQ into a more productive agricultural venture whereby the community could benefit economically. Initial planning allows for approximately 200 ha of land to be developed into a number of smaller plots that will be managed by individual members of the community.
19	The construction of a dam, where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5 metres or higher or where the high-water mark of the dam covers an area of 10 hectares or more.	Stormwater dams will be established where the highest part of the dam wall exceeds 5 metres.

Activity Number	Listed Activity	Description of activity
Notice 546, 18 June 2010		
2	<p>The construction of reservoirs for bulk water supply with a capacity of more than 250 cubic metres (c) in the North West:</p> <ul style="list-style-type: none"> (i) a protected area identified in terms of NEMPAA, excluding conservancies (ii) outside urban areas, in <ul style="list-style-type: none"> (aa) National Protected Area Expansion Strategy Focus areas; (bb) sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority (cc) sites or areas identified in terms of an International Convention; (dd) critical biodiversity areas (Type 1 only) as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (ee) core areas in biosphere reserves; (ff) areas within 10km from national parks or world heritage sites or 5km from any other protected area identified in terms of NEMPAA or from the core of a biosphere reserve; (iii) in urban areas <ul style="list-style-type: none"> (aa) areas zoned for use as public open space; (bb) areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, or zoned for a conservation purpose. 	<p>Preliminary design information allows for reservoirs with a capacity of 2 000 cubic metres to be established on site. The project site is located outside urban areas within 5km of the Pilanesberg Park.</p>
3	<p>The construction of masts or towers of any material or type used for telecommunication broadcasting or radio transmission purposes where the mast:</p> <ul style="list-style-type: none"> (a) is to be placed on a site not previously used for this purpose, and (b) will exceed 15 metres in height, but excluding attachments to existing buildings and masts on rooftops. (c) in the North West: <ul style="list-style-type: none"> (i) outside urban areas, in <ul style="list-style-type: none"> (aa) a protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; (cc) sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (dd) sites or areas identified in terms of an International Convention; (ee) Critical biodiversity areas (Type 1 only) as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (ff) core areas in biosphere reserves; (gg) areas within 10km from national parks or world heritage sites or 5km from any other 	<p>Preliminary design information allows for the establishment of a 30m telecommunications mast on site. The project site is located outside urban areas, within 5km of the Pilanesberg National Park</p>

Activity Number	Listed Activity	Description of activity
	<p>protected area identified in terms of NEMPAA or from the core of a biosphere reserve;</p> <p>(ii) in urban areas, the following:</p> <p>(aa) areas designated for conservation use in adopted Spatial Development Frameworks, or zoned for a conservation purpose.</p>	
4	<p>The construction of a road wider than 4 metres with a reserve less than 13,5 metres c) In North West:</p> <p>(i) outside urban areas, in</p> <p>(aa) a protected area identified in terms of NEMPAA, excluding conservancies;</p> <p>(bb) National Protected Area Expansion Strategy Focus areas;</p> <p>(cc) sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;</p> <p>(dd) sites or areas identified in terms of an International Convention;</p> <p>(ee) Critical biodiversity areas (terrestrial Type 1 and 2 and Aquatic Type 1) as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p> <p>(ff) core areas in biosphere reserves;</p> <p>(gg) areas within 10km from national parks or world heritage sites or 5km from any other protected area identified in terms of NEMPAA or from the core of a biosphere reserve;</p> <p>(ii) in urban areas, the following:</p> <p>(aa) areas zoned for use as public open space;</p> <p>(bb) areas designated for conservation use in adopted Spatial Development Frameworks, or zoned for a conservation purpose;</p> <p>(cc) natural heritage sites.</p>	<p>Internal haul roads will be established on the project site for mine related traffic. The project site is located outside urban areas, within 5km of the Pilanesberg National Park</p>
14	<p>The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation of require for:</p> <ol style="list-style-type: none"> 1. purpose of agriculture or a forestation inside areas identified in spatial instruments adopted by the competent authority for agriculture or a forestation purposes; 2. the undertaking of a process or activity 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 activity is regarded to be excluded from this list; 3. the undertaking of a linear activity falling below the threshold in Notice 544 of 2010; <p>a) In Eastern Cape , Free State, KwaZulu-Natal, Gauteng, Limpopo, Mpumalanga, Northern Cape, North-West and Western Cape: (i) all areas outside urban areas.</p>	<p>The project footprint will disturb in excess of 5 hectares of land where the vegetation could be classified as indigenous. The project site is located outside urban areas.</p>

TABLE 6: RELEVANT NEMWA LISTED ACTIVITIES

Activity Number	Listed Activity	Description of Activity
GN No, R.718 of 3 July 2009, Category A		
Category A (1)	The storage, including the temporary storage, of general waste at a facility that has the capacity to store in excess of 100m ³ of general waste at any one time, excluding the storage of waste in lagoons.	Richtrau proposes to construct a salvage facility as part of its mining and processing operations to sort and store waste from the operations prior to disposal.
Category A (4)	The storage of waste tyres in a storage area exceeding 500m ² .	Richtrau proposes to construct a salvage facility as part of its mining and processing operations to sort and store waste from the operations prior to disposal. The used rubber tyres will be stored and sorted at the proposed salvage facility.
Category A (5)	The sorting, shredding, grinding or bailing of general waste at a facility that has the capacity to process in excess of one ton of general waste per day.	Richtrau proposes to construct a salvage facility as part of its mining and processing operations to sort and store waste from the operations prior to disposal. The proposed salvage facility will have the capacity to process more than one ton of general waste per day.
Category A (7)	The recycling or re-use of general waste of more than 10 tons per month.	Richtrau proposes to construct a salvage facility as part of its mining and processing operations to sort and store waste from the operations prior to disposal. It is expected that a minimum of 10 tons of general waste will be recycled and/or re-used per month at the salvage facility.
Category A (8)	The recovery of waste including the refining, utilisation, or co-processing of the waste at a facility that has the capacity to process in excess of three tons of general waste or less than 500kg of hazardous waste per day, excluding recovery that takes place as an integral part of an internal manufacturing process within the same premises.	Richtrau proposes to construct a salvage facility as part of its mining and processing operations to sort and store waste from the operations prior to disposal. The hazardous waste will be transported to a facility capable of handling the waste.
Category A (9)	The biological, physical or physico-chemical treatment of general waste at a facility that has the capacity to process in excess of 10 tons of general waste per day.	Richtrau proposes to construct a salvage facility as part of its mining and processing operations to sort and store waste from the operations prior to disposal. It is expected that this facility will have capacity to process more than 10 tons of general waste per day, and the biological, physical or physico-chemical treatment of waste containers may be required prior to disposal.

Activity Number	Listed Activity	Description of Activity
Category A (18)	The construction of facilities for activities listed in Category A of this Schedule (not in isolation to associated activity).	Richtrau proposes to construct a salvage facility as part of its mining and processing operations to sort and store waste from the operations prior to disposal
GN No, R.718 of 3 July 2009, Category B		
Category B (8)	The incineration of waste regardless of the capacity of such a facility.	Richtrau proposes to construct a salvage facility as part of its mining and processing operations to sort and store waste from the operations prior to disposal. Preliminary planning indicates that an incinerator might be required.
Category B (11)	The construction of facilities for activities listed in Category B of this Schedule (not in isolation to associated activity).	Richtrau proposes to construct a salvage facility as part of its mining and processing operations to sort and store waste from the operations prior to disposal.

3.7 CONFIRMATION OF IAP CONSULTATION AND AGREEMENT ON POTENTIAL IMPACTS

IAPs were provided information on the potential impacts during the public scoping meeting. All of the IAP issues, concerns and objections raised during the scoping meetings have been provided in Appendix D. IAPs will also have the opportunity to review this scoping report.

3.8 POTENTIAL CULTURAL ENVIRONMENT IMPACTS

A list and description of potential impacts identified within the cultural environment is provided below as part of archaeological and heritage impacts.

3.9 POTENTIAL HERITAGE ENVIRONMENT IMPACTS

A list and description of potential impacts identified on the archaeological, heritage and cultural environment is provided below.

3.9.1 ARCHAEOLOGICAL, HERITAGE AND CULTURAL RESOURCES

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

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion

Heritage (including cultural) resources do occur in the project area and range from having medium to low, or no, historical significance. The heritage resources are located in the southern section of the proposed project area, and fall outside of the current proposed footprint of the proposed surface infrastructure. The additional work required to address this issue is described in Section 6.1.11 of this scoping report.

3.9.2 PALAEOLOGICAL RESOURCES

3.9.2.1 Issue: Loss of or damage to palaeontological resources

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion

The project area is underlain by igneous rocks of the Rustenberg Layered Suite of the Bushveld Igneous Complex. This Complex is an intrusive igneous body comprising a series of ultramafic-mafic layers and a suite of associated granitoid rocks. As these rocks are Precambrian in age and are of igneous origin it is highly unlikely that fossils will be affected by the proposed subsurface mining development (Rubidge,

2011). The additional work required to address this issue is described in Section 6.1.12 of this scoping report.

3.10 POTENTIAL SOCIO-ECONOMIC ENVIRONMENT IMPACTS

A list and description of potential impacts identified on the socio-economic conditions of any person on the property, and on any adjacent or non-adjacent property that may be affected by the proposed mining operation, is provided below.

3.10.1 LAND USE

3.10.1.1 Issue: impact on existing agricultural and residential uses

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion

The land use and capability on the proposed project site will be impacted by the surface infrastructure, however the extent of the disturbance is dependent on the infrastructure that is established on site. If the ore is processed off-site and the proposed mineral processing plant and tailings facility are not established, surface infrastructure will be limited to the shaft complexes and support infrastructure. If this is the case, livestock grazing and subsistence agriculture could continue to take place on the farm during all phases of the mining operation. Should the mineral processing plant and TSF be established on-site the impact on existing agricultural and residential uses would be more significant. At this stage it is anticipated that the project site will be returned to its pre-project land use after mine closure, however some infrastructure such as the TSF (if established) and the waste rock dumps will remain in perpetuity. In addition, adjacent and future land uses, such as tourism and the proposed Heritage Park, could be affected by the mining activities. The additional work required to address these issues is described in Section 6.1.13.1 of this scoping report.

3.10.2 TRANSPORT SYSTEMS

3.10.2.1 Issue: Disturbance of roads by project-related traffic

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure
		Insignificant	Not applicable

Discussion

During the construction phase, an increase in traffic can be expected as a result of trucks bringing raw materials to the site, and busses and taxis transporting staff to and from the mine. The duration of the

construction phase is expected to be approximately five years. If the Magazynskraal and Sedibelo mines function as a combined operation, traffic quantities during the operational phase, are expected to remain the same as those estimated for the Sedibelo operation as the Magazynskraal Mine will be an extension of the underground mining operations at Sedibelo. However, if the operations function independently, traffic impacts during the operational phase of the Magazynskraal Platinum Mine are expected to increase. The additional work required to address this issue is described in Section 6.1.14 of the scoping report.

3.11 POTENTIAL IMPACTS ON EMPLOYMENT OPPORTUNITIES, COMMUNITY HEALTH, COMMUNITY PROXIMITY AND LINKS TO THE SOCIAL AND LABOUR PLAN

A list of potential impacts (positive and negative) on: employment opportunities, community health, community proximity and links to the Social and Labour Plan, is provided below.

3.11.1 POSITIVE AND NEGATIVE SOCIO-ECONOMIC IMPACTS

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion

Mining projects of this nature have the potential to result in both positive and negative social and economic impacts. Each of these is discussed below.

Positive impacts

The following positive impacts could be expected during the construction and operational phases:

- employment for local communities (new jobs during construction and extension of contracts during operations);
- direct socio-economic investment in local communities in accordance with Richtrau's social and labour plan;
- capital investment that will impact on local and regional suppliers (including the possible development of small and medium supplier enterprises);
- increase off-shore revenue; and
- increase the support of service-sector jobs.

After closure of the mine, there may still be some positive impacts through maintenance and aftercare activities and the fact that the mine would have contributed to a greater economic critical mass, skills, and wealth that can be used in other economic opportunities.

Negative impacts

The following negative impacts could be expected during the construction and operational phases:

- increase in traffic on the local roads (discussed in Section 3.10.2);
- sterilisation of mineral resources (discussed further in 3.12.1.1).
- influx of people into the area in search of work, leading to informal settlements and associated problems of crime, disease, and social disruption;
- increased pressure on housing and related services (water, power, sanitation, rubbish removal, schooling);
- increase in theft and poaching of wild roaming animals on surrounding farms; and
- reduced quality of life for surrounding landowners.

The most significant socio-economic impact after closure will be the loss of income with respect to the local, regional and national economies.

The additional work required to address these issues is described in Section 6.1.15 of the scoping report.

3.12 POTENTIAL BIOPHYSICAL ENVIRONMENT IMPACTS

A list and description of potential impacts identified with the biophysical environment including but not limited to impacts on: flora, fauna, water resources, air and noise etc; is provided below.

3.12.1 GEOLOGY

3.12.1.1 Issue: Loss and sterilisation of mineral resources

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion

By the nature of mining projects the geology is exploited for the target minerals therefore the impact on the geology at the proposed project area will be high in all project phases. In addition, the potential exists to sterilise mineral resources by placement of surface infrastructure or disposal on a TSF. The additional work required to address this issue is described in Section 6.1.1 of this scoping report.

3.12.2 TOPOGRAPHY

3.12.2.1 Issue: Hazardous excavations and infrastructure

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion

The topography of the project site will be impacted by project-related surface infrastructure, however the extent of the disturbance is dependent on the infrastructure that is established on site. If the ore is processed off-site and the mineral processing plant and TSF are not established, surface infrastructure will be limited to the shaft complexes and support infrastructure. If this is the case, the alteration of topography would be limited during all phases of the mining operation. Should the mineral processing plant and TSF be established on-site the impact on the topography would be more significant.

The construction of the shafts and associated surface infrastructure as well as the waste rock dumps will alter the site topography during the construction phase. Related issues include hazardous excavations and infrastructure which pose a danger to humans and animals, alteration of drainage patterns (discussed under Section 6.1.5) as well as visual impacts (discussed under Section 6.1.10).

During the construction phase hazardous excavations and infrastructure could include foundations and trenching, water containment dams, as well as the establishment of scaffolding and cranes. The TSF (if established), waste rock dumps, shafts and water containment dams will remain for the duration on the operational phase and will present a potential hazardous structure. The process of infrastructure removal during the decommissioning phase could also require temporary hazardous structures such as scaffolding. The TSF (if established), waste rock dumps and shafts, although these will be sealed, will remain in perpetuity and will remain as potential hazardous structures.

At this stage it is anticipated that the project site will be returned to its pre-project land use after mine closure, however some infrastructure such as the TSF (if established) and the waste rock dumps will remain in perpetuity. In addition, adjacent and future land uses, such as tourism and the proposed Heritage Park, could be affected by the mining activities.

The additional work required to address this issue is described in Section 6.1.2 of this scoping report.

3.12.3 SOIL AND LAND CAPABILITY

3.12.3.1 Issue: Loss of soil and change in land capability through sterilisation, erosion and contamination

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion

Topsoil is generally a resource of high value containing a gene bank of seeds of indigenous species. A loss of topsoil (through sterilisation, erosion or contamination) would generally result in a decrease in the rehabilitation and future land use potential of any land that is disturbed by the project. The soils and land capability of the project site will be impacted by project-related surface infrastructure, however the extent of the disturbance is dependent on the infrastructure that is established on site. If the ore is processed off-site and the mineral processing plant and TSF are not established, surface infrastructure will be limited to the shaft complexes and support infrastructure. If this is the case, the alteration of soils and land capability would be limited during all phases of the mining operation. Should the mineral processing plant and TSF be established on-site the impact on the soils and land capability would be more significant.

Topsoil and subsoil will be disturbed during the construction phase when the footprint areas for surface infrastructure will be stripped. A plan for stripping and stockpiling of soil will be developed to ensure its availability for rehabilitation.

At this stage no additional soil stripping is envisaged during the operational phase of this project. However, improper management of topsoil stockpiles during this phase and accidental spills could result in a loss of topsoil through contamination, erosion and compaction.

At decommissioning, the topsoil and subsoil will be used to rehabilitate the various sites after the infrastructure has been removed. However, the actual process of infrastructure removal during decommissioning could cause soil erosion and contamination.

No residual impacts are expected after closure if the rehabilitation is well managed and implemented correctly.

The additional work required to address this issue is described in Section 6.1.3 of this scoping report.

3.12.4 FAUNA AND FLORA (NATURAL PLANT AND ANIMAL LIFE)

3.12.4.1 Issue: Loss of natural vegetation and animal life

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion

The proposed construction and operation and subsequent decommissioning of the shafts and associated infrastructure has the potential to impact negatively on plant and animal life, including terrestrial and aquatic ecosystems, in the project area and immediate surrounds through site clearing and building activities, as well as mining activities. The extent of the disturbance is dependent on the infrastructure that is established on site. If the ore is processed off-site and the mineral processing plant and TSF are not established, surface infrastructure will be limited to the shaft complexes and support infrastructure. If this is the case, the disturbance on plant and animal life would be limited during all phases of the mining operation. Should the mineral processing plant and TSF be established on-site the impact on plant and animal life would be more significant.

The additional work required to address this issue is described in Section 6.1.4 of this scoping report.

3.12.5 HYDROLOGY (SURFACE WATER)

3.12.5.1 Issue: Alteration of surface drainage patterns

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion

The proposed project is likely to have a negative impact on drainage patterns through the placement of surface infrastructure and stormwater management measures that will be established on-site. The significance of this impact will depend on the surface infrastructure that is established on site. If the ore is processed off-site and the mineral processing plant and TSF are not established, surface infrastructure will be limited to the shaft complexes and support infrastructure. If this is the case, the alternation of surface drainage patterns would be limited during all phases of the mining operation. Should the mineral processing plant and TSF be established on-site the impact on drainage patterns would be more significant.

The additional work required to address this issue is described in Section 6.1.5 of this scoping report.

3.12.5.2 Issue: Contamination of surface water

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion

Projects of this nature will generally present a number of pollution sources that can have a negative impact on surface water quality during the construction and operational phases if unmanaged. Site clearing activities could cause sedimentation of watercourses during the construction phase. Various potential pollution sources could result in contamination of watercourses during the operational phase, such as tailings spillages (if applicable), workshop/wash bay runoff, spillages of fuel and lubricants, and particles from exposed soils in the form of suspended solids. The extent and significance of this impact will be determined by the surface infrastructure that is established on site. If the ore is processed off-site and the mineral processing plant and TSF are not established, surface infrastructure will be limited to the shaft complexes and support infrastructure. If this is the case, the number of pollution sources would decrease during all phases of the mining operation. Should the mineral processing plant and TSF be established on-site the number of pollution sources would increase, and ultimately the impact on surface water contamination would be more significant.

The additional work required to address this issue is described in Section 6.1.5 of this scoping report.

3.12.6 GROUNDWATER

3.12.6.1 Issue: Reducing groundwater levels and availability

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion

Groundwater levels could be reduced by dewatering at the shaft complexes and in the associated underground mine sections during the construction and operational phases.

Dewatering activities will stop when the relevant sections of the mine closes and the groundwater table should recover to its pre-mining level. No residual impacts are anticipated at this stage from the shafts and associated infrastructure on groundwater availability after closure.

The additional work required to address this issue is included in Section 6.1.6 of this scoping report.

3.12.6.2 Issue: Contamination of groundwater

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion

Projects of this nature will generally present a number of pollution sources that can have a negative impact on groundwater quality during the construction, operational, decommissioning and closure phases if unmanaged. Groundwater could become contaminated through the incorrect stockpiling of potentially polluting waste materials on the site during the construction and decommissioning of the shafts and associated infrastructure. Possible sources of groundwater contamination during the operational phase include seepage from the following: accidental spills and leaks, blasting residues and exposure of groundwater to exposed rock, waste rock dumps and the TSF (if established on-site). The potential for groundwater contamination would increase if an on-site TSF is established.

After site rehabilitation, seepage from the waste rock dumps and TSF (if established), both of which will remain in perpetuity, may impact on groundwater quality.

The additional work required to address this issue is included in Sections 6.1.6 and 6.1.7 of this scoping report.

3.12.7 AIR QUALITY

3.12.7.1 Issue: Pollution from emissions to air

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion

Projects of this nature will generally present a number of pollution sources that can have a negative impact on air quality during all project phases if unmanaged. This significance of this impact is dependent on the surface infrastructure that could be established on site. Vegetation and topsoil stripping during the construction phase will generate dust, as will materials handling, blasting and vehicle movement on unsurfaced roads. Potential dust sources during the operational phase include topsoil stockpiles, materials handling, vehicle movements, waste rock dumps and the TSF (if established). If a TSF is not established, the significance of this impact could be greatly reduced. Dust could also be generated if further vegetation or topsoil stripping is required during the operational phase.

Rehabilitation activities will generate dust through vehicle movement on unsurfaced roads and the replacement of topsoil over disturbed areas. Proper management and re-vegetation of the TSF (if

established) and waste rock dumps after closure will prevent dust arising from these facilities which will remain in perpetuity.

The additional work required to address this issue is included in Section 6.1.8 of this scoping report.

3.12.8 NOISE

3.12.8.1 Issue: Increase in disturbing noise levels

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion

Projects of this nature will generally present a number of noise sources which can increase ambient noise levels in the area, such as site clearing activities, vehicle movements and blasting during the construction phase. General mining activities and the mineral processing plant will also increase ambient noise levels during the operational phase, as will rehabilitation activities due to vehicle movement during the decommissioning phase. The significance of this impact is dependent on the infrastructure that would be established, particularly the mineral processing plant. The additional work required to address this issue is described in Section 6.1.9 of this scoping report.

3.12.9 VISUAL ASPECTS

3.12.9.1 Issue: Negative visual impacts

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion

The construction, operation and decommissioning of the surface infrastructure, namely the shafts and associated infrastructure, mineral processing plant and TSF (if established) will alter the visual character of the project area. This significance of this impact is dependent on the surface infrastructure that could be established as part of the project. If the ore is processed off-site and the mineral processing plant and TSF are not established, surface infrastructure will be limited to the shaft complexes and support infrastructure. Should the mineral processing plant and TSF be established on-site the visual impact would be more significant. The TSF (if established) and waste rock dumps will remain in perpetuity and will therefore result in visual intrusion after mine closure. The additional work required to address this issue is described in Section 6.1.10 of this scoping report.

3.13 POTENTIAL CUMULATIVE IMPACTS

This section provides a description of potential cumulative impacts that the proposed operation may contribute to considering other identified land uses which may have potential environmental linkages to the land concerned.

All identified impacts are considered in a cumulative manner such that the current baseline conditions on site and in the surrounding area and those potentially associated with the project are discussed and assessed together. In addition, the identified impacts in the preceding sections will be considered in a cumulative manner such that the impacts from the Magazynskraal Platinum Mine and those of the Sedibelo and PPM mining activities will be assessed cumulatively as these mines may form one overall operation in the future.

4 PROJECT ALTERNATIVES

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

The main project alternatives to be considered include:

- alternative land use;
- project infrastructure alternatives; and
- the “no-go” alternative.

4.1 LAND USE ALTERNATIVES

A description of alternative land uses that exist on the property or on adjacent or non-adjacent properties that may be affected by the proposed mining operation is provided below.

In accordance with the current land use in the vicinity of the proposed project (see Section 2.4.3) the area proposed for the mining operations, as an alternative to the project, could be used for cattle grazing or community activities. When considering the post rehabilitation land use alternatives, the only option considered to date is rehabilitation back to the current land use capability.

Adjacent and future land uses, such as subsistence farming, cattle grazing, tourism and the proposed Heritage Park, could be affected by the mining activities. Other land uses that could be affected by the proposed project will be identified during the EIA process, and the information will be included in the EIA and EMP report.

The method to be used for assessing land use alternatives is outlined in Section 6.3 of the scoping report.

4.2 PROJECT ALTERNATIVES

4.2.1 COMBINED VERSUS STANDALONE MINING OPERATION

The proposed Magazynskraal Platinum Mine could operate as either a standalone mining operation, or it could be combined with the neighbouring Sedibelo mining operation. Due to the position of the ore body, Richtrau is of the opinion that it would make economic and mining sense to combine the two operations. The chosen alternative would determine the extent of surface infrastructure that is established on the farm Magazynskraal 3 JQ, i.e. if the combined operation is the preferred option, the proposed mineral processing plant and TSF would not be established as the facilities on Sedibelo would be used. The criteria that will be used to inform this decision will include various environmental factors, including the

footprint of the mining operations, as well as the commercial and financial benefits for the mining companies.

4.2.2 INFRASTRUCTURE LAYOUT ALTERNATIVES

The position of the shafts is limited due to the location of the ore body. From Richtrau's perspective, Figure 3 and Figure 4 show the preferred infrastructure layout for the standalone and combined mining operation respectively. As part of the EIA phase of the project, the specialist studies will investigate the feasibility of the preferred layouts. Should the specialist studies show that these sites are not feasible, the infrastructure could be moved to another location within the project area.

The assessment of these alternatives requires input from the investigations described in Section 6.1 so that the full extent of environmental, social and economic considerations can be taken into account.

4.3 LAND DEVELOPMENTS WHICH MAY BE AFFECTED BY THE PROPOSED PROJECT

This section provides a description of land developments identified by the community or IAPs that are in progress and which may be affected by the proposed mining operation.

With reference to Section 2.5.4, the proposed project area will be incorporated into the proposed Heritage Park Corridor that aims to link the Pilanesberg National Park to the Lebatlhane Nature Reserve and ultimately the Madikwe Game Reserve. This will be taken into account during the EIA and relevant specialist studies.

4.4 IAP PROPOSALS TO ADJUST PROJECT PLAN

This section provides a description of proposals made in the consultation process to adjust the operational plans of the mine to accommodate the needs of the community, landowners and IAPs.

To date, no proposals to adjust the project plan have been received by SLR. All objections, issues and concerns raised throughout the Scoping Phase have been captured into the issues and concerns report provided in Appendix D.

4.5 THE "NO-GO" OPTION

This section provides information in relation to the consequence of not proceeding with the proposed mining operation.

The assessment of this option requires a comparison between the options of proceeding with the project with that of not proceeding with the project. The assessment of this option requires input from the investigations described in Section 6 so that the full extent of environmental, social and economic considerations can be taken into account.

The method to be used for assessing this option is outlined in Section 6.3 of the scoping report.

4.6 PROJECT PLAN

A description of the most appropriate procedure to plan and develop the proposed project is provided in Section 3.1.

4.6.1 AVOIDANCE OF POTENTIAL IMPACTS

This section provides information on the applicant's response to the findings of the application process and the possible options to adjust the mine project proposal to avoid potential impacts identified in the consultation process.

The overall project team, which consists of Richtrau, SLR, Epoch and various other engineering firms, with input from specialists, aims to develop the project infrastructure layout and plan in a manner which will prevent impacts to the socio-economic, cultural and biophysical environment. Should impacts be unavoidable, the emphasis will be on impact minimisation and mitigation. The input provided by the relevant EIA specialists will be used to inform any required changes to the project plan during the EIA phase of the project. Further detail will be provided in the EIA and EMP report.

4.6.2 PROJECT PLAN TO AVOID POTENTIAL IMPACTS

This section describes the most appropriate procedure to plan and develop the proposed mining operation with due consideration of the issues raised in the consultation process

As indicated above, the overall project team, which consists of Richtrau, various environmental specialists and SLR, aims to develop the project plan in a manner which will prevent impacts to the socio-economic, cultural and biophysical environment. Should impacts relating to the project scope be unavoidable, the emphasis will be on impact minimisation and mitigation. The input provided by the relevant EIA specialists will be used to inform any required changes to the project plan during the EIA phase of the project.

5 DESCRIPTION OF THE PROCESS OF ENGAGEMENT OF IAPS, INCLUDING THEIR VIEWS AND CONCERNS

5.1 INFORMATION SHARING

This section describes the information provided to the community, landowners and IAPs to inform them in sufficient detail of what the mining operation will entail on the land, in order for them to assess what impact the operation will have on them or the use of the land. It should be noted that a joint public consultation process was implemented for the Magazynskraal, Sedibelo and PPM projects.

5.1.1 DATABASE

The database for the Magazynskraal project was developed using databases from previous and ongoing projects in the project area and supplemented with information on IAPs provided in the scoping meetings. The joint Magazynskraal- Sedibelo-PPM database is provided in Appendix C.

5.1.2 BACKGROUND INFORMATION DOCUMENT (BID)

A BID was compiled and distributed by hand (during the social scan and at the scoping meetings) and e-mail to IAPs and authorities on the project's public involvement database. The purpose of the BID was to inform IAPs and authorities about the proposed project, the environmental assessment process, possible environmental impacts, and means of providing input into the environmental assessment process. Attached to the BID was a registration and response form, which provided IAPs with an opportunity to submit their names, contact details and comments on the project. A copy of the joint Magazynskraal-Sedibelo-PPM BID is provided in Appendix C.

5.1.3 NOTIFICATION

The landowner of the farm Magazynskraal 3 JQ is the Republic of South Africa (care of the Department of Rural Development and Land Reform [DRDLR], previously known as the Department of Land Affairs). The DRDLR was notified telephonically and in writing, by hand delivered letters, of the proposed project.

In addition, the neighboring landowners were informed of the proposed project via telephone and in writing, by hand delivered letters. Proof of these notifications is provided in Appendix C. To date, SLR has not been able to contact one of the landowners of the neighbouring farm Koedoesfontein 42 JQ, Mr Tchinangoe Pilane (refer to Section 1.8 for landowner details). SLR has been informed by the Bakgatla-Ba-Kgafela Tribal Council that Mr Tchinangoe Pilane is deceased, however this is yet to be confirmed and the inheritor/s are still to be identified.

Attempts were made by SLR to inform the land users of Magazynskraal 3 JQ of the proposed project through a social scan process. This involved site visits where SLR personnel tried to meet with these land users directly and attempted meetings with the 'Dibeso' (community elders). These attempts were however unsuccessful with the land users from the Lesetlheng community not being willing to discuss the project with SLR personnel due to disputes between these communities and the BBKTA. SLR will continue to engage with the BBKTA structures during the EIA in order to consult with these land users.

Site notices in English and Setswana were placed at key conspicuous positions in and around the project site and surrounding villages. Block advertisements were placed in The Sowetan and The Rustenburg Herald newspapers on 27 January 2012. Photographs of the site notices and copies of the newspaper advertisements are provided in Appendix C.

IAPs were notified of the proposed project and the public meetings in the following manner:

- a newsletter sent by post and/or email;
- sms notification; and
- loud hailing in villages where the scoping meetings were scheduled (three days before each meeting).

A copy of the newsletter is attached in Appendix C.

5.1.4 SCOPING MEETINGS

The following scoping meetings were held for the proposed project:

- fourteen general scoping meeting were held from 5 to 13 March 2012 at various locations surrounding the proposed project site, namely
 - Saulspoort / Moruleng
 - Lesetlheng
 - Manamakgoteng
 - Lekutung
 - Sefikile / Spitskop
 - Mononono
 - Kgamatha / Lesobeng
 - Lekgraal / Bofule
 - Ramasedi
 - Ntswana-le-Metsing
 - Motlhabe
 - Ngwedding
 - Magalane
 - Magong

- one authorities meeting was held on 06 March 2012; and
- three focused meetings were held during February and March 2012, namely:
 - FES,
 - Pilanesberg National Park and surrounding industry; and
 - Black Rhino Game Reserve.

It should be noted that the Lesetlheng community meeting was arranged at the Lesetlheng Primary School on 5 March 2012 at 13:00. Upon arrival the Lesetlheng community requested that this meeting be postponed until the 17 March 2012 and requested that the directors of PPM, IBMR, Richtrau as well as the leaders of the BBKTA be invited to this meeting. The meeting (17 March 2012) did not take place as it was not possible for the directors and leaders of the various entities to attend and another meeting was subsequently arranged for 19 May 2012. The community requested that the meeting be moved to 27 May 2012. Due to civil unrest in the area the May meeting was cancelled by Platmin South Africa. A meeting between representatives from the Lesetlheng community and SLR was arranged for 28 June 2012, however SLR was instructed to cancel the meeting. The meeting between SLR and Lesetlheng representatives took place on 26 July 2012. One of the outcomes of the meeting was a formal request, in writing, from SLR to meet with the Lesetlheng community as part of the EIA consultation process. It is understood that the Lesetlheng representatives communicated the request to the community, who responded by stating that they do not want to participate in the consultation process until various conditions have been met. Copies of this correspondence are included in Appendix C.

As the potential exists for the three mining projects described in the Introduction of this report to operate as one mining operation, a presentation was given at each meeting that provided basic information for the three projects and the environmental process being followed. The same presentation was given at all of the meetings. At this early stage in the project, limited information is available regarding the project description as the project is still in the design phase. The meetings were therefore focussed on:

- informing IAPs about the proposed project;
- informing IAPs about the stakeholder engagement process and how IAPs can have input into the process;
- providing information about the baseline environment and obtaining input thereon;
- providing information about the potential impacts of the project and obtaining input thereon; and
- providing an opportunity for IAPs to raise issues and concerns. These issues and concerns have been documented in the Issues and Concerns Report (Appendix D) and used to inform the Plan of Study for the EIA Phase.

Meeting attendance registers, minutes, the meeting presentation are provided in Appendix C and the issues and concerns report are provided in Appendix D.

5.1.5 REVIEW OF SCOPING REPORT

The scoping report will be subjected to public review in September 2012. Full copies of the scoping report will be available for public review at the following venues:

- Villages immediately surrounding the project area, including Lesetlheng; Manamakgoteng; Lekutung; Sefikile/Spitskop; Mononono; Kgamatha/Lesobeng; Lekgraal/Bofule; Ramasedi; Ntswana-le-Metsing; Motlhabe; Ngweding; Magalane; Magong;
- Bakgatla-Ba-Kgafela traditional offices in Saulspoort;
- Moses Kotane Local Municipality in Saulspoort;
- Rustenburg public library;
- Black Rhino Game Reserve;
- Pilanesberg Platinum Mine;
- SLR's offices in Johannesburg; and
- electronically on a CD, on request.

Summaries of the report will be sent by post or e-mail to all IAPs and authorities on the project's public involvement database. In addition, IAPs will be notified when the report is available for review via SMS.

5.2 IAPs CONSULTED DURING SCOPING PHASE

This section discusses which of the identified communities, landowners or lawful occupiers and other IAPs were in fact consulted during the Scoping Phase.

IAPs that are registered on the project database (Appendix B) have been consulted during the scoping phase.

5.3 IAP VIEWS ON EXISTING ENVIRONMENT

All views, issues and concerns raised throughout the Scoping Phase with regard to the existing cultural, socio-economic or biophysical environment have been captured into the issues and concerns report provided in Appendix D.

5.4 IAP VIEWS ON POTENTIAL IMPACTS

All views, issues and concerns raised throughout the Scoping Phase on how the existing cultural, socio-economic or biophysical environment could potentially be impacted upon by the proposed mining operation have been captured into the issues and concerns report provided in Appendix D.

5.5 OTHER IAP CONCERNS

All views, issues and concerns raised throughout the Scoping Phase have been captured into the issues and concerns report provided in Appendix D. Issues pertained to:

- procedural issues related to the public consultation process;
- technical issues related to the mine design and planned infrastructure ;
- socio-economic issues specifically what benefits could be expected and employment of local people as well as the influx of people into the area. Another significant issue raised was internal tribal issues between several communities and the traditional leadership;
- surface water pollution and loss of water used for domestic and agricultural use;
- groundwater pollution;
- land use changes;
- air quality, specifically dust generation;
- traffic and related safety hazards as well as requests for road upgrading;
- blasting safety hazards and cracking of houses;
- safety hazards related to open excavations;
- heritage resources, specifically potential impacts on graves;
- potential health impacts on people and livestock;
- noise pollution;
- sensitive biodiversity;
- soil and land capability; and
- impacts of the existing mining operations.

5.6 MEETING MINUTES AND RECORDS OF CONSULTATIONS

Copies of the scoping meeting attendance register, minutes, and scoping meeting presentation are included in Appendix C, and the issues and concerns report is provided in Appendix D.

5.7 IAP OBJECTIONS

Objections to the proposed project were received and have been recorded in the issues and concerns report included in Appendix D.

6 FURTHER INVESTIGATIONS AND EIA PLAN OF STUDY

This section describes the nature and extent of further investigations required in the Environmental Impact Assessment Report, including any specialist studies that may be required, and sets out the proposed approach to the EIA and EMP phase.

6.1 FURTHER INVESTIGATIONS

The proposed terms of reference for further investigations required for the completion of the EIA study are discussed below. The results of these studies will be collated into a combined EIA and EMP report.

6.1.1 GEOLOGY

It is proposed that no specialist investigations are required. The assessment and detailed management measures will be provided in the EIA and EMP report by SLR and technical project team.

6.1.2 TOPOGRAPHY

It is proposed that no specialist investigations are required. The assessment and detailed management measures will be provided in the EIA and EMP report by SLR.

6.1.3 SOIL AND LAND CAPABILITY

The investigation is being conducted by Earth Science Solutions. The baseline study has been completed and was used to inform the scoping report. The impact section will be completed during the EIA phase. The investigation has the following objectives:

- to identify and map the soils occurring in the proposed Magazynskraal project area,
- to collect soil samples for analysis in order to quantify the soil characteristics,
- to detail soil and land capability aspects; and
- to have input, together with SLR and Richtrau, into the project alternatives and the soil management measures going forward.

6.1.4 NATURAL VEGETATION AND ANIMAL LIFE (FLORA AND FAUNA)

The detailed (flora, fauna and aquatic system) summer investigation is being conducted by Natural Scientific Services. The baseline study has been completed and the impact section will be completed during the EIA phase. The investigation has the following objectives:

- to perform desktop and field investigations to identify and map different habitats in the proposed Magazynskraal project area;
- to assign species to each habitat through various trapping and sampling methods;

- to rank each habitat type based on conservation importance (in terms of provincial biodiversity priorities) and ecological sensitivity;
- to identify potential impacts on ecology; and
- to have input, together with SLR and Richtrau, into project alternatives and ecology management measures going forward.

6.1.5 HYDROLOGY (SURFACE WATER)

It is proposed that SLR will conduct the surface water study. The investigation has the following objectives:

- develop a detailed baseline hydrological description of the selected site and immediate surrounds;
- determine the rainfall intensities per month (1hr, 24hr, 24hr 1:50, 24hr 1:100);
- determine the mean monthly rainfall and evaporation;
- determine the mean annual runoff from the mine;
- determine flood peaks for recurrence intervals of 1:20, 1:50 and 1:100 years and the regional maximum flood (RMF);
- delineate the 1:50 and 1:100 year flood lines and 100m offset on main rivers where relevant;
- identification and assessment of potential impacts of the development on surface water;
- development of relevant management and mitigation measures including a detailed stormwater management plan; and
- provide input, together with SLR and the technical project team into project alternatives and surface water management measures going forward.
- The aforementioned terms of reference will be based upon relevant legislation/guidance including GN 704 and BPG1.

6.1.6 GROUNDWATER

It is proposed that detailed investigation will be conducted by AGES. Due to the complex nature of groundwater resources, and the proximity of the Magazynskraal and Sedibelo project sites to one another, one groundwater report will be produced that will assess the impacts of both mining operations.

The study will have the following objectives:

- to review and evaluate existing data and perform a site description (desk study) on the geology and geohydrology of the project site;
- to conduct a hydrocensus survey to determine the groundwater and borehole locations, status, depth, distribution, use and owners in the area;
- to sample groundwater features to determine the groundwater quality distribution and baseline water quality data;
- to compile geological, geohydrological and hydrochemical GIS maps of the aquifer system that indicates the groundwater (and water quality) in relation to the geology;

- to conduct geophysics for positioning boreholes;
- to drill boreholes to verify aquifer classification;
- to model the dewatering and pollution impacts of the proposed projects; and
- to have input, together with SLR and the project team, into project alternatives and groundwater management measures going forward.

6.1.7 ENGINEERING DESIGN

Epoch Resources (Pty) Ltd will compile the detailed design for the TSF and waste rock dumps. The TSF will be designed by an appropriately qualified professional engineer in accordance with the requirements of Regulation 73 of the Mineral and Petroleum Resources Development Act, 28 of 2002, and Regulation 704 of the National Water Act, 108 of 1998.

6.1.8 AIR QUALITY

It is proposed that the detailed investigation be conducted by Airshed Planning Professionals (Pty) Ltd. This investigation will have the following objectives:

- to identify potential receptors;
- to quantify the emissions from the proposed project in an emissions inventory;
- to quantify the cumulative emissions from the proposed project as well as the neighbouring Sedibelo and PPM mining operations.
- to determine the day-night and seasonal wind patterns in the project area;
- to assess the potential impacts of the emissions on receptors; and
- to recommend management measures where required, in consultation with SLR, Richtrau and relevant IAPs.

6.1.9 NOISE

It is proposed that a detailed investigation be conducted by Acusolv. The investigation has the following objectives:

- to profile the noise sensitive areas and receptors;
- to quantify the pre-development ambient noise climate for day and night;
- to model operational noise levels during the day and night;
- to compare these estimated impacts to relevant standards; and
- to recommend mitigation measures if necessary in consultation with SLR, Richtrau and relevant IAPs.

6.1.10 VISUAL ASPECTS

It is proposed that a visual impact investigation be conducted by Newtown Landscape Architects. The investigation will assess the surface infrastructure that is proposed as part of this project, as well as the changes to surface infrastructure that is currently being applied for at Sedibelo and has the following objectives:

- to determine the physical presence (visual intrusion) of project related components (including dust) for day and night;
- to determine the aesthetic value of the receiving environment;
- to assess the effect on the visual environment and sense of place of the study area;
- to assess the potential loss of scenic value of the landscape and impact on key views; and
- to have input, together with SLR, Richtrau and relevant IAPs into project alternatives and mitigation measures going forward.

6.1.11 ARCHAEOLOGICAL, CULTURAL AND HERITAGE RESOURCES

A Phase I heritage impact assessment has been conducted by Dr Julius Pistorius (August, 2010) as part of Richtrau's prospecting EMP amendment. The objectives of the study are listed below. The study will be used for this project and no further studies are planned.

- to identify and map (through literature review and field work) all heritage resources in the proposed Magazynskraal project area;
- to assess the significance of the identified resources;
- to assess the impact of the proposed Magazynskraal development on the heritage resources;
- to have input, together with SLR, Richtrau and relevant IAPs into project alternatives and heritage resources management measures going forward.

6.1.12 PALEONTOLOGICAL RESOURCES

A desktop assessment of paleontological resources has been undertaken by Professor Bruce Rubidge of BPI for Palaeontological Research (February, 2011). The study will be used for this project and no further studies are planned. The study had the following objectives:

- to identify (through literature review) all paleontological resources in the proposed Magazynskraal project area;
- to assess the significance of the identified resources;
- to assess the impact of the proposed Magazynskraal development on the paleontological resources;
- to have input, together with SLR, Richtrau and relevant IAPs into project alternatives and paleontological resources management measures going forward.

6.1.13 LAND USE

6.1.13.1 Impact on existing agricultural and residential uses

It is proposed that no specialist investigations are required. The assessment and detailed management measures will be provided in the EIA and EMP report by SLR.

6.1.14 TRANSPORT SYSTEMS

It is proposed that the detailed investigation be conducted by Siyazi (Pty) Ltd. The investigation will assess each of the projects individually (PPM, Sedibelo and Magazynskraal) and include a cumulative assessment. One report will be produced to cater for the above-mentioned projects. The investigation has the following objectives:

- confirm current status of road network and intersections under investigation;
- conduct trip generation and distribution calculations;
- conduct detailed traffic analyses; and
- have input, together with SLR and Richtrau into appropriate mitigation measures for project alternatives and traffic related management measures where required.

6.1.15 SOCIO-ECONOMIC ISSUES

It is proposed that Managing Transformation Solutions (Pty) Ltd (MTS) will conduct a social impact assessment for the proposed project. The objectives of the study are as follows:

- determine the baseline information detailing the socio-economic and socio-political background of the area in the vicinity of the proposed project;
- identify and assess potential impacts of a social and economic nature from the proposed mine through investigation with a variety of stakeholders;
- provide input, together with SLR, Richtrau and relevant IAPs into appropriate mitigation measures for each of the identified impacts.

Strategy4Good will conduct an economic assessment to meet the requirements of the DMR EIA and EMP report template. The investigation will include the following tasks:

- comparative land use assessment; and
- costs and benefits analysis.

6.2 METHODOLOGY FOR THE ASSESSMENT OF ENVIRONMENTAL ISSUES

The proposed method for the assessment of environmental issues is set out in Table 7 below. This assessment methodology enables the assessment of environmental issues including: cumulative impacts, the severity of impacts (including the nature of impacts and the degree to which impacts may cause irreplaceable loss of resources), the extent of the impacts, the duration and reversibility of impacts, the probability of the impact occurring, and the degree to which the impacts can be mitigated.

TABLE 7: CRITERIA FOR ASSESSING IMPACTS

Note: Part A provides the definition for determining impact consequence (combining severity, spatial scale and duration) and impact significance (the overall rating of the impact). Impact consequence and significance are determined from Part B and C. The interpretation of the impact significance is given in Part D.

PART A: DEFINITION AND CRITERIA*					
Definition of SIGNIFICANCE		Significance = consequence x probability			
Definition of CONSEQUENCE		Consequence is a function of severity, spatial extent and duration			
Criteria for ranking of the SEVERITY of environmental impacts	H	Substantial deterioration (death, illness or injury). Recommended level will often be violated. Vigorous community action.			
	M	Moderate/ measurable deterioration (discomfort). Recommended level will occasionally be violated. Widespread complaints.			
	L	Minor deterioration (nuisance or minor deterioration). Change not measurable/ will remain in the current range. Recommended level will never be violated. Sporadic complaints.			
	L+	Minor improvement. Change not measurable/ will remain in the current range. Recommended level will never be violated. Sporadic complaints.			
	M+	Moderate improvement. Will be within or better than the recommended level. No observed reaction.			
	H+	Substantial improvement. Will be within or better than the recommended level. Favourable publicity.			
Criteria for ranking the DURATION of impacts	L	Quickly reversible. Less than the project life. Short term			
	M	Reversible over time. Life of the project. Medium term			
	H	Permanent. Beyond closure. Long term.			
Criteria for ranking the SPATIAL SCALE of impacts	L	Localised - Within the site boundary.			
	M	Fairly widespread – Beyond the site boundary. Local			
	H	Widespread – Far beyond site boundary. Regional/ national			
PART B: DETERMINING CONSEQUENCE					
SEVERITY = L					
DURATION	Long term	H	Medium	Medium	Medium
	Medium term	M	Low	Low	Medium
	Short term	L	Low	Low	Medium
SEVERITY = M					
DURATION	Long term	H	Medium	High	High
	Medium term	M	Medium	Medium	High
	Short term	L	Low	Medium	Medium
SEVERITY = H					
DURATION	Long term	H	High	High	High
	Medium term	M	Medium	Medium	High
	Short term	L	Medium	Medium	High
			L	M	H
			Localised Within site boundary Site	Fairly widespread Beyond site boundary Local	Widespread Far beyond site boundary Regional/ national
SPATIAL SCALE					
PART C: DETERMINING SIGNIFICANCE					
PROBABILITY (of exposure to impacts)	Definite/ Continuous	H	Medium	Medium	High
	Possible/ frequent	M	Medium	Medium	High
	Unlikely/ seldom	L	Low	Low	Medium
			L	M	H
CONSEQUENCE					
PART D: INTERPRETATION OF SIGNIFICANCE					
Significance		Decision guideline			
High		It would influence the decision regardless of any possible mitigation.			
Medium		It should have an influence on the decision unless it is mitigated.			
Low		It will not have an influence on the decision.			

*H = high, M= medium and L= low and + denotes a positive impact.

6.3 METHODOLOGY FOR THE ASSESSMENT OF PROJECT ALTERNATIVES

6.3.1 ASSESSMENT OF THE “NO-GO OPTION”

The assessment of the implications of the “No-Go option” will require a high level comparison between the existing situation without the project and the possible future situation with the project, as assessed in the EIA and EMP report. This comparison will take existing and future impacts into account, including both positive and negative impacts. Additional discussion is included in Section 4.5 of the scoping report.

6.3.2 ASSESSMENT OF PROJECT ALTERNATIVES

The realistic alternatives and associated assessment criteria for choosing between these alternatives have been discussed in Section 4 of the scoping report. The proposed methodology for the assessment of these alternatives is a relative comparison that also applies the assessment method described above to each of the listed assessment criteria, where possible.

6.4 CLOSURE COST ESTIMATE

Richtrau’s closure cost estimate will be calculated by SLR using the DMR model.

6.5 WAY FORWARD FOR SCOPING

The way forward for the remainder of the scoping phase is as follows:

- distribute the scoping report and a summary thereof for review by the IAPs, the DMR and other regulatory authorities;
- submit a copy of the Scoping Report that went out for public review to DEDECT and DEA for their records;
- receive comments from IAPs and other regulatory authorities;
- update the scoping report with IAP comments and forward to DEDECT and DEA;
- receive comments from the DMR, DEDECT and DEA and address in EIA phase.

6.6 PLAN OF STUDY FOR THE EIA PHASE

6.6.1 EIA PHASE OBJECTIVES

The main objectives of the EIA phase are to:

- assess project alternatives;
- assess the potential environmental and social impacts of the project;
- identify and describe procedures and measures that will mitigate potential negative impacts and enhance potential positive impacts;

- liaise with IAPs including relevant government departments on issues relating to the proposed development to ensure compliance with existing guidelines and regulations;
- undertake consultations with IAPs and provide them with an opportunity to review and comment on the outcomes of the environmental assessment process and acceptability of mitigation measures;
- develop an environmental management plan and a conceptual closure/decommissioning plan; and
- provide measures for on-going monitoring (including environmental audits) to ensure that the project plan and proposed mitigation measures are implemented as outlined in the detailed EIA.

6.6.2 EIA PROJECT TEAM

The proposed EIA project team is outlined in Table 8 and is similar to the team used for the scoping phase with the inclusion of additional specialists.

TABLE 8: PROPOSED EIA TEAM

Team	Name	Designation	Tasks and roles	Company
Project management	Fiona Bolton	Project manager	Management of the assessment process, stakeholder engagement and report compilation.	SLR
	Ntsako Baloyi	Stakeholder engagement		
	Caitlin Pringle	Project administrator		
	Brandon Stobart Alex Pheiffer	Project reviewer	Report and process review	
Specialist investigations	Susan Abell	Ecologist	Ecological survey	Natural Scientific Services
	Ian Jones	Soil specialist	Soil and land capability assessment	Earth Science Solutions
	Julius Pistorius	Archaeologist	Heritage assessment	Private
	Hanlie Liebenberg-Enslin	Air quality specialist	Air emissions model	Airshed Planning Professionals
	Graham Young	Visual specialist	View shed analysis	Newtown Landscape Architects
	Ben van Zyl	Noise specialist	Noise assessment	Acusolv
	Paul van der Westhuizen	Traffic specialist	Traffic impact assessment	Siyazi
	Stephan Meyer	Groundwater specialist	Hydrocensus, groundwater model and water balance	AGES
	Paul Klimczak and Steve van Niekerk	Hydrologist and engineer	Surface water management plan and flood lines	SLR
	Sonny Nkomo	Social scientist	Socio assessment	MTS
	Gerrie Muller	Economist	Economic assessment	Strategy4Good
	Steve van Niekerk	Engineer	Closure cost estimate	SLR
	Guy Wiid	Engineer	Tailings and waste rock design	Epoch Resources

6.6.3 EIA AND EMP PHASE ACTIVITIES

An overview of the EIA and EMP phase and corresponding activities are outlined in Table 9.

TABLE 9: EIA AND EMP ACTIVITIES

Objectives	Corresponding activities and estimated dates
<i>Further investigations (July to October 2012)</i>	
<ul style="list-style-type: none"> Describe the affected environment Define potential impacts Give management and monitoring recommendations 	<ul style="list-style-type: none"> Investigations by technical project team and SLR of issues identified during the scoping stage including investigations into alternatives.
<i>EIA and EMP phase (November 2012 to August 2013)</i>	
<ul style="list-style-type: none"> Assessment of potential environmental impacts Design requirements and management and mitigation measures Receive feedback on application 	<ul style="list-style-type: none"> Compilation of EIA and EMP report. Distribute EIA and EMP report to IAPs and other regulatory authorities for review (January 2013). Public feedback meetings with IAPs (if required) (February 2013). Record comments (March 2013). Forward IAP comments to DMR (March 2013). Forward final EIA and EMP report to DEDECT and DEA (March 2013) Circulate record of decision to all registered IAPs (second half of 2013).

6.6.4 STAGES OF CONSULTATION WITH THE COMPETENT AUTHORITY IN EIA PHASE

Proposed consultation meetings for the EIA phase include:

- a site visit and meeting with the DMR, DEDECT, DEA and DWA (if requested); and
- a general authorities meeting at the end of the EIA phase to present the main findings of the EIA prior to submission of the EIA and EMP report (if requested).

6.6.5 PUBLIC INVOLVEMENT PROCESS IN EIA PHASE

The proposed public involvement process can be separated into focussed and general involvement. Each of these is described below:

Focussed involvement

As part of the various investigations that form part of the EIA tasks focussed meetings with certain IAPs will be held, as required. These meetings will be arranged and facilitated by SLR.

General involvement

As with the scoping report, full copies of the EIA and EMP report will be distributed to the agreed venues and summaries will be distributed to registered IAPs. Full copies of the report will also be provided electronically (on a CD) on request.

Towards the end of the review period, public feedback meetings will be arranged (if requested). The purpose of these meetings would be as follows:

- to provide IAPs with a final chance to submit comments on the EIA and EMP report; and
- to provide IAPs with an opportunity to discuss the outcomes of the EIA and EMP report.

All comments received from IAPs in the review period will be forwarded to the DMR.

Once the DMR, DEDECT and DEA have issued their respective decisions, the IAPs will be notified by e-mail and post in accordance with the instructions from the departments.

7 SUMMARY AND CONCLUSIONS

The scoping phase of the EIA catering for the establishment of underground mining and related surface infrastructure at the proposed Magazynskraal Platinum Mine has been completed. The potential impacts identified in this scoping report will be investigated by various studies to be conducted in the next phase of the EIA.

Fiona Bolton
Project Manager

Alex Pheiffer (PrSci Nat)
Reviewer

8 REFERENCES

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- North West Parks and Tourism Board (NWPTB) (April 2002): *Heritage park Concept Plan second edition.*
- personal communications with Black Rhino representatives (7 March 2012).
- Pistorius, J (August 2010): *A Phase I Heritage Impact Assessment for the farm Magazynskraal 3 JQ near the Pilanesberg National Park in the North West Province of South Africa.*
- Rubidge, B (February 2011): *Magazynskraal project – Palaeontological Impact Assessment.*
- topographical maps (1:50 000 scale) (2527AA, 2527AB2526BB, 2426DD, 2427CD and 2427CC).
- WR2005, 2009, *Water Resources of South Africa, 2005 Study (WR2005).*

APPENDIX A: RELEVANT SECTIONS OF THE NEMA APPLICATION

Note: the NEMWA application has not yet been submitted to the DEA.

APPENDIX B: STAKEHOLDER DATABASE

APPENDIX C: INFORMATION SHARING WITH STAKEHOLDERS

- Correspondence with relevant authorities
- Proof of landowner notification
- Site notice in English and Setswana, and photographs showing the placement of site notices
- Advertisements
- Notification letter sent to IAPs and ward councilors
- Background Information Document (in English and Setswana)
- Initial meetings with BBKTA, Kgosanas, and Moses Kotane Local Municipality
- Scoping meeting minutes and attendance registers
- Completed registration forms / comments received
- Correspondence with representatives from the Lesetlheng community

APPENDIX D: ISSUES AND CONCERNS REPORT



RECORD OF REPORT DISTRIBUTION

Project Number:	B001-03
Title:	Proposed establishment of an underground platinum mining operation and related surface infrastructure - Magazynskraal Platinum Mine
Report Number:	1
Proponent:	Richtrau No. 123 (Pty) Ltd

Name	Entity	No. of copies	Date issued	Issuer
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Livhuwani Kutame	Department of Economic Development, Environment, Conservation and Tourism (for information only)	1	September 2012	F Bolton
Caroline Shai	Department of Water Affairs	1	September 2012	F Bolton
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Motsitsi Pilane	Lekutung	1	September 2012	F Bolton
Tidimalo Kgatlhang	Sefikile / Spitskop	1	September 2012	F Bolton
D Molefe	Mononono	1	September 2012	F Bolton
Dan Segale	Kgamatha / Lesobeng	1	September 2012	F Bolton
Mac Deatswana	Lekgraal / Bofule	1	September 2012	F Bolton
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Meme Moeng	Ntswana-le-Metsing	1	September 2012	F Bolton
Kgosana Tlhabane Pilane	Motlhabe	1	September 2012	F Bolton
Marks Mweletsi	Ngweding	1	September 2012	F Bolton
TBC	Magalane	1	September 2012	F Bolton
Mr. Leoto	Magong	1	September 2012	F Bolton
TBC	Department of Environmental Affairs	4	After public review	F Bolton
Livhuwani Kutame	Department of Economic Development, Environment, Conservation and Tourism	5	After public review	F Bolton

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