

# PROPOSED EXPANSION OF THE PARKING AREA AT THE SHAFT 16 COMPLEX, IMPALA PLATINUM MINE, RUSTENBURG OPERATION - BASIC ASSESSMENT REPORT

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## REPORT SIGN OFF AND APPROVALS



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## EXECUTIVE SUMMARY

### PROJECT BACKGROUND

Impala Platinum Limited (Impala), a member of the Implats group of companies, operates a platinum group metals (PGM) mining and processing operation located approximately 16 km north-north-west of the town of Rustenburg, in the Rustenburg Local Municipality (RLM) and the Bojanala Platinum District Municipality (BPDM), North West province.

Impala holds and operates in accordance with the following authorisations:

- An amended Mining Right (MR) issued in terms of the Mineral and Petroleum Resources Development Act, 28 of 2002 (MPRDA) (Department of Mineral Resources and Energy (DMRE) (previously the Department of Mineral Resources (DMR) Ref: NW-00194-MR/102) issued on 13 December 2018; and
- An approved consolidated Environmental Management Programme (EMPr) issued in terms of the MPRDA (DMRE (previously the DMR) Ref: NW30/5/1/2/3/2/1/130,131,132 and 133 EM)) issued on 20 August 2013.

Impala's Shaft 16 Complex is located on the farm Reinkoyalskraal 278 JQ and comprises of a vertical hoisting shaft, an upcast ventilation shaft, waste rock dump (WRD), run of mine and stockpile areas, and various ancillary support services, including an office complex, stores and parking area. As part of its on-going mine planning, Impala is proposing to expand the existing parking area with additional covered parking bays (proposed project).

### SUMMARY OF AUTHORISATION REQUIREMENTS

Prior to the commencement of the proposed project, the following is required:

- An amended EMPr in terms of Section 102 the MPRDA from the DMRE; and
- An Environmental Authorisation (EA) in terms of the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) promulgated under the National Environmental Management Act, 107 of 1998 (NEMA) from the DMRE.

SLR Consulting (Africa) (Pty) Ltd (SLR), an independent firm of Environmental Assessment Practitioners (EAPs), has been appointed by Impala to manage the amended EMPr and EA processes.

### OPPORTUNITY FOR COMMENT

This Basic Assessment Report (BAR) has been distributed for a 30-day comment period from 8 September to 8 October 2021 in order to provide Interested and Affected Parties (I&APs) with an opportunity to comment on any aspect of the Basic Assessment (BA) process and the proposed project. Copies of the full report have been made available on the SLR website ([www.slrconsulting.com](http://www.slrconsulting.com)) and the SLR data-free website (<https://slrpublicdocs.datafree.co/public-documents>). Any comments should be forwarded to SLR at the

address, telephone or email address shown below<sup>1</sup>. For comments to be included in the revised BAR, comments should reach SLR **by no later than 8 October 2021**.

**SLR Consulting (Africa) (Pty) Ltd**  
**Attention: Mrs Rizqah Baker**  
**Post: PO Box 1596, Cramerview, 2060\***  
**Tel: 011 467 0945**  
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## SUMMARY OF IDENTIFIED IMPACTS AND SIGNIFICANCE

The potential impacts associated with the project activities and infrastructure can be categorised into those that have very low, low, medium, high, very high or insignificant significance in the unmitigated scenario. A summary of the identified impacts is provided in the table below.

Aspect	Potential Impact	Cumulative impact significance of the impact	
		Unmitigated	Mitigated
Geology	Loss and sterilisation of mineral resources	<b>INSIGNIFICANT</b>	
Topography	Altering topography	<b>INSIGNIFICANT</b>	
	Hazardous excavations and infrastructure resulting in safety risks to third parties and animals	<b>Medium</b>	<b>VERY LOW</b>
Soil and land capability	Loss of soil resources and land capability through physical disturbance and contamination	<b>INSIGNIFICANT</b>	
Biodiversity	Physical destruction and disturbance of floral species	<b>Low</b>	<b>VERY LOW</b>
	Physical destruction and disturbance of faunal species	<b>Low</b>	<b>VERY LOW</b>
Surface water resources	Alteration of natural drainage patterns	<b>INSIGNIFICANT</b>	
	Contamination of surface water resources	<b>INSIGNIFICANT</b>	
Groundwater	Contamination of groundwater resources	<b>INSIGNIFICANT</b>	
Air quality	Air pollution	<b>INSIGNIFICANT</b>	
Noise	Increase in disturbing noise levels	<b>INSIGNIFICANT</b>	
Visual	Negative visual views	<b>INSIGNIFICANT</b>	
Traffic	Road disturbance and traffic safety	<b>INSIGNIFICANT</b>	
Cultural/heritage and palaeontological resources	Loss of cultural/heritage and palaeontological resources	<b>INSIGNIFICANT</b>	
Socio-economic	Inward migration and economic impact	<b>INSIGNIFICANT</b>	
	Change in land use	<b>INSIGNIFICANT</b>	

<sup>1</sup> By providing your personal information to be registered as an I&AP for this project, you consent to SLR keeping and using your personal information as part of a contact database for this and other EIA projects and processes; contacting you about these projects; disclosing it to other authorised parties for lawful purposes, including transferring to other countries; processing it for lawful purposes (fulfilling contractual, legal and public policy obligations, and protecting legitimate interests SLR and other authorized parties). SLR will only collect the necessary personal information. SLR (and any authorised parties) will only use it for lawful purposes, and use reasonable, appropriate security safeguards to protect it, reasonably prevent any damage to, or loss, unauthorised access, or disclosure thereof. **Your rights:** You may request SLR to provide you with names of the authorized parties, and details of your personal information held in the I&AP database. You may object to the processing thereof, or request to correct, delete or destroy it, at any time by contacting SLR by email or in writing. However, you understand that SLR (and any authorised parties) may not be able to delete or destroy it for legal or public policy reasons. SLR will provide you with the reasons. You may lodge a complaint with the information regulator at: <https://justice.gov.za/inforeg/>. Link to SLR's privacy policy: <https://cdn.slrconsulting.com/uploads/2020-08/slr-privacy-notice.pdf>

## ENVIRONMENTAL STATEMENT

The assessment of the proposed project presents the potential for negative impacts to occur (in the unmitigated scenario in particular) on the biophysical, cultural/heritage and socio-economic environments, both on the project footprint and in the surrounding area. With the implementation of management actions, these potential impacts can be prevented or reduced to acceptable levels. It follows that provided the EMPr is effectively implemented, there is no reason from a biophysical, cultural/heritage or socio-economic standpoint why the proposed project should not proceed.

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## ACRONYMS AND ABBREVIATIONS

Acronym / Abbreviation	Definition
AEL	Atmospheric Emissions Licence
AQSR	Air Quality Sensitive Receptors
BA	Basic Assessment
BAR	Basic Assessment Report
BIC	Bushveld Igneous Complex
BID	Background Information Document
BMR	Base Metals Refinery
BoQ	Bill of Quantities
BPDM	Bojanala Platinum District Municipality
DEA	Department of Environmental Affairs
DEDECT	North West Department of Economic Development, Environment and Nature Conservation
DFFE	Department of Forestry, Fisheries and Environment
DMR	Department of Mineral Resources
DMRE	Department of Mineral Resources and Energy
DRDLR	Department of Rural Development and Land Reform
DWS	Department of Water and Sanitation
E-Tek	E-Tek Consulting (Pty) Ltd
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
ECO	Environmental Control Officer
EO	Environmental Officer
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMPr	Environmental Management Programme
GN	Government Notice
GNR	Government Notice Regulation
Grevix	Grevix Services and Solutions
H&S	Health and Safety
ha	Hectares
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IAIAsa	International Association for Impact Assessment South Africa

Acronym / Abbreviation	Definition
IBA	Important Bird Area
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
Impala	Impala Platinum Limited
m	Meter
mamsl	Metres Above Mean Sea Level
MAR	Mean Annual Run-Off
mbgl	Metres Below Ground Level
MCLEF	Mine Community Leadership and Engagement Forum
MPRDA	Mineral and Petroleum Resources Development Act, 28 of 2002
MR	Mining Right
NBA	National Biodiversity Assessment
NDCR	National Dust Control Regulations
NDP	National Development Plan
NEM: AQA	National Environmental Management: Air Quality Act, 39 of 2004
NEM: BA	National Environmental Management: Biodiversity Act, 10 of 2004
NEM: WA	National Environmental Management: Waste Act, 59 of 2008
NEMA	National Environmental Management Act, 107 of 1998
NFEPA	National Freshwater Ecosystem Priority Areas
NHRA	National Heritage Resources Act, 25 of 1999
NPAES	National Protected Areas Expansion Strategy
NTS	Non-Technical Summary
P&G's	Preliminary and Generals
PGM	Platinum Group Metals
PPP	Public Participation Process
PSDF	Provincial Spatial Development Framework
RBA/RBN	Royal Bafokeng Administrations/Royal Bafokeng Nation
RDL	Red-Data List
RLM	Rustenburg Local Municipality
RLS	Rustenburg Layered Suite
RQIS	Research Quality Information Services
SACAD	South African Conservation Areas Database
SACNASP	South African Council for Natural Scientific Professions
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute

Acronym / Abbreviation	Definition
SANS	South African National Standards
SAPS	South African Police Service
SAPAD	South African Protected Area Database
SLP	Social and Labour Plan
SLR	SLR Consulting (Africa) (Pty) Ltd
SSVR	Site Sensitivity Verification Report
StatsSA	Statistics South Africa
STS	Scientific Terrestrial Services cc
TNCO	Transvaal Nature Conservation Ordinance, No. 12 of 1983
TOPS	Threatened or Protected Species
UCVB	Unchanneled Valley Bottom
WMA	Water Management Area
WRD	Waste Rock Dump
WUL	Water Use Licence

# Proposed Expansion of the Parking Area at the Shaft 16 Complex, Impala Platinum Mine, Rustenburg Operation - Basic Assessment Report

## INTRODUCTION

This chapter provides a brief description of the proposed project background, described the purpose of the report, summarises the legislative authorisation requirements and outlines the opportunity for stakeholders to comment.

## PROJECT BACKGROUND

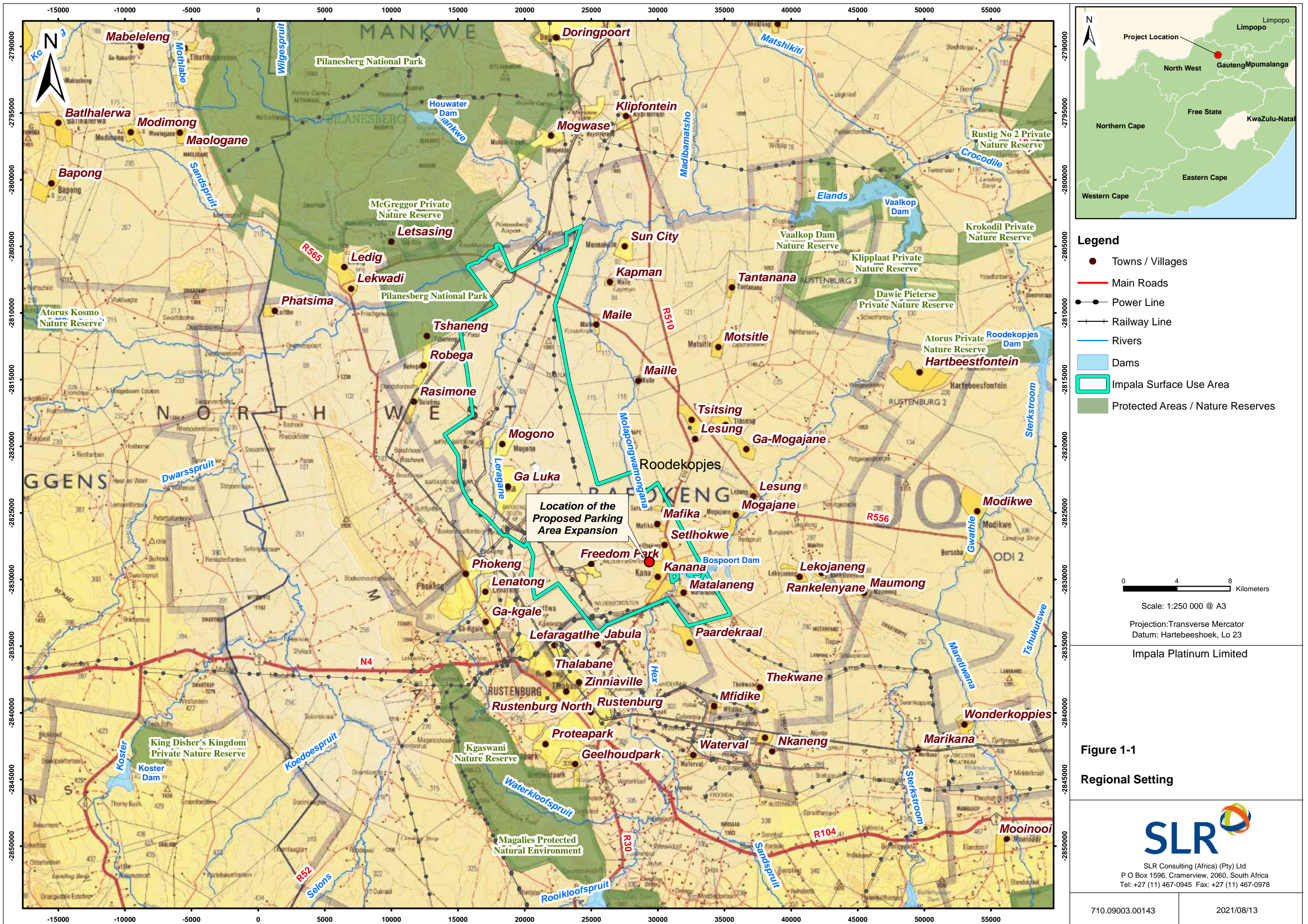
Impala Platinum Limited (Impala), a member of the Implats group of companies, operates a platinum group metals (PGM) mining and processing operation located approximately 16 km north-north-west of the town of Rustenburg, in the Rustenburg Local Municipality (RLM) and the Bojanala Platinum District Municipality (BPDM), North West province. Regional and local setting maps are provided in Figure 1-1 and Figure 1-2, respectively.

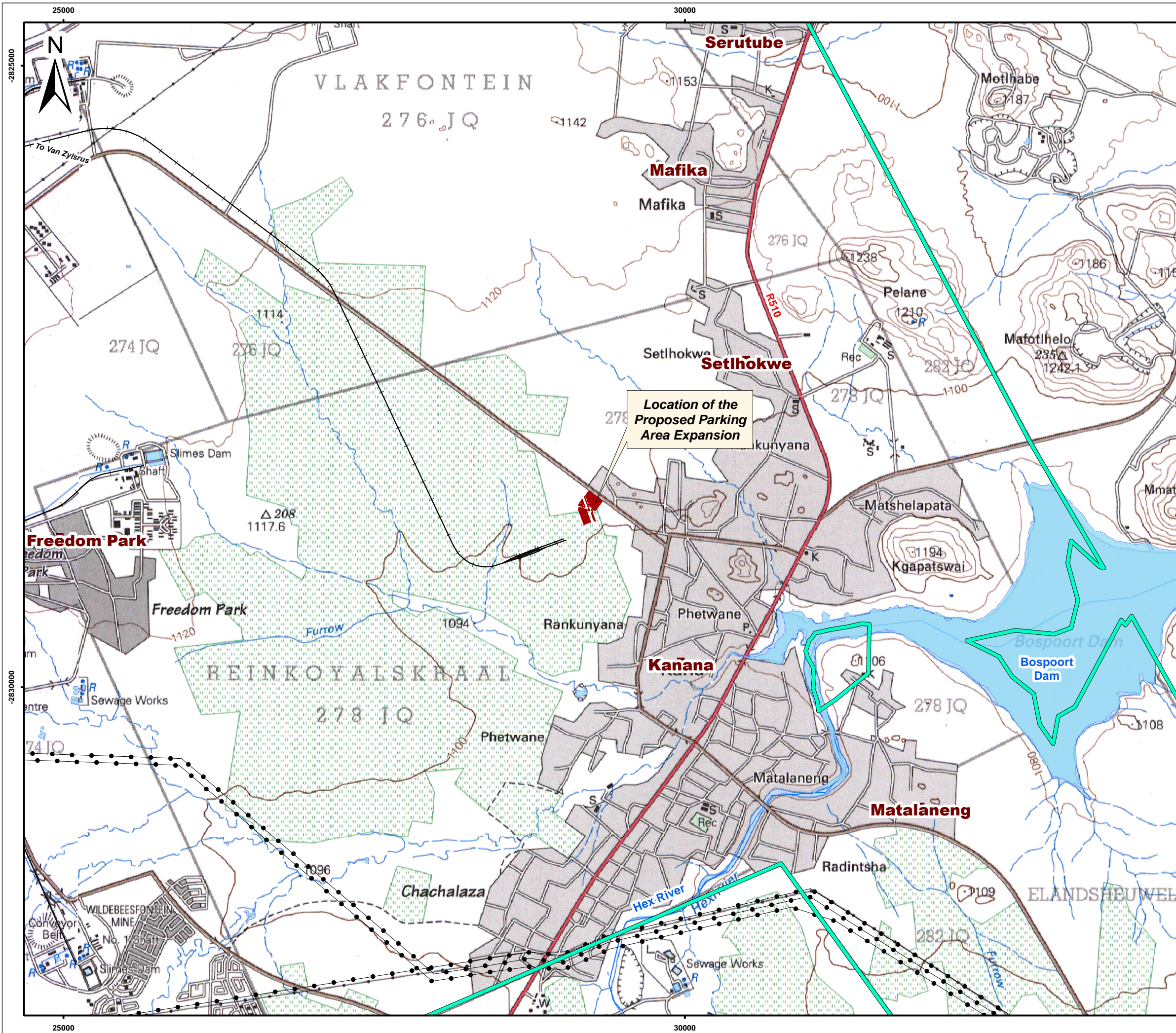
Impala holds and operates in accordance with the following authorisations (attached as Appendix A):

- An amended Mining Right (MR) issued in terms of the Mineral and Petroleum Resources Development Act, 28 of 2002 (MPRDA) (Department of Mineral Resources and Energy (DMRE) (previously the Department of Mineral Resources (DMR) Ref: NW-00194-MR/102) issued on 13 December 2018; and
- An approved consolidated Environmental Management Programme (EMPr) issued in terms of the MPRDA (DMRE (previously the DMR) Ref: NW30/5/1/2/3/2/1/130,131,132 and 133 EM) issued on 20 August 2013.

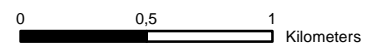
Impala's Shaft 16 Complex is located on the farm Reinkoyalskraal 278 JQ and comprises of a vertical hoisting shaft, an upcast ventilation shaft, waste rock dump (WRD), run of mine and stockpile areas, and various ancillary support services, including an office complex, stores and parking area. As part of its on-going mine planning, Impala is proposing to expand the existing parking area with additional covered parking bays, inclusive of a dedicated taxi pick-up, drop-off and waiting area (proposed project).







- Legend**
- Towns / Villages
  - Main Roads
  - Power Line
  - +— Railway Line
  - Rivers
  - Dams
  - Impala Surface Use Area
  - Proposed Parking Area Expansion



Scale: 1:30 000 @ A3

Projection: Transverse Mercator  
Datum: Hartbeeshoek, Lo 27

Impala Platinum Limited

**Figure 1-2**  
**Local Setting**



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

## SUMMARY OF AUTHORISATION REQUIREMENTS

Prior to the commencement of the proposed project, the following is required:

- An amended EMPr in terms of Section 102 the MPRDA from the DMRE; and
- An Environmental Authorisation (EA) in terms of the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) promulgated under the National Environmental Management Act, 107 of 1998 (NEMA) from the DMRE.

SLR Consulting (Africa) (Pty) Ltd (SLR), an independent firm of Environmental Assessment Practitioners (EAPs), has been appointed by Impala to manage the amended EMPr and EA processes.

## PURPOSE OF THIS REPORT

This Basic Assessment Report (BAR) is compiled in accordance with Appendix 1 of the EIA Regulations, 2014 (as amended) and is distributed for review and comment as part of a Basic Assessment (BA) process undertaken for the proposed project.

This BAR provides a description of the proposed project and the affected environment, summaries the BA process undertaken to date, identifies and assesses the key impacts resulting from the proposed project and presents management and mitigation measures that are recommended to enhance benefits and limit negative impacts. The specialist findings and other relevant information is integrated into this BAR, which includes an EMPr.

The purpose of the report is to present the afore-mentioned information in a clear and understandable format suitable for easy interpretation by Interested and Affected Parties (I&APs) and provides an opportunity for I&APs to comment on all aspects of the proposed project, as well as findings of the impact assessment.

Furthermore, the proposed project requires an amendment to the existing EMPr in terms of the MPRDA: *“A reconnaissance permission, prospecting right, **mining right**, mining permit, retention permit, technical corporation permit, reconnaissance permit, exploration right, production right, prospecting work programme, exploration work programme, production work programme, mining work programme environmental management programme or an environmental authorisation issued in terms of the National Environmental Management Act, 1998, as the case may be, may not be amended or varied (including by extension of the area covered by it or by the additional of minerals or a shares or seams, mineralised bodies or strata, which are not at the time the subject thereof) without the written consent of the Minister.”*

In this regard, this BAR aims to address the requirements of both the MPRDA Section 102, as well as NEMA requirements to facilitate informed decision making by the competent authority. Due to the localised nature of the activity, a stand-alone EMPr has been compiled for ease of management of this activity. The stand-alone EMPr will be appended to the broader mining EMPr.

## TERMS OF REFERENCE

The terms of reference for these amended EMPr and EA processes are to:

- Apply for an EA for the Listed Activities triggered by the proposed project in terms of the EIA Regulations promulgated under NEMA;
- Submit a Section 102 application to amend the consolidated EMPr in terms of the MPRDA;
- Ensure that a BA process for the proposed project is undertaken in an open, participatory manner that ensures all potential issues of concern and their associated impacts are identified;
- Undertake a formal public participation process (PPP), which includes the distribution of information to I&APs and provide an opportunity for I&APs to raise any issues/concerns arising from the proposed project, as well as an opportunity to comment on all documentation arising from the BA process; and
- Integrate all information into a BAR to allow for an informed decision to be taken on the proposed project by the relevant authorities.

## OBJECTIVES OF THE BASIC ASSESSMENT PROCESS

In accordance with Appendix 1 of the EIA Regulations, 2014 (as amended), the objectives of the BA process are to:

- Identify the relevant policies and legislation relevant to the activity and determine how the activity complies and responds to the policy and legislative context;
- Present the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- Identify and confirm the preferred activity, technology and sites related to the proposed project;
- Undertake an impact assessment, inclusive of cumulative impacts, to determine the biophysical and socio-economic sensitivity of the project sites and assess the nature, significance, consequence, extent, duration and probability of the impacts occurring;
- Assess the degree to which impacts can be reversed, may cause irreplaceable loss of resources and can be avoided, managed or mitigated; and
- Identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

## OPPORTUNITY FOR COMMENT

This BAR has been distributed for a 30-day comment period from 8 September to 8 October 2021 in order to provide I&APs with an opportunity to comment on any aspect of the BA process and the proposed project. Copies of the full report have been made available on the SLR website ([www.slrconsulting.com](http://www.slrconsulting.com)) and the SLR data-free website (<https://slrpublicdocs.datafree.co/public-documents>). Any comments should be forwarded to SLR at the address, telephone or email address shown below<sup>2</sup>. For comments to be included in the revised BAR, comments should reach SLR **by no later than 8 October 2021**.

<sup>2</sup> By providing your personal information to be registered as an I&AP for this project, you consent to SLR keeping and using your personal information as part of a contact database for this and other EIA projects and processes; contacting you about these projects; disclosing it to other authorised parties for lawful purposes, including transferring to other countries; processing it for lawful purposes (fulfilling contractual, legal and public policy obligations, and protecting legitimate interests SLR and other authorized parties). SLR will only collect the necessary personal information. SLR (and any authorised parties) will only use it for lawful purposes, and use reasonable, appropriate security safeguards to protect it, reasonably prevent any damage to, or loss, unauthorised access, or disclosure thereof. **Your rights:** You may request SLR to provide you with names of the authorized parties, and details of your personal information held in the I&AP database. You may object to the processing thereof, or request to correct, delete or destroy it, at any time by contacting SLR by email or in writing. However, you understand that SLR (and any authorised parties) may not be able to delete or destroy it for legal or public policy reasons. SLR will provide you with the reasons. You may lodge a complaint with the information regulator at: <https://justice.gov.za/inforeg/>. Link to SLR's privacy policy: <https://cdn.slrconsulting.com/uploads/2020-08/slr-privacy-notice.pdf>

**SLR Consulting (Africa) (Pty) Ltd**

**Attention:** Mrs Rizqah Baker

**Post:** PO Box 1596, Cramerview, 2060\*

**Tel:** 011 467 0945

**Email:** rbaker@slrconsulting.com

\*(if using post, please call SLR to notify us of your submission)

After the conclusion of the comment period, all comments received will be collated into a Comments and Responses Report. The comments will be duly taken into account in compiling the revised BAR, which will be submitted to the DMRE for consideration and decision-making.

# **PART A – SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT**

## 1. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

This chapter provides the details, qualifications and experience of the EAPs undertaking the BA process for the proposed project.

### 1.1 DETAILS OF THE PROJECT TEAM

SLR, an independent firm of EAPs, has been appointed by Impala to manage the amended EMPr and EA processes. The details of the project team that were involved in the preparation of this BAR are provided in Table 1-1.

SLR has no vested interest in the proposed project other than fair payment for consulting services rendered as part of the amended EMPr and EA processes and has declared its independence, as required by the EIA Regulations, 2014 (as amended), in chapter 17.

**Table 1-1: Details of the EAP**

General		
<b>Organisation</b>	SLR Consulting (Africa) (Pty) Ltd	
<b>Postal Address</b>	PO Box 1596, Cramerview, 2060	
<b>Tel</b>	011 467 0945	
<b>Fax</b>	011 467 0978	
<b>Name</b>	<b>Task and role</b>	<b>Email</b>
<b>Ed Perry</b>	Project Reviewer - Document and process review, quality control	eperry@slrconsulting.com
<b>Sharon Meyer</b>	Project Director – EAP	smeyer@slrconsulting.com
<b>Rizqah Baker</b>	Project Manager – Management of BA process, report compilation	rbaker@slrconsulting.com

### 1.2 EXPERTISE OF THE EAP

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

**Sharon Meyer** has over 20 years of experience as an environmental scientist and project manager. She has managed complex projects within the mining and power generation sectors, with a focus on industrial waste management. She has managed multi-national and multi-disciplinary teams on authorisation processes and social due diligence mining projects in Africa. Sharon has worked on a variety of mining projects including diamond, coal, gold, vanadium, and tailings reclamation projects. Sharon is registered as an EAP with EAPASA, is registered with the South African Council for Natural Scientific Professions (SACNASP) and is a member of IAIAAsa.

**Rizqah Baker** is a consultant with four years' experience working in the environmental field and has worked both in the public and private sectors. She worked for the City of Cape Town; her roles included environmental auditing and providing comment on various BARs, Method Statements, EMPs and development proposals. In the private sector she worked for an environmental rehabilitation firm, with a main role being report compilation and writing and has spent considerable time in the field, having undertaken alien vegetation control and search and rescue operations. As a consultant, she has worked in the various fields including infrastructure, oil & gas, mining, and the built environment. She's also worked as an Environmental Control Officer (ECO) in various fields and thus brings with her a strong understanding of, and implementation of EMPs.

Curriculum vitae and professional registrations of the project team are provided in Appendix B.



## 2. LOCATION OF ACTIVITY

This chapter provides details of the location of the proposed project.

### 2.1 LOCATION OF OVERALL ACTIVITY

Details of the property of on which the proposed project is located is provided in Table 2-1.

**Table 2-1: Property Description**

Description	Detail
<b>Farm name and portion</b>	Portion 3 of the farm Reinkoyalskraal 278 JQ
<b>Application area (hectares (ha))</b>	The proposed project covers an area of approximately 2.5 ha
<b>Magisterial District</b>	Rustenburg Magisterial District
<b>Distance and direction from nearest town</b>	16 km north-north-west of the town of Rustenburg
<b>21-digit surveyor general code</b>	T0JQ0000000027800003

### 2.2 LOCALITY MAP

Regional and local setting maps are provided in Figure 1-1 and Figure 1-2, respectively.

### 3. DESCRIPTION OF THE SCOPE OF THE ACTIVITY

This chapter provides an overview of the existing operations, identifies the Listed Activities triggered by the proposed project and provides a description of the proposed project activities.

#### 3.1 OVERVIEW OF EXISTING OPERATIONS

Impala’s mining and mineral processing operation is located approximately 16 km north-north-west of the town of Rustenburg. In broad terms, the existing activities include underground mining and mineral processing. It should be noted that historic opencast mining operations have ceased, and the last pit was rehabilitated in December 2013. Further detail is provided in the following sections.

##### 3.1.1 Underground Mining

Two separate reefs are mined as part of Impala’s current underground mining operations, namely, the UG2 reef and the Merensky reef. Impala has several shafts mining these reserves, as outlined in Table 3-1.

**Table 3-1: Impala's Shafts**

Name	Detail and Description
1 Shaft	Operating shaft
2 and 2A Shaft	Mining completed ore reserves, no future mining is planned
4 Shaft	Mining completed ore reserves, no future mining is planned
5 Shaft	Mining completed ore reserves, no future mining is planned
6 Shaft	Operating shaft
7 and 7A Shaft	Mining completed ore reserves, no future mining is planned
8 Shaft	Mining completed ore reserves, no future mining is planned
9 Shaft	Mining completed ore reserves, no future mining is planned
10 Shaft	Operating shaft
11 Shaft	Operating shaft
12 Shaft	Operating shaft
12 North Shaft	Mining completed ore reserves, no future mining is planned
14 Shaft	Operating shaft
16 Shaft	Operating shaft (still ramping up to full production)
17 Shaft	Construction deferred/no mining is planned
20 Shaft	Operating shaft (still ramping up to full production)
EF Shaft	Operating shaft

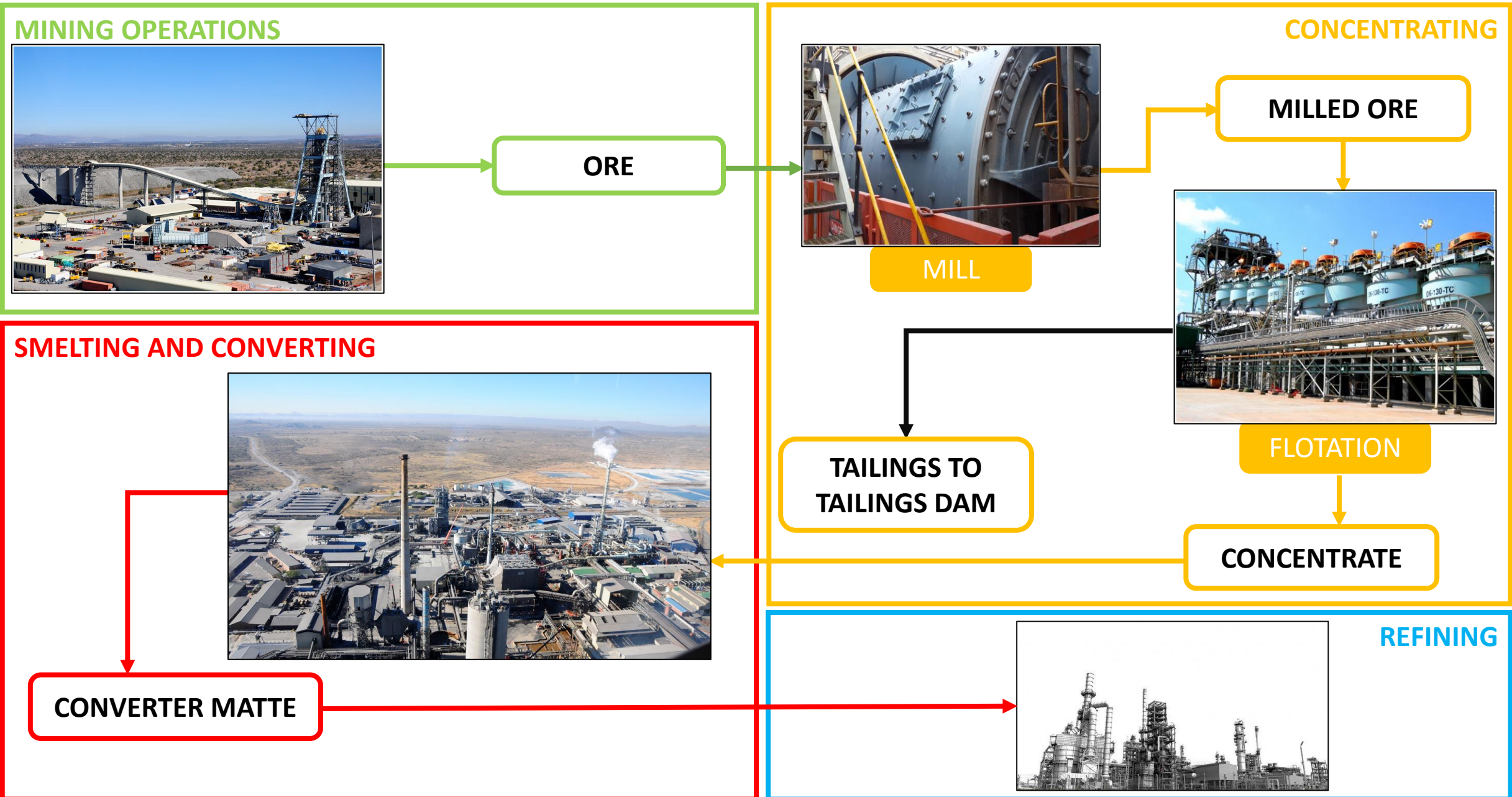
Two types of mining methods are utilised by Impala as part of its current underground mining operations. These methods are summarised as follows:

- **Conventional Mining:** This method entails the use of underground conventional stoping to conduct mining operations. Underground tunnels are drilled using handheld compressed air powered rockdrills, leaving behind an open space known as a stope. Subsequent holes drilled for rock extraction are filled with explosives and blasted at a set time. The blasted rocks are extracted, pulled to the main rock transfer system and then hoisted to surface. In underground conventional stoping, blasted rock is cleaned using electric-powered winches, which uses wire ropes to pull on scrapers to scrape the rock into an ore pass, which then gets loaded into the hoppers and transported to the shaft ore transfer system.
- **Mechanised Mining Operations (Trackless Mining):** This method entails the use of mobile equipment i.e., self-propelled machines. Underground tunnels are drilled using diesel-powered vehicles and large hydroelectric drills. Underground tunnels are then filled with explosives and blasted at a set time. In trackless mining, no vehicles which run on rails are used to move ore. The blasted rocks are transported to the mine's ore transfer system using underground dump trucks or conveyors.

### 3.1.2 Mineral Processing

Ore from mining operations are treated at the mineral processing plant. Impala's mineral processing operation comprises two concentrators (Central Concentrator Plant and UG2 Plant), a smelter and two tailing storage facility complexes. The final converter matte produced in the smelter is refined at the Impala Refineries at Spring. An overview of the processing mineral processing operations is provided in Figure 3-1.

**FIGURE 3-1: OVER OF MINERAL PROCESSING OPERATIONS**



### 3.1.3 Existing Parking Area at Impala’s Shaft 16 Complex

Impala’s Shaft 16 Complex is located on the farm Reinkoyalskraal 278 JQ and comprises of a vertical man/material and rock hoisting shaft, an upcast ventilation shaft, WRD and run of mine and stockpile areas, and various ancillary support services, including an office complex, stores and parking area. The current parking area is located within the boundary of the Shaft 16 Complex and consists of 919 covered parking bays. The existing parking area accommodates the current labour force at the Complex of 6 430 employees, making provision for 14% of the current labour force.

## 3.2 PROPOSED LISTED AND SPECIFIED ACTIVITIES

The EIA Regulations, 2014 (as amended) promulgated under NEMA and published in Government Notice (GN) No. R982 (as amended by GN No. 326 of 7 April 2017) controls certain Listed Activities. These activities are listed in GN No. R983 (Listing Notice 1; as amended by GN No. 327 of 7 April 2017), R 984 (Listing Notice 2; as amended by GN No. 325 of 7 April 2017) and R985 (Listing Notice 3; as amended by GN No. 324 of 7 April 2017) and are prohibited until EA has been obtained from the competent authority. Such EA, which may be granted subject to conditions, will only be considered once there has been compliance with GN No. R982 (as amended).

GN No. R 983 (as amended) sets out the procedures and documentation that need to be complied with when applying for EA. A BA process must be applied to an application if the authorisation applied for is in respect of an activity or activities listed in Listing Notices 1 and/or 3 and an EIA process must be applied to an application if the authorisation applied for is in respect of an activity or activities listed in Listing Notice 2.

The proposed project triggers Listing Activity 27 contained in Listing Notice 1 (see Table 3-2), thus a BA process must be undertaken in order for the DMRE to consider the application in terms of NEMA and make a decision as to whether to grant EA or not.

**Table 3-2: Listing Activities Applicable to the Proposed Project**

Description of the proposed project	Extent of the activity	Listed Notice, Listing Activity and Relevance
Proposed expansion of the parking area at the Impala’s Shaft 16 Complex	Approximately 2.5 ha	<p>Listing Notice 1, GN No. R983, Listing Activity 27: <i>The clearance of an area of 1 ha or more, but less than 20 ha of indigenous vegetation, except where such clearance of indigenous vegetation is required for -</i></p> <p><i>(i) the undertaking of a linear activity; or</i></p> <p><i>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</i></p> <p><b>Relevance: The proposed expansion of the parking area will require the clearance of approximately 2.5 ha of indigenous vegetation.</b></p>

### 3.3 DESCRIPTION OF THE PROPOSED PROJECT

Impala is proposing to expand the existing parking area at the Shaft 16 Complex by 672 covered parking bays. The proposed project also includes a dedicated taxi pick-up, drop-off and waiting area. The proposed expansion will be undertaken within the boundary of Impala's MR and will cover an area of approximately 2.5 ha. The proposed project layout is provided in Figure 3-2.

The scope of work for the expansion of the parking area includes the following:

- Excavation and terracing for foundation in accordance with the approved civil/structural engineering drawings;
- Concrete works;
- Structural steelwork and roof sheeting; and
- Plumbing, electrical and external works including perimeter palisade fencing, storm water drainage, lighting masts, security and access control.

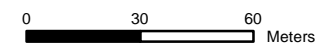
It is important to note that decommissioning and closure-related activities for the proposed project will form part of the existing approved activities for the Shaft 16 Complex.

An overview of the activities and infrastructure associated with the proposed project are provided in Table 3-3.

The duration of the construction phase of the proposed project is anticipated to be approximately 12 months. Due to the nature of the proposed project and the limited extent and duration, it is not anticipated to generate a significant number of job opportunities. In this regard, a staff complement of approximately 45 individuals would be required for the construction phase (skilled and unskilled job opportunities). Procurement opportunities would be sourced locally, as far as possible. Due to the nature of the proposed project, no job or procurement opportunities will be created post-construction.



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Scale: 1:2 000 @ A3  
 Projection: Transverse Mercator  
 Datum: Hartbeeshoek, Lo 27

Impala Platinum Limited

Figure 3-2  
 Site Layout



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**Table 3-3: Overview of the Activities Associated with the Proposed Project**

Main Activity	Sub-Activity	Applicable Phase
Site preparation	Establishment of contractor's site camp and laydown area	<ul style="list-style-type: none"> <li>• Construction</li> </ul>
Earthworks	Vegetation clearing	<ul style="list-style-type: none"> <li>• Construction</li> </ul>
	Topsoil removal	<ul style="list-style-type: none"> <li>• Construction</li> </ul>
	Site excavation and terracing for foundations	<ul style="list-style-type: none"> <li>• Construction</li> </ul>
Civil works	Mixing of concrete and concrete work (including storage and handling of fuel, lubricants, sand, rock, cement and chemical additives)	<ul style="list-style-type: none"> <li>• Construction</li> </ul>
	Dust suppression	<ul style="list-style-type: none"> <li>• Construction</li> </ul>
	Structural steelwork (including grinding and welding) and roof sheeting installation	<ul style="list-style-type: none"> <li>• Construction</li> </ul>
	Plumbing, electrical and lighting works	<ul style="list-style-type: none"> <li>• Construction</li> </ul>
	Fencing installation	<ul style="list-style-type: none"> <li>• Construction</li> </ul>
	Stormwater drainage management	<ul style="list-style-type: none"> <li>• Construction</li> </ul>
Transport system	The use of parking, loading and off-loading areas for truck, plant and other equipment	<ul style="list-style-type: none"> <li>• Construction</li> <li>• Decommissioning</li> </ul>
	Transportation of staff to and from site	<ul style="list-style-type: none"> <li>• Construction</li> <li>• Operation</li> <li>• Decommissioning</li> </ul>
	Use of parking bays	<ul style="list-style-type: none"> <li>• Operation</li> </ul>
General site management	Security and access control	<ul style="list-style-type: none"> <li>• Construction</li> <li>• Operation</li> </ul>
	Alien vegetation management	<ul style="list-style-type: none"> <li>• Construction</li> <li>• Operation</li> </ul>
	General monitoring, inspection and maintenance	<ul style="list-style-type: none"> <li>• Operation</li> </ul>
	Dust suppression	<ul style="list-style-type: none"> <li>• Construction</li> <li>• Operation</li> </ul>
Demolition	Removal of contractor's site camp and laydown area	<ul style="list-style-type: none"> <li>• Construction</li> </ul>
	Removal of infrastructure	<ul style="list-style-type: none"> <li>• Decommissioning</li> </ul>
Rehabilitation	Replenishment of soil resources	<ul style="list-style-type: none"> <li>• Decommissioning</li> </ul>
	Revegetation of disturbed areas	<ul style="list-style-type: none"> <li>• Decommissioning</li> </ul>
	Slope stabilisation and erosion control	<ul style="list-style-type: none"> <li>• Decommissioning</li> </ul>
	Alien vegetation management	<ul style="list-style-type: none"> <li>• Decommissioning</li> </ul>
Maintenance and aftercare	Initiation of aftercare and maintenance programme	<ul style="list-style-type: none"> <li>• Closure</li> </ul>
	Maintenance of post-closure landforms, facilities and rehabilitated areas	<ul style="list-style-type: none"> <li>• Closure</li> </ul>



## 4. POLICY AND LEGISLATIVE CONTEXT

In accordance with the EIA Regulations, 2014 (as amended) and the DMRE BAR template, this chapter outlines the key legislative requirements applicable to the proposed project and outlines the guidelines, policies and plans that have been considered during the EMPr amendment and EA processes.

### 4.1 CONSIDERATION OF LEGISLATION

#### 4.1.1 Mineral and Petroleum Resources Development Act, 28 of 2008

The MPRDA governs the acquisition, use and disposal of mineral and petroleum resources. The objectives of the Act, amongst others, are to promote economic growth and mineral and petroleum resources development in South Africa, particularly the development of downstream industries through the provision of feedstock and development of mining and petroleum inputs industries and also to promote employment and advance the social and economic welfare of all South Africans.

Chapter 4 of the Mineral and Environmental Regulation provides a framework for the application of mining, prospecting and closure rights. The DMRE must apply the range of environmental principles included in Section 2 of NEMA when taking decisions that significantly affect the environment. To give effect to the general objectives of Integrated Environmental Management (IEM), the potential impacts on the environment of listed or specified activities must be considered, investigated, assessed and reported on to the competent authority. Section 24(4) of NEMA provides the minimum requirements for procedures for the investigation, assessment, management, and communication of the potential impacts.

In addition, Section 102 of the MPRDA governs the amendment of rights, permits, programmes and plans.

**The proposed project entails the expansion of the parking area at Impala's Shaft 16 Complex. The proposed project will be undertaken within the boundary of Impala's MR. The proposed project does not include the addition of any minerals not currently included in the MR, therefore, a separate EA under the MPRDA is not deemed applicable. However, an application, in terms of Section 102 of the MPRDA, to amend the approved consolidated EMPr must be submitted to the DMRE to take cognisance of the proposed project, the associated environmental impacts and the subsequent monitoring or mitigation measures.**

#### 4.1.2 National Environmental Management Act, 107 of 1998

The NEMA establishes principles and provides a regulatory framework for decision-making on matters affecting the environment. Section 2 of NEMA sets out a range of environmental principles that are to be applied by all organs of state when taking decisions that significantly affect the environment. Included amongst the key principles is that all development must be socially, economically and environmentally sustainable and that environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably. NEMA also provides for the participation of I&APs and stipulates that decisions must take into account the interests, needs and values of all I&APs.

Chapter 5 of NEMA outlines the general objectives and implementation of IEM, which provides a framework for the integration of environmental issues into the planning, design, decision-making and implementation of plans and development proposals. Section 24 provides a framework for granting of EA. In order to give effect to the general objectives of IEM, the potential impacts on the environment of listed activities must be considered, investigated, assessed and reported on to the competent authority. Section 24(4) provides the minimum requirements for procedures for the investigation, assessment and communication of the potential impact of activities.

**This EA process must be undertaken in consideration of the afore-mentioned principles. In line with sustainability principles, potential impacts arising from the proposed project must be identified and mitigation actions must be provided.**

#### **4.1.3 Environmental Impact Assessment Regulations, 2014 (as amended)**

The EIA Regulations, 2014 (as amended, promulgated under NEMA provide for control over certain listed activities. These listed activities are detailed in Listing Notice 1, Listing Notice 2 and Listing Notice 3. The undertaking of activities specified in the Listing Notices is prohibited until EA has been obtained from the competent authority. Such EA, which may be granted subject to conditions, will only be considered once there has been compliance with the EIA Regulations, 2014 (as amended).

The EIA Regulations, 2014 (as amended) set out the procedures and documentation that need to be complied with when applying for EA. A BA process must be applied to an application if the authorisation applied for is in respect of an activity or activities listed in Listing Notices 1 and/or 3 and a Scoping and EIA process must be applied to an application if the authorisation applied for is in respect of an activity or activities listed in Listing Notice 2.

Furthermore, Appendix 1, Appendix 4 and Appendix 6 of the EIA Regulations, 2014 (as amended) set out the outcomes and requirements of reporting when compiling a BAR, EMPr and specialist reports, respectively. Compliance with these appendices is required upon submission of a BAR, EMPr and specialist reports (supporting documentation for a BAR) for application for EA in terms of the EIA Regulations, 2014 (as amended).

**The proposed project triggers activities in terms of Listing Notice 1 (Activity 27) (refer to Table 3-2), therefore application for EA through a BA process, requiring the compilation of a BAR and EMPr (with specialist reports as supporting documentation), must be submitted to the DMRE.**

#### **4.1.4 National Environmental Management: Air Quality Act, 39 of 2004**

This NEM: AQA regulates all aspects of air quality, including prevention of pollution and environmental degradation; providing for national norms and standards regulating air quality monitoring, management and control; and licencing of activities that result in atmospheric emissions and have or may have a significant detrimental effect on the environment. The NEM: AQA has established a National Framework for Air Quality Management with various standards being implemented. Activities that require an Atmospheric Emissions Licence (AEL) are listed in GN No. 893 (22 November 2013), published in terms of Section 21(1) ((b) of the NEM: AQA. In terms of Section 22 of NEM: AQA no person may conduct a listed activity without an AEL. Furthermore, the National Dust Control Regulations (NDCR), published on 1 November 2013,

prescribes the general measures for the control of dust in all areas. The standard for the acceptable dust fall rate is set out in the NDCR for residential and non-residential areas.

**The proposed project does not trigger any activities that require application for an AEL in terms of NEM: AQA. However, the proposed project would result in the clearance of vegetation and removal of topsoil during the construction phase and may lead to an increase in ambient air emissions from vehicle tailpipes during operation. In this regard, the potential impacts on air quality in terms of NEM: AQA and the NDCR must be assessed, and monitoring and mitigation measures must be recommended.**

#### **4.1.5 National Environmental Management: Waste Act, 59 of 2008**

The National Environmental Management: Waste Act, 59 of 2008 (NEM: WA) regulates all aspects of waste management and has an emphasis on waste avoidance and minimisation. NEM: WA creates a system for listing and licensing waste management activities. Listed waste management activities above certain thresholds are subject to a process of impact assessment and licensing. Activities listed in Category A require a BA, while activities listed in Category B require a Scoping and EIA process.

**The proposed project does not trigger any activities that require application for a Waste Management Licence in terms of NEM: WA. However, minimal volumes of construction waste may be generated during the construction phase of the proposed project. In this regard, monitoring and management measures of waste in terms of NEM: WA must be recommended.**

#### **4.1.6 National Environmental Management: Biodiversity Act, 10 of 2004**

The National Environmental Management: Biodiversity Act, No. 10 of 2004 (NEM: BA) provides for the management and conservation of South Africa's biodiversity within the framework of the NEMA and provides for the following:

- The protection of species and ecosystems that warrant national protection;
- The sustainable use of indigenous biological resources;
- The fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources; and
- The establishment and functions of a South African National Biodiversity Institute (SANBI) and for matters connected therewith.

**The proposed project entails the clearance of approximately 2.5 ha of indigenous vegetation in order to make provision for the expansion of the parking area at the Shaft 16 Complex. In this regard, the potential impact on biodiversity must be considered as part of the EA process. Moreover, cognisance of protected species in terms of NEM: BA must be made, in the event that these species are identified within the project footprint.**

#### **4.1.7 National Heritage Resources Act, 25 of 1999**

The National Heritage Resources Act, 25 of 1999 (NHRA) provides for the identification, assessment and management of the heritage resources of South Africa. The Act lists development activities that would require authorisation by the responsible heritage resources authority. The Act requires that a person who intends to undertake a listed activity notify the relevant provincial heritage authority at the earliest stages

of initiating such a development. The relevant provincial heritage authority would then in turn, notify the person whether a Heritage Impact Assessment (HIA) should be submitted. However, according to Section 38(8) of the NHRA, a separate report would not be necessary if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act (No. 73 of 1989) (now replaced by NEMA) or any other applicable legislation. The decision-making authority should, however, ensure that the heritage evaluation fulfils the requirements of the NHRA and consider in its decision-making any comments and recommendations made by the relevant heritage resources authority.

In terms of Section 38(1)(c)(i) of the NHRA, any development or activity exceeding 5 000 m<sup>2</sup> in extent would require that notification of the proposed development be made to the responsible heritage authority. Furthermore, details pertaining to the location, nature and extent of the proposed development are also required to be submitted to the responsible heritage authority.

**The proposed project entails the expansion of the parking area at the Shaft 16 Complex, measuring at approximately 2.5 ha i.e., exceeding 5 000 m<sup>2</sup> in extent. In this regard, the provisions of NHRA must be followed and notification and other relevant information must be submitted to the South African Heritage Resources Agency (SAHRA).**

## 4.2 CONSIDERATION OF GUIDELINES, POLICIES, PLANS AND FRAMEWORKS

The guidelines, policies, plans and frameworks that have been considered during the EMPr amendment and EA processes are provided in Table 4-1.

**Table 4-1: Guidelines, Policies, Plans and Frameworks Applicable to the Proposed Project**

Document	Governing Body	Relevance
Covid-19 Directions	Department of Social Development	These Directions informed the form and levels of public participation possible within the restrictions related to the National State of Disaster.
Public Participation Guideline in terms of NEMA (2017)	Department of Forestry, Fisheries and Environment (DFFE)	The purpose of these guidelines is to ensure that an adequate PPP was undertaken during the EMPr amendment and EA process.
Guideline for consultation with communities and I&APs (2014)	DMRE	
IEM Guideline Series Guideline 7: Public participation in the EIA process (2012)	DFFE	
Guideline on need and desirability in terms of the EIA Regulations (2017)	DFFE	These documents informed the consideration of the need and desirability aspects of the proposed project.
Guideline on need and desirability in terms of the EIA Regulations (2014)	DFFE	

Document	Governing Body	Relevance
National Development Plan (NDP), 2030	National Planning Commission	
New Growth Path, 2011	Department of Economic Development	
RLM Integrated Development Plan (IDP), 2020-2021	RLM	
BPDM IDP, 2019-2020	BPDM	
North West Provincial Spatial Development Framework (PSDF), 2016	Office of the Premier of the North West	
Cumulative Effects Assessment, IEM, Information Series 7 (2004)	DFFE	This guideline will be consulted to inform the consideration of potential cumulative effects of the proposed project.
Criteria for determining Alternatives in EIA, IEM, Information Series 11 (2004)	DFFE	This guideline was consulted to inform the consideration of alternatives.
Environmental Management Plans (EMP), IEM, Information Series 12 (2004)	DFFE	This guideline will be consulted to ensure that the EMPs has been adequately compiled.
Environmental Impact Reporting, IEM, Information Series 15 (2004)	DFFE	This guideline was consulted to inform the approach to impact reporting.
Specialist Studies, IEM, Information Series 4 (2002)	DFFE	This guideline was consulted to ensure adequate development of terms of reference for specialist studies.
Impact significance, IEM, Information Series 5 (2002)	DFFE	This guideline was consulted to inform the assessment of significance of impacts of the proposed project.

### 4.3 LEGISLATIVE BAR CONTENT REQUIREMENTS

This BAR has been prepared in accordance with the DMRE BAR template format and Appendix 1 and Appendix 4 of EIA Regulations, 2014 (as amended), the contents of which are outlined in Table 4-2 and Table 4-3.

**Table 4-2: Requirements of a BAR in terms of Part A of the DMRE template and Appendix 1 of the EIA Regulations**

BAR requirements as per the DMRE template	BAR requirements as per the EIA Regulations, 2014 (as amended)	Reference in the report
Part A of the DMRE template	Appendix 1 of the EIA Regulations, 2014 (as amended)	
Details of the EAP.	Details of the EAP who prepared the report.	Chapter 1
Expertise of the EAP.	Details of the expertise of the EAP, including curriculum vitae.	Chapter 1 and Appendix A

BAR requirements as per the DMRE template	BAR requirements as per the EIA Regulations, 2014 (as amended)	Reference in the report
Location of overall activity.	The location of the activity, including - the 21-digit Surveyor General code of each cadastral land parcel. Where available the physical address and farm name. Where the required information is not available, the coordinates of the boundary of the property or properties.	Chapter 2
Locality plan.	A plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken or on land where the property has not been defined, the coordinates within which the activity is to be undertaken.	Figure 1-1, Figure 1-2 and Figure 3-2
Description of the scope of the proposed overall activity.	A description of the scope of the proposed activity, including all listed and specified activities triggered. A description of the activities to be undertaken, including associated structure and infrastructure.	Chapter 3
Policy and legislative context.	A description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context.	Chapter 4
Need and desirability of the proposed activity.	A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location.	Chapter 5
Motivation for the overall preferred site, activities and technology alternative.	A motivation of the preferred development footprint within the approved site including.	Chapter 6
A full description of the process followed to reach the proposed development footprint within the site.	A full description of the process followed to reach the proposed development footprint within the approved site.	Chapter 7
Details of the development footprint alternatives considered.	Details of all the alternatives considered.	Chapter 6
Details of the PPP followed.	Details of the PPP undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs.	Chapter 7
Summary of issues raised by I&APs.	A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them.	Chapter 7
Environmental attributes associated with the alternatives.	The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.	Chapter 7
Impacts and risks identified including the nature, significance, consequence, extent, duration and probability	The impacts and risks identified, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts can	Appendix D

BAR requirements as per the DMRE template	BAR requirements as per the EIA Regulations, 2014 (as amended)	Reference in the report
of the impacts including the degree of the impacts.	be reversed, may cause irreplaceable loss of resources and can be avoided, managed and mitigated.	
Methodology used in determining the nature, significance, consequence, extent, duration and probability of potential environmental impacts and risks.	The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks.	Section 7.6
The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternative will have on the environment and the community that may be affected.	Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.	Appendix D
The possible management actions that could be applied and the level of risk.	The possible management actions that could be applied and level of residual risk.	Chapter 26
Motivation where no alternative sites were considered.	The outcome of the site selection matrix. If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such.	Chapter 6
Statement motivating the alternative development location within the overall site.	A concluding statement indicating the preferred alternatives, including preferred location within the approved site.	Chapter 7
Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (in respect of the final site layout) through the life of the activity.	A full description of the process undertaken to identify, assess and rank the impacts the activity and associated structure and infrastructure will impose on the preferred location through the life of the activity including a description of all environmental issues and risks that were identified during the environmental impact assessment process and an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of management actions.	Chapter 8
Assessment of each identified potentially significant impact and risk.	An assessment of each identified potentially significant impact and risk including cumulative impacts, the nature, significant and consequence of the impact and risk, the extent and duration of the impact and risk, the probability of the impact and risk occurring, the degree to which the impact can be reversed, the degree to which the impact and risk may cause irreplaceable loss of a resources and the degree to which the impact and risk can be mitigated.	Chapter 9
Summary of specialist reports.	Where applicable the summary of the findings and recommendations of any specialist report complying with Appendix 6 of these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report.	Chapter 10

BAR requirements as per the DMRE template	BAR requirements as per the EIA Regulations, 2014 (as amended)	Reference in the report
Environmental impact statement.	An environmental impact statement which contains a summary of the key findings of the environmental impact assessment, a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers and a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.	Chapter 11
Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr.	Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr.	Chapter 12
Aspects for inclusion as conditions of authorisation.	Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation.	Chapter 13
Description of any assumptions, uncertainties and gaps in knowledge.	A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and management actions proposed.	Chapter 14
Reasoned opinion as to whether the proposed activity should or should not be authorised.	Reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation.	Chapter 15
Period for which environmental authorisation is required.	Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded, and the post construction monitoring requirements finalised.	Chapter 16
Undertaking.	An undertaking under oath or affirmation by the EAP in relation to the correctness of the information provided in the reports, the inclusion of comments and inputs from stakeholders and I&APs, the inclusion of inputs and recommendations from the specialist reports where relevant and any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties.	Chapter 17
Financial provision.	Where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts.	Chapter 27
Specific information required by the competent authority.	Any specific information required by the competent authority.	Chapter 30
Other matter required in terms of section 24(4)(a) and (b) of the Act.	Any other matter required in terms of section 24(4)(a) and (b) of the Act.	N/A



**Table 4-3: Requirements of a BAR in terms of Part A of the DMRE template and Appendix 4 of the EIA Regulations**

BAR requirements as per the DMRE template	EMPr requirements per the EIA Regulations, 2014 (as amended)	Reference in the report
Part B of the DMRE template	Appendix 4 of the EIA Regulations, 2014 (as amended)	
Details of EAP.	Details of the EAP who prepared the EMPr and the expertise of that EAP to prepare the EMPr, including curriculum vitae.	Chapter 1
Description of the aspects of the activity.	A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.	Chapter 3
Composite map.	A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, including buffers.	Figure 1-1, Figure 1-2 and Figure 3-2
Description of impact management objectives including management statements.	A description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including planning and design, pre-construction activities, construction activities, rehabilitation of the environment after construction and where applicable post closure; and where relevant, operation activities.	Appendix D
Impacts to be mitigated in their respective phases.	-	Appendix D
Impact management outcomes.	A description and identification of impact management outcomes required for the aspects contemplated in paragraph.	Chapter 25
Impact management actions.	A description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes be achieved, and must, where applicable, include actions to avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; comply with any prescribed environmental management standards or practices; comply with any applicable provisions of the Act regarding closure, where applicable comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable.	Chapter 26
Financial provision.	-	Chapter 27
Mechanism for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon.	The method of monitoring the implementation of the impact management actions.	Chapter 28
-	The frequency of monitoring the implementation of the impact management actions.	Chapter 28

BAR requirements as per the DMRE template	EMPr requirements per the EIA Regulations, 2014 (as amended)	Reference in the report
-	An indication of the persons who will be responsible for the implementation of the impact management actions.	
-	The time periods within which the impact management actions must be implemented.	
-	The mechanism for monitoring compliance with the impact management actions.	
-	A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations.	
Environmental Awareness Plan.	An environmental awareness plan describing the manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work; and risks must be dealt with in order to avoid pollution or the degradation of the environment.	Chapter 29
Specific information required by the competent authority.	Any specific information that may be required by the competent authority.	Chapter 30
Undertaking.	-	Chapter 31

## 5. NEED AND DESIRABILITY OF THE PROPOSED PROJECT

This chapter aims to provide an overview of the need and desirability of the proposed project with the strategic context of national development policy planning, broader societal needs and regional and local planning, as well as the NEMA principles of sustainable development.

### 5.1 BACKGROUND

The DFFE's (previously the Department of Environmental Affairs (DEA)) guideline on need and desirability (2017) notes that while addressing the growth of the national economy through the implementation of various national policies and strategies, it is also essential that these policies take cognisance of strategic concerns such as climate change, food security, as well as the sustainability in supply of natural resources and the status of our ecosystem services. Thus, the over-arching framework for considering the need and desirability of development in general is taken at the policy level through the identification and promotion of activities/industries/developments required by civil society as a whole. The DFFE guideline further notes that at a project level (as part of an impact assessment process), the need and desirability of the project should take into consideration the content of regional and local plans, frameworks and strategies.

In light of the above, and in alignment with the above-mentioned guideline (DFFE, 2017), this section aims to provide an overview of the need and desirability for the proposed project by highlighting how it is aligned with the strategic context of national, regional and local development policy and planning, as well as with the goals of sustainable development as outlined in NEMA.

### 5.2 RATIONALE FOR THE PROPOSED PROJECT

The current build-up to steady state at Impala's Shaft 16 Complex entails the growth of the labour force from 6 430 to 6 930 staff. In this regard, and as part of its on-going mine planning, Impala has identified the need for additional parking bays on site to accommodate the increasing number of employees coming to the Shaft 16 Complex with their own vehicles. In addition, the proposed expansion of the parking area aims to improve health, safety and security for Impala's employees, through the provision of safe, secure and covered parking bays.

### 5.3 ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES

The proposed project footprint is located within the Savanna Biome, the Central Bushveld Bioregion and the Marikana Thornveld vegetation type. Historical imagery indicates that the entire project footprint has been cultivated and is thus considered to be significantly transformed, which has resulted in a significant alteration in vegetation structure, floral species composition and the ability of the habitat to support a high diversity of faunal species. In this regard, the habitat units identified on site can be more accurately described as follows:

- **Transformed Area:** A small section of the project footprint includes current built-up or transformed habitat associated with the main road leading to the Shaft 16 Complex, as well as heavily modified land where little to no indigenous vegetation remains; and
- **Secondary Marikana Thornveld Habitat Unit:** This habitat unit includes areas that are currently vegetated and that comprises indigenous vegetation; however, due to significant historic

transformation of this area, with no rehabilitation efforts, the vegetation is homogenous and species diversity poor from both a faunal and floral perspective.

The proposed project has the potential to directly disturb fauna and flora, with specific reference to vegetation clearing within the development footprint. Furthermore, soil is considered to be a valuable resource that supports a variety of ecological functions, and the proposed project has the potential to damage soil resources through physical disturbance, which has a direct impact on the potential loss of the natural capability of the land. As part of the EA process, an independent biodiversity specialist was appointed to determine the sensitivity of the project footprint. Measures that were considered to avoid the destruction and disturbance of biodiversity resources include limiting the extent of the development footprint. Where sensitivities could not be avoided, management actions focussed on ensuring ecological sustainability through appropriate rehabilitation measures. These management measures have been included in the EMP, where appropriate.

## 5.4 PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT

### 5.4.1 National Policy and Planning Framework

#### 5.4.1.1 National Development Plan, 2030

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

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

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

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

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

The proposed project does not relate directly to the exploitation of mineral resources; however, the proposed expansion of the parking area is considered an ancillary activity associated with the current mining operations at the Shaft 16 Complex. In this regard, as part of on-going mine planning, the need for additional parking bays was identified, and will improve health, safety and security for the employees currently employed at the Shaft 16 Complex.

#### 5.4.1.2 New Growth Path, 2011

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

In this regard, a staff complement of approximately 45 individuals would be required for the construction phase (skilled and unskilled job opportunities) of the proposed project. Procurement opportunities would be sourced locally, as far as possible.

#### 5.4.2 Regional and Local Policy and Planning Framework

##### 5.4.2.1 North West Provincial Spatial Development Framework, 2016

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

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

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

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

The proposed project entails the expansion of the parking area at the Shaft 16 Complex and is considered to relate to the afore-mentioned Strategic Objectives 3 and 4. This is because the proposed project relates to the investment in infrastructure development and will support economic development through the provision of job and procurement opportunities within the region during the construction phase.

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

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

1. Water and sanitation;
2. Roads and storm water;
3. Electricity;
4. Land and housing;
5. Economic development;
6. Institutional development;
7. Municipality health; and
8. Social services.

The proposed project is considered to relate to the afore-mentioned priority issue 5. This is because the proposed project relates will support economic development through the provision of job and procurement opportunities within the region during the construction phase.

#### 5.4.2.3 Rustenburg Local Municipality Integrated Development Plan, 2020-2021

The RLM IDP, 2020-2021 is the principle strategic instrument guiding all planning, management, investment and development within the local municipality in order to provide best solutions towards sustainable development. The RLM IDP, 2020-2021 identifies strategic focus areas identified as the cornerstones of a successful and thriving council within the developed Master Plan 2040, and which form the foundation of its five-year IDP. The approved master plan has five goals which reads as follows:

- City of vibrant and diversified economy;
- City of identity;
- City of smart liveable homes;
- City of excellence in education and sport; and
- City of sustainable resources management

The IDP identifies agriculture, mining, manufacturing, utilities, trade, transport, finance, community and personal services, general government services and tourism as sectors that contributes to local economic development.

In this regard, the proposed project will contribute to local economic development through the provision of job and procurement opportunities during the construction phase.

### 5.5 CONSISTENCY WITH NEMA PRINCIPLES

When considering an application for EA, the competent authority must comply with Section 24O of NEMA and must have regard for any guideline published in terms of Section 24J of the Act and any minimum requirements for the application. This includes the DFFE's Guideline on Need and Desirability (2017). Additionally, the EIA Regulations, 2014 (as amended) require EAPs who undertake environmental

assessments, to have knowledge and consider relevant guidelines. A person applying for an EA must abide by the Regulations, which are binding on the applicant.

The DFFE's Guideline on Need and Desirability (2017) sets out a list of questions which should be addressed when considering need and desirability of a proposed development. These are divided into questions that relate to the aspects of ecological sustainability and justifiable economic and social development of the proposed project. Table 5-1 sets out the list of questions as per the Guideline.

**Table 5-1: Questions to be Engaged with when Considering Need and Desirability, as per the DFFE Guideline on Need and Desirability (2017)**

QUESTION	LOCATION IN REPORT/RELEVANCE
<p><b>1. How will this development (and its separate elements / aspects) impact on the ecological integrity of the area?</b></p>	
<p>1.1 How were the ecological integrity considerations taken into account?</p> <p>1.1.1. Threatened Ecosystems,</p> <p>1.1.2. Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure,</p> <p>1.1.3. Critical Biodiversity Areas (“CBAs”) and Ecological Support Areas (“ESAs”),</p> <p>1.1.4. Conservation targets,</p> <p>1.1.5 Ecological drivers of the ecosystem,</p> <p>1.1.6. Environmental Management Framework,</p> <p>1.1.7. Spatial Development Framework, and</p> <p>1.1.8. Global and international responsibilities relating to the environment (e.g., RAMSAR sites, Climate Change, etc.)</p>	<p>A Terrestrial Biodiversity was commissioned as part of the EA process. The study outlined the biodiversity sensitivities of the development footprint and recommended monitoring, mitigation and enhancement measures to limit impacts and enhance benefits have been included in the EMPr.</p>
<p>1.2 How will this development disturb or enhance ecosystems and / or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?</p>	
<p>1.3 How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?</p>	<p>See response provided above. Recommended monitoring, mitigation and enhancement measures have been included in the EMPr.</p>
<p>1.4 What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?</p>	<p>Minimal volumes of construction waste will be generated by the proposed project. Measures to management waste have been included in the EMPr.</p>
<p>1.5 How will this development disturb or enhance landscapes and/or sites that constitute the nation’s cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?</p>	<p>A Phase I Heritage Study was commissioned as part of the EA process. No cultural/heritage resources were identified within the development footprint. Recommended monitoring, mitigation and enhancement measures to limit impacts on</p>



QUESTION	LOCATION IN REPORT/RELEVANCE
	cultural/heritage and enhance benefits have been included in the EMPr.
<p>1.6 How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?</p>	<p>The proposed project does not relate directly to the development or use of non-renewable/ renewable resources; however, the proposed expansion of the parking area is considered an ancillary activity associated with the current mining operations at the Shaft 16 Complex, and association exploitation of platinum. In this regard, as part of on-going mine planning, the need for additional parking bays was identified, and will support the employees currently employed at the Shaft 16 Complex.</p>
<p>1.7 How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system considering carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?</p> <p>1.7.1. Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e., de-materialised growth)? (Note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life)</p> <p>1.7.2. Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e., what are the opportunity costs of using these resources this the proposed development alternative?)</p> <p>1.7.3. Do the proposed location, type and scale of development promote a reduced dependency on resources?</p>	
<p>1.8 How were a risk-averse and cautious approach applied in terms of ecological impacts?</p> <p>1.8.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?</p> <p>1.8.2. What is the level of risk associated with the limits of current knowledge?</p> <p>1.8.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?</p>	

QUESTION	LOCATION IN REPORT/RELEVANCE
<p>1.9. How will the ecological impacts resulting from this development impact on people’s environmental right in terms following:</p> <p>1.9.1. Negative impacts: e.g., access to resources, opportunity costs, loss of amenity (e.g., open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?</p> <p>1.9.2. Positive impacts: e.g., improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?</p>	<p>The impact assessment is undertaken in accordance with SLR’s methodology. The potential impacts and the significance thereof are presented in Appendix D.</p>
<p>1.10. Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development’s ecological impacts will result in socioeconomic impacts (e.g., on livelihoods, loss of heritage site, opportunity costs, etc.)?</p>	
<p>1.11. Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?</p>	
<p>1.12. Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the “best practicable environmental option” in terms of ecological considerations?</p>	<p>The locality of the proposed project was determined due to the need to be in close proximity to the Shaft 16 Complex. As well as being near to the main access road. In this regard, location alternatives were not applicable to the proposed project. Design alternatives related to the reconfiguration of the parking area layout to avoid the underground Magalies water pipeline and the existing overhead powerline located within the development footprint.</p>
<p>1.13. Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?</p>	<p>The impact assessment is undertaken in accordance with SLR’s methodology. The potential impacts and the significance thereof are presented in Appendix D.</p>
<p>2.1. What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?</p> <p>2.1.1. The IDP (and its sector plans’ vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area,</p> <p>2.1.2. Spatial priorities and desired spatial patterns (e.g., need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.),</p> <p>2.1.3. Spatial characteristics (e.g., existing land uses, planned land uses, cultural landscapes, etc.), and</p>	<p>The need and desirability of the proposed project has been presented in terms of the consideration of the national, regional and local context.</p>

QUESTION	LOCATION IN REPORT/RELEVANCE
2.1.4. Municipal Economic Development Strategy (“LED Strategy”).	
<p>2.2. Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?</p> <p>2.2.1. Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?</p>	<p>The impact assessment is undertaken in accordance with SLR’s methodology. The potential impacts and the significance thereof are presented in Appendix D.</p>
2.3. How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	<p>The proposed project aims to improve health, safety and security for Impala’s employees based at the Shaft 16 Complex, through the provision of safe, secure and covered parking bays. Due to the nature of the proposed project, it is not anticipated to have an impact on intergenerational impact distribution.</p>
2.4. Will the development result in equitable (intra- and inter-generational) impact distribution, in the short and long-term? Will the impact be socially and economically sustainable in the short- and long-term?	
<p>2.5. In terms of location, describe how the placement of the proposed development will:</p> <p>2.5.1. Result in the creation of residential and employment opportunities in close proximity to or integrated with each other,</p> <p>2.5.2. Reduce the need for transport of people and goods,</p> <p>2.5.3. Result in access to public transport or enable non-motorised and pedestrian transport (e.g., will the development result in densification and the achievement of thresholds in terms public transport),</p> <p>2.5.4. Compliment other uses in the area,</p> <p>2.5.5. Be in line with the planning for the area,</p> <p>2.5.6. For urban related development, make use of underutilised land available with the urban edge,</p> <p>2.5.7. Optimise the use of existing resources and infrastructure,</p> <p>2.5.8. Opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g., not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement),</p> <p>2.5.9. Discourage "urban sprawl" and contribute to compaction/densification,</p> <p>2.5.10. Contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs,</p> <p>2.5.11. Encourage environmentally sustainable land development practices and processes,</p> <p>2.5.12. Consider special locational factors that might favour the specific location (e.g., the location of a strategic mineral resource, access to the port, access to rail, etc.),</p>	<p>A staff complement of approximately 45 individuals would be required for the construction phase (skilled and unskilled job opportunities) of the proposed project. Procurement opportunities would be sourced locally, as far as possible. However, due to the limited nature and extent of the proposed project, the development is not anticipated to contribute the other factors mentioned.</p>

QUESTION	LOCATION IN REPORT/RELEVANCE
<p>2.5.13. The investment in the settlement or area in question will generate the highest socio-economic returns (i.e., an area with high economic potential),</p> <p>2.5.14. Impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and</p> <p>2.5.15. In terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?</p>	
<p>2.6. How were a risk-averse and cautious approach applied in terms of socio-economic impacts?</p> <p>2.6.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?</p> <p>2.6.2. What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?</p> <p>2.6.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?</p>	<p>Assumptions, uncertainties and limitations associated with the compilation of this BAR is included in chapter 14. Compliance with the various legislative requirements is presented in this BAR.</p>
<p>2.7. How will the socio-economic impacts resulting from this development impact on people’s environmental right in terms following:</p> <p>2.7.1. Negative impacts: e.g., health (e.g., HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?</p> <p>2.7.2. Positive impacts. What measures were taken to enhance positive impacts?</p>	<p>The impact assessment is undertaken in accordance with SLR’s methodology. The potential impacts and the significance thereof are presented in Appendix D.</p>
<p>2.8. Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development’s socio-economic impacts will result in ecological impacts (e.g., over utilisation of natural resources, etc.)?</p>	
<p>2.9. What measures were taken to pursue the selection of the “best practicable environmental option” in terms of socio-economic considerations?</p>	<p>An alternatives analysis was undertaken as part of the proposed project.</p>
<p>2.10. What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the “best practicable environmental option” to be selected, or is there a need for other alternatives to be considered?</p>	<p>An EMPr has been compiled for the proposed project which will be implemented during the development’s life cycle.</p>

QUESTION	LOCATION IN REPORT/RELEVANCE
2.11. What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	Due to the nature of the proposed project, this is not applicable.
2.12. What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	An EMPr has been compiled for the proposed project which will be implemented during the development's life cycle.
<p>2.13. What measures were taken to:</p> <p>2.13.1. Ensure the participation of all interested and affected parties,</p> <p>2.13.2. Provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation,</p> <p>2.13.3. Ensure participation by vulnerable and disadvantaged persons,</p> <p>2.13.4. Promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means,</p> <p>2.13.5. Ensure openness and transparency, and access to information in terms of the process,</p> <p>2.13.6. Ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge, and</p> <p>2.13.7. Ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein were be promoted?</p>	The PPP for the proposed project was undertaken in terms of the EIA Regulations, 2014 (as amended) promulgated under NEMA. The PPP undertaken to date, as well as the proposed process for the remainder of the application process, is provided in section 7.2
2.14. Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g., a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	A staff complement of approximately 45 individuals would be required for the construction phase (skilled and unskilled job opportunities) of the proposed project. Procurement opportunities would be sourced locally, as far as possible.
2.15. What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	Project activities would comply with Impala's occupational health and safety policies and/or standards, as well as national legislation.
<p>2.16. Describe how the development will impact on job creation in terms of, amongst other aspects:</p> <p>2.16.1. The number of temporary versus permanent jobs that will be created,</p> <p>2.16.2. Whether the labour available in the area will be able to take up the job opportunities (i.e., do the required skills match the skills available in the area),</p> <p>2.16.3. The distance from where labourers will have to travel,</p>	A staff complement of approximately 45 individuals would be required for the construction phase (skilled and unskilled job opportunities) of the proposed project. Procurement opportunities would be sourced locally, as far as possible. Due

QUESTION	LOCATION IN REPORT/RELEVANCE
<p>2.16.4. The location of jobs opportunities versus the location of impacts (i.e., equitable distribution of costs and benefits), and</p> <p>2.16.5. The opportunity costs in terms of job creation (e.g., a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).</p>	<p>to the nature of the proposed project, no job or procurement opportunities will be created post-construction.</p>
<p>2.17. What measures were taken to ensure:</p> <p>2.17.1. That there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment, and</p> <p>2.17.2. That actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?</p>	<p>The need and desirability of the proposed project has been presented in terms of the consideration of the national, regional and local context.</p>
<p>2.18. What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people’s common heritage?</p>	<p>Measures to mitigate environmental impacts associated with the proposed project have been included in the EMPr.</p>
<p>2.19. Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?</p>	
<p>2.20. What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?</p>	<p>Impala will be responsible for the implementation of the measures included in the EMPr. The financial provision has been determined to cater for the costs associated with the rehabilitation of the environmental post-closure.</p>
<p>2.21. Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?</p>	<p>The locality of the proposed project was determined due to the need to be in close proximity to the Shaft 16 Complex. As well as being near to the main access road. In this regard, location alternatives were not applicable to the proposed project. Design alternatives related to the reconfiguration of the parking area layout to avoid the underground Magalies water pipeline and the existing overhead powerline located within the development footprint.</p>
<p>2.22. Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?</p>	<p>The impact assessment is undertaken in accordance with SLR’s methodology.</p>

## **6. MOTIVATION FOR THE PREFERRED SITE, ACTIVITIES AND TECHNOLOGY ALTERNATIVES**

This section provides a motivation for the preferred site and technology alternatives relative to the proposed project.

### **6.1 LOCATION ALTERNATIVES**

The proposed project entails the extension of the existing parking area and therefore it is most effective if it is adjacent to the current parking area. Similarly, the locality of the proposed parking area has been determined due to the need to be in close proximity to the Shaft 16 Complex, as well as being near the main access road. It follows that no site alternatives were considered due to this fixed position.

### **6.2 TECHNOLOGY ALTERNATIVES**

Due to the nature and limited extent of the proposed project, no technology alternatives were considered.

## 7. FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED ALTERNATIVES WITHIN THE SITE

This chapter describes the alternatives considered for the proposed project and summarises the process followed to reach the preferred alternative.

### 7.1 DETAILS OF THE DEVELOPMENT FOOTPRINT CONSIDERED

#### 7.1.1 Site Alternatives

As mentioned in section 6.1, the locality of the proposed parking area has been determined due to the need to be in close proximity to the Shaft 16 Complex, as well as being near the main access road. It follows that no site alternatives were considered due to this fixed position.

#### 7.1.2 Technology Alternatives

As mentioned in section 6.2, due to the nature and limited extent of the proposed project, no technology alternatives were considered.

#### 7.1.3 Activity Alternatives

The project site adjacent to the Shaft 16 Complex, is currently vacant and has not been earmarked for non-mining-related development. The proposed expansion of the parking area is thus considered an ancillary activity associated with the current mining operations at the Shaft 16 Complex. In this regard the need for additional parking bays was identified, as part of on-going mine planning, to accommodate the increasing number of employees coming to the Shaft 16 Complex with their own vehicles, and will improve health, safety and security for the employees. It follows that no other activity alternatives were considered.

#### 7.1.4 No-Go Alternative

The No-Go alternative is the non-occurrence of the proposed project. The negative implications of not going ahead with the proposed project are as follows:

- Loss of opportunity to improve the health, safety and security of Impala's employees employed at the Shaft 16 Complex; and
- Lost job and procurement opportunities associated with the construction phase.

The positive implications of the no-go option are that there would be no effects on the biophysical environment within the development footprint.

### 7.2 DETAILS OF THE PPP FOLLOWED

The PPP was undertaken in accordance with the requirements of chapter 6 of the EIA Regulations, 2014 (as amended) promulgated under NEMA. In addition to this, consideration was also given to various public participation guidelines governed by the DFFE (refer to Table 4-1).



### 7.2.1 PPP Undertaken to Date

The PPP undertaken to date is provided in Table 7-1. Proof of the undertaking of the PPP associated with the pre-application phase has been included in Appendix C. Proof of the undertaking of the PPP associated with the application phase will be provided in the revised BAR.

**Table 7-1: PPP Undertaken to Date**

Step	Detail
<b>Pre-Application Phase</b>	
Stakeholder identification	<p>A project I&amp;AP database was developed for the proposed project and comprises key I&amp;APs (surrounding landowners, land users and community forums; neighbouring mines and industries, Non-Government Organisations and Associations, Parastatals and regulatory and commenting authorities (local and regional). The commenting authorities who have been identified include:</p> <ul style="list-style-type: none"> <li>• DFFE;</li> <li>• Department of Water and Sanitation (DWS);</li> <li>• North West Department of Agriculture;</li> <li>• North West Department of Rural Development and Land Reform (DRDLR) (inclusive of the Land Claims Commissioner);</li> <li>• North West Department of Roads and Public Works;</li> <li>• North West Department of Rural, Environment and Agricultural Development;</li> <li>• North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT);</li> <li>• North West Parks and Tourism Board;</li> <li>• ESKOM;</li> <li>• SAHRA;</li> <li>• RLM; and</li> <li>• BPDM.</li> </ul>
Consultation with Land Claims Commissioner	<p>The DRDLR (Land Claims Commissioner) in North West was contacted to confirm if there were any land claims on remaining extent of portion 3 of the farm Reinkoyalskraal 278 JQ. The Land Claims Commissioner confirmed that no land claims have been lodged on the property.</p>
Meetings with authorities	<p>Meetings with the DMRE and DEDECT were undertaken on 14 May 2021 and 12 May 2021, respectively. The meetings were undertaken virtually, via Microsoft Teams, and were facilitated by SLR. The main aims of the meetings were to present the proposed project, to propose stakeholder engagement strategies, to provide a platform for any initial concerns or queries to be raised and to obtain confirmation on who the designated competent authority would be for the proposed project.</p>
Meetings with key stakeholders	<p>Meetings with the Royal Bafokeng Nation/Royal Bafokeng Administration (RBN/RBA) and the Mine Community Leadership and Engagement Forum (MCLEF) were undertaken on 12 May 2021 and 18 May 2021, respectively. The meeting with RBA/RBN was undertaken virtually, via Microsoft Teams, and was facilitated by SLR. The meeting with MCLEF was undertaken in person and was facilitated by a local consultant, Grevix Services and Solutions (Grevix). The main aims of the meetings were to present the proposed project, to propose stakeholder</p>

Step	Detail
	<p>engagement strategies and to provide a platform for any initial concerns or queries to be raised.</p> <p>A follow up meeting with MCLEF was undertaken on 30 August 2021. The meeting was undertaken in person and facilitated by Grevix. The main aims of the follow-up meeting were to present the findings of the impact assessment, to provide feedback to issues and concerns raised at the initial meeting and to record any additional comments and concerns.</p>
<p>Background Information Document (BID)</p>	<p>A BID (English and Setswana) was compiled by SLR was made available for a public and authority review period from 2 June – 5 July 2021 on SLR’s websites (including a data-free option). The BID provided:</p> <ul style="list-style-type: none"> <li>• Information about the proposed project;</li> <li>• Information about the baseline environment of the proposed project footprint;</li> <li>• Information regarding possible biophysical/cultural/socio-economic impacts associated with the proposed project activities;</li> <li>• Details pertaining to stakeholder engagement;</li> <li>• Information on how I&amp;APs and commenting authorities can have input into the environmental assessment process.</li> </ul> <p>A registration and response form was attached to the BID, which provided I&amp;APs with an opportunity to register as an I&amp;AP and submit comments on the proposed project.</p> <p>A notification letter (English and Setswana) indicating the availability of the BID and providing the links to the SLR websites in order to access the BID, was provided to I&amp;APs registered on the project database, via email on 2 June 2021. A remainder email was sent on 21 June 2021. A notification (English) indicating the availability of the BID and providing a link to the SLR data-free website in order to access the BID, was provided to I&amp;APs registered on the project database, via SMS on 2 June 2021. A remainder SMS was sent on 21 June 2021.</p>
<p>Site notices</p>	<p>Grevix placed 50 laminated A2-sized site notices (English and Setswana) at key conspicuous positions in and around the Shaft 16 Complex, as well as the following nearby villages and towns on 2 and 3 June 2021:</p> <ul style="list-style-type: none"> <li>• Chachalaza;</li> <li>• Kanana;</li> <li>• Serutube;</li> <li>• Lefaragatlha;</li> <li>• Phokeng;</li> <li>• Luka;</li> <li>• Mogono;</li> <li>• Freedom Park; and</li> <li>• Bobuampya.</li> </ul> <p>The site notices provided information about the proposed project, details pertaining to stakeholder engagement, information on how I&amp;APs can have input into the environmental assessment process, and information pertaining to the availability and access of the BID for review and comment.</p>

Step	Detail
Newspaper advertisements	Advertisements (English) were placed in two local newspapers and one national newspaper. These include the <i>Platinum Weekly</i> (4 & 5 June 2021), <i>Rustenburg Herald</i> (2 June 2021), and <i>Daily Sun</i> (4 & 5 June 2021). The advertisements provided information about the proposed project, details pertaining to stakeholder engagement, information on how I&APs can have input into the environmental assessment process, and information pertaining to the availability and access of the BID for review and comment.
Flyers	<p>Grevix distributed 2 000 A5-sized flyers (1 000 - English and 1 000 - Setswana) at key conspicuous positions in and around the Shaft 16 Complex, as well as the following nearby villages and towns on 2 and 3 June 2021:</p> <ul style="list-style-type: none"> <li>• Chachalaza;</li> <li>• Kanana;</li> <li>• Serutube;</li> <li>• Lefaragatlha;</li> <li>• Phokeng;</li> <li>• Luka;</li> <li>• Mogono;</li> <li>• Freedom Park; and</li> <li>• Bobuampya.</li> </ul> <p>The flyers provided information about the proposed project, details pertaining to stakeholder engagement, information on how I&amp;APs can have input into the environmental assessment process, and information pertaining to the availability and access of the BID for review and comment.</p>
<b>Application Phase</b>	
BAR and Non-Technical Summary (NTS)	<p>This BAR (English) and NTS (English and Setswana) have been made available for a 30-day public review and comment period from 8 September – 8 October 2021 in order to provide I&amp;APs with an opportunity to comment on any aspect of the proposed project and the findings of the environmental assessment process. Full copies of the BAR and the NTS have been placed on the SLR website (<a href="http://www.slrconsulting.com">www.slrconsulting.com</a>) and the SLR data-free website (<a href="https://slrpublicdoc.datafree.co/public-documents">https://slrpublicdoc.datafree.co/public-documents</a>).</p> <p>A notification letter (English and Setswana) indicating the availability of the BAR and NTS and providing the links to the SLR websites in order to access the documents, was provided to I&amp;APs registered on the project database, via email on 7 September 2021. A notification (English) indicating the availability of the documents and providing a link to the SLR data-free website in order to access the documents, was provided to I&amp;APs registered on the project database, via SMS on 7 September 2021.</p>
Posters	<p>Grevix will place 50 laminated A2-sized posters (English and Setswana) where site notices were previously erected.</p> <p>The posters will provide an overview of the findings of the environmental assessment and will include links to the SLR websites that can be used to access the BAR and NTS.</p>
Flyers	Grevix will distribute 2 000 A5-sized flyers (1 000 - English and 1 000 - Setswana) where flyers were previously distributed.

Step	Detail
	<p>The flyers will provide an overview of the findings of the environmental assessment and will include links to the SLR websites that can be used to access the BAR and NTS.</p>
<p>Revised BAR and NTS</p>	<p>This revised BAR (English) and NTS (English and Setswana) will be compiled and updated with comments received from the I&amp;APs. The revised BAR and NTS will be submitted to the DMRE for consideration and decision-making. Full copies of the revised BAR and the NTS will be placed on the SLR website (<a href="http://www.slrconsulting.com">www.slrconsulting.com</a>) and the SLR data-free website (<a href="https://slrpublicdoc.datafree.co/public-documents">https://slrpublicdoc.datafree.co/public-documents</a>).</p> <p>A notification letter (English and Setswana) indicating the submission of the revised BAR and NTS to the DMRE, as well as the links to the SLR websites in order to access the documents, will be provided to I&amp;APs registered on the project database, via email. A notification (English) indicating the submission of the revised BAR and NTS to the DMRE, as well as the links to the SLR websites in order to access the documents, will be provided to I&amp;APs registered on the project database, via SMS.</p>
<p>DMRE decision</p>	<p>All I&amp;APs registered on the project database will be notified once the decision to grant or refuse EA is received. The notification letter (English and Setswana) will include information on how to access the decision, as well as information pertaining to the appeal process. The notification letter will be provided to I&amp;APs registered on the project database via email. A notification (English) of the afore-mentioned will also be provided by SMS.</p> <p>Grevix will distribute 250 hard copies of the notification letter (125 - English and 125 – Setswana) where flyers were previously distributed.</p>

### 7.3 SUMMARY OF ISSUES RAISED BY I&APS

A full record of the issues and concerns raised to date have been included in Table 7-2.

**Table 7-2: Full Record of Issues Raised by I&APs to date**

I&AP	Date comment received	Issue raised	Response provided	Report reference where the issue and responses were incorporated
<b>Authorities</b>				
Gasewabone Thebe (DEDECT)	12 May 2021 (at DEDECT pre-application meeting)	What is the total area to be cleared?	The total area to be cleared measures at approximately 2.5 ha.	Chapter 3
		What is the current land use at the project site?	The project site is adjacent to the existing Shaft 16 Complex. The land is not being utilised and is currently vacant, consisting of indigenous vegetation. A powerline runs through the area	Section 7.4.3.2.
		If the land is being used for agricultural purposes, the Department of Agriculture must be included as a commenting authority.	The project site is not currently utilised for agricultural purposes; however, the North West Department of Agricultural and the North West Department of Rural, Environment and Agricultural Development has been included in the I&AP database.	Table 7-1
Motshabi Mohlalisi (DEDECT)	12 May 2021 (at DEDECT pre-application meeting)	What pollution impacts, other than air quality, have been identified as part of the proposed project? I.e., how will stormwater be managed at the parking area?	Stormwater/surface water run-off at the proposed parking area will be channelled to the existing stormwater canal adjacent to the parking area.	Chapter 9
		What does the design of the parking area entail? Will it be bare sand or paved?	The parking area will be placed on bare sand, similar to the existing parking area.	Chapter 3
<b>Tribal Authorities, Community Leadership and Ward Councillors</b>				
Kgosana Rapetsana	18 May 2021 (at MCLEF focussed meeting)	Is the parking area being expanded due to new employment opportunities?	The parking area is being expanded due to the increasing number of employees coming to the Shaft 16 Complex with their own vehicles.	Chapter 5
		What is the real impact of the project?	Approximately 45 unskilled to semi-skilled workers will be offered employment opportunities during the construction phase of the proposed project. The potential negative environmental impacts associated with the project may include	Chapter 3

I&AP	Date comment received	Issue raised	Response provided	Report reference where the issue and responses were incorporated
			increase in traffic and disturbance of heritage resources. However, any heritage resources identified by the specialist will be demarcated and excluded from the project footprint.	
Councillor Lefyedi	18 May 2021 (at MCLEF focussed meeting)	Procurement opportunities should be extended to Lefaragathla and not be limited to Kanana	The comment is noted. Procurement opportunities will be sourced from the local area but would not be limited to Kanana.	Chapter 3
Councillor Mekgoe	18 May 2021 (at MCLEF focussed meeting)	What is the estimated project value?	The total value of the project is yet to be determined.	N/A
		Will the project be awarded to two contractors? Will there be subcontracting opportunities for the local companies?	As mentioned above, procurement opportunities will be sourced from the local area. It has not yet been determined how many companies would be required for the construction phase of the proposed project.	Chapter 3
Councillor Mputle	18 May 2021 (at MCLEF focussed meeting)	The new parking area will also result in an increase in crime in the area. Can Impala increase the security around the project?	Impala will undertake a risk assessment to address the safety of pedestrians using the access road and security concerns associated with the proposed project.	Appendix D

## 7.4 ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE PROPOSED PROJECT AND THE ALTERNATIVES

An understanding of the biophysical, cultural/heritage and socio-economic context and sensitivity within which the proposed project is located is important in understanding the potential impacts of the project. This section provides a description of these attributes in the receiving environment of the project footprint.

### 7.4.1 Baseline Biophysical Environment Affected by the Proposed Activity

#### 7.4.1.1 Geology

##### Introduction

Mineral resources can be sterilised and/or lost through the placement of infrastructure and activities in close proximity to resources, by preventing access to potential mining areas. Geological processes can also influence soil forms and the potential for palaeontological resources.

A baseline situational analysis is described below in order to understand:

- The potential for sterilisation of mineral reserves; and
- The potential for geological lineaments such as faults and dykes. Faults, dykes and other lineaments can act as preferential flow paths of groundwater, which can influence both the dispersion of potential pollution plumes and the inflow of water into mine workings.

##### Data Sources

Information in this section was sourced from the Impala EIA and EMPr Consolidation Report (SLR, 2012), the EIA and EMPr for the Shaft 16 WRD Expansion (SLR, 2013) and the BAR and EMPr for the Flash Dryer Project (SLR, 2021).

##### Description

**Regional Geology:** Impala is situated on 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. The BIC consists of crystalline material such as norites and pyroxenites. The BIC comprises an unweathered and intact rock matrix with negligible matrix porosity and permeability, and planes of discontinuity in the rock matrix, including both faults and joint plant (collectively referred to as fractures).

**Local Geology:** Impala is located on the Western Limb of the BIC, where the layers dip at approximately 10 - 20° into the basin. The ultramafic-mafic rocks of the BIC are known as the Rustenburg Layered Suite (RLS). The rocks of the RLS range from ultrabasic pyroxenites and anorthosites in the lower parts, to norite, gabbro and magnetite gabbro in the upper parts. The RLS is subdivided into the Marginal, Lower, Critical and Upper Zones. The Shaft 16 Complex and the project footprint is located on the Pyramid Gabbro Norite of the Main Zone.

**Lineaments:** Dykes are dolerite intrusions that vary in thickness and can extend up to 40 m thick in places. The local geology is also characterised by dykes that range in thickness from 0.2 to 2.0 m. No dykes have been identified beneath the project footprint. However, some dykes occur further afield from project footprint. The underground workings have encountered numerous faults and to date the maximum

displacement has been 10 m. There are larger, as well as reverse faults in the local geology; although uncommon. No faults were identified within close proximity or within the project footprint (see Figure 7-1).

### Conclusion

Where new permanent infrastructure is placed within close proximity to mineable ore there is the possibility that sterilisation can occur. It is not envisaged that the location of the proposed parking area will result in any sterilisation of minerals. No dykes and faults have been identified beneath the project footprint. There are; however, dykes located further afield from the project footprint. These lineaments are not considered to be preferential flow paths for contamination and therefore do not affect the site selection or design of the proposed parking area.

### **7.4.1.2 Topography**

#### Introduction

Changes to topography through the development of the proposed project may impact on surface water drainage, visual aspects and the safety of both people and animals. To understand the basis of these potential impacts, a baseline situational analysis is described below.

#### Data Sources

Information in this section was sourced from the EIA and EMPr for the Shaft 16 WRD Expansion (SLR, 2013) and the BAR and EMPr for the Flash Dryer Project (SLR, 2021).

#### Description

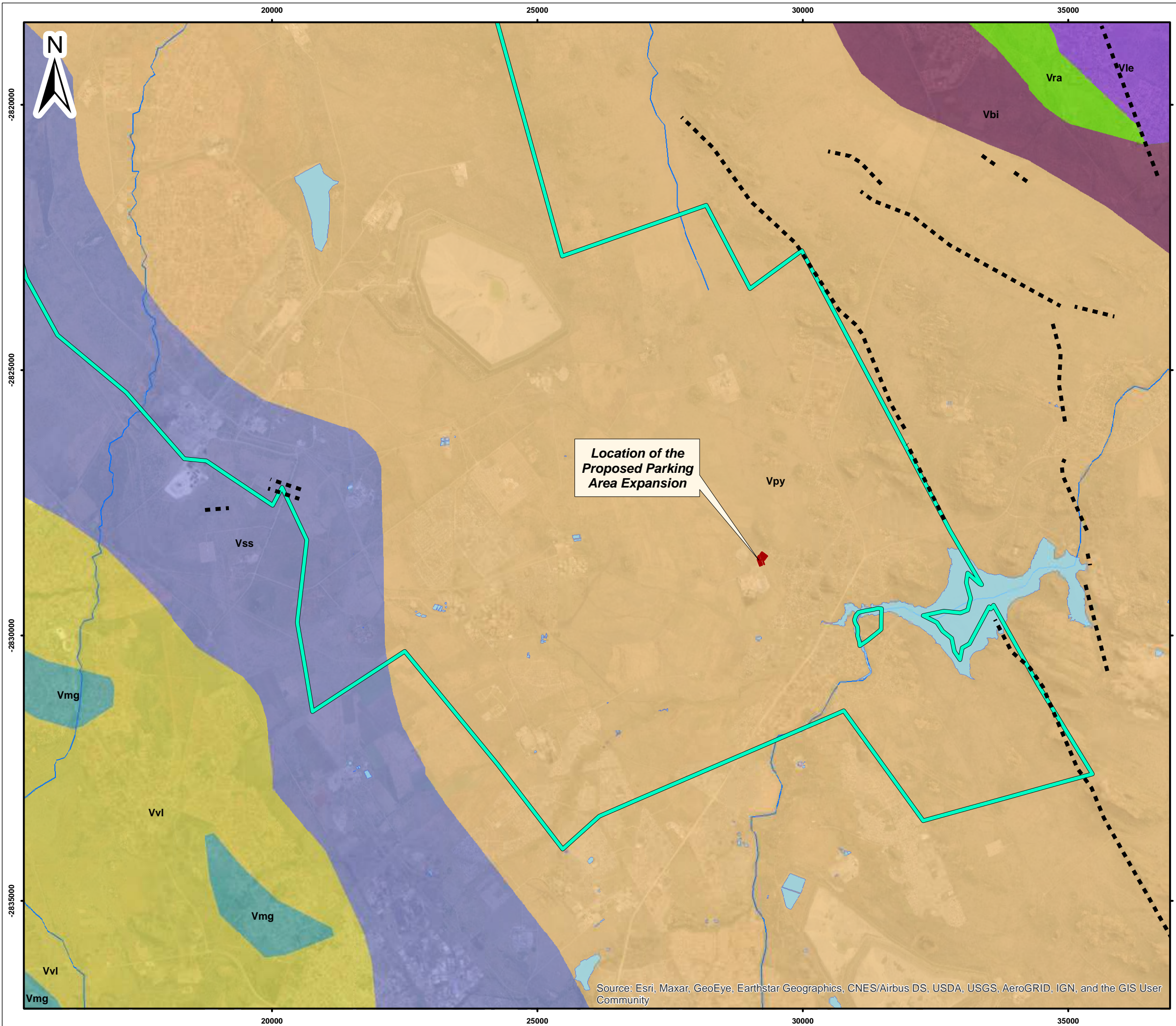
**Regional Topography:** The broader environment is characterised by gentle undulating plains at an altitude of approximately 1 130 meters above mean sea level (mamsl), approximately 10 km north-east of the northern most section of the Magaliesberg Range. Peaks in this section of the Magaliesberg rise to heights of between 1 400 and 1 500 mamsl. The northern parts of Impala's MR area are largely undisturbed and therefore regarded as being in its natural state. The southern sections of Impala's MR area have been disturbed due to the presence of mining activities, infrastructure and communities.

**Local Topography:** The project footprint is characterised as fairly flat. A stormwater culvert is located adjacent to the site, creating a depression across the site in a north-westerly to south-easterly direction. An overhead transmission line also runs across the site in the same afore-mentioned direction. Majority of the project footprint has been transformed by historic cultivation purposes; therefore, the topography of the site has been altered.

#### Conclusion

Mining activities, infrastructure and communities have the potential to alter the topography and the natural state of undisturbed areas. An alteration of the natural topography has the potential to impact both animals and people. The proposed project; however, does not pose safety risks to third parties and animals, as the topography within the project footprint has already been largely transformed, and because the project footprint is located adjacent to the existing access-controlled Shaft 16 Complex, the security measures of which will be extended as part of the proposed project.





- Legend**
- Rivers
  - Dams
  - Impala Surface Use Area
  - Proposed Parking Area Expansion
- Geological Features**
- BIERKRAAL MAGNETITE GABBRO
  - LEBOWA GRANITE
  - MAGALIESBERG
  - PYRAMID GABBRO-NORITE
  - RASHOOP GRANOPHYRE
  - SCHILPADNEST
  - VLAKFONTEIN
  - Stratigraphic and Lithologic Features

0 0.5 1 Kilometers  
 Scale: 1:30 000 @ A3  
 Projection: Transverse Mercator  
 Datum: Hartebeeshoek, Lo 27

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**Figure 7-1**  
**Geological Features Associated with the Impala MR Area**

**SLR**  
 SLR Consulting (Africa) (Pty) Ltd  
 P O Box 1596, Cramerview, 2060, South Africa  
 Tel: +27 (11) 467-0945 Fax: +27 (11) 467-0978

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

### 7.4.1.3 Climate

#### Introduction

Climate can influence the potential for environmental impacts and related mine design. Specific issues are listed below:

- Rainfall could influence erosion, evaporation, vegetation growth, rehabilitation planning, dust suppression, and surface water management planning;
- Temperature could influence air dispersion through impacts on atmospheric stability and mixing layers, vegetation growth, and evaporation which could influence rehabilitation planning; and
- Wind could influence erosion, the dispersion of potential atmospheric pollutants, and rehabilitation planning.

To understand the basis of these potential impacts, a baseline situational analysis is described below.

#### Data Sources

Information in this section was sourced from the Air Quality Specialist Report for the Proposed Flash Dryer (Airshed, 2020) and the BAR and EMPr for the Flash Dryer Project (SLR, 2021).

#### Description

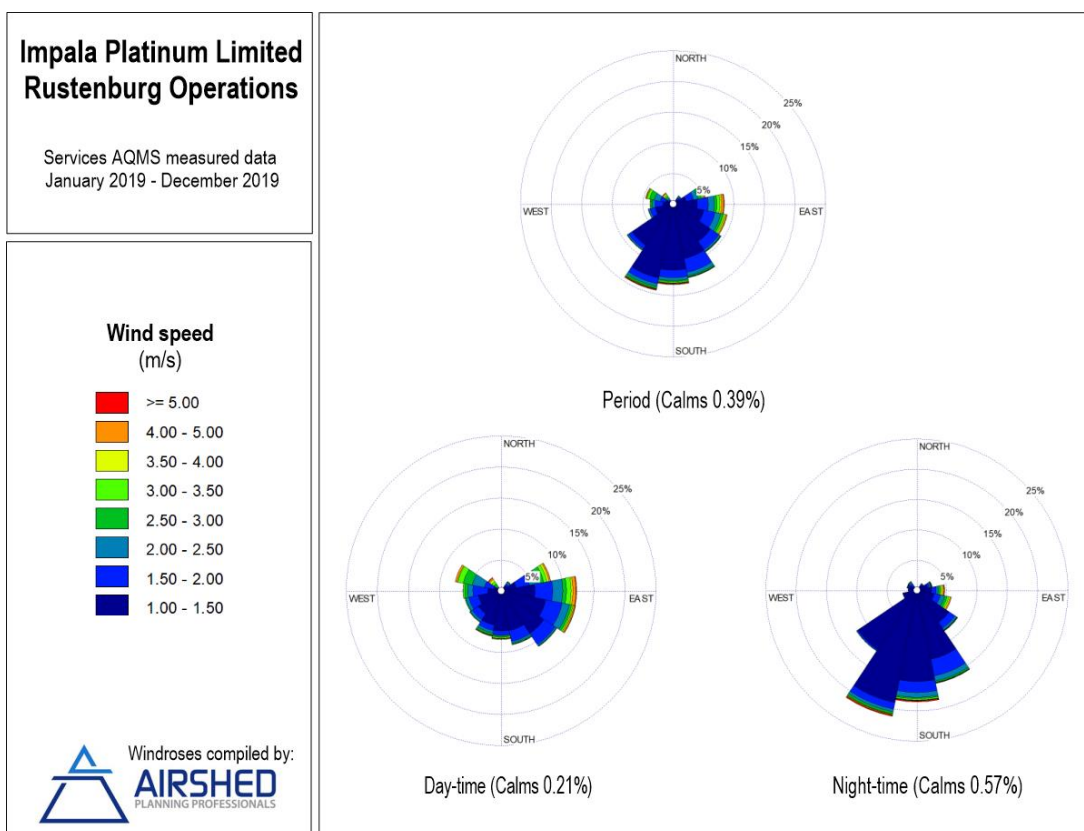
**Climate:** The project footprint falls within the Highveld Climatic Zone. Of the mean annual precipitation, 85% falls during summer thunderstorms. Thunderstorms generally occur every three to four days in summer and are of short duration and high intensity. Temperatures in this climatic zone are generally 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.

**Rainfall:** Rainfall data for several hydrological years (i.e., for the period 2016 – 2020) is provided in Table 7-3. Notably, there was no rainfall received for a period of five months in 2019, and for a period of four months in 2020. No rainfall measurements are available for three months in 2020; thus, the total measured rainfall is likely less than what the actual rainfall for 2020 will be. Total average annual rainfall from October 2016 to September 2020 is 672 mm. The rainfall for 2016, 2017, 2018, and 2019 was 713.8 mm, 529.6 mm, 501.3 mm and 934.1 mm, respectively. Rainfall in this area occurs mostly during the summer months, although it also rains during spring and autumn. The winter months are dry.

**Table 7-3: Monthly rainfall data measured in mm (October 2016 - September 2020)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep
Oct 2016 – Sept 2017	26.7	94.8	1335.7	156.6	221.1	4.8	46.1	25	0	3	0	0
Oct 2017 – Sept 2018	78.3	59	44.8	82.3	110.7	114.9	39.4	4.7	0	1.5	0	4
Oct 2018 – Sept 2019	15	28.7	104	180.3	46.2	32.3	94.8	0	0	0	0	0
Oct 2019 – Sept 2020	7	166.3	266	172	70.9	105.4	144	0	2.5	0	0	0

**Wind:** The period wind field and diurnal variability in the wind field are shown in Figure 7-2, while the seasonal variations are shown in Figure 7-3. The wind field is dominated by winds from the southerly sectors. Calm conditions occurred 0.39% of the time, with the average wind speed over the period of 1.35 m/s. Wind from the east and east-south-east having higher speeds were greater during the day with a lower frequency of calm conditions (0.21% during the day) than during the night (0.57% during the night). Daytime shows dominant easterly and east-south-easterly components to the wind field and during the night winds these winds decrease and the south-south-westerly winds dominate. Strong winds in excess of 4 m/s occurred most frequently during spring followed by summer. Calm conditions occurred most frequently during the winter months. Although it may appear on the wind roses that the northerly winds are not being measured correctly, it was determined that the frequency of these winds are 0.3%. Assuming all the missing data is for northerly sector the maximum amount of time that the winds may originate from the north is 1.4%.



**Figure 7-2: Period, Day- and Night-Time Wind Roses (AERMET Processed Measured Data, Jan 2019 - Dec 2019)**

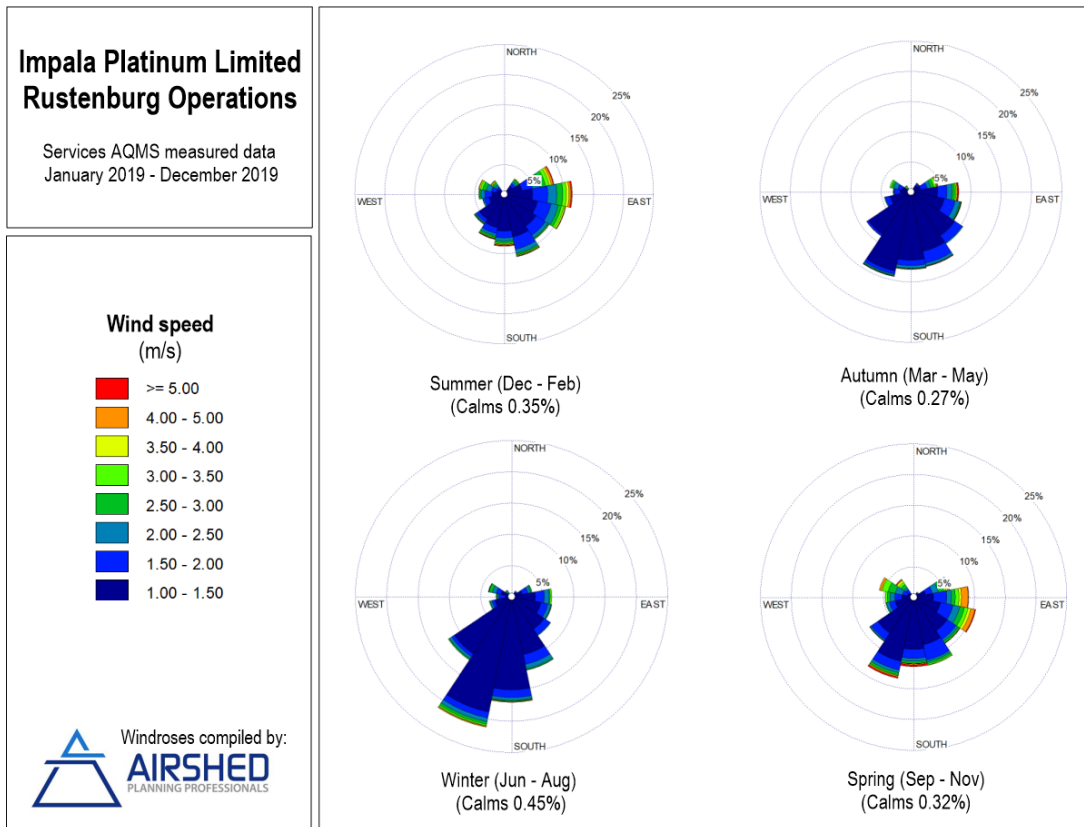
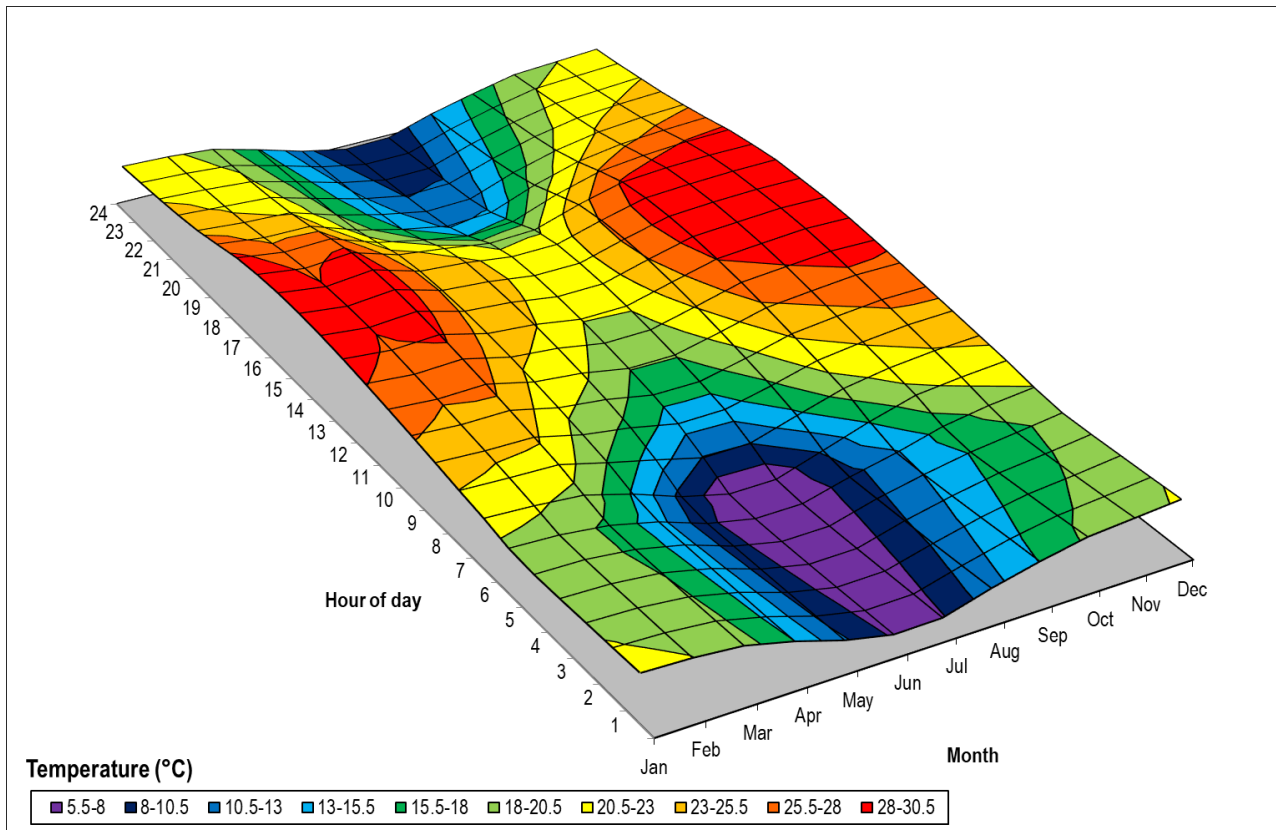


Figure 7-3: Seasonal Wind Roses (AERMET Measured Data, Jan 2019 - Dec 2019)

**Ambient Temperature:** Monthly mean, maximum and minimum temperatures, for the period January – December 2019, are given in Table 7-4. Diurnal temperature variability, for the period January – December 2019, is presented in Figure 7-4. Temperatures ranged between 1°C and 38°C. The highest temperatures occurred in October and the lowest in July. During the day, temperatures increase to reach the maximum at approximately 14h00 in the afternoon. Ambient air temperature decreases to reach the minimum at approximately 06h00 i.e., just before sunrise.

Table 7-4: Monthly Temperature Summary (AERMET Processed Measures Data, Jan - Dec 2019)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Hourly Minimum (°C)	16	14	15	8	6	2	1	5	4	11	15	12
Monthly Average (°C)	25	24	25	19	17	13	13	18	20	25	25	24
Hourly Maximum (°C)	36	36	36	32	28	27	28	30	33	38	36	37



**Figure 7-4: Diurnal Temperature Profile (AERMET Processed Measures Data, Jan - Dec 2019)**

Conclusion

The project footprint is characterised by rainy seasons with heavy thunderstorms that last for short periods at a time. High rainfall levels can increase the erosion potential and the formation of erosion gullies. The mixing of layers resulting in the formation of temperature inversions and the presence of cloud cover limits the dispersion of pollutants into the atmosphere. Wind significantly affects the amount of material that is suspended from exposed surface to the atmosphere. The wind speed determines the distance of downward transport as well as the rate of dilution of pollutants in the atmosphere. Where wind speeds increase above 5 m/s the possibility of dust dispersion increases, and this will require consideration from a planning and management perspective.

However, in general, the wind field is dominated by winds from the south, while average wind speeds were captured at 1.35m/s. These climatic aspects have been taken into consideration as part of the proposed project.

**7.4.1.4 Soils and Land Capability**

Introduction

Soils are an important component of most ecosystems. As an ecological driver, soil is the medium in which most vegetation grows and a range of vertebrates and invertebrates exist. In the context of mining operations, soil is even more significant if one considers that mining is a temporary land use, whereafter rehabilitation (using soil) is the key to re-establishing post closure land capability that will support post closure land uses.

Mining projects have the potential to damage soil resources through physical loss of soil and/or the contamination of soils, thereby impacting on the soils’ ability to sustain natural vegetation and altering land

capability. Contamination of soils may in turn contribute to the contamination of surface and groundwater resources. Loss of the topsoil resource reduces chances of successful rehabilitation and restoration. To understand the basis of these potential impacts, a baseline situational analysis is described below.

#### Data Sources

Information in this section was sourced from the EIA and EMPr for the Shaft 16 WRD Expansion (SLR, 2013) and the BAR and EMPr for the Flash Dryer Project (SLR, 2021).

#### Description

**Soil Distribution and Forms:** The distribution of soils is closely linked to the topography and parent materials from which they are derived. The better drained soils are generally associated with a less basic parent material; while the more structured and more clay rich (less easily drained) soils are associated with the intrusive, basic parent material. Numerous soil forms have been identified within the Impala MR area. These include Hutton, Shortlands and Valsrivier, Mispah, Mayo and Milkwood, Sterkspruit and Swartland, Arcadia, Sepane, Rensburg, Kroonstad and Katspruit, Glenrosa, Westleigh, Witbank and Outcrop. The soil forms underlying the project footprint are that of Sterkspruit and Swartland. These soil forms comprise the following characteristics:

- Blocky to prismatic in structure;
- Generally grey to dark brown or black in colour;
- Exhibits evidence of expansive clays, and displays a 2:1 swelling;
- Moderate to high erodibility;
- Low intake rates and moderate water holding capabilities; and
- A fair range in effective rooting depths from 200 mm – 600 mm.

**Land Capability:** The land capability within the Impala MR area is a mixture of grazing, wilderness and wetland with a small percentage consisting of arable potential. The land capability within the project footprint is that of grazing.

#### Conclusion

Soils forms within the project footprint are blocky to prismatic in structure, exhibit moderate to high erodibility and are relatively shallow with a high clay content which allows for high water retention. The land capability within the project footprint is that of grazing. In this regard, soil management is important if the land capability is to be appropriately reinstated as part of closure activities.

### **7.4.1.5 Biodiversity**

#### Introduction

In the broadest sense, biodiversity provides value for ecosystem functionality, aesthetic, spiritual, cultural, and recreational reasons. The known value of biodiversity and ecosystems is as follows:

- Soil formation and fertility maintenance;
- Primary production through photosynthesis, as the supportive foundation for all life;
- Provision of food and fuel;
- Provision of shelter and building materials;
- Regulation of water flows and water quality;

- Regulation and purification of atmospheric gases;
- Moderation of climate and weather;
- Control of pests and diseases; and
- Maintenance of genetic resources.

The establishment of infrastructure, as well as certain supportive activities have the potential to result in the loss of vegetation, habitat and related ecosystem functionality through physical disturbance and/or contamination of soil and/or water resources. To understand the basis of these potential impacts, a baseline situational analysis is described below.

#### Data Sources

Information in this section was sourced from the EIA and EMPr for the Shaft 16 WRD Expansion (SLR, 2013), the BAR and EMPr for the Flash Dryer Project (SLR, 2021), the Plant, Animal and Avifauna Compliance Statement compiled for the Parking Area Expansion (STS, 2021), the Terrestrial Biodiversity Study for the Parking Area Expansion (STS, 2021) and the Aquatic Diversity Compliance Statement for the Parking Area Expansion (SAS, 2021).

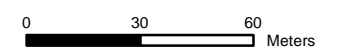
#### Description

**Flora:** Impala's MR area is located within the Savannah Biome. The Savannah Biome comprises various vegetation types, four of which are within the MR area. These are the Zeerust Thornveld, Marikana Thornveld, Central Sandy Thornveld and the Norite Koppies Bushveld vegetation types. Of the four aforementioned vegetation types, the project footprint is located within the Marikana Thornveld (see Figure 7-5).



**Legend**

- Proposed Parking Area Expansion
- Vegetation Types**
- Secondary Marikana Thornveld
- Transformed



Scale: 1:2 000 @ A3

Projection: Transverse Mercator  
Datum: Hartbeeshoek, Lo 27

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**Figure 7-5**

**Vegetation Types**



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Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

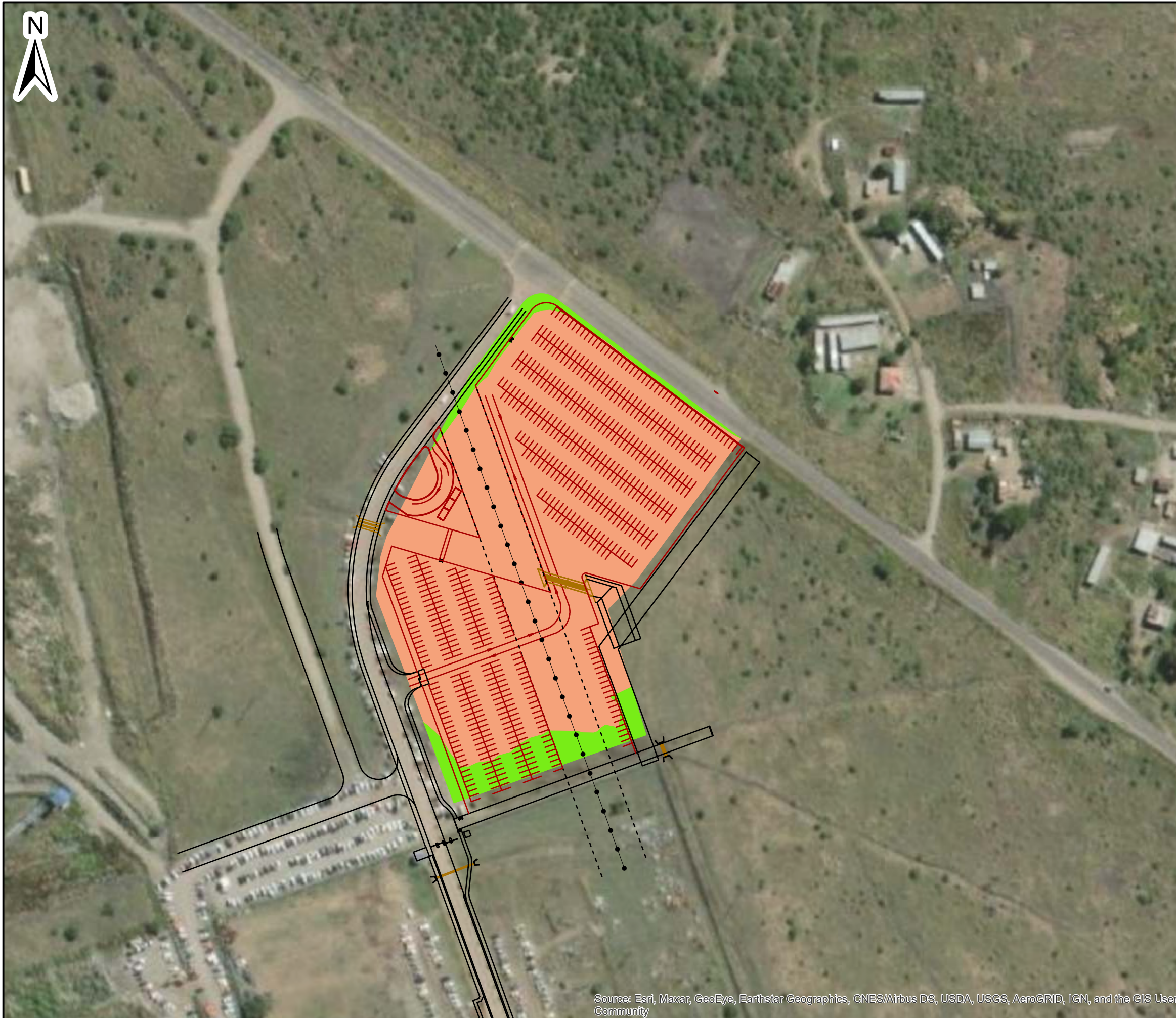


The Marikana Thornveld has been identified by SANBI as an important thornveld requiring conservation and care. The Marikana Thornveld occurs on plains from the Rustenburg area in the west, through Marikana and Brits to the Pretoria area in the east. The Marikana Thornveld is characterised by open *Vachellia Karroo* woodland, occurring in valleys and slightly undulation plains and some lowland hills.

Historic aerial photography indicates that the entirety of the project footprint has been cultivated historically, which has resulted in a significant alteration in vegetation structure, floral species composition and the ability of the habitat to support a high diversity of faunal species. In this regard and following a field assessment undertaken by Scientific Terrestrial Services cc (STS) and Scientific Aquatic Services cc (SAS) on 26 May 2021, no riparian and wetland habitats were identified, and two habitat units were distinguished at the project footprint (see Figure 7-6). These are as follows:

- Transformed Areas: These areas include current built-up or transformed areas associated with the main road leading up to the Shaft 16 Complex, as well as heavily modified land where little to no indigenous vegetation remains; and
- Secondary Marikana Thornveld: These areas are currently vegetated and comprises indigenous vegetation; however, due to significant historic transformation of this area (long-term cultivation), with no rehabilitation efforts, the vegetation is species poor.

Further to the above, floral communities within the project footprint are considered species poor and characterised by a dominance of graminoids, scattered woody species and a general lack of herbaceous species. A full list of floral species identified within the project footprint is provided in Table 7-5. Identified alien species have been shaded in red.



**Legend**

- Proposed Parking Area Expansion
- Habitat Units**
- Moderately Low Sensitivity
- Low Sensitivity

0 30 60 Meters

Scale: 1:2 000 @ A3

Projection: Transverse Mercator  
Datum: Hartbeeshoek, Lo 27

Impala Platinum Limited

**Figure 7-6**

**Habitat Units Identified Within the Project Footprint**



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Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

**Table 7-5: Floral Species Identified with the Project Footprint**

Species Type	Species				
Woody Species	<i>Asparagus suaveolens</i>		<i>Diospyros lycioides subsp. guerkei</i>		<i>Senegalia mellifera subsp. detinens</i>
	<i>Sesbania cf. bispinosa</i>		<i>Vachellia nilotica subsp. kraussiana</i>		<i>Vachellia tortilis subsp. tortilis</i>
Forb Species	<i>Albuca sp.</i>	<i>Bidens pilosa</i>	<i>Crabbea hirsute</i>	<i>Erigon sp.</i>	<i>Gladiolus sp.</i>
	<i>Hermannia depressa</i>	<i>Hermannia transvaalensis</i>	<i>Hypoxis rigidula</i>	<i>Indigofera cf. comosa</i>	<i>Jamesbrittenia aurantiaca</i>
	<i>Kyphocarpa angustifolia</i>	<i>Nidorella anomala</i>	<i>Polygala hottentotta</i>	<i>Rhynchosia monophyla</i>	<i>Schkuhria pinnata</i>
	<i>Sida dregei</i>	<i>Solanum sisymbriifolium</i>	<i>Tagetes minuta</i>	<i>Zinnia perviana</i>	
Succulent Species	<i>Opuntia ficus-indica</i>				
Graminoid Species	<i>Aristida bipartite</i>	<i>Brachiaria cf. serrata</i>		<i>Cenchrus ciliaris</i>	<i>Cymbopogon caecius</i>
	<i>Cynodon dactylon</i>	<i>Dichanthium annulatum</i>		<i>Enneapogon cenchroides</i>	<i>Eragrostis chloromelas</i>
	<i>Eragrostis sp.</i>	<i>Heteropogon contortus</i>		<i>Ischaemum afrum</i>	<i>Setaria cf. incrassate</i>
	<i>Setaria sp.</i>	<i>Sporobolus africanus</i>	<i>Sporobolus stapfianus</i>		<i>Themeda triandra</i>

As the natural floral community structure and composition have been altered, floral species of conservation concern (SCC) are unlikely to establish viable populations, especially within areas that have been completely transformed. In this regard, no nationally threatened SCC (i.e., red-data list (RDL) plants), in terms of Section 56 of the NEM: BA were identified within the project footprint, nor were any species observed from the NEM: BA Threatened or Protected Species (TOPS) list for the North West Province. This is because no suitable habitat is present for these species on site. Furthermore, provincially protected species, listed on the Transvaal Nature Conservation Ordinance, No. 12 of 1983 (TNCO) Schedule 11 - Protected Plants, were also not observed within the project footprint.

It is important to note that as part of the proposed project, consideration was given to provincial and national biodiversity sensitivity databases, such as the National Protected Areas Expansion Strategy (NPAES) 2010, the South African Conservation Areas Database (SACAD) 2020, the South African Protected Area Database (SAPAD) 2020, the Mining and Biodiversity Guidelines 2013, the North West Biodiversity Sector Plan 2015, the Important Bird Areas (IBAs) 2015, the National Freshwater Ecosystem Priority Areas (NFEPA) Database 2011, the DWS Research Quality Information Services (RQIS) Database 2014, the National Biodiversity Assessment (NBA) 2018 and the NEM: BA. The project footprint does not fall within any sensitive habitats identified in these databases.

**Fauna:** The most common mammals occurring within the Impala MR Area are the Multi-Mammate Mouse, the Namaqua Rock Mouse and the Rock Dassie. Mammals are predominantly located in areas such as rocky outcrops, dense mattered vegetation, moist marshy habitats etc, where favourable habitats exist. Five RDL

bird species were identified within the Impala MR Area, these includes *Mycteria ibis*, *Phoenicopterus roseus*, *Sagittarius serpentarius*, *Falco biarmicus* and *Mirafra cheniana*. Protected bird species in terms of the TNCO that have been identified within the Impala MR area include *Phalacrocorax lucidus*, *Phalacrocorax africanus*, *Streptopelia semitorquata*, *Streptopelia capicola*, *Streptopelia senegalensis*, *Corvus albus*, *Passer melanurus* and *Quelea*.

Following a site assessment undertaken by STS on 26 May 2021, it was revealed that faunal diversity within the project footprint was low. Species observed were limited to common and widely occurring species known to survive in areas of decreased sensitivity and that have integrated well into anthropogenic settings. The project footprint is fragmented and isolated from surrounding natural habitat via man-made barriers, with roads being the immediate barrier and built-up areas (Shaft 16 Complex and Kanana residential area) forming additional barriers in the larger, local landscape. These barriers influence the presence of expected fauna – although this applies largely to megaherbivores and large predators which are completely absent from the study area (apart from domestic cattle). Smaller mammals can more readily move through, and potentially utilise the habitat within the Secondary Marikana Thornveld Habitat Unit, e.g., Scrub Hare scatt was noted on site. Mammal species also likely to utilise the study area for foraging include *Herpestes sanguinea* (Slender Mongoose) and small rodents.

The Secondary Marikana Thornveld Habitat Unit provides some suitable habitat for invertebrates, but invertebrate diversity is not anticipated to be high in the project footprint area. Whilst no arachnid species were observed during the field assessment undertaken by STS, it is expected that the project footprint will support a moderately low diversity as there is some suitable habitat and food resources available. The project footprint is also expected to harbour a low diversity of common reptilian species. No amphibian species were encountered during the field assessment undertaken by STS on 26 May 2021, due to the lack of any wetland or riparian habitat within the project footprint. Avifaunal species were the most abundant species noted within the project footprint and surrounding area. Species observed were common species with broad habitat requirements capable of utilising anthropogenically modified landscapes. A full list of observed or expected species within the project footprint is provided in Table 7-6.

**Table 7-6: Faunal Species Identified with the Project Footprint**

Species Type	Scientific Name	Common Name
<b>Mammals</b>	<i>Lepus saxatilis</i>	Scrub Hare
	<i>Herpestes sanguinea</i>	Slender Mongoose
<b>Avifauna</b>	<i>Acridotheres tristis</i>	Common Myna
	<i>Bostrychia hagedash</i>	Hadedda Ibis
	<i>Corythaixoides concolor</i>	Grey Go-Away Bird
	<i>Streptopelia capicola</i>	Cape Turtle-Dove
	<i>Trachyphonus vaillantii</i>	Crested Barbet
	<i>Vanellus coronatus</i>	Crowned Lapwing
	<i>Passer domesticus</i>	House Sparrow
<b>Amphibians</b>	None	
	<i>Acanthoplus discoidalis</i>	Brown Armoured Corn cricket

Species Type	Scientific Name	Common Name
Insects	<i>Acanthacris ruficornis</i>	Garden Locust
	<i>Acrididae Grasshopper</i>	-
	<i>Belenois aurota</i>	Brown-Veined White
	<i>Danaus chrysippus</i>	African Monarch
	<i>Junonia hierta</i>	Yellow Pansy
	<i>Mantodea</i>	-
Reptiles	<i>Gerrhosaurus</i>	Typical Pated Lizard
Arachnids	None	

As the habitat within the project footprint does not provide suitable food resources or shelter to support faunal SCC, the probability of any such species utilising the area is highly unlikely. In this regard, no faunal SCC were identified on site. It is unlikely that faunal SCC will utilise the habitat within the project footprint for breeding, although it may be possible for such species to cross the area.

#### Conclusion

Two habitat units were identified within the project footprint, namely Secondary Marikana Thornveld and Transformed Areas. Due to historic cultivation, floral communities within the project footprint are considered species poor. In this regard, no floral or faunal SCC have been identified within the project footprint. Despite this, it is important to consider what the pre-disturbance natural vegetation would have been and use this information to inform rehabilitation measures post-closure. Various alien species were identified and would need to be managed as part of the proposed project, as well as part of rehabilitation measures post-closure.

#### **7.4.1.6 Surface Water**

##### Introduction

Surface water resources include drainage lines and paths of preferential flow of stormwater runoff. Mine-related activities have the potential to alter the drainage of surface water through the establishment of infrastructure and/or result in the contamination of the surface water resources through seepage and/or spillage of process materials and non-mineralised (general and hazardous) and mineralised wastes. To understand the basis of these potential impacts, a baseline situational analysis is described below.

##### Data Sources

Information in this section was sourced from the EIA and EMPr for the Shaft 16 WRD Expansion (SLR, 2013) and the BAR and EMPr for the Flash Dryer Project (SLR, 2021).

##### Description

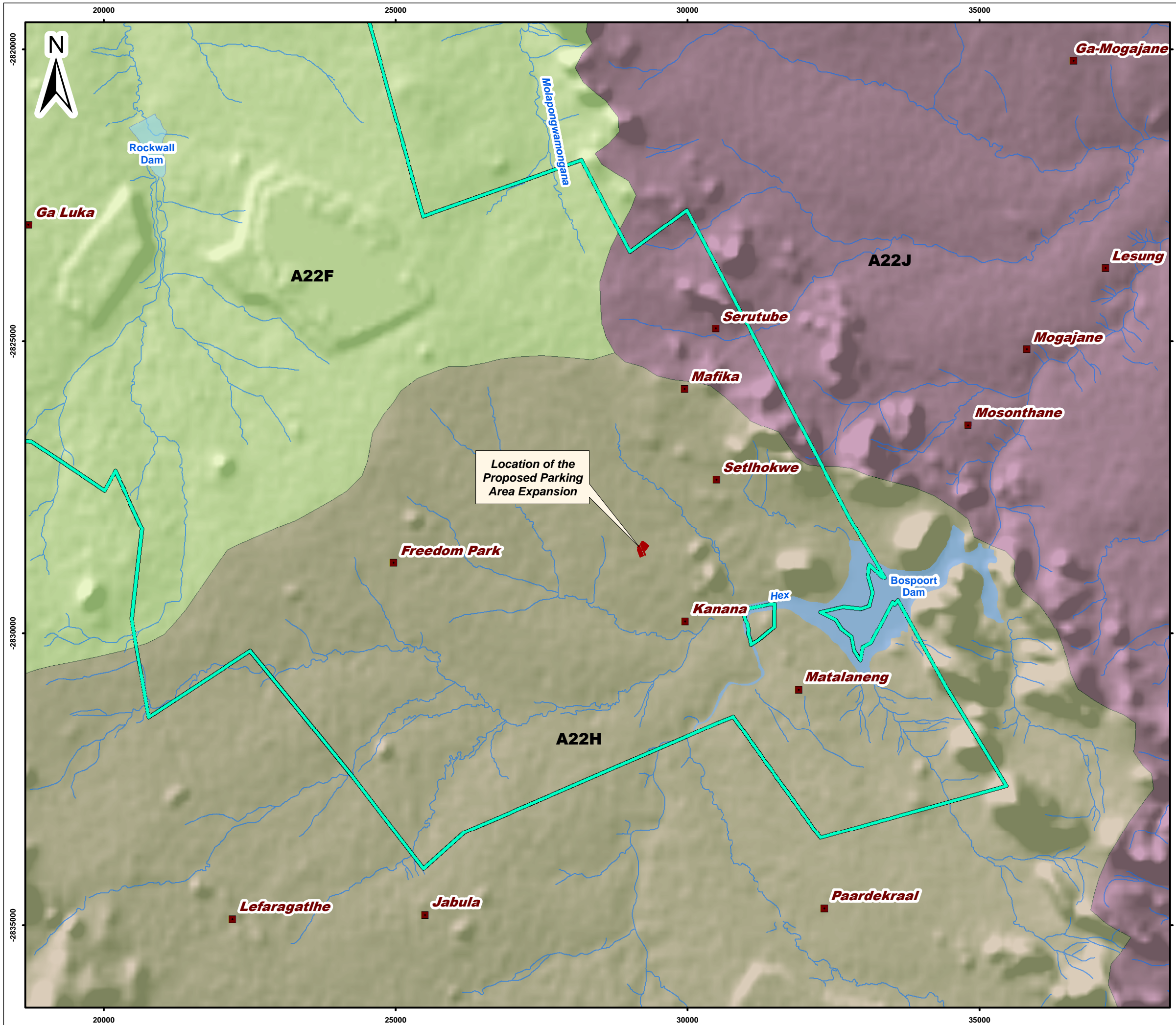
**Catchments:** The Impala MR area is located within Limpopo A Drainage Region and within three quaternary catchments of the Lower Vaal Water Management Area (WMA) (see

Figure 7-7). These catchments are listed below:

- Quaternary catchment A22F, with a catchment area of 1 688 km<sup>2</sup> and a mean annual runoff (MAR) of 16 million m<sup>3</sup>;
- Quaternary catchment A22H, with a catchment area of 579 km<sup>2</sup>; and a MAR of 23.7 million m<sup>3</sup>; and
- Quaternary catchment A22J, with a catchment area of 591 km<sup>2</sup>; and a MAR of 17.1 million m<sup>3</sup>.

The project footprint is located within the afore-mentioned quaternary catchment A22H, also known as the Hex River Catchment. The Hex River Catchment feeds into the Limpopo River.

**Surface Water Resources:** No/limited flow occurs the Impala MR area during the dry season. These streams are therefore considered to be non-perennial in nature. Evidence of flow during the wet season was found in larger streams. These are assumed to flow steadily following larger rainfall events, peaking for short periods. Dams identified within the Impala MR area are the Bospoort (border of MR area) and Rockwall Dams, located approximately 2.5 km south-east and 10.5 km north-west of the project area, respectively (see Figure 7-7). No watercourses have been identified within or in close proximity to the project footprint.



- Legend**
- Towns / Villages
  - Dams
  - Rivers
  - Quaternary Catchments
  - A22F
  - A22H
  - A22J
  - Impala Surface Use Area
  - Proposed Parking Area Expansion

0 1 2 Kilometers  
 Scale: 1:63 000 @ A3  
 Projection: Transverse Mercator  
 Datum: Hartbeeshoek, Lo 27

Impala Platinum Limited

**Figure 7-7**  
**Catchment Areas Identified Within the Project Area**

**SLR**  
 SLR Consulting (Africa) (Pty) Ltd  
 P O Box 1596, Cramerview, 2060, South Africa  
 Tel: +27 (11) 467-0945 Fax: +27 (11) 467-0978

According to the NFEPA 2011 and NBA 2018 databases, there are no wetlands within the project footprint. The NFEPA 2011 database indicates that an unchanneled valley bottom (UCVB) wetland is located approximately 1.4 km downgradient of the project footprint. This UCVB is considered to be in a largely modified ecological condition.

A stormwater culvert is located west of the project footprint. Given the hardened surfaces around the project area, it is expected that water flows through this culvert and collects in parts of the project footprint. Due to the relatively flat topography and the clay-like soils, water is likely to remain trapped here and is only lost through evaporation.

**Surface Water Use:** Many communities within the Impala MR area have access to reticulated water supply; however, it is possible that surface water is still abstracted from watercourses for domestic purposes and livestock watering. Water in the Bospoort Dam is used for domestic, recreation and agricultural purposes, while water at the Rockwall Dam is used for livestock watering.

### Conclusion

Mining infrastructure has the potential to influence contributions of runoff to the catchment and related natural drainage patterns. In addition to this, mining activities and infrastructure present contamination sources that have the potential to pollute surface water resources when water is available in the non-perennial drainage lines. Despite there being no watercourses or wetlands located in the vicinity of the proposed project, there is evidence of a preferential flow path of water as a result of the stormwater culvert located on site. This flow path must be taken into account in the design of the proposed parking area.

### **7.4.1.7 Groundwater**

#### Introduction

Groundwater is a valuable resource and is defined as water which is located beneath the ground surface in soil/rock pore spaces and in the fractures of lithologic formations. Activities such as the handling and storage of hazardous materials and handling and storage of mineralised and non-mineralised wastes have the potential to impact groundwater resources, both to the environment and third-party users, through potential pollution. To understand the basis of these potential impacts, a baseline situational analysis is described below.

#### Data Sources

Information in this section was sourced from the EIA and EMPr for the Shaft 16 WRD Expansion (SLR, 2013) and the BAR and EMPr for the Flash Dryer Project (SLR, 2021).

#### Description

**Aquifer:** Based on the South African Aquifer Classification System, the aquifer underlying the Impala MR area is generally classified as a minor aquifer system. Within this minor aquifer system, the possibility exists that there will be zones that can be classified as major aquifer systems. These zones are likely to be associated with geological features such as the Hex River fault, which is associated with significant volumes of poor-quality water.



**Groundwater Flow:** The infiltration of water from the shallow weathered aquifer system to the deeper fractured bedrock aquifer system is strongly heterogeneous and requires permeable soils, or permeable horizons (i.e., 'infiltration routes'), as well as 'open' and interconnected fracture systems in the bedrock. Within the Impala MR area and immediately above under-mined zones, the shallow weathered aquifer may be drained due to slow vertical leakage to the dewatered, deeper fractured aquifer. However, the shallow aquifer has the potential to be replenished relatively quickly during sustained rainfall periods.

Due to local recharge and discharge, groundwater divides developed beneath the major surface water divides. Evidence of this is provided by a generally strong correlation between groundwater level elevation and topography and the observed groundwater flow directions. It can be assumed that the groundwater table follows the surface topography based on a very good correlation between the measured head and topography. In addition, horizontal groundwater flow is generally in accordance with surface water flow such that the regional groundwater flow is generally north-west and northwards towards the Elands River, as well as south and south-east in the direction of the Bospoort Dam and Hex River.

**Groundwater Levels:** Impala's Groundwater Database indicates that groundwater levels in the shallow weathered aquifer vary between 3.7 and 19.3 mbgl (metres below ground level) with an average depth of 6.8 mbgl. The groundwater level for the deeper fractured aquifer varies between 9.3 and 48.6 mbgl with an average depth of 21.8 mbgl.

**Groundwater Use:** Groundwater quality is influenced by existing mining operations in the broader area. Boreholes within and surrounding the project area are used for groundwater monitoring purposes. As mentioned previously, communities within the Impala MR area generally have access to reticulated water supply. It follows that use of groundwater for domestic purposes is generally limited.

### Conclusion

The proposed project is located on a minor aquifer with an average depth of 6.7 mbgl. Due to the nature of the proposed project, it is not anticipated that groundwater would be affected.

## **7.4.1.8 Air Quality**

### Introduction

Existing sources of emissions in the region and the characterisation of existing ambient pollution concentrations are fundamental to the assessment of cumulative air impacts. A change in ambient air quality can result in a range of impacts which in turn may cause a disturbance and/or health impacts to nearby receptors. To understand the basis of these potential impacts, a baseline situational analysis is described below.

### Data Sources

Information in this section was sourced from the EIA and EMPr for the Shaft 16 WRD Expansion (SLR, 2013) and the BAR and EMPr for the Flash Dryer Project (SLR, 2021).

### Description

**Regional Air Quality:** The contribution of various sources of emission to ambient particulate and gaseous concentrations within the Rustenburg region is of interest given that elevated concentrations have been

recorded in and around the Rustenburg area. The most significant sources located within the Rustenburg region include:

- Stack, vent and fugitive emissions from industrial operations;
- Stack emissions from boiler operations;
- Stack emissions from incineration operations;
- Fugitive emissions from quarrying and mining operations;
- Fugitive dust emissions from tailings impoundments which are associated with Anglo Platinum, Impala, Lonmin, Aquarius, Xstrata-Merafe, International Ferro-metals, Tharisa Minerals and Bafokeng Rasimone Platinum Mine;
- Vehicle tailpipe emissions ;
- Household fuel combustion (coal, wood);
- Biomass burning; and
- Various miscellaneous fugitive dust sources, including agricultural activities, wind erosion of open areas, vehicle-entrainment of dust along paved and unpaved roads.

**Local Air Quality:** The key operations and activities that contribute to the air pollution within the Impala MR area include:

- Point source emissions from listed activities at the smelter operations (stack and fugitive emissions);
- Ventilation emissions from underground mine workings (NO<sub>x</sub>, CO<sub>x</sub> and particulates);
- Open cast operations;
- Dust generated from the tailings dams and spills along the delivery pipelines;
- Diesel generators;
- Vehicle tailpipe emissions;
- Materials handling operations (e.g., crushing, tipping of waste rock and ore, conveying of ore, stockpiles);
- Vehicle activity on paved and unpaved roads (during construction, operation and decommissioning); and
- Wind erosion from exposed working surfaces.

These emissions contribute towards both nuisance value, mainly in the immediate area of the source (large particle deposition) and potential increased health impacts (PM<sub>10</sub> in particular).

**Potential Receptors:** Air Quality Sensitive Receptors (AQSR) generally include places of residences and areas where members of the public may be affected by air pollution. Sensitive receptors within a 10 km radius of the proposed project area include Kanana, Mmatshetshele and Lekoneng residential areas, the R510 road and the Bospoort Dam to the east, Mosonthal-Marubitshi and Lesung residential areas to the north-east, Mafika and Serutuba residential areas to the north, Freedom Park residential area to the west and Chachalaza and Boitekong residential areas and Boitekong Mall to the south.

**Dust Fallout Data:** Dust fallout sampling is being undertaken at Impala for both external (off-site/residential) and internal (on-site) buckets. The network includes monitoring at 36 locations (27 non-residential sites and 9 residential sites) in accordance with ASTM D1739 (1970). Dust fallout rates at the external sampling sites from January 2016 to June 2020 are summarised in Table 7-7. There was one

exceedance of the NDCR limit for residential areas at Platinum Village in November 2018 (it is believed that this sample was contaminated or tampered with). The operations off-site dust fallout rates shown by the sampling complies with the NDCR as there were no exceedances of more than two times per year at a site or for consecutive months at a site.

**Table 7-7: Dust Fallout Rates Summary for External Buckets**

Dustfall Rate (NDCR Limit for Residential Areas = 600 mg/m <sup>2</sup> -day)												
Period	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Boschoek Primary</b>												
2016	ND	ND	ND	37	31	17	27	17	10	99	59	74
2017	49	34	60	23	10	30	19	23	31	53	89	83
2018	98	87	44	47	81	24	27	109	198	67	47	116
2019	90	118	26	51	21	53	64	47	87	65	65	37
2020	58	57	102	29	33	33	-	-	-	-	-	-
<b>Ga-Luka South</b>												
2016	27	31	10	33	18	7	26	24	21	43	54	54
2017	19	13	27	33	32	37	21	31	51	72	39	54
2018	164	122	33	26	34	31	22	41	103	57	39	180
2019	141	89	75	64	37	47	98	97	59	40	144	49
2020	10	44	59	12	46	57	-	-	-	-	-	-
<b>Ga-Luka Primary</b>												
2016	19	129	155	63	90	97	122	42	52	59	102	133
2017	70	64	134	48	67	41	68	66	121	63	181	ND
2018	86	265	105	23	37	173	68	102	86	51	128	129
2019	108	233	203	196	33	150	543	233	185	133	326	170
2020	26	156	163	40	30	30	-	-	-	-	-	-
<b>Ga-Luka North</b>												
2016	173	48	148	47	58	21	30	11	175	75	168	59
2017	27	34	133	43	28	46	33	79	155	65	115	95
2018	65	95	182	64	107	27	71	83	228	ND	ND	184
2019	24	41	51	27	36	14	97	65	181	194	321	250
2020	ND	67	229	22	76	88	-	-	-	-	-	-
<b>Ga-Luka Village Tailings</b>												
2016	381	73	35	ND	ND	ND	ND	ND	ND	ND	ND	ND
2017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2019	ND	ND	ND	33	26	138	97	104	57	87	126	59
2020	58	64	53	58	26	159	-	-	-	-	-	-

Dustfall Rate (NDCR Limit for Residential Areas = 600 mg/m <sup>2</sup> -day)												
Ga-Luka Village Shaft 17												
2016	274	36	92	36	42	19	29	23	79	100	72	58
2017	25	23	58	ND	15	22	23	41	80	113	37	105
2018	84	70	57	16	33	22	14	71	93	85	91	40
2019	189	406	79	25	13	31	82	46	81	96	78	121
2020	65	69	175	5	22	45	-	-	-	-	-	-
Phokeng Village												
2016	ND	ND	ND	56	24	17	33	11	170	90	109	69
2017	51	39	122	18	25	29	22	32	189	122	75	143
2018	73	32	31	17	38	16	14	37	48	30	24	79
2019	57	77	18	22	12	36	18	46	39	25	32	91
2020	19	15	44	17	38	13	-	-	-	-	-	-
Freedom Park												
2016	109	35	43	72	19	18	47	45	38	57	82	99
2017	114	175	57	ND	15	7	36	34	ND	66	41	
2018	36	61	52	38	31	34	557	49	81	87	68	85
2019	18	69	40	26	37	42	62	68	70	114	270	50
2020	46	93	ND	7	10	16	-	-	-	-	-	-
Platinum Village												
2016	106	51	24	42	14	21	28	36	21	50	36	59
2017	17	47	28	9	31	31	18	31	40	37	68	41
2018	99	66	39	16	108	101	87	65	39	37	9186*	65
2019	71	47	38	79	32	38	35	7	72	116	60	119
2020	75	42	76	53	20	15	-	-	-	-	-	-

\* Possible sample contamination/tampering based on hourly sequential data

### Conclusion

The project area is situated within a region with already elevated ambient air pollution. Monitoring results at Impala indicate that dust fallout from the existing mining operations do not exceed the NDCR limits (apart from one exceedance at the Platinum Village which is believed to be a contaminated or tampered sample). The operations off-site dust fallout rates shown by the sampling complies with the NDCR as there were no exceedances of more than two times per year at a site or for consecutive months at a site. Management measures for current mining activities need to be complied with at all times to effectively manage operational contributions to ambient air concentrations and dust fallout.

Due to the nature of the proposed project, it is unlikely to result in any material changes to localised air impacts. Although Kanana, as a third-party receptor is located within close proximity to the project footprint, it must be noted that the emissions to air generated by the parking area expansion will be

negligible, limited primarily to the construction phase and is not expected that impacts will be felt by the community members at Kanana.

#### 7.4.1.9 Noise

##### Introduction

Mining activities and infrastructure have the potential to cause an increase in ambient noise levels in and around the proposed project area. This may cause a disturbance to nearby receptors. Land uses and potential receptor sites including residential areas surrounding the mine have been described in the land use section below. To understand the basis of these impacts, a baseline situational analysis is described below.

##### Data Sources

Information in this section was sourced from the EIA and EMPr for the Shaft 16 WRD Expansion (SLR, 2013).

##### Description

Day-time noise levels range from 43 dBA – 52 dBA, with an average of 48 dBA which does exceed the South African National Standards (SANS) day-time rating of 50 dBA. Night-time noise levels before 22h00 range from 42 dBA – 46 dBA with an average of 44 dBA and therefore does not exceed the SANS day/night-time rating of 50 dBA. Night-time noise levels (after 22h00) fall even lower to a range of between 37 dBA to 40 dBA which is below the SANS night-time threshold of 40dBA.

##### Conclusion

Areas that are located in close proximity to mining activities have elevated ambient noise levels. Given that the project footprint is located adjacent to the Shaft 16 Complex, the noise environment has already been altered and as such, is not expected that the proposed project will result in an increase in noise disturbance.

Due to the nature of the proposed project, it is unlikely to result in any material changes to noise impacts. Although Kanana, as a third-party receptor is located within close proximity to the project footprint, it must be noted that the noise generated by the parking area expansion will be negligible, limited primarily to the construction phase and is not expected that impacts will be felt by the community members at Kanana.

#### 7.4.1.10 Visual

##### Introduction and Link to Impact

Mining infrastructure has the potential to alter the landscape character at the proposed project area and surrounding area through the establishment of both temporary and permanent infrastructure. To understand the basis of these potential impacts, a baseline situational analysis is described below.

##### Data Sources

Information in this section was sourced from the EIA and EMPr for the Shaft 16 WRD Expansion (SLR, 2013), the BAR and EMPr for the Flash Dryer Project (SLR, 2021) and the Landscape/Visual Site Sensitivity Verification Report (SSVR) for the Parking Area Expansion (SLR, 2021).

## Description

**Landscape Character:** The landscape character of the Impala MR area is defined by gentle undulating plains, koppies, communities and mining infrastructure. The project area is characterised as fairly flat in terms of topography, vegetated by low grasses. The project footprint is currently vacant; however, an overhead transmission line traverses the area, and a stormwater culvert is located to the west of the site. The project footprint is located adjacent to Impala's Shaft 16 Complex and has been significantly disturbed as a result of historic cultivation activities.

**Scenic Quality:** The scenic quality is linked to the type of landscapes that occur within an area. Scenic quality ranges from high to low as follows:

- High – these include the mountains and koppies, water bodies such as farm and irrigation dams, and natural drainage systems;
- Moderate – these include agricultural activities and recreational areas; and
- Low – these include towns, communities, roads, railway line, industries and existing mines.

When these landscape types are considered as a whole, the scenic quality in the central, southern and western areas of the Impala MR area can be characterised as moderate to low, due to existing mining and community infrastructure. Resources that are considered to have a high scenic value are isolated koppies to the east and areas that have not been disturbed by any mining or community activities to the east and north. Given the presence of the existing Shaft 16 Complex, the overhead transmission line, various access roads, the stormwater culvert and the Kanana residential area all within the vicinity of the project area, the scenic value at the project footprint can be considered to be low.

**Sense of Place:** The sense of place results from the combined influence of landscape diversity and distinctive features. Given the dominance of the mining and community infrastructure, and the lack of landscape diversity and distinctiveness, the overall sense of place for the central, southern and western areas of the Impala MR area is considered to be low. A moderate value is placed on the plains to the north of the Impala MR Area because while the area is relatively undisturbed, it is a fairly common landscape with limited diversity. A high value is placed on the hills and koppies in the east of Impala MR Area because this landscape contains a complex and coherent special dimension with both diversity and distinctiveness. Given the dominance of the mining, community and civil infrastructure, and the lack of landscape diversity and distinctiveness, the overall sense of place for the project footprint is moderate to low.

**Visual Receptors:** When viewed from the perspective of tourists and community members, mining activities could be associated with a sense of disenchantment. People who benefit from Impala (employees, contractors, service providers etc.) may not experience this disenchantment but rather see the mine with a sense of excitement and anticipation. It follows that the sensitive viewer locations are those situated within the vicinity of undisturbed natural areas or on surrounding transport routes (particularly those that are used to reach tourist destinations). Visual receptor locations and routes that are less sensitive, but that are still visual receptors to the visual intrusion of the proposed project include the Kanana residential area located to the east, and the two access roads bordering the project footprint that are used to gain access to Impala's Shaft 16 Complex.

## Conclusion

When considering landscape character, scenic quality, sense of place and visual receptors the baseline conclusion is that the project footprint is located in an area which has already been disturbed by mining and historic agricultural activities. It follows that the visual value of the project area has already been influenced.

## 7.4.2 Baseline Cultural/Heritage Environment Affected by the Proposed Activity

### 7.4.2.1 Cultural/Heritage and Palaeontology

#### Introduction

Cultural/heritage 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.

Paleontological resources are fossils, the remains or traces of prehistoric life preserved in the geological (rock stratigraphic) record. They range from the well-known and well-publicized (such as dinosaur and mammoth bones) to the more obscure but nevertheless scientifically important fossils (such as palaeobotanical remains, trace fossils, and microfossils). Paleontological resources include the casts or impressions of ancient animals and plants, their trace remains (for example, burrows and trackways), microfossils (for example, fossil pollen, ostracodes, and diatoms), and unmineralised remains (for example, bones of Ice Age mammals).

Mining activities and mining-related infrastructure have the potential to impact heritage/cultural and paleontological resources through the placement of infrastructure and through the related construction and operational activities. To understand the basis of these potential impacts, a baseline situational analysis is described below.

#### Data Sources

Information in this section was sourced from the EIA and EMPr for the Shaft 16 WRD Expansion (SLR, 2013), the BAR and EMPr for the Flash Dryer Project (SLR, 2021), the Phase I HIA for the Parking Area Expansion (Pistorius, J., 2021) and the Request for Exemption Letter for the Parking Area Expansion (University of Witwatersrand, 2021).

#### Description

**Cultural/Heritage:** Impala's MR area is situated in the Central Bankeveld of the North West province. The Bankeveld is a narrow strip of land between the Northern Bushveld Savannah and the centrally situated Highveld. The Bankeveld as a whole has a rich archaeological heritage dating from the prehistoric and historic (or colonial) periods, which form a record of cultural heritage of most groups living in South Africa. Heritage sites identified within the Impala MR Area include stone age sites, late iron age sites and historical settlements, houses, graveyards and other features. Following a field assessment undertaken by Dr. Julius Pistorius on 5 May 2021, cultural/heritage materials of significance were identified within or in close proximity to the project footprint.

**Palaeontology:** The Impala MR area is located on Pyramid Gabbro Norite, an intrusive igneous rock types. These rocks are approximately 2 200 – 2 050 million years old and are enriched with the PGM resources that Impala mines as part of their operations. This underlying geology forms part of the Main Zone of the RLS of the BIC (refer to Section 7.4.1.1). Palaeontological resources are not associated with this underlying geology as they are not capable of preserving fossils.

### Conclusion

The project footprint is situated within the Central Bankeveld region of the North West province. The Bankveld is rich in archaeological resources; however, no cultural/heritage resources of significance have been identified within the project footprint. Furthermore, the project footprint is located on the RLS of the BIC with no palaeontological resources associated with this underlying geology. Notwithstanding the above, the potential exists for resources to be buried beneath the surface of the ground and chance finds during the construction phase would need to be managed accordingly.

## **7.4.3 Baseline Socio-Economic Environment Affected by the Proposed Activity**

### **7.4.3.1 Socio-Economic**

#### Introduction

Mining operations have the potential to result in both positive and negative socio-economic impacts. The positive impacts are usually economic in nature with mines contributing directly towards employment, procurement, skills development and taxes on a national, regional and local scale. In addition, mines indirectly contribute to economic growth in the national, regional and local economies by strengthening the national economy and by increasing the number of income-earning people, this has a multiplying effect on the trade of other goods and services in other sectors.

The negative impacts associated with mining operations can be both social and economic in nature. In this regard, mines can cause:

- An influx of people seeking job opportunities which can lead to increased pressure on basic infrastructure and services (housing, health, sanitation and education), informal settlement development, increased trespassing, increased crime, introduction of diseases and disruption to the existing social structures within communities; and
- A change to not only pre-existing land uses, but also the associated social structure and meaning associated with these land uses and way of life. This is particularly relevant in the closure phase when the economic support provided by mines ends, the natural resources that were available to the pre-mining society are reduced, and the social structure that has been transformed to deal with the threats and opportunities associated with mining finds it difficult to readapt.

To understand the basis of these potential impacts, a baseline situational analysis is described below.

#### Data Sources

Information in this section was sourced from the BAR and EMPr for the Flash Dryer Project (SLR, 2021) and the Community Survey (Statistics South Africa (StatsSA), 2016).



### Description

The socio-economic environment on a provincial, district and municipal level are summarised in Table 7-8.

**Table 7-8: Socio-Economic Environment of the District and Local Municipalities**

Category and Indicator	North West Province	BPDM	RLM
<b>Demographics</b>			
<b>Municipality Size</b>	105 238.1 km <sup>2</sup>	18 489.5 km <sup>2</sup>	3 422.8 km <sup>2</sup>
<b>Population Size</b>	3 748 435	1 657 149	626 522
<b>Population Density</b>	35.6 per km <sup>2</sup>	89.6 per km <sup>2</sup>	183 per km <sup>2</sup>
<b>Age</b>	<ul style="list-style-type: none"> <li>0 - 29 years (57%)</li> <li>30-59 years (34%)</li> <li>60 years and older (9%)</li> </ul>	<ul style="list-style-type: none"> <li>0 - 29 years (55%)</li> <li>30-59 years (37%)</li> <li>60 years and older (8%)</li> </ul>	<ul style="list-style-type: none"> <li>0 - 29 years (54%)</li> <li>30-59 years (40%)</li> <li>60 years and older (6%)</li> </ul>
<b>Gender</b>	<ul style="list-style-type: none"> <li>Female (49%)</li> <li>Male (51%)</li> </ul>	<ul style="list-style-type: none"> <li>Female (47%)</li> <li>Male (53%)</li> </ul>	<ul style="list-style-type: none"> <li>Female (45%)</li> <li>Male (55%)</li> </ul>
<b>Race</b>	<ul style="list-style-type: none"> <li>Black African (92%)</li> <li>White (6%)</li> <li>Coloured (2%)</li> </ul>	<ul style="list-style-type: none"> <li>Black African (94%)</li> <li>White (5%)</li> <li>Coloured (1%)</li> </ul>	<ul style="list-style-type: none"> <li>Black African (93%)</li> <li>White (6%)</li> <li>Coloured (1%)</li> </ul>
<b>Language</b>	<ul style="list-style-type: none"> <li>Setswana (70%)</li> <li>Afrikaans (7%)</li> <li>Sesotho (6%)</li> <li>IsiXhosa (5%)</li> <li>Xitsonga (3%)</li> <li>Others (9%)</li> </ul>	<ul style="list-style-type: none"> <li>Setswana (65%)</li> <li>Xitsonga (6%)</li> <li>IsiXhosa (5%)</li> <li>Afrikaans (5%)</li> <li>Sesotho (4%)</li> <li>Sepedi (4%)</li> <li>Others (11%)</li> </ul>	<ul style="list-style-type: none"> <li>Setswana (64%)</li> <li>IsiXhosa (10%)</li> <li>Afrikaans (6%)</li> <li>Sesotho (5%)</li> <li>Xitsonga (5%)</li> <li>Others (10%)</li> </ul>
<b>Migration</b>	<ul style="list-style-type: none"> <li>South African (97%) <ul style="list-style-type: none"> <li>North West (81%)</li> <li>Gauteng (5%)</li> <li>Limpopo (3%)</li> <li>Free State (2%)</li> <li>Eastern Cape (2%)</li> <li>Others and outside of South Africa (5%)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>South African (94%) <ul style="list-style-type: none"> <li>North West (72%)</li> <li>Gauteng (9%)</li> <li>Limpopo (5%)</li> <li>Eastern Cape (4%)</li> <li>Mpumalanga (2%)</li> <li>Others and outside of South Africa (8%)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>South African (92%) <ul style="list-style-type: none"> <li>North West (73%)</li> <li>Others and outside of South Africa (10%)</li> <li>Eastern Cape (8%)</li> <li>Gauteng (4%)</li> <li>Limpopo (3%)</li> <li>Free State (2%)</li> </ul> </li> </ul>
<b>Households</b>			
<b>Household Number</b>	1 248 765	611 145	262 576
<b>Household Type</b>	<ul style="list-style-type: none"> <li>Formal houses (67%)</li> <li>Shacks (18%)</li> <li>Flats in backyards (8%)</li> <li>Others (5%)</li> <li>Traditional dwellings (2%)</li> </ul>	<ul style="list-style-type: none"> <li>Formal houses (58%)</li> <li>Shacks (27%)</li> <li>Flats in backyards (10%)</li> <li>Others (5%)</li> </ul>	<ul style="list-style-type: none"> <li>Formal houses (51%)</li> <li>Shacks (29%)</li> <li>Flats in backyards (14%)</li> <li>Others (6%)</li> </ul>
<b>Service Delivery</b>			
<b>Water</b>	<ul style="list-style-type: none"> <li>Piped water inside house or yard (63%)</li> <li>Others (18%)</li> <li>Community stand (10%)</li> <li>Communal tap (9%)</li> </ul>	<ul style="list-style-type: none"> <li>Piped water inside house or yard (66%)</li> <li>Others (22%)</li> <li>Community stand (6%)</li> <li>Communal tap (6%)</li> </ul>	<ul style="list-style-type: none"> <li>Piped water inside house or yard (86%)</li> <li>Others (5%)</li> <li>Community stand (5%)</li> <li>Communal tap (4%)</li> </ul>
<b>Electricity</b>	<ul style="list-style-type: none"> <li>Pre-paid or conventional meters (91%)</li> </ul>	<ul style="list-style-type: none"> <li>Pre-paid or conventional meters (90%)</li> </ul>	<ul style="list-style-type: none"> <li>Pre-paid or conventional meters (85%)</li> </ul>

Category and Indicator	North West Province	BPDM	RLM
	<ul style="list-style-type: none"> <li>No access (7%)</li> <li>Unmetered (unpaid) (2%)</li> </ul>	<ul style="list-style-type: none"> <li>No access (8%)</li> <li>Unmetered (unpaid) (2%)</li> </ul>	<ul style="list-style-type: none"> <li>No access (11%)</li> <li>Unmetered (unpaid) (3%)</li> <li>Other (1%)</li> </ul>
<b>Toilets</b>	<ul style="list-style-type: none"> <li>Flush toilet (47%)</li> <li>Pit toilet (47%)</li> <li>Other (3%)</li> <li>No access (3%)</li> </ul>	<ul style="list-style-type: none"> <li>Flush toilet (38%)</li> <li>Pit toilet (56%)</li> <li>Other (4%)</li> <li>No access (2%)</li> </ul>	<ul style="list-style-type: none"> <li>Flush toilet (60%)</li> <li>Pit toilet (36%)</li> <li>Other (1%)</li> <li>No access (2%)</li> </ul>
<b>Refuse</b>	<ul style="list-style-type: none"> <li>Regular service provider (55%)</li> <li>Own dump (34%)</li> <li>Other (5%)</li> <li>Irregular service provider (3%)</li> <li>None (3%)</li> </ul>	<ul style="list-style-type: none"> <li>Regular service provider (59%)</li> <li>Own dump (27%)</li> <li>Other (6%)</li> <li>Irregular service provider (5%)</li> <li>None (3%)</li> </ul>	<ul style="list-style-type: none"> <li>Regular service provider (73%)</li> <li>Own dump (12%)</li> <li>Other (6%)</li> <li>Irregular service provider (5%)</li> <li>None (4%)</li> </ul>
<b>Economics</b>			
<b>Employment</b>	<ul style="list-style-type: none"> <li>Employed (37%)</li> <li>Other not economically active (40%)</li> <li>Unemployed (17%)</li> <li>Discouraged work seeker (6%)</li> </ul>	<ul style="list-style-type: none"> <li>Employed (42%)</li> <li>Other not economically active (35%)</li> <li>Unemployed (19%)</li> <li>Discouraged work seeker (4%)</li> </ul>	<ul style="list-style-type: none"> <li>Employed (49%)</li> <li>Other not economically active (30%)</li> <li>Unemployed (18%)</li> <li>Discouraged work seeker (3%)</li> </ul>
<b>Sector of employment</b>	<ul style="list-style-type: none"> <li>Formal (68%)</li> <li>Informal (15%)</li> <li>Private household (15%)</li> <li>Unsure (2%)</li> </ul>	<ul style="list-style-type: none"> <li>Formal (71%)</li> <li>Informal (14%)</li> <li>Private household (13%)</li> <li>Unsure (2%)</li> </ul>	<ul style="list-style-type: none"> <li>Formal (75%)</li> <li>Private household (12%)</li> <li>Informal (11%)</li> <li>Unsure (2%)</li> </ul>
<b>Annual Income</b>	<ul style="list-style-type: none"> <li>Average – R30 000 <ul style="list-style-type: none"> <li>R0 – R20 000 (38%)</li> <li>R20 0001 – R150 000 (48%)</li> <li>R150 001 – R600 000 (8%)</li> <li>R600 001 and above (1%)</li> <li>Unspecified (4%)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Average – R30 000 <ul style="list-style-type: none"> <li>R0 – R20 000 (34%)</li> <li>R20 0001 – R150 000 (55%)</li> <li>R150 001 – R600 000 (8%)</li> <li>R600 001 and above (1%)</li> <li>Unspecified (2%)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Average – R57 500 <ul style="list-style-type: none"> <li>R0 – R20 000 (25%)</li> <li>R20 0001 – R150 000 (58%)</li> <li>R150 001 – R600 000 (11%)</li> <li>R600 001 and above (1%)</li> <li>Unspecified (5%)</li> </ul> </li> </ul>
<b>Education</b>			
<b>Education Level</b>	<ul style="list-style-type: none"> <li>None (9%)</li> <li>Primary (or some) (18%)</li> <li>Matric (or some secondary) (66%)</li> <li>Tertiary (5%)</li> <li>Unspecified (2%)</li> </ul>	<ul style="list-style-type: none"> <li>None (6%)</li> <li>Primary (or some) (16%)</li> <li>Matric (or some secondary) (71%)</li> <li>Tertiary (4%)</li> <li>Unspecified (3%)</li> </ul>	<ul style="list-style-type: none"> <li>None (5%)</li> <li>Primary (or some) (15%)</li> <li>Matric (or some secondary) (72%)</li> <li>Tertiary (5%)</li> <li>Unspecified (3%)</li> </ul>

## Conclusion

The socio-economic environment descriptions for the province and district and local municipalities indicate that in the communities surrounding Impala’s operations, there are significant social and economic challenges. The existing situation indicates that there is a measure of unemployment, informal settlement development, with limited inward migration of people with the resultant pressure on basic infrastructure and services (education, sanitation, water etc.). Whilst the proposed project may contribute (cumulatively) to the social and economic challenges described above, due to the nature, scale and limited extent of the proposed project, it is expected that the associated negative socio-economic impact will be negligible. The proposed expansion of the parking area will contribute and allow for the creation of short-term employment and procurement opportunities. However, similarly to the afore-mentioned negative impacts, this positive impact will be negligible due to the limited nature, scale and extent of the proposed project.

### 7.4.3.2 Land Use

#### Introduction

Mining activities have the potential to affect land uses both within the mine area and in the surrounding areas. This can be caused by physical land transformation and through direct or secondary impacts. The key related potential environmental impacts are pollution of water, air pollution, noise pollution, visual impacts and the influx of job seekers with related social ills. To understand the basis of the potential land use impacts, a baseline situational analysis is described below.

#### Data Sources

Information in this section was sourced from the EIA and EMPr for the Shaft 16 WRD Expansion (SLR, 2013), the BAR and EMPr for the Flash Dryer Project (SLR, 2021), site observations, Windeed searches and a review of topographical maps and satellite imagery.

#### Description

**Mining and Prospecting Rights:** The extent of Impala’s current mining and prospecting rights are listed in Appendix E. Property details on which the proposed project is located are provided in Table 7-9.

**Table 7-9: Impala’s Mining Rights within Project Area**

Property Description	Portion number	Mining/Prospecting Rights
Reinkoyalskraal 278 JQ	Whole farm	MR held by Impala – reference NW30/5/1/2/2/131MR

**Land Ownership:** Impala’s MR area is an area of land that Impala may utilise for mining activities. Impala does not own any land within this area. The MR area is made up of surface lease agreement with the RBA/RBN. Land ownership details on which the proposed project is located are provided in Table 7-10.

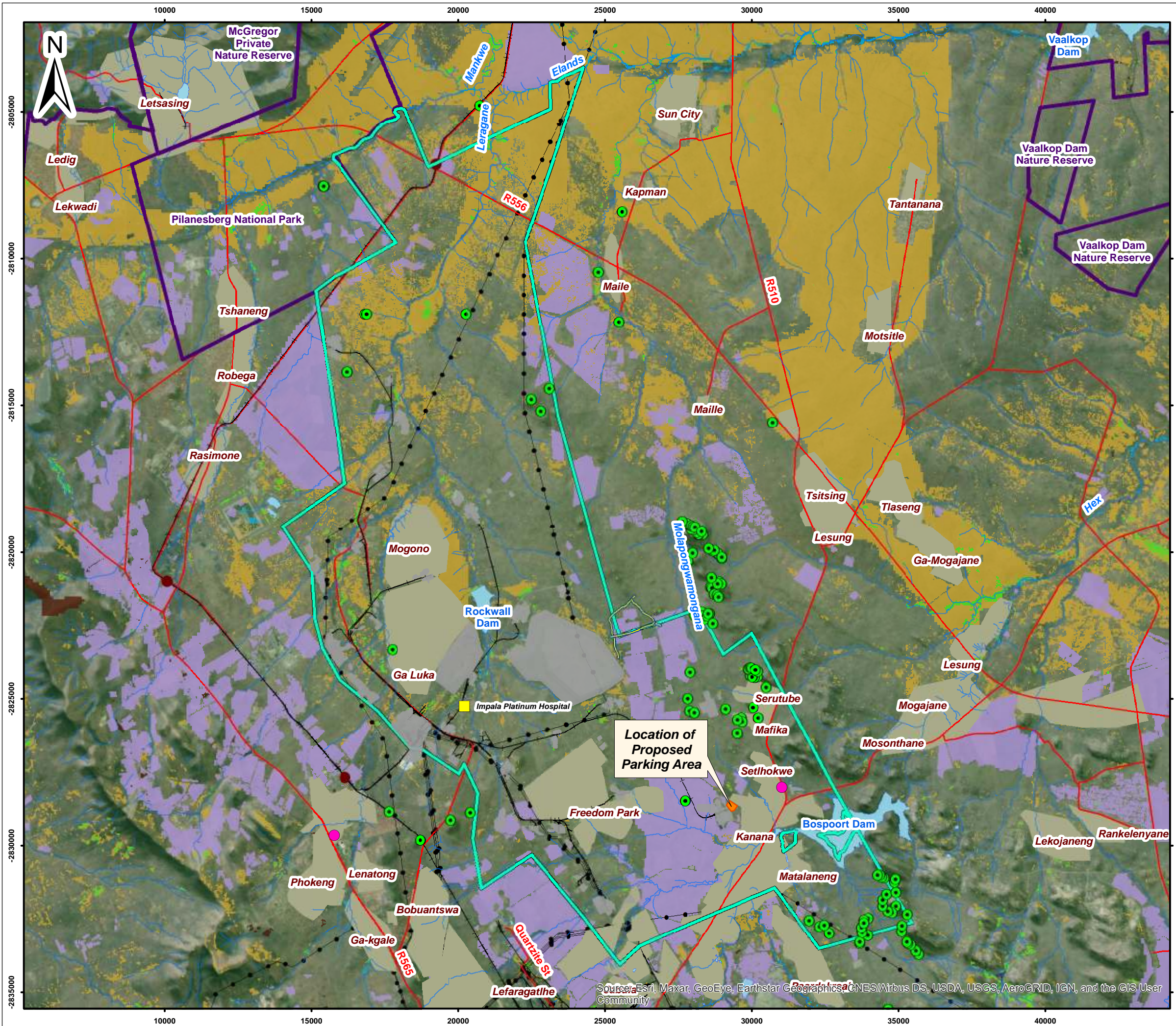
**Table 7-10: Land Ownership within Project Area**

Property Name	Portion Number	Title Deed Reference	Registered Property Owner
Reinkoyalskraal 278 JQ	3	T373/1992BP	Bafokeng Tribe

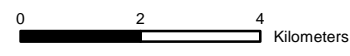
**Land Claims:** The DRDLR Land Claims Commissioner of the North West was contacted to confirm if any land claims were lodged on the proposed project area (portion 3 of the farm Reinkoyalskraal 278 JQ) (see Appendix C). The Land Claims Commissioner confirmed that no land claims have been lodged.

**Land Use:** Land use within the Impala MR Area is a mixture of agriculture, residential, mining activities and wilderness. Regional and local land use maps are provided in Figure 7-8 and Figure 7-9, respectively. The land on which the project footprint is located is currently vacant but was used historically for cultivation. More detail is provided below.

- **Agriculture:** Agricultural activities currently undertaken within Impala’s MR area include firewood harvesting, crop harvesting (this includes dry land sunflowers and maize) and grazing for livestock. Any crop cultivation is mainly on a subsistence basis and is limited to areas that have not been occupied by mining-related infrastructure and surrounding communities. Farmers in the area rely on rain to water their crops and experience losses when summer rains are late or insufficient. As mentioned previously, historic cultivation activities are associated with the proposed project area; however, no farming activities have been undertaken here for at least 15 years.
- **Residential:** Numerous communities are located within the Impala MR area. Kanana is the closest community to the project footprint, which lies approximately 100 m eastwards. Residential areas located within a 10 km radius of the project area are listed as follows:
  - Freedom Park, approximately 4.5 km west;
  - Mafika, approximately 2.5 km north;
  - Serutube, approximately 4 km north;
  - Lesung, approximately 9 km north-east;
  - Mosonthal-Marubitshi. Approximately 6.5 km north-east;
  - Mmatshetshela, approximately 6 km east;
  - Lekojaneng, approximately 10km east;
  - Boitekong, approximately 8.5 km south; and
  - Chachalaza, approximately 3 km south.



- Legend**
- Impala Surface Use Area
  - Roads
  - Power Line
  - Railway Line
  - Rivers
  - Dams
  - Residential Areas
  - Mining Related Interests or Operations
  - Protected Areas / Nature Reserves
  - Wetlands
  - Plantations
  - Improved Veld
  - Degraded
  - Cultivated
  - Places of Worship
  - Heritage Resources
  - Impala Platinum Hospital
  - Historically Man Made Furrows



Scale: 1:250 000 @ A3

Projection: Transverse Mercator  
Datum: Hartbeeshoek, Lo 23

Impala Platinum Limited

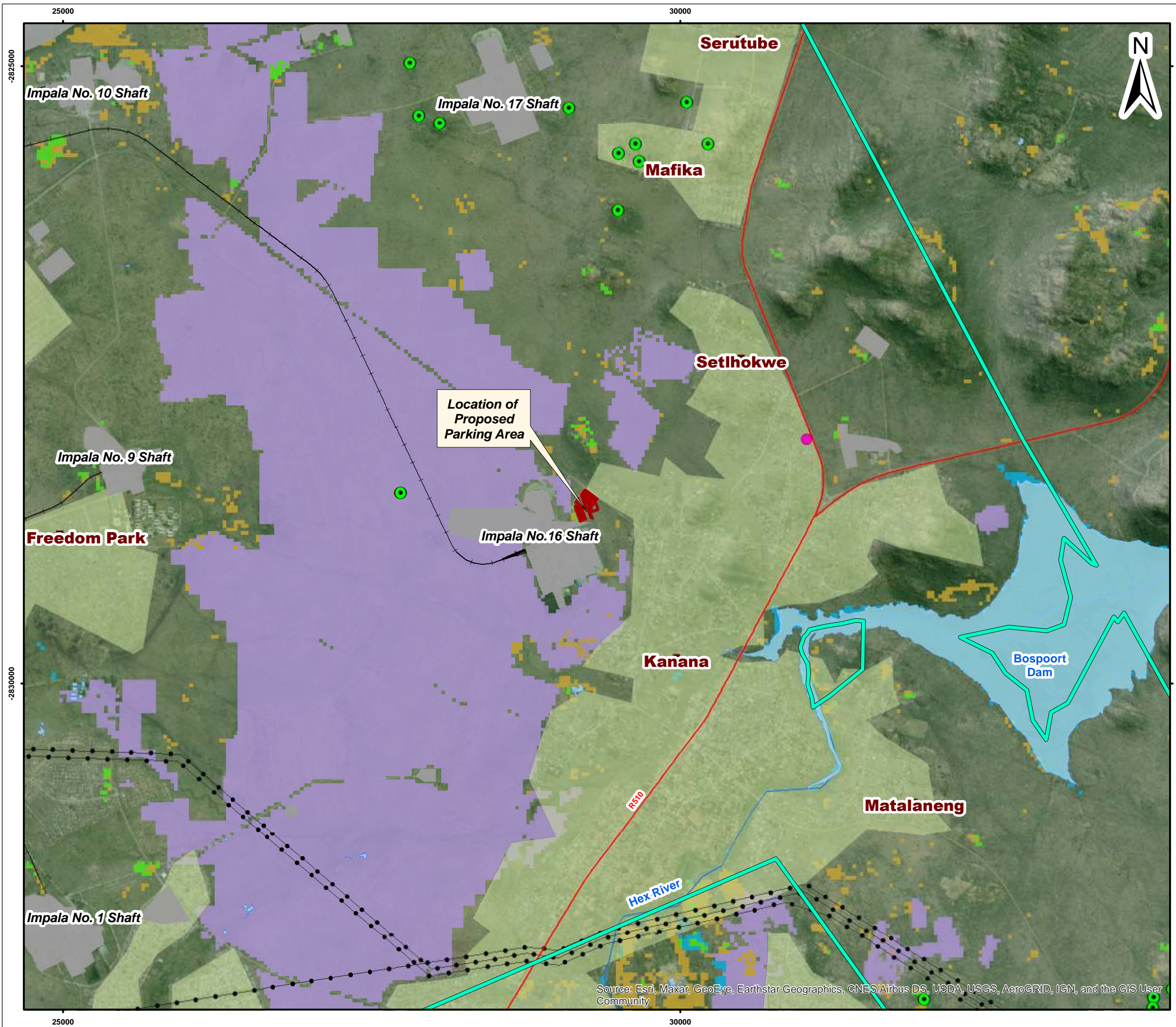
**Figure 7-8**

**Regional Land Use**

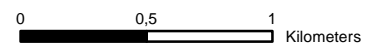


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Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



- Legend**
- Towns / Villages
  - Main Roads
  - Power Line
  - +— Railway Line
  - Rivers
  - Dams
  - Residential Areas
  - Mining Related Interests of Operations
  - Wetlands
  - Improved Veld
  - Degraded
  - Cultivated
  - Heritage Resources
  - Places of Worship
  - Impala Surface Use Area
  - Proposed Parking Area Expansion



Scale: 1:30 000 @ A3

Projection: Transverse Mercator  
Datum: Hartebeeshoek, Lo 27

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**Figure 7-9**

**Local Land Use**



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Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- **Infrastructure and Servitudes:** Impala has an extensive network of railway lines, water pipelines and power and telephone lines. Railway lines located within the MR area form part of Impala's internal railway network. This network is extensive and comprises over 100 km of rail which is utilised for the transportation of mining product. There are numerous pipelines within the MR area that transport compressed air, clean water, sewage, treated sewage effluent, process water, and slurry (amongst other substances). These pipelines are either located above ground or underground and are maintained by Impala except for the Rand Water pipeline feeding the main Rand Water reservoir at the UG2 Concentrator. Power lines located within the MR area comprise internal Impala power lines, municipal power lines and regional Eskom power lines. In addition to this there are numerous telephone lines within the MR area that are maintained by Telkom. The underground Magalies water pipeline is located in close proximity to the project footprint. An overhead powerline traverses the project footprint and stormwater culvert is located to the west of the site. a pedestrian walkway, recently built by Impala, is also located south of the site. The location of these infrastructural components has influenced the design and configuration of the proposed parking area.
- **Mining Operations and Other Industries:** There are a number of individual operators that are located within and outside of Impala's MR area that operate on the basis of their own agreements with the RBA/RBN and therefore do not fall under the responsibility of Impala even though they may be located in the MR area. These include Sasol Nitro, Xstrata Merafe and Omnia. None of these are located within a 10 km radius of the project footprint.

### Conclusion

Whilst the project footprint is located within close proximity to Kanana, it is not anticipated that community will be affected by the proposed project. This is due largely to the nature and limited scale and extent of the proposed project. Various infrastructural components (powerline, pipeline and stormwater culvert) are located in close proximity or within the project footprint. The proposed project will need to be managed in such a way so as not to interfere with the infrastructure. The design and configuration of the proposed parking area has already taken the location of this infrastructure into account.

### **7.4.3.3 Traffic**

#### Introduction

Traffic from mining projects has the potential to affect the capacity of existing road networks, as well as result in public road safety issues. To understand the basis of these potential impacts in the context of the project activities, a baseline situational analysis is described below.

#### Data Sources

Information in this section was sourced from the BAR and EMPr for the Flash Dryer Project (SLR, 2021) and from site observations.

#### Description

Existing road intersections within the vicinity of the proposed project include the following:

- Two main access roads used to enter the Shaft 16 Complex;
- Detour, Mapogo and Thekwane roads; and
- The R510 road.



Access to Impala's Shaft 16 Complex is via the afore-mentioned two main access roads that run through the community of Kanana. Employees coming to the Shaft 16 Complex with their own vehicles are provided with parking bays within the Complex but are also forced to park along the access road due to the limited number of bays available.

### Conclusion

A key potential traffic-related impact is public safety. The proposed project will require the movement of heavy vehicles and an increase in the traffic in the project area during the construction phase. Due to the nature and limited scale and extent of the proposed project, the impact to the nearby community of Kanana is expected to be limited. These impacts would; however, still need to be managed accordingly. In contrast, the expansion of the parking area is expected to increase public safety through the provision of safe, secure parking bays. It will limit the need to park vehicles along the access road which is considered to be unsafe.

#### **7.4.3.4 Description of Specific Environmental Features and Infrastructure on the Site**

The environmental features associated with the project area are described in Section 7.4.1 above. No notable environmental features are associated with the project footprint. In contrast, noteworthy infrastructure within or in close proximity to the proposed project include the underground Magalies water pipeline, the overhead powerline and the stormwater culvert (refer to Section 7.4.3.2).

#### **7.4.3.5 Environmental and Current Land Use Map**

Regional and local land use maps are provided in Figure 7-8 and Figure 7-9, respectively.

### **7.5 ENVIRONMENTAL IMPACTS AND RISKS OF THE ALTERNATIVES**

This section requires a list of potential impacts on environmental and socio-economic aspects that have been identified in respect of each of the main project activities and processes for each of the project phases in terms of the project alternatives. With reference to chapter 6, no project alternatives have been considered and as such this section is not applicable.

### **7.6 METHODOLOGY USED IN DETERMINING THE SIGNIFICANCE OF ENVIRONMENTAL IMPACTS**

The method used for the assessment of environmental issues is set out in Table 7-11. Part A provides the definition for determining impact consequence (combining intensity, 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.

The 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 7-11: SLR's Impact Assessment Methodology**

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

INTENSITY = L							
DURATION	Very long	VH	Medium	Medium	Medium	High	High
	Long term	H	Low	Medium	Medium	Medium	High
	Medium term	M	Low	Low	Medium	Medium	Medium
	Short term	L	Low	Low	Low	Medium	Medium
	Very short	VL	Very low	Low	Low	Low	Medium
INTENSITY = M							
DURATION	Very long	VH	Medium	High	High	High	Very High
	Long term	H	Medium	Medium	Medium	High	High
	Medium term	M	Medium	Medium	Medium	High	High
	Short term	L	Low	Medium	Medium	Medium	High
	Very short	VL	Low	Low	Low	Medium	Medium
INTENSITY = H							
DURATION	Very long	VH	High	High	High	Very High	Very High
	Long term	H	Medium	High	High	High	Very High
	Medium term	M	Medium	Medium	High	High	High
	Short term	L	Medium	Medium	Medium	High	High
	Very short	VL	Low	Medium	Medium	Medium	High
INTENSITY = VH							
DURATION	Very long	VH	High	High	Very High	Very High	Very High
	Long term	H	High	High	High	Very High	Very High
	Medium term	M	Medium	High	High	High	Very High
	Short term	L	Medium	Medium	High	High	High
	Very short	VL	Low	Medium	Medium	High	High
			VL	L	M	H	VH
			A part of the site/property	Whole site	Beyond the site, affecting neighbours	Extending far beyond site but localised	Regional/ National
EXTENT							
PART C: DETERMINING SIGNIFICANCE							
PROBABILITY (of exposure to impacts)	Definite/ Continuous	VH	Very Low	Low	Medium	High	Very High
	Probable	H	Very Low	Low	Medium	High	Very High
	Possible/ frequent	M	Very Low	Very Low	Low	Medium	High
	Conceivable	L	Insignificant	Very Low	Low	Medium	High
	Unlikely/ improbable	VL	Insignificant	Insignificant	Very Low	Low	Medium
			VL	L	M	H	VH
CONSEQUENCE							
PART D: INTERPRETATION OF SIGNIFICANCE							
Significance	Decision guideline						
Very High	Potential fatal flaw unless mitigated to lower significance.						
High	It must have an influence on the decision. Substantial mitigation will be required.						
Medium	It should have an influence on the decision. Mitigation will be required.						
Low	Unlikely that it will have a real influence on the decision. Limited mitigation is likely required.						
Very Low	It will not have an influence on the decision. Does not require any mitigation						
Negligible	Inconsequential, not requiring any consideration.						

## 7.7 POSITIVE AND NEGATIVE IMPACTS OF THE PROPOSED ACTIVITY AND ALTERNATIVES

As noted in chapter 6, no site alternatives were considered as the project footprint was determined due to the need to be in close proximity to the Shaft 16 Complex, as well as being near the main access road.

## 7.8 POSSIBLE MANAGEMENT ACTIONS THAT COULD BE APPLIED AND THE LEVEL OF RISK

A summary of the issues and concerns raised by I&APs during the BA process to date is provided in Section 7.3. A list of the potential impacts identified raised by I&APs, as well as the possible management and mitigation measures, is provided in Table 7-12. An estimation of the level of residual risk after management or mitigation is provided.

**Table 7-12: Possible Management Actions and the Anticipated Level of Risk**

Issue and Concern Raised	Possible Management Actions or Alternatives to Address Issue	Impact Significance of the Possible Management Action Before and After Mitigation	
		Without Mitigation	With Mitigation
What pollution impacts, other than air quality, have been identified as part of the proposed project? I.e., how will stormwater be managed at the parking area?	<p>Management actions to be implemented during all proposed project phases to address impacts related to stormwater include:</p> <ul style="list-style-type: none"> <li>• Design the proposed parking area to allow for stormwater/surface water run-off to be channelled to the existing stormwater canal adjacent to the parking area;</li> <li>• Implement the use of high-quality diesel to reduce vehicle exhaust emissions;</li> <li>• Undertake routine inspection and maintenance programmes for all plant and equipment;</li> <li>• Continue the implementation of Impala’s air quality monitoring programme;</li> <li>• Continue the implementation of approved management actions pertaining to the containment of dirty water in accordance with Regulation 704 (June 1999);</li> <li>• Continue to implement approved waste management procedures;</li> <li>• Continue the implementation of monitoring measures of surface water resources. Where monitoring results indicate that third-party water supply has been polluted by Impala, ensure the provision of alternative equivalent water supply; and</li> <li>• Implement monitoring and record keeping.</li> </ul>	<b>Insignificant</b>	<b>INSIGNIFICANT</b>
Procurement opportunities should be extended to Lefaragathla and not be limited to Kanana	<ul style="list-style-type: none"> <li>• During all project phases, Impala will continue to implement existing Impala management actions pertaining to the procurement of local people (where possible) and procurement of local good.</li> </ul>	<b>Insignificant</b>	<b>INSIGNIFICANT</b>
The new parking area will also result in an increase in crime in the area. Can Impala increase the security around the project?	<ul style="list-style-type: none"> <li>• Impala will undertake a risk assessment to address the safety of pedestrians using the access road and security concerns associated with the proposed project;</li> <li>• Access control will be implemented at the project site.</li> </ul>	<b>Low</b>	<b>VERY LOW</b>

## 7.9 MOTIVATION WHERE NO ALTERNATIVE SITES WERE CONSIDERED

As noted in chapter 6, no site alternatives were considered as the project footprint was determined due to the need to be in close proximity to the Shaft 16 Complex, as well as being near the main access road.

## 7.10 STATEMENT MOTIVATING THE PREFERRED ALTERNATIVE

Due to the nature and limited extent of the proposed project, no technology alternatives were considered. The project site adjacent to the Shaft 16 Complex, is currently vacant and has not been earmarked for non-mining-related development. The proposed expansion of the parking area is thus considered an ancillary activity associated with the current mining operations at the Shaft 16 Complex. In this regard, as part of on-going mine planning, the need for additional parking bays was identified, to accommodate the increasing number of employees coming to the Shaft 16 Complex with their own vehicles and will improve health, safety and security for the employees.

## 8. FULL DESCRIPTION OF THE PROCESS UNDERTAKEN TO IDENTIFY, ASSESS AND RANK THE IMPACTS AND RISKS THE ACTIVITY WILL IMPOSE ON THE PREFERRED SITE THROUGH THE LIFE OF THE ACTIVITY

This chapter provides a description of the process that was followed in order to identify the potential biophysical, cultural and socio-economic impacts that are assessed as part of the proposed project.

### 8.1 DESCRIPTION OF THE PROCESS UNDERTAKEN TO IDENTIFY IMPACTS

Biophysical, cultural/heritage and socio-economic impacts associated with the proposed project were identified through site visits undertaken by SLR, as well as specialists and the associated specialist studies.

As part of the PPP, I&APs (refer to section 7.2) are being provided with opportunities to provide input into the BA process and comment on the proposed project, including the identification of biophysical, cultural/heritage and socio-economic impacts.

### 8.2 DESCRIPTION OF THE PROCESS UNDERTAKEN TO ASSESS AND RANK THE IMPACTS AND RISKS

A description of SLR’s assessment methodology used to assess the severity of identified 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, is provided in section 7.6.

### 8.3 A DESCRIPTION OF THE ENVIRONMENTAL IMPACTS AND RISKS IDENTIFIED DURING THE ENVIRONMENTAL ASSESSMENT PROCESS

Descriptions of the biophysical, cultural/heritage and socio-economic impacts in respect of each of the main project activities and phases are provided in Table 8-1. The detailed assessment of these impacts is provided in Appendix D. Impacts that have been deemed insignificant, but only due to the implementation of mitigation, are also included. Impacts that are deemed insignificant without mitigation are included for completeness and will not be associated with any activities or project phase.

**Table 8-1: List of Potential Impacts in respect of each Project Activity and Phase**

Potential Impact	Activity	Phase
Loss and sterilisation of mineral resources	N/A	N/A
Altering topography	<ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> <li>• Rehabilitation</li> <li>• Maintenance and aftercare</li> </ul>	<ul style="list-style-type: none"> <li>• Construction</li> <li>• Decommissioning</li> <li>• Closure</li> </ul>
Hazardous excavations and infrastructure resulting in safety risks to third parties and animals	<ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> </ul>	<ul style="list-style-type: none"> <li>• Construction</li> </ul>

Potential Impact	Activity	Phase
Loss of soil resources and land capability through physical disturbance and contamination	<ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> <li>• Transport systems</li> <li>• General site management</li> <li>• Demolition</li> <li>• Rehabilitation</li> <li>• Maintenance and aftercare</li> </ul>	<ul style="list-style-type: none"> <li>• Construction</li> <li>• Operation</li> <li>• Decommissioning</li> <li>• Closure</li> </ul>
Physical destruction and disturbance of floral species	<ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> <li>• Transport systems</li> <li>• General site maintenance</li> <li>• Demolition</li> <li>• Rehabilitation</li> <li>• Maintenance and aftercare</li> </ul>	<ul style="list-style-type: none"> <li>• Construction</li> <li>• Decommissioning</li> <li>• Closure</li> </ul>
Physical destruction and disturbance of faunal species	<ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> <li>• Transport systems</li> <li>• General site maintenance</li> <li>• Demolition</li> <li>• Rehabilitation</li> <li>• Maintenance and aftercare</li> </ul>	<ul style="list-style-type: none"> <li>• Construction</li> <li>• Decommissioning</li> <li>• Closure</li> </ul>
Alteration of natural drainage patterns	N/A	N/A
Contamination of surface water resources	<ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> <li>• Transport systems</li> <li>• General site maintenance</li> <li>• Demolition</li> <li>• Rehabilitation</li> <li>• Maintenance and aftercare</li> </ul>	<ul style="list-style-type: none"> <li>• Construction</li> <li>• Operation</li> <li>• Decommissioning</li> <li>• Closure</li> </ul>
Contamination of groundwater resources	<ul style="list-style-type: none"> <li>• Site preparation</li> </ul>	<ul style="list-style-type: none"> <li>• Construction</li> </ul>



Potential Impact	Activity	Phase
	<ul style="list-style-type: none"> <li>• Civil works</li> <li>• Earthworks</li> <li>• Transport systems</li> <li>• General site maintenance</li> <li>• Demolition</li> <li>• Rehabilitation</li> <li>• Maintenance and aftercare</li> </ul>	<ul style="list-style-type: none"> <li>• Operation</li> <li>• Decommissioning</li> <li>• Closure</li> </ul>
Air pollution	<ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> <li>• Transport systems</li> <li>• General site maintenance</li> <li>• Demolition</li> <li>• Rehabilitation</li> <li>• Maintenance and aftercare</li> </ul>	<ul style="list-style-type: none"> <li>• Construction</li> <li>• Operation</li> <li>• Decommissioning</li> <li>• Closure</li> </ul>
Increase in disturbing noise levels	N/A	N/A
Negative visual views	N/A	N/A
Road disturbance and traffic safety	N/A	N/A
Loss of cultural/heritage and palaeontological resources	<ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> </ul>	<ul style="list-style-type: none"> <li>• Construction</li> </ul>
Inward migration and economic impact	N/A	N/A
Change in land use	N/A	N/A

#### 8.4 ASSESSMENT OF THE SIGNIFICANCE OF EACH IMPACT AND RISK AND AN INDICATION OF THE EXTENT OF WHICH THE ISSUE AND RISK CAN BE AVOIDED OR ADDRESSED BY THE ADOPTION OF MANAGEMENT ACTION

The assessment of the significance of potential biophysical, cultural/heritage and socio-economic impacts, including the extent to which impacts can be avoided or mitigated, is included in chapter 9 and Appendix D.

## 9. ASSESSMENT OF EACH IDENTIFIED POTENTIALLY SIGNIFICANT IMPACT AND RISK

This chapter provides a summary of the assessment results of the identified potentially significant biophysical, cultural/heritage and socio-economic impacts identified for the proposed project.

A summary of the assessment of the identified potentially significant biophysical, cultural/heritage and socio-economic impacts associated with the proposed project is provided in Table 9-1. A full description of the assessment is included in Appendix D.

**Table 9-1: Assessment of Significant Impacts and Risks**

Activity	Potential impact	Aspects affected	Phase	Significance (Unmitigated)	Management actions type	Significance (Mitigated)	Extent to which the impact can be reversed, avoided or cause irreplaceable loss and the degree to which the impact and risk can be mitigated
N/A	Loss and sterilisation of mineral resources	Geology	N/A	<b>INSIGNIFICANT</b>			
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>	Altering topography	Topography	<ul style="list-style-type: none"> <li>Construction</li> <li>Decommissioning</li> <li>Closure</li> </ul>	<b>Insignificant</b>	<ul style="list-style-type: none"> <li>Minimise the area of disturbance by designing and constructing the most compact infrastructure practically possible;</li> <li>Rehabilitate in accordance with the approved mine closure plan that ensure a suitable post-closure land use is achieved.</li> </ul>	<b>INSIGNIFICANT</b>	
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> </ul>	Hazardous excavations and infrastructure resulting in safety risks to third parties and animals		<ul style="list-style-type: none"> <li>Construction</li> </ul>	<b>Medium</b>	<ul style="list-style-type: none"> <li>The project area will be fenced off to prevent inadvertent access by third parties and animals;</li> <li>Access control will be implemented to ensure access is only granted to those who have authorisation;</li> <li>Barriers will be erected around all hazardous excavations;</li> <li>Warning signage will be erected at all hazardous excavations; and</li> <li>Where the proposed project has caused injury to third parties or animals, appropriate compensations will be provided.</li> </ul>	<b>VERY LOW</b>	<ul style="list-style-type: none"> <li>Highly likely to be mitigated.</li> <li>Highly unlikely to be reversed in the case of injury or death.</li> <li>Highly likely to be avoided with mitigation.</li> <li>Highly likely to cause irreplaceable loss in the case of injury or death.</li> </ul>
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>	Loss of soil resources and land capability through physical disturbance and contamination	Soil and Land Capability	<ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul>	<b>Insignificant</b>	<ul style="list-style-type: none"> <li>Minimise the area of disturbance by designing and constructing the most compact infrastructure practically possible;</li> <li>Implement the soil conservation procedure as set out in Table 26-3;</li> <li>Rehabilitate in accordance with the approved mine closure plan that ensures a suitable post-closure land use is achieved;</li> <li>Establish short term perennial vegetation that will stabilise the site but allow the indigenous vegetation to establish over the site;</li> <li>Use existing established roads;</li> <li>Conduct potentially polluting activities (i.e., loading, hauling, tipping, transportation, handling and storage) in a manner that pollutants are contained at source and do not pollute soils. In this regard:                             <ul style="list-style-type: none"> <li>Service all vehicles and mobile equipment regularly in workshops, service bays and wash bays with contained impermeable, floors, dirty water collection facilities and oil traps;</li> <li>Design and operate all new and used chemical, fuel and oil storage and handling facilities in a manner that all spillages are contained in impermeable areas and cannot be released into the environment;</li> <li>Report ad hoc spills of potentially polluting substances (whether in dirty areas or in the environment) to the environmental manager immediately and clean up and/or remediate immediately;</li> <li>Implement and maintain a dirty water management system;</li> <li>Implement the waste management practices, as set out in Table 26-2;</li> <li>Educate and train all employees (temporary and permanent) and contractors in pollution prevention; and</li> </ul> </li> </ul>	<b>INSIGNIFICANT</b>	

Activity	Potential impact	Aspects affected	Phase	Significance (Unmitigated)	Management actions type	Significance (Mitigated)	Extent to which the impact can be reversed, avoided or cause irreplaceable loss and the degree to which the impact and risk can be mitigated
					<ul style="list-style-type: none"> <li>○ Implement formalised action plans to enable fast and efficient reaction to contain and remediate pollution incidents.</li> <li>● Take into account the requirements for long term soil pollution prevention, land function and confirmatory monitoring in the design of any permanent and potentially polluting structures; and</li> <li>● Implement the emergency response procedure in Table 29-1 in the event any major spillage incident.</li> </ul>		
<ul style="list-style-type: none"> <li>● Site preparation</li> <li>● Civil works</li> <li>● Earthworks</li> <li>● Transport systems</li> <li>● General site management</li> <li>● Demolition</li> <li>● Rehabilitation</li> <li>● Maintenance and aftercare</li> </ul>	Physical destruction and disturbance of floral species	Biodiversity	<ul style="list-style-type: none"> <li>● Construction</li> <li>● Operation</li> <li>● Decommissioning</li> <li>● Closure</li> </ul>	<b>Low</b>	<ul style="list-style-type: none"> <li>● A biodiversity specialist shall do a walkdown of the project footprint prior to land clearing activities to identify protected floral species and floral SCC that may have been lying dormant during initial field observations;</li> <li>● Minimise the area of disturbance by designing and constructing the most compact infrastructure practically possible;</li> <li>● Ensure the removal of indigenous vegetation is restricted to what is absolutely necessary. Where possible, utilise remaining natural areas as part of landscaping of the parking area;</li> <li>● Rehabilitate in accordance with the approved mine closure plan that ensures a suitable post-closure land use is achieved;</li> <li>● Establish short term perennial vegetation that will stabilise the site but allow the indigenous vegetation to establish over the site;</li> <li>● Use existing established roads. Additional road construction is to be limited to what is absolutely necessary and the footprint thereof kept to a minimum;</li> <li>● Ensure vegetation clearing is undertaken in phases, so as to limit the potential for erosion;</li> <li>● No collection of floral species and floral SCC is allowed;</li> <li>● Where formal gardens are envisioned, indigenous vegetation or ornamental alien species not listed within the NEM: BA Alien Species List (2020) must be used)</li> <li>● While no protected plant or tree species were identified on site, if any species are encountered on site, the necessary permits need to be obtained from the DEDECT and/or DFFE prior to removal;</li> <li>● Limit edge effects to the surrounding environment by: <ul style="list-style-type: none"> <li>○ Demarcating all footprint areas during construction;</li> <li>○ Preventing construction rubble or cleared alien vegetation and invasive species to be disposed outside of demarcated areas;</li> <li>○ Ensuring that construction rubble and cleared alien and invasive species are taken to a registered waste disposal facility; and</li> <li>○ Managing the spread of alien and invasive species.</li> </ul> </li> <li>● Provide appropriate sanitary facilities and ensure the disposal thereof at a registered licenced facility;</li> <li>● Ensure no temporary dump sites are created on site;</li> <li>● No fires are allowed on site;</li> <li>● Compile an alien invasive species management or control plan for implementation with the following recommendations: <ul style="list-style-type: none"> <li>○ Removal alien invasive species throughout the construction, operation and maintenance phases;</li> <li>○ Ensure alien vegetation is removed prior to the removal of indigenous vegetation;</li> <li>○ Ensure only trained personnel are involved in the chemical control of alien invasive species;</li> <li>○ Edge effects arising from the proposed project which may affect adjacent areas must be strictly managed;</li> <li>○ Ongoing alien invasive species monitoring must be undertaken throughout all phases; and</li> <li>○ Removed alien invasive species must not be placed on unprotected ground as seeds may disperse upon it. All cleared alien invasive species must be disposed of at a licenced waste facility.</li> </ul> </li> </ul>	<b>VERY LOW</b>	<ul style="list-style-type: none"> <li>● Very highly likely to be mitigated.</li> <li>● Medium likeliness to be reversed.</li> <li>● Medium likeliness to be avoided with mitigation.</li> <li>● Unlikely to cause irreplaceable loss.</li> </ul>
<ul style="list-style-type: none"> <li>● Site preparation</li> <li>● Civil works</li> <li>● Earthworks</li> </ul>	Physical destruction and disturbance of faunal species	Biodiversity	<ul style="list-style-type: none"> <li>● Construction</li> <li>● Operation</li> <li>● Decommissioning</li> <li>● Closure</li> </ul>	<b>Low</b>	<ul style="list-style-type: none"> <li>● A biodiversity specialist shall do a walkdown of the project footprint prior to land clearing activities to identify faunal species on site and to assist with the relocation thereof;</li> <li>● Ensure vegetation clearing is undertaken in phases, so as to allow for faunal species to vacate the area safely;</li> <li>● No collection, trapping and harming of faunal species and faunal SCC is allowed;</li> </ul>	<b>VERY LOW</b>	<ul style="list-style-type: none"> <li>● Very highly likely to be mitigated.</li> <li>● Medium likeliness to be reversed.</li> <li>● Medium likeliness to be avoided with mitigation.</li> </ul>

Activity	Potential impact	Aspects affected	Phase	Significance (Unmitigated)	Management actions type	Significance (Mitigated)	Extent to which the impact can be reversed, avoided or cause irreplaceable loss and the degree to which the impact and risk can be mitigated
<ul style="list-style-type: none"> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>					<ul style="list-style-type: none"> <li>Construction personnel are to undergo environmental awareness training pertaining to the potential faunal species located on site;</li> <li>While no protected faunal species were identified on site, if any species are encountered on site, the necessary permits need to be obtained from DFFE prior to removal; and</li> <li>Smaller species that are not readily able to move out of an area ahead of vegetation and ground clearing activities (such as scorpions and reptiles), will be less mobile during rainfall events and cold days. As such, care must be taken to look for these species prior to these activities and should these species be encountered, they are to be carefully and safely moved to an area of similar habitat outside of the project footprint. A suitably trained specialist shall be instructed to carry out the removal of venomous snake species.</li> </ul>		<ul style="list-style-type: none"> <li>Unlikely to cause irreplaceable loss.</li> </ul>
N/A	Alteration of natural drainage patterns	Surface water resources	N/A	<b>INSIGNIFICANT</b>			
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>	Contamination of surface water resources		<ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul>	<b>Insignificant</b>	<ul style="list-style-type: none"> <li>Implement approved management actions pertaining to the containment of dirty water in accordance with Regulation 704 (June 1999);</li> <li>Prevent contamination through appropriate and effective channelling of stormwater into existing stormwater canal;</li> <li>Any sheet runoff from compacted areas must be slowed down by the strategic placement of berms;</li> <li>Ensure the inclusion of structure developed by means of soft engineering approaches such as swales, to spread, and attenuate flow and to trap sediment within the design of the parking area in order to ensure flow pattern and timing within the area are not impacted;</li> <li>Implement the emergency response procedure in Table 29-1 in the event any major spillage incident;</li> <li>Monitor surface water resources in accordance with Impala's approved surface water monitoring programme. Where monitoring results indicate that third party water supply has been polluted by Impala, ensure that an alternative equivalent water supply is provided; and</li> <li>Conduct potentially polluting activities (i.e., loading, hauling, tipping, transportation, handling and storage) in a manner that pollutants are contained at source and do not allow to be washed away through runoff. In this regard: <ul style="list-style-type: none"> <li>Service all vehicles and mobile equipment regularly in workshops, service bays and wash bays with contained impermeable, floors, dirty water collection facilities and oil traps;</li> <li>Design and operate all new and used chemical, fuel and oil storage and handling facilities in a manner that all spillages are contained in impermeable areas and cannot be released into the environment;</li> <li>Report ad hoc spills of potentially polluting substances (whether in dirty areas or in the environment) to the environmental manager immediately and clean up and/or remediate immediately;</li> <li>Implement and maintain a dirty water management system;</li> <li>Implement the waste management practices, as set out in Table 26-2;</li> <li>Educate and train all employees (temporary and permanent) and contractors in pollution prevention; and</li> </ul> </li> <li>Implement formalised action plans to enable fast and efficient reaction to contain and remediate pollution incidents.</li> </ul>	<b>INSIGNIFICANT</b>	
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> </ul>	Contamination of groundwater resources	Groundwater resources	<ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul>	<b>Insignificant</b>	<ul style="list-style-type: none"> <li>Refer to section above.</li> </ul>	<b>INSIGNIFICANT</b>	

Activity	Potential impact	Aspects affected	Phase	Significance (Unmitigated)	Management actions type	Significance (Mitigated)	Extent to which the impact can be reversed, avoided or cause irreplaceable loss and the degree to which the impact and risk can be mitigated
<ul style="list-style-type: none"> <li>Maintenance and aftercare</li> </ul>							
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>	Air pollution	Air Quality	<ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul>	<b>Insignificant</b>	<ul style="list-style-type: none"> <li>Continue the implementation of Impala's air quality monitoring programme;</li> <li>Reduce vehicle exhaust emissions through the use of better-quality diesel;</li> <li>Implement inspection and maintenance programmes; and</li> <li>Ensure vegetation clearing is undertaken in phases, so as to limit the potential for dust generation.</li> </ul>	<b>INSIGNIFICANT</b>	
N/A	Increase in disturbing noise levels	Noise	N/A	<b>INSIGNIFICANT</b>			
N/A	Negative visual views	Visual	N/A	<b>INSIGNIFICANT</b>			
NA	Road disturbance and traffic safety	Traffic	N/A	<b>INSIGNIFICANT</b>			
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> </ul>	Loss of cultural/heritage and paleontological resources	Cultural/heritage and paleontological resources	<ul style="list-style-type: none"> <li>Construction</li> </ul>	<b>Insignificant</b>	<ul style="list-style-type: none"> <li>Implement the chance find procedure (see Table 10-1) in the event of the discovery of cultural/heritage and/or palaeontological resources on site.</li> </ul>	<b>INSIGNIFICANT</b>	
N/A	Inward migration and economic impact	Socio-economic	N/A	<b>INSIGNIFICANT</b>			
N/A	Change in land use		N/A	<b>INSIGNIFICANT</b>			

## 10. SUMMARY OF SPECIALIST REPORTING FINDINGS

The aim of this chapter is to list the various specialist studies undertaken for the proposed project, including the main findings of their reports, which are used to inform the compilation of this BAR.

The relevant specialist studies that were undertaken as part of the proposed project including the recommendations made by the specialists are provided in Table 10-1. All relevant specialist reports have been attached as Appendix F.

**Table 10-1: A List of Specialist Studies and Recommendations**

Specialist Study	Recommendation of Specialist	Specialist Recommendations that have been included in the BAR (Mark with X)	Reference to Applicable Section in this Report
Biodiversity Study	<ul style="list-style-type: none"> <li>• Minimise loss of indigenous vegetation where possible through planning and where necessary by incorporating the sensitivity of the biodiversity report, as well as any other specialist studies;</li> <li>• The construction footprint must be kept as small as possible to minimise impact on the surrounding environment (edge effect management);</li> <li>• Removal of vegetation must be restricted to what is absolutely necessary and should remain within the approved development footprint. Where possible/ feasible, any remaining natural areas should be utilised as part of the landscaping of the proposed development;</li> <li>• Clearing of vegetation should take place in a phased manner. This will allow for faunal species within the study area to flee and avoid harm;</li> <li>• Smaller species that are not as readily able to move out of an area ahead of ground clearing activities such as scorpions and reptiles will be less mobile during rainfall events and cold days (winter). As such should any be observed in the construction site during clearing and construction activities, they are to be carefully and safely moved to an area of similar habitat outside of the disturbance footprint. Construction personnel are to be educated about these species and instructed not to kill them. Smaller scorpion species and harmless reptiles (that may occur within the study area) should be carefully relocated by a suitably nominated construction person to the surrounding natural veld. For larger venomous snakes, a suitably trained specialist, or on-site personnel, should be contacted to carry out the relocation of the species, should it not move off on its own;</li> <li>• Vehicles should be restricted to travelling only on designated roadways to limit the ecological footprint of the construction activities. Additional road construction should be limited to what is absolutely necessary, and the footprint thereof kept to a minimal;</li> <li>• Where formal landscaped gardens are envisioned, use should be made of indigenous species or ornamental alien species that are not listed within the NEM:BA Alien Species List (2020);</li> <li>• No collection of floral SCC must be allowed by construction personnel;</li> <li>• No hunting or trapping of faunal species is to be allowed by construction personnel;</li> <li>• Informal fires by construction personnel should be prohibited, and no uncontrolled fires whatsoever should be allowed;</li> <li>• Care should be taken during the construction and operation of the proposed development to limit edge effects to surrounding natural habitat. This can be achieved by: <ul style="list-style-type: none"> <li>○ Demarcating all footprint areas during construction activities;</li> <li>○ No construction rubble or cleared AIPs are to be disposed of outside of demarcated areas, and should be taken to a registered waste disposal facility;</li> <li>○ All soils compacted as a result of construction activities should be ripped and profiled and reseeded;</li> <li>○ Manage the spread of alien invasive species, which may affect remaining natural habitat within surrounding areas;</li> </ul> </li> <li>• Appropriate sanitary facilities must be provided during the construction of the development and must be removed to an appropriate waste disposal site;</li> <li>• No dumping of litter, rubble or cleared vegetation on site should be allowed. Infrastructure and rubble removed because of the construction activities should be disposed of at an appropriate registered dump site away from the development footprint. No temporary dump sites should be allowed in areas with natural vegetation. It is advised that waste disposal containers and bins be provided during the construction phase for all construction rubble and general waste. Vegetation cuttings must be carefully collected and disposed of at a separate waste facility;</li> <li>• If any spills occur, they should be immediately cleaned up to avoid soil contamination that can hinder floral rehabilitation later down the line. Spill kits should be kept on-site within workshops. In the event of a breakdown, maintenance of vehicles must take place with care, and the recollection of spillage should be practised, preventing the ingress of hydrocarbons into the topsoil;</li> <li>• Upon completion of construction activities, it must be ensured that no bare areas remain, and that indigenous species be used to revegetate the disturbed area;</li> <li>• Edge effects arising from the proposed development, such as erosion and alien plant species proliferation, which may affect adjacent natural areas, need to be strictly managed. Specific mention in this regard is made of Category 1b alien and invasive species (as listed in the NEM: BA Alien species lists, 2020), in line with the NEM:BA Alien and Invasive Species Regulations (2020); and</li> <li>• Prior to the commencement of construction activities, an alien invasive species management/control plan should be compiled for implementation. If the mine has an existing alien invasive species management plan, it is recommended that the parking area be incorporated into such a plan: <ul style="list-style-type: none"> <li>○ Removal of alien invasive species should preferably commence during the pre-construction phase and continue throughout the construction and operational phases. alien invasive species should be cleared within the study area before any vegetation clearing activities commence, thereby ensuring that no alien invasive species propagules are spread, or soils contaminated with alien invasive species seeds during the construction phase;</li> </ul> </li> </ul>	X	Chapter 9 and Table 9-1

Specialist Study	Recommendation of Specialist	Specialist Recommendations that have been included in the BAR (Mark with X)	Reference to Applicable Section in this Report
	<ul style="list-style-type: none"> <li>○ No uncertified chemical control of alien invasive species to take place. Only trained personnel to handle chemical clearing of alien invasive species. Ongoing alien and invasive species monitoring and clearing/control should take place throughout the construction and operational phase of the development, and a 30 m buffer surrounding the study area should be regularly checked for alien and invasive species proliferation and to prevent spread into surrounding natural areas; and</li> <li>○ Alien vegetation that is removed must not be allowed to lay on unprotected ground as seeds might disperse upon it. All cleared plant material to be disposed of at a licensed waste facility which complies with legal standards.</li> </ul>		
Plant, Animal and Avifauna Compliance Statement	<ul style="list-style-type: none"> <li>● It is recommended that a site walkdown be undertaken after the area has received adequate rain and prior to the clearing of vegetation to determine the presence of provincially protected species that may require permit applications (these are not RDL species), i.e., the TNCO provides a list of Specially Protected Species (Schedule 12) (Section 86 (1) (b) of the TNCO) and Protected Species (Schedule 11) (Section 86 (1) (a) of the TNCO) for the North West Province. Permits from the Department of Rural, Environment and Agricultural Development (DREAD) would need to be obtained to remove, cut, or destroy the above-mentioned protected species before any vegetation clearing may take place;</li> <li>● Edge effects arising from the proposed parking expansion, such as soil compaction, erosion and alien plant species proliferation, which may affect adjacent natural areas, need to be strictly managed. Specific mention in this regard is made of listed invasive species as per the National NEM: BA Alien species lists, 2020, in line with the NEM: BA Alien and Invasive Species Regulations (2020). Ongoing alien and invasive plant monitoring and clearing/control should take place throughout the construction of the parking expansion, and a buffer surrounding the study area (e.g., 30 m) should be regularly checked for alien and invasive species proliferation and to prevent spread into surrounding natural areas during the operational and maintenance phases;</li> <li>● Alien vegetation that is removed must not be allowed to lay on unprotected ground as seeds might disperse upon it. All cleared plant material to be disposed of at a licenced waste facility which complies with legal standards;</li> <li>● If any spills occurs, they should be immediately cleaned up to avoid soil contamination that can hinder floral rehabilitation later down the line. Spill kits should be kept on site within workshops. In the event of a breakdown, maintenance of vehicles must take place with care, and the recollection of spillage should be practiced, preventing the ingress of hydrocarbons into the topsoil;</li> <li>● No dumping of litter, rubble or cleared vegetation on site should be allowed;</li> <li>● Infrastructure and rubble removed as a result of the construction activities should be disposed of at an appropriate registered dump site away from the development footprint;</li> <li>● No temporary dump sites should be allowed in areas with natural vegetation;</li> <li>● Waste disposal contained and bins should be provided during the construction phase for all construction rubble and general waste;</li> <li>● All soils compacted or exposed as a result of construction activities should be ripped and profiled and reseeded; All footprint areas should remain as small as possible and the boundaries of footprint areas, must be clearly defined and it should be ensured that all activities remain within defined footprint areas; Planning of temporary roads and access routes should be restricted to existing roads;</li> <li>● It must be ensured that an adequate number of waste and "spill" bins are provided will also prevent litter and ensure the proper disposal of waste and spills;</li> <li>● All vehicles must be regularly inspected for leaks. Re-fuelling must take place on a sealed surface area to prevent ingress of hydrocarbons into the topsoil; and</li> <li>● Any sheet runoff from compacted areas should be slowed down by the strategic placement of berms.</li> </ul>	X	Chapter 9 and Table 9-1
Aquatic Biodiversity Compliance Statement	<ul style="list-style-type: none"> <li>● Ensure the inclusion of structures developed by means of soft engineering approaches such as swales, to spread, and attenuate flow and to rap sediment within the design of the parking area in order to ensure flow pattern and timing within the area are not impacted post development of the parking area;</li> <li>● The development footprint area should remain as small as possible and the boundaries of footprint area, must be clearly defined and it should be ensured that all activities remain within defined footprint area;</li> <li>● Existing roads must be utilised by construction vehicles during the construction phase of the project;</li> <li>● All waste management should take place according to be best practice guidelines and principles;</li> <li>● All vehicles must be regularly inspected for leaks. Re-fuelling must take place on a sealed surface area to prevent ingress of hydrocarbons into the topsoil; and</li> <li>● Any sheet runoff from compacted areas should be slowed down by the strategic placement of berms.</li> </ul>	X	Chapter 9 and Table 9-1
Cultural/Heritage Study	<ul style="list-style-type: none"> <li>● In the event of the uncovering of a heritage resource, implement the following chance find procedure: <ul style="list-style-type: none"> <li>○ The person or group (identifier) who identified or exposed the heritage resource or graves must cease all activity in the immediate vicinity of the site;</li> <li>○ The identifier must immediately inform the senior on-site manager of the discovery;</li> <li>○ The senior on-site manager must make an initial assessment of the extent of the find and confirm that further work has stopped and ensure that the site is secured, and that controlled access is implemented;</li> <li>○ The senior on-site manager will inform the Environmental Officer (EO) and Health and Safety (HS) officers of the chance-find and its immediate impact on the project. The EO will then contact the project archaeologist;</li> <li>○ The project archaeologist will do a site inspection and confirm the significance of the discovery, recommend appropriate mitigation measures and notify the relevant authorities; and</li> </ul> </li> </ul>	X	Chapter 9 and Table 9-1

Specialist Study	Recommendation of Specialist	Specialist Recommendations that have been included in the BAR (Mark with X)	Reference to Applicable Section in this Report
	<ul style="list-style-type: none"> <li>○ Based on the comments received from the authorities the project archaeologist will provide the mine with a Terms of References Report and associated costs if mitigation measures must be implemented.</li> <li>● In the event of the uncovering of grave, implement the following chance find procedure:               <ul style="list-style-type: none"> <li>○ The project archaeologist must confirm the presence of graveyards and graves and follow the following procedures;</li> <li>○ Inform the local South African Police Service (SAPS) and traditional authority.</li> <li>○ The project archaeologist in conjunction with the SAPS and traditional authority will inspect the possible graves and make an informed decision whether the remains are of forensic, recent, cultural-historical or of archaeological significance;</li> <li>○ Should it be concluded that the find is of heritage significance and therefore protected in terms of heritage legislation the project archaeologist will notify the relevant authorities; and</li> <li>○ The project archaeologist will provide advice with mitigation measures for the graveyards and graves.</li> </ul> </li> </ul>		
Paleontological Exemption Letter	None	N/A	N/A



## 11. ENVIRONMENTAL IMPACT STATEMENT

The aim of this chapter is to provide a summary of the potential biophysical, cultural/heritage and socio-economic impacts identified as part of the proposed project, as well as their significance.

### 11.1 SUMMARY OF KEY FINDINGS

This section provides a summary of the findings of identified as part of the proposed project and assessed potential impacts on the receiving environment in both the unmitigated and mitigated scenarios, including cumulative impacts. A summary of the potential impacts (as per chapter 9), associated with the preferred alternative (as per chapter 6), in the unmitigated and mitigated scenarios for all project phases is included in Table 11-1.

The assessment of the proposed project presents the potential for negative impacts to occur (in the unmitigated scenario in particular) on the biophysical and socio-economic environments both on the project footprint and in the surrounding area. With the implementation of management actions, these potential impacts can be prevented or reduced to acceptable levels.

It follows that provided the EMP is effectively implemented, there is no biophysical, cultural/heritage or socio-economic reason why the proposed project should not proceed.

**Table 11-1: Summary of Potential Impacts**

Aspect	Potential impact	Cumulative impact significance of the impact (the ratings are negative unless otherwise specified)	
		Unmitigated	Mitigated
Geology	Loss and sterilisation of mineral resources	<b>INSIGNIFICANT</b>	
Topography	Altering topography	<b>INSIGNIFICANT</b>	
	Hazardous excavations and infrastructure resulting in safety risks to third parties and animals	<b>Medium</b>	<b>VERY LOW</b>
Soil and land capability	Loss of soil resources and land capability through physical disturbance and contamination	<b>INSIGNIFICANT</b>	
Biodiversity	Physical destruction and disturbance of floral species	<b>Low</b>	<b>VERY LOW</b>
	Physical destruction and disturbance of faunal species	<b>Low</b>	<b>VERY LOW</b>
Surface water resources	Alteration of natural drainage patterns	<b>INSIGNIFICANT</b>	
	Contamination of surface water resources	<b>INSIGNIFICANT</b>	
Groundwater	Contamination of groundwater resources	<b>INSIGNIFICANT</b>	
Air quality	Air pollution	<b>INSIGNIFICANT</b>	
Noise	Increase in disturbing noise levels	<b>INSIGNIFICANT</b>	
Visual	Negative visual views	<b>INSIGNIFICANT</b>	
Traffic	Road disturbance and traffic safety	<b>INSIGNIFICANT</b>	
Cultural/heritage and palaeontological resources	Loss of cultural/heritage and palaeontological resources	<b>INSIGNIFICANT</b>	
Socio-economic	Inward migration and economic impact	<b>INSIGNIFICANT</b>	
	Change in land use	<b>INSIGNIFICANT</b>	

## 11.2 FINAL SITE MAP

The final preferred alternative site layout map is included in Figure 3-2.

## 11.3 SUMMARY OF THE POSITIVE AND NEGATIVE IMPACTS AND RISKS OF THE PROPOSED ACTIVITY AND IDENTIFIED ALTERNATIVES

The positive and negative impacts and risks of the proposed activity are summarised above in section 11.1.

As noted in chapter 6, the locality of the proposed parking area has been determined due to the need to be in close proximity to the Shaft 16 Complex, as well as being near the main access road. It follows that no site alternatives were considered due to this fixed position.

## 12. IMPACT MANAGEMENT OBJECTIVES AND OUTCOMES FOR INCLUSION IN THE EMPR

Based on the outcome of the impact assessment (refer to chapter 9 and see Appendix D), and where applicable the recommendations from specialists (refer to chapter 10), the proposed management objectives and outcomes are provided in this chapter.

### 12.1 PROPOSED MANAGEMENT OBJECTIVES AND OUTCOMES FOR ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS

Specific environmental objectives and outcomes to control, remedy or prevent potential impacts from the proposed project are provided in Table 12-1.

**Table 12-1: Environmental Objectives and Outcomes**

Aspect	Environmental Objective	Environmental Outcome
<b>Topography</b>	The objective is to minimise changes to natural topography.	The outcome is to limit the alteration of topography during the proposed project and through rehabilitation.
	The objective is to prevent physical harm to third parties and animals resulting from potentially hazardous excavations and infrastructure.	The outcome is to ensure no third parties or animals are harmed during the proposed project.
<b>Soils and Land Capability</b>	The objective is to minimise the loss of soil resources and related land capability from physical disturbance, erosion, compaction and soil pollution.	The outcome is to handle, manage and conserve soil resources to be used as part of rehabilitation and re-establishment of the pre-mining land capability.
<b>Biodiversity</b>	The objective is to prevent the unacceptable loss and disturbance to floral species, and to prevent the proliferation of alien invasive species within and surrounding the project area.	The outcome is to prevent the spread of alien species in the project area, as well to limit disturbance as far as practically possible.
	The objective is to prevent the unacceptable destruction and disturbance to faunal species.	The outcome is to ensure that no faunal species are harmed or disturbed in the project area.
<b>Surface Water Resources</b>	The objective is to prevent pollution of surface water resources.	The outcome is to ensure that surface water quality remains within acceptable limits for both domestic and agricultural purposes.
<b>Groundwater Resources</b>	The objective is to prevent pollution of groundwater resources.	The outcome is to ensure that groundwater quality remains within acceptable limits for both domestic and agricultural purposes.
<b>Air Quality</b>	The objective is to prevent air pollution health impacts.	The outcome is to ensure that any pollutants emitted as a result of the proposed project remains within acceptable limits so as to prevent health related impacts.

Aspect	Environmental Objective	Environmental Outcome
<b>Cultural/Heritage and Palaeontology</b>	The objective is to minimise the disturbance of cultural/heritage and paleontological resources.	The outcome is to protect heritage resources where possible. If disturbance is unavoidable, then mitigate impact in consultation with a specialist and the SAHRA and in line with regulatory requirements.

### 12.1.1 Impacts That Require Monitoring Programme

Outcomes of the environmental objectives listed in the section above are the implementation of monitoring programmes. Impacts that require monitoring include:

- Hazardous excavations and infrastructure resulting in safety risks to third parties and animals;
- Physical destruction and disturbance of biodiversity; and
- Air quality.

Environmental impacts requiring monitoring are discussed further in chapter 28.

### 12.1.2 Activities and Infrastructure

The source activities of potential impacts which require management include:

- Site preparation;
- Earthworks;
- Civil works;
- Transport systems;
- General site management;
- Demolition;
- Rehabilitation; and
- Maintenance and aftercare.

The phases of development associated with the above-mentioned source activities are provided in Table 3-3.

### 12.1.3 Management Actions

Management actions which will be implemented to control the proposed project activities or processes which have the potential to pollute or result in environmental degradation are provided in chapter 9 and Table 9-1.

### 12.1.4 Roles and Responsibilities

The key personnel to ensure compliance to this BAR and EMP are the operations executive and the Environmental Department Manager and officers. As a minimum, their roles, as they relate to the implementation of monitoring programmes and management activities, include:

- Ensuring that monitoring programmes and audits are scoped to be fit for purpose and included in the annual mine budget;

- Identifying and appointing appropriately qualified specialists/engineers to undertake the monitoring programmes;
- Appointing specialists in a timeous manner to ensure work can be carried out to acceptable standards;
- Liaising with the relevant company, municipal and community structures in terms of the commitments in the Social and Labour Plan (SLP);
- Ensuring that commitments in the SLP are developed and implemented timeously;
- Establishing and maintaining good working relations with surrounding communities and landowners; and
- Facilitating stakeholder communication, information sharing and a grievance mechanism.

### **13. ASPECTS FOR INCLUSION AS CONDITIONS OF THE AUTHORISATION**

Management actions (refer to chapter 9 and Table 9-1) including monitoring requirements (see chapter 28), should form part of the conditions of the EA. With reference to Regulation 26 of Government Notice Regulation (GNR) 982 of NEMA, additional conditions that should form part of the EA that are not specifically included in the EMPr report, include compliance with all applicable environmental legislation, whether specifically mentioned in this document or not, and which may be amended from time to time.

## 14. ASSUMPTIONS, UNCERTAINTIES, LIMITATIONS AND GAPS IN KNOWLEDGE

This chapter outlines the assumptions, uncertainties, limitations and gaps in knowledge associated with the BA process and the proposed project.

### 14.1 ENVIRONMENTAL ASSESSMENT LIMIT

The BA process focuses on third parties only and does not assess health and safety impacts on employees and contractors because the assumption is made that these aspects are separately regulated by health and safety legislation, policies and standards, and that Impala will adhere to these.

### 14.2 BIODIVERSITY

The following assumptions and limitations apply to the Biodiversity Study compiled for the proposed project:

- The biodiversity assessment was confined to the project footprint and did not include the neighbouring and adjacent properties. This were considered as part of the desktop assessment;
- With ecology being dynamic and complex, some aspects (some of which may be important) may have been overlooked. It is; however, expected that most floral and faunal communities have been accurately assessed and considered. Relevant online sources and background information were further accessed to improve on the overall understanding of the project footprint's ecology;
- Due to most faunal taxa's nature and habits, it is unlikely that all species would have been observed during a field assessment of limited duration. Due to the locality of the project footprint (peri-urban area), continuous anthropogenic activities, the cyclical nature of many species' life stages, as well as the season of the assessment, few faunal species were observed during the site visit. As such, background data (desktop) and literature studies (previous studies undertaken in the immediate area) were used to further infer faunal species composition and sensitivities in relation to the available habitat;
- Sampling, by its nature, means that not all individuals are assessed and identified. Some species and taxa associated with the project footprint may have been missed during the assessment; and
- The data presented in the Biodiversity Study are based on one site visit, undertaken on the 26 of May 2021 (autumn season). A more comprehensive assessment would require that assessments take place in all seasons of the year. However, on-site data were augmented with all available desktop data. Together with project experience in the area, the findings of the assessment are considered an accurate reflection of the ecological characteristics of the project footprint.

### 14.3 CULTURAL/HERITAGE

The following assumptions and limitations apply to the HIA compiled for the proposed project:

- The findings, observations, conclusions and recommendations reached in the report are based on the author's best scientific and professional knowledge, available information and his ability to keep up with the physical challenges that the project commanded;
- The project area was surveyed on several former occasions in the past when various heritage surveys were done for Impala. Information was thus based on a review of this documentation;

- The report's findings are based on accepted archaeological survey and assessment techniques and methodologies. However, the author preserves the right to modify aspects of the report including the recommendations if and when new information becomes available, particularly if this information may have an influence on the reports final results and recommendations. This in particular applies to the uncovering of graves as these may have been missed during the survey as a result of various reasons;
- The heritage survey may have missed heritage resources as these may be located below the surface of the earth and may be exposed during the developmental stages of the proposed project; and
- Is possible that heritage resources simply may have been missed as a result of human failure to observe or to recognise them.



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## **15. REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORISED**

The aim of this chapter is to provide a reasoned independent opinion, whether or not the proposed project should proceed or not. This opinion is informed by the outcome of the impact assessment and recommendations made by specialists and I&APs.

### **15.1 REASONS WHY THE ACTIVITY SHOULD BE AUTHORISED OR NOT**

The assessment of the proposed project presents the potential for negative impacts to occur (in the unmitigated scenario in particular) on the biophysical, cultural/heritage and socio-economic environments, both on the project footprint and in the surrounding area. With the implementation of management actions, these potential impacts can be prevented or reduced to acceptable levels. It follows that provided the EMPr is effectively implemented, there is no reason from a biophysical, cultural/heritage or socio-economic standpoint why the proposed project should not proceed.

### **15.2 CONDITIONS THAT MUST BE INCLUDED IN THE AUTHORISATION**

#### **15.2.1 Specific Conditions for Inclusion in the EMPr**

Refer to chapter 13.

#### **15.2.2 Rehabilitation Requirements**

Refer to chapter 9.

## **16. PERIOD FOR WHICH AUTHORISATION IS REQUIRED**

With specific reference to Table 3-3, the identified project activities relate to all phases of development (construction, operation, decommissioning and closure. Given that the proposed project will supplement mining operations at the Shaft 16 Complex, it follows that authorisation is required for the remaining life of mine, approximately 20 years.

## 17. UNDERTAKING

We, Sharon Meyer and Rizqah Baker, undertake that:

- The information provided herein is correct;
- Comments and inputs from I&APs have been included and correctly recorded in this report;
- Inputs and recommendations from the specialist reports have been included, where relevant; and
- Any information provided to I&APs and any responses to comments or inputs made is correct or was correct at that time.



Signature of Report Author

2 September 2021

Date



Signature of EAP

2 September 2021

Date

To be provided in revised BAR (hard copy)

Signature of Commissioner of Oaths

Date

## 18. FINANCIAL PROVISION

The aim of this chapter is to provide information pertaining to the methodology considered as part of the closure liability calculation determination.

### 18.1 METHODOLOGY

#### 18.1.1 Methodology Applied to Liability Model

The following approach was applied by E-Tek Consulting (Pty) Ltd (E-Tek) to determine the financial provision:

- Financial models were developed to cater for the requirements of GNR 1147;
- The costing models were developed to address all the identified closure components applicable to Impala;
- The costing models provide the following output:
  - Executive summary (summary of all closure components and associated costs (where applicable));
  - Preliminary and Generals (P&G's): Allocation of P&G's for each component and provides weighted P&G's as certain P&G's allowances, can vary per component);
  - Contingencies (allocation of contingencies for each component and provides weighted contingencies, as certain contingency allowances can vary per component);
  - Closure components summary (provides a summary of all costs per closure component).  
The five main closure components have been identified as follows:
    - Infrastructural aspects;
    - Mining aspects;
    - Biophysical closure aspects;
    - Social closure aspects; and
    - General aspects.
  - Closure components (breakdown of the detail facilities and aspects under each of the five main closure components); and
  - Rates table (unit rates for various actions required).

#### 18.1.2 Assessment Methodology

The approach followed by E-Tek with the determination of the closure costs is summarised as follows:

- Review of available information and identification of infrastructure that would need to be decommissioned at closure;
- Gathering of relevant data which forms the basis of the calculation;
- All-newly proposed infrastructure was assigned with a reference number which can be referenced directly to the costing model;
- Reference map was created indicating the position of the proposed infrastructure in relation to the existing infrastructure;
- Closure criteria was developed and workshopped with Impala as part of the annual liability assessment;
- The closure forecast was based on the proposed project timeframe;

- Compilation of a Bill of Quantities (BoQ) capturing the quantities and actions relating to the closure of the different closure aspects (Microsoft excel format); and
- Unit rates from E-Tek's database were updated to be aligned with the current market-related rates acquired from local civil- and demolition contractors (these rates refer to closure conditions when the mine is no longer operational).

### 18.1.3 Components

The following components were identified by E-Tek through the review of the site layout plan (refer to Figure 3-2) and form part of the calculation:

- Carports;
- Covered waiting area;
- Taxi drop-off lane;
- Pedestrian access bridge;
- Fencing;
- Paving; and
- Stormwater culvert.

## 18.2 CONFIRM THAT THE AMOUNT CAN BE PROVIDED FROM OPERATING EXPENDITURE

The amount required to manage and rehabilitate the environmental disturbance (as a result of Impala's activities) is provided for in the operating costs.

## 19. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

### 19.1 IMPACT ON THE SOCIO-ECONOMIC CONDITIONS OF ANY DIRECTLY AFFECTED PERSON

The impacts associated with socio-economic conditions are discussed in Appendix D. Management actions identified to address any socio-economic impacts are provided in chapter 9 and Table 9-1.

No person will be directly affected by the project given that no I&APs currently reside within the project footprint area and no I&APs undertake any activities (i.e., farming, etc.) activities within the project footprint. However, other impacts include:

- Road disturbance and traffic safety (**INSIGNIFICANT**);
- Inward migration which in turn increases pressure on existing communities, housing, basic service delivery and raises concerns around safety and security (**INSIGNIFICANT**); and
- Employment and procurement of goods and services (**INSIGNIFICANT**).

Indirect socio-economic impacts include:

- Hazardous excavations and infrastructure resulting in safety risks to third parties and animals (**VERY LOW** significance with mitigation);
- Alteration of drainage patterns by reducing the volume of runoff into the downstream catchments (**INSIGNIFICANT**);
- Contamination of surface water resources (**INSIGNIFICANT**);
- Contamination of groundwater resources (**INSIGNIFICANT**);
- Air pollution sources that can have a negative impact on ambient air quality (**INSIGNIFICANT**);
- Increase in disturbing noise levels (**INSIGNIFICANT**); and
- Visual impacts on this receiving environment may be caused by activities and infrastructure (**INSIGNIFICANT**).

### 19.2 IMPACT ON ANY NATIONAL ESTATE REFERRED TO IN SECTION 3(2) OF THE NHRA

No national estate will be affected by the proposed project.

### 19.3 SCREENING TOOL

DFFE developed an online screening tool which identifies environmental sensitivities within the project area. The screening tool report for the proposed project was generated using the DFFE online screening tool and was attached to the NEMA application form as supporting documentation. The screening tool report recommended specialist studies to be undertaken as part of the BA process. The specialist studies that were identified in the screening tool report are included in Table 19-1, as well as explanations for why or why not they were undertaken as part of the BA process.

**Table 19-1: Specialist Studies and Environmental Sensitivities Identified by the Screening Tool**

Theme	Sensitivity	Specialist Study	Reason for in/exclusion
Avifauna	Unspecified	Compliance Statement	The proposed project entails the clearance of approximately 2.5 ha of indigenous vegetation that may

Theme	Sensitivity	Specialist Study	Reason for in/exclusion
			provide a habitat for avifauna. Due to the unspecified sensitivity, a Compliance Statement was deemed sufficient.
Animal Species	Low	Compliance Statement	The proposed project entails the clearance of approximately 2.5 ha of indigenous vegetation that may provide a habitat for fauna SCC. Due to the low sensitivity, a Compliance Statement was deemed sufficient.
Aquatic Biodiversity	Low	Compliance Statement	No aquatic resources were identified within the project area. Due to the low sensitivity, a Compliance Statement was deemed sufficient.
Archaeological and Cultural Heritage	High	HIA	The proposed project is located within the Central Bankeveld, a region rich with diverse cultural/heritage resources. A full HIA was deemed appropriate.
Landscape/Visual	Unspecified	SSVR	The proposed project is located adjacent to an existing mining complex. A SSVR was deemed sufficient.
Palaeontology	Medium	Exemption Letter	The proposed project is associated with underlying geology of the BIC of the RLS. No palaeontological resources are associated with this geology. A letter of exemption from a paleontological specialist was deemed appropriate.
Plant Species	Low	Compliance Statement	The proposed project entails the clearance of approximately 2.5 ha of indigenous vegetation that may contain floral SCC. Due to the low sensitivity, a Compliance Statement was deemed sufficient.
Socio-Economic	Unspecified	SSVR	Due to the nature and limited duration and extent of the proposed project, as well as the unspecified sensitivity, a SSVR was deemed sufficient.
Terrestrial Biodiversity	Very High	Biodiversity Study	The proposed project entails the clearance of approximately 2.5 ha of indigenous vegetation. Due to the very high sensitivity, a full biodiversity study was deemed appropriate.

## **20. OTHER MATTERS REQUIRED IN TERMS OF SECTION 24(4)(A) AND (B) OF THE ACT**

No other matters are required.



# **PART B – ENVIRONMENTAL MANAGEMENT PROGRAMME**

## **21. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER**

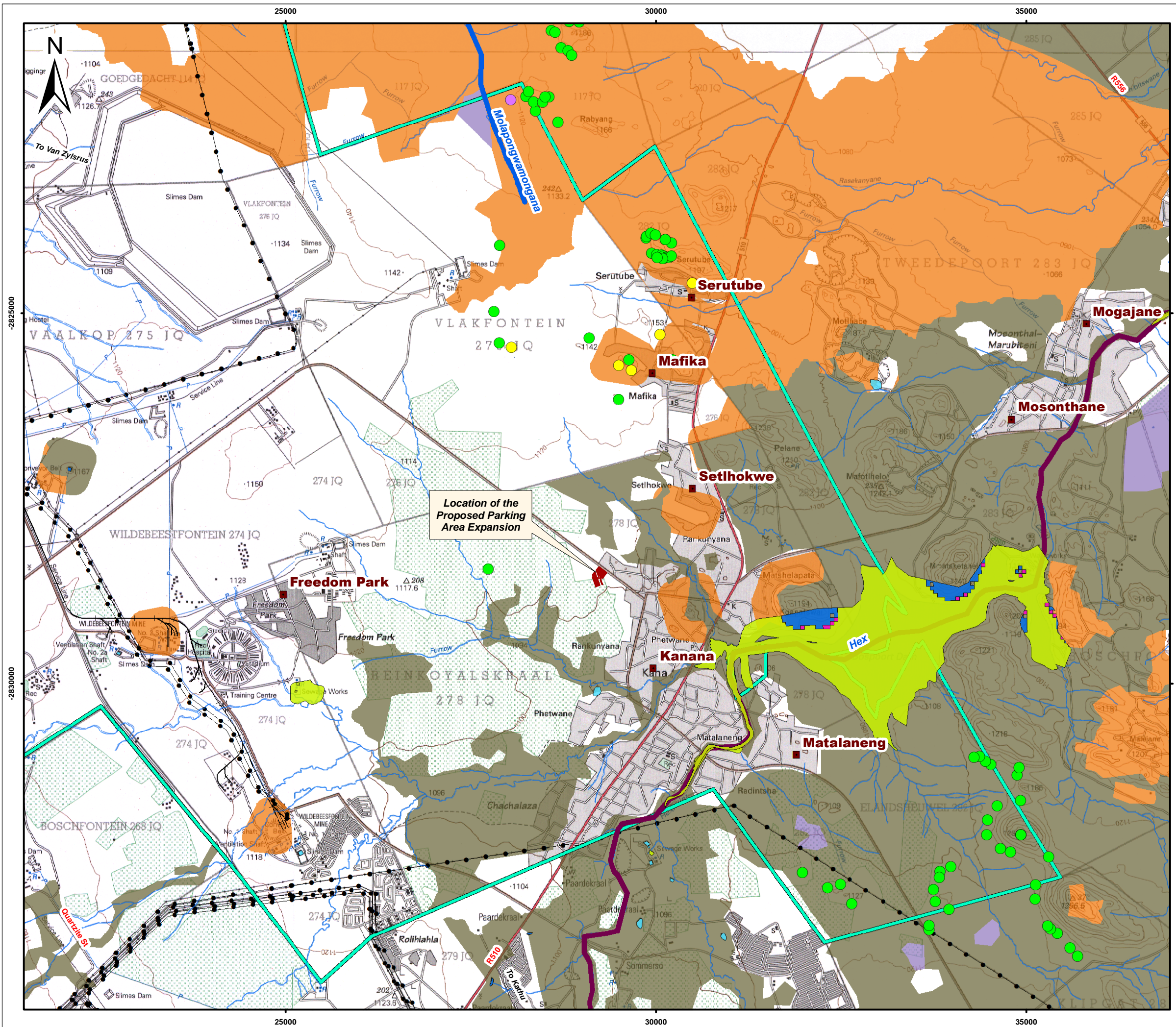
The details of the EAPs who undertake the BA process and prepared this BAR are provided in chapter 1.

## 22. DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

The activities associated with the proposed project that are covered in the EMPr are included in chapter 3 and Table 3-3.

## 23. COMPOSITE MAP

A composite map of the environmental sensitivities of the project area superimposed on the project footprint is provided in Figure 23-1.



**Legend**

- Towns / Villages
- Main Roads
- Power Line
- +— Railway Line
- Rivers
- Dams
- ▭ Impala Surface Use Area
- Proposed Parking Area Expansion

**North West CBA and ESA (2015)**

- Critical Biodiversity Area 1
- Critical Biodiversity Area 2
- Ecological Support Area 1
- Ecological Support Area 2

**Heritage Resources**

- Historical site
- Stone tools
- Stone wall settlement

**NFEPA Wetlands**

- Channelled valley-bottom wetland
- Unchannelled valley-bottom wetland
- Valleyhead seep
- Flat

**NFEPA Rivers**

- CLASS C: Moderately Modified
- CLASS D: Largely Modified

0 1 2 Kilometers  
Scale: 1:50 000 @ A3  
Projection: Transverse Mercator  
Datum: Hartbeeshoek, Lo 27

Impala Platinum Limited

**Figure 23-1**  
**Composite Map of Environmental Sensitivities Superimposed on the Project Footprint**

**SLR**

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## 24. DESCRIPTION OF THE IMPACT MANAGEMENT OBJECTIVES, INCLUDING THE MANAGEMENT STATEMENT

This chapter outlines the determination of the closure objectives and provides a list of the management measures specifically identified to mitigate impacts associated with the project activities.

### 24.1 DETERMINATION OF CLOSURE OBJECTIVES

The closure objectives for the project were determined taking into account the existing type of environment as described in section 7.4.1, in order to ensure that the closure objectives strive to achieve a condition approximating its natural state as far as possible. Further information pertaining to the closure objectives identified for the proposed in provided in section 27.1.1.

### 24.2 VOLUMES AND RATE OF WATER USED FOR MINING

The proposed project will require minimal volumes of water as part of the construction phase.

### 24.3 HAS A WATER USE LICENCE BEEN APPLIED FOR?

The proposed project does not trigger any activities in the NWA. It follows that a Water Use Licence (WUL) is not required.

### 24.4 IMPACTS TO BE MITIGATED IN THEIR RESPECTIVE PHASES

The assessment of potential impacts associated with the proposed project is provided in chapter 9 and Appendix D. Management actions which will be implemented to avoid, reduce and minimise impacts to acceptable levels are detailed in chapter 9 and Table 9-1. Table 24-1 outlines the management actions that are specific to the Listed Activities triggered by the proposed project in terms of NEMA.

**Table 24-1: Measures to Rehabilitate the Environment Affected by the Undertaking of a Listed Activity**

Activity (Listed in terms of NEMA)		Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Number	Description					
Listing Notice 1, GN No. R983, Listing Activity 27:	<i>The clearance of an area of 1 ha or more, but less than 20 ha of indigenous vegetation, except where such clearance of indigenous vegetation is required for -</i> <i>(i) the undertaking of a linear activity; or</i> <i>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</i>	<ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul>	Approximately 2.5 ha	<ul style="list-style-type: none"> <li>A biodiversity specialist shall do a walkdown of the project footprint prior to land clearing activities to identify protected floral species and floral SCC that may have been lying dormant during initial field observations;</li> <li>Minimise the area of disturbance by designing and constructing the most compact infrastructure practically possible;</li> <li>Ensure the removal of indigenous vegetation is restricted to what is absolutely necessary. Where possible, utilise remaining natural areas as part of landscaping of the parking area;</li> <li>Rehabilitate in accordance with the approved mine closure plan that ensures a suitable post-closure land use is achieved;</li> <li>Establish short term perennial vegetation that will stabilise the site but allow the indigenous vegetation to establish over the site;</li> <li>Use existing established roads. Additional road construction is to be limited to what is absolutely necessary and the footprint thereof kept to a minimum;</li> <li>Ensure vegetation clearing is undertaken in phases, so as to limit the potential for erosion;</li> <li>No collection of floral species and floral SCC is allowed;</li> <li>Where formal gardens are envisioned, indigenous vegetation or ornamental alien species not listed within the NEM: BA Alien Species List (2020) must be used;</li> <li>While no protected plant or tree species were identified on site, if any species are encountered on site, the necessary permits need to be obtained from the DEDECT and/or DFFE prior to removal;</li> <li>Limit edge effects to the surrounding environment by: <ul style="list-style-type: none"> <li>Demarcating all footprint areas during construction;</li> <li>Preventing construction rubble or cleared alien vegetation and invasive species to be disposed outside of demarcated areas;</li> <li>Ensuring that construction rubble and cleared alien and invasive species are taken to a registered waste disposal facility; and</li> <li>Managing the spread of alien and invasive species.</li> </ul> </li> <li>Provide appropriate sanitary facilities and ensure the disposal thereof at a registered licenced facility;</li> <li>Ensure no temporary dump sites are created on site;</li> <li>No fires are allowed on site;</li> <li>Compile an alien invasive species management or control plan for implementation with the following recommendations: <ul style="list-style-type: none"> <li>Removal alien invasive species throughout the construction, operation and maintenance phases;</li> <li>Ensure alien vegetation is removed prior to the removal of indigenous vegetation;</li> <li>Ensure only trained personnel are involved in the chemical control of alien invasive species;</li> <li>Edge effects arising from the proposed project which may affect adjacent areas must be strictly managed;</li> <li>Ongoing alien invasive species monitoring must be undertaken throughout all phases.</li> </ul> </li> <li>Removed alien invasive species must not be placed on unprotected ground as seeds may disperse upon it. All cleared alien invasive species must be disposed of at a licenced waste facility;</li> <li>A biodiversity specialist shall do a walkdown of the project footprint prior to land clearing activities to identify faunal species on site and to assist with the relocation thereof;</li> <li>Ensure vegetation clearing is undertaken in phases, so as to allow for faunal species to vacate the area safely;</li> <li>No collection, trapping and harming of faunal species and faunal SCC is allowed;</li> <li>Construction personnel are to undergo environmental awareness training pertaining to the potential faunal species located on site;</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of an alien invasive species management or control plan is in accordance with the NEM: BA Alien and Invasive Species List (2020) that require the control of alien invasive species.</li> <li>Obtaining permits to remove protected flora and faunal species is in accordance with the TNCO and NEM: BA.</li> <li>Planting formal gardens will comply with the NEM: BA Alien and Invasive Species List (2020).</li> </ul>	<ul style="list-style-type: none"> <li>Prior to construction</li> <li>Prior to construction</li> <li>Construction</li> <li>Decommissioning and Closure</li> <li>Decommissioning and Closure</li> <li>Construction and Operation</li> <li>Construction</li> <li>Construction</li> <li>Construction</li> <li>Construction</li> <li>Construction</li> <li>Construction</li> <li>Construction</li> <li>Construction</li> <li>Prior to construction</li> <li>Construction</li> <li>Prior to construction</li> <li>Construction</li> <li>Construction</li> <li>Prior to construction</li> </ul>

Activity (Listed in terms of NEMA)		Phase	Size and Scale of Disturbance	Mitigation Measures	Compliance with Standards	Time Period for Implementation
Number	Description					
				<ul style="list-style-type: none"> <li>• While no protected faunal species were identified on site, if any species are encountered on site, the necessary permits need to be obtained from DFFE prior to removal; and</li> <li>• Smaller species that are not readily able to move out of an area ahead of vegetation and ground clearing activities (such as scorpions and reptiles), will be less mobile during rainfall events and cold days. As such, care must be taken to look for these species prior to these activities and should these species be encountered, they are to be carefully and safely moved to an area of similar habitat outside of the project footprint. A suitably trained specialist shall be instructed to carry out the removal of venomous snake species.</li> </ul>		<ul style="list-style-type: none"> <li>• Prior to construction</li> <li>• Prior to construction</li> </ul>



## 25. IMPACT MANAGEMENT OUTCOMES AND OBJECTIVES

The purpose of this chapter is to outline the impact management objectives and outcomes for the potential biophysical, cultural/heritage and socio-economic impacts identified for the proposed project.

Table 25-1 provides a description of the outcomes and objectives of the management actions recommended to manage, remedy, control or modify potential impacts associated with the proposed project. The management actions identified to achieve these outcomes and objectives are also provided.

**Table 25-1: Description of Impact Management Outcomes and Objectives**

Activity	Potential Impact	Affected Aspect	Phase	Management Action	Standard to be Achieved (Impact Management Objective and Outcomes)
N/A	Loss and sterilisation of mineral resources	Geology	N/A	<b>INSIGNIFICANT</b>	
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>	Altering topography	Topography	<ul style="list-style-type: none"> <li>Construction</li> <li>Decommissioning</li> <li>Closure</li> </ul>	<ul style="list-style-type: none"> <li>Minimise the area of disturbance by designing and constructing the most compact infrastructure practically possible; and</li> <li>Rehabilitate in accordance with the approved mine closure plan that ensure a suitable post-closure land use is achieved.</li> </ul>	<ul style="list-style-type: none"> <li>The objective is to minimise changes to natural topography.</li> <li>The outcome is to limit the alteration of topography during the proposed project and through rehabilitation.</li> </ul>
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> </ul>	Hazardous excavations and infrastructure resulting in safety risks to third parties and animals		<ul style="list-style-type: none"> <li>Construction</li> </ul>	<ul style="list-style-type: none"> <li>The project area will be fenced off to prevent inadvertent access by third parties and animals;</li> <li>Access control will be implemented to ensure access is only granted to those who have authorisation;</li> <li>Barriers will be erected around all hazardous excavations;</li> <li>Warning signage will be erected at all hazardous excavations; and</li> <li>Where the proposed project has caused injury to third parties or animals, appropriate compensations will be provided.</li> </ul>	<ul style="list-style-type: none"> <li>The objective is to prevent physical harm to third parties and animals resulting from potentially hazardous excavations and infrastructure.</li> <li>The outcome is to ensure no third parties' animals are harmed during the proposed project.</li> </ul>
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>	Loss of soil resources and land capability through physical disturbance and contamination	Soils and Land Capability	<ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul>	<ul style="list-style-type: none"> <li>Minimise the area of disturbance by designing and constructing the most compact infrastructure practically possible;</li> <li>Implement the soil conservation procedure as set out in Table 26-3;</li> <li>Rehabilitate in accordance with the approved mine closure plan that ensures a suitable post-closure land use is achieved;</li> <li>Establish short term perennial vegetation that will stabilise the site but allow the indigenous vegetation to establish over the site;</li> <li>Use existing established roads;</li> <li>Conduct potentially polluting activities (i.e., loading, hauling, tipping, transportation, handling and storage) in a manner that pollutants are contained at source and do not pollute soils. In this regard:                             <ul style="list-style-type: none"> <li>Service all vehicles and mobile equipment regularly in workshops, service bays and wash bays with contained impermeable, floors, dirty water collection facilities and oil traps;</li> <li>Design and operate all new and used chemical, fuel and oil storage and handling facilities in a manner that all spillages are contained in impermeable areas and cannot be released into the environment;</li> <li>Report ad hoc spills of potentially polluting substances (whether in dirty areas or in the environment) to the environmental manager immediately and clean up and/or remediate immediately;</li> <li>Implement and maintain a dirty water management system;</li> <li>Implement the waste management practices, as set out in Table 26-2;</li> <li>Educate and train all employees (temporary and permanent) and contractors in pollution prevention; and implement formalised action plans to enable fast and efficient reaction to contain and remediate pollution incidents.</li> </ul> </li> <li>Consider the requirements for long term soil pollution prevention, land function and confirmatory monitoring in the design of any permanent and potentially polluting structures; and</li> <li>Implement the emergency response procedure in section Table 29-1 in the event any major spillage incident.</li> </ul>	<ul style="list-style-type: none"> <li>The objective is to minimise the loss of soil resources and related land capability from physical disturbance, erosion, compaction and soil pollution.</li> <li>The outcome is to handle, manage and conserve soil resources to be used as part of rehabilitation and re-establishment of the pre-mining land capability.</li> </ul>

Activity	Potential Impact	Affected Aspect	Phase	Management Action	Standard to be Achieved (Impact Management Objective and Outcomes)
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>	Physical destruction and disturbance of floral species	Biodiversity	<ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul>	<ul style="list-style-type: none"> <li>A biodiversity specialist shall do a walkdown of the project footprint prior to land clearing activities to identify protected floral species and floral SCC that may have been lying dormant during initial field observations;</li> <li>Minimise the area of disturbance by designing and constructing the most compact infrastructure practically possible;</li> <li>Ensure the removal of indigenous vegetation is restricted to what is absolutely necessary. Where possible, utilise remaining natural areas as part of landscaping of the parking area;</li> <li>Rehabilitate in accordance with the approved mine closure plan that ensures a suitable post-closure land use is achieved;</li> <li>Establish short term perennial vegetation that will stabilise the site but allow the indigenous vegetation to establish over the site;</li> <li>Use existing established roads. Additional road construction is to be limited to what is absolutely necessary and the footprint thereof kept to a minimum;</li> <li>Ensure vegetation clearing is undertaken in phases, so as to limit the potential for erosion;</li> <li>No collection of floral species and floral SCC is allowed;</li> <li>Where formal gardens are envisioned, indigenous vegetation or ornamental alien species not listed within the NEM: BA Alien Species List (2020) must be used)</li> <li>While no protected plant or tree species were identified on site, if any species are encountered on site, the necessary permits need to be obtained from the DEDECT and/or DFFE prior to removal;</li> <li>Limit edge effects to the surrounding environment by: <ul style="list-style-type: none"> <li>Demarcating all footprint areas during construction;</li> <li>Preventing construction rubble or cleared alien vegetation and invasive species to be disposed outside of demarcated areas;</li> <li>Ensuring that construction rubble and cleared alien and invasive species are taken to a registered waste disposal facility; and</li> <li>Managing the spread of alien and invasive species.</li> </ul> </li> <li>Provide appropriate sanitary facilities and ensure the disposal thereof at a registered licenced facility;</li> <li>Ensure no temporary dump sites are created on site;</li> <li>No fires are allowed on site;</li> <li>Compile an alien invasive species management or control plan for implementation with the following recommendations: <ul style="list-style-type: none"> <li>Removal alien invasive species throughout the construction, operation and maintenance phases;</li> <li>Ensure alien vegetation is removed prior to the removal of indigenous vegetation;</li> <li>Ensure only trained personnel are involved in the chemical control of alien invasive species;</li> <li>Edge effects arising from the proposed project which may affect adjacent areas must be strictly managed;</li> <li>Ongoing alien invasive species monitoring must be undertaken throughout all phases; and</li> <li>Removed alien invasive species must not be placed on unprotected ground as seeds may disperse upon it. All cleared alien invasive species must be disposed of at a licenced waste facility.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>The objective is to prevent the unacceptable loss and disturbance to floral species, and to prevent the proliferation of alien invasive species within and surrounding the project area.</li> <li>The outcome is to prevent the spread of alien species in the project area, as well to limit disturbance as far as practically possible.</li> </ul>
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>	Physical destruction and disturbance of faunal species		<ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul>	<ul style="list-style-type: none"> <li>A biodiversity specialist shall do a walkdown of the project footprint prior to land clearing activities to identify faunal species on site and to assist with the relocation thereof;</li> <li>Ensure vegetation clearing is undertaken in phases, so as to allow for faunal species to vacate the area safely;</li> <li>No collection, trapping and harming of faunal species and faunal SCC is allowed;</li> <li>Construction personnel are to undergo environmental awareness training pertaining to the potential faunal species located on site;</li> <li>While no protected faunal species were identified on site, if any species are encountered on site, the necessary permits need to be obtained from DFFE prior to removal; and</li> <li>Smaller species that are not readily able to move out of an area ahead of vegetation and ground clearing activities (such as scorpions and reptiles), will be less mobile during rainfall events and cold days. As such, care must be taken to look for these species prior to these activities and should these species be encountered, they are to be carefully and safely moved to an area of similar habitat outside of the project footprint. A suitably trained specialist shall be instructed to carry out the removal of venomous snake species.</li> </ul>	<ul style="list-style-type: none"> <li>The objective is to prevent the unacceptable destruction and disturbance to faunal species.</li> <li>The outcome is to ensure that no faunal species are harmed or disturbed in the project area.</li> </ul>
N/A	Alteration of natural drainage patterns	Surface Water Resources	N/A	<b>INSIGNIFICANT</b>	

Activity	Potential Impact	Affected Aspect	Phase	Management Action	Standard to be Achieved (Impact Management Objective and Outcomes)
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>	Contamination of surface water resources		<ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul>	<ul style="list-style-type: none"> <li>Implement approved management actions pertaining to the containment of dirty water in accordance with Regulation 704 (June 1999);</li> <li>Prevent contamination through appropriate and effective channelling of stormwater into existing stormwater canal;</li> <li>Any sheet runoff from compacted areas must be slowed down by the strategic placement of berms;</li> <li>Ensure the inclusion of structure developed by means of soft engineering approaches such as swales, to spread, and attenuate flow and to trap sediment within the design of the parking area in order to ensure flow pattern and timing within the area are not impacted;</li> <li>Implement the emergency response procedure in section Table 29-1 in the event any major spillage incident;</li> <li>Monitor surface water resources in accordance with Impala's approved surface water monitoring programme. Where monitoring results indicate that third party water supply has been polluted by Impala, ensure that an alternative equivalent water supply is provided; and</li> <li>Conduct potentially polluting activities (i.e., loading, hauling, tipping, transportation, handling and storage) in a manner that pollutants are contained at source and do not allow to be washed away through runoff. In this regard: <ul style="list-style-type: none"> <li>Service all vehicles and mobile equipment regularly in workshops, service bays and wash bays with contained impermeable, floors, dirty water collection facilities and oil traps;</li> <li>Design and operate all new and used chemical, fuel and oil storage and handling facilities in a manner that all spillages are contained in impermeable areas and cannot be released into the environment;</li> <li>Report ad hoc spills of potentially polluting substances (whether in dirty areas or in the environment) to the environmental manager immediately and clean up and/or remediate immediately;</li> <li>Implement and maintain a dirty water management system;</li> <li>Implement the waste management practices, as set out in Table 26-2;</li> <li>Educate and train all employees (temporary and permanent) and contractors in pollution prevention; and</li> <li>Implement formalised action plans to enable fast and efficient reaction to contain and remediate pollution incidents.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>The objective is to prevent pollution of surface water resources.</li> <li>The outcome is to ensure that surface water quality remains within acceptable limits for both domestic and agricultural purposes.</li> </ul>
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>	Contamination of groundwater resources	Groundwater Resources	<ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul>	Refer to the section above.	<ul style="list-style-type: none"> <li>The objective is to prevent pollution of groundwater resources.</li> <li>The outcome is to ensure that groundwater quality remains within acceptable limits for both domestic and agricultural purposes.</li> </ul>
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>	Air pollution	Air Quality	<ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul>	<ul style="list-style-type: none"> <li>Continue the implementation of Impala's air quality monitoring programme;</li> <li>Reduce vehicle exhaust emissions through the use of better-quality diesel;</li> <li>Implement inspection and maintenance programmes; and</li> <li>Ensure vegetation clearing is undertaken in phases, so as to limit the potential for dust generation.</li> </ul>	<ul style="list-style-type: none"> <li>The objective is to prevent air pollution health impacts.</li> <li>The outcome is to ensure that any pollutants emitted as a result of the project remains within acceptable limits so as to prevent health related impacts.</li> </ul>
N/A	Negative visual views	Visual	N/A	<b>INSIGNIFICANT</b>	
N/A	Road disturbance and traffic safety	Traffic	N/A	<b>INSIGNIFICANT</b>	

Activity	Potential Impact	Affected Aspect	Phase	Management Action	Standard to be Achieved (Impact Management Objective and Outcomes)
<ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> </ul>	Loss of cultural/heritage and paleontological resources	Cultural/Heritage and Paleontological Resources	<ul style="list-style-type: none"> <li>• Construction</li> </ul>	<ul style="list-style-type: none"> <li>• Implement the chance find procedure (refer to Table 10-1) in the event of the discovery of cultural/heritage and/or palaeontological resources on site.</li> </ul>	<ul style="list-style-type: none"> <li>• The objective is to minimise the disturbance of cultural/heritage and paleontological resources.</li> <li>• The outcome is to protect heritage resources where possible. If disturbance is unavoidable, then mitigate impact in consultation with a specialist and the SAHRA and in line with regulatory requirements.</li> </ul>
N/A	Inward migration and economic impact	Socio-Economic	N/A	<b>INSIGNIFICANT</b>	
N/A	Change in land use		N/A	<b>INSIGNIFICANT</b>	

## 26. IMPACT MANAGEMENT ACTIONS

Table 26-1: Description of Impact Management Actions

Activity	Potential Impact	Management Action	Time Period for Implementation	Compliance with Standards
N/A	Loss and sterilisation of mineral resources	<b>INSIGNIFICANT</b>		
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>	Altering topography	<ul style="list-style-type: none"> <li>Minimise the area of disturbance by designing and constructing the most compact infrastructure practically possible; and</li> <li>Rehabilitate in accordance with the approved mine closure plan that ensure a suitable post-closure land use is achieved.</li> </ul>	<ul style="list-style-type: none"> <li>Construction</li> <li>Closure</li> </ul>	N/A
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> </ul>	Hazardous excavations and infrastructure resulting in safety risks to third parties and animals	<ul style="list-style-type: none"> <li>The project area will be fenced off to prevent inadvertent access by third parties and animals;</li> <li>Access control will be implemented to ensure access is only granted to those who have authorisation;</li> <li>Barriers will be erected around all hazardous excavations;</li> <li>Warning signage will be erected at all hazardous excavations; and</li> <li>Where the proposed project has caused injury to third parties or animals, appropriate compensations will be provided.</li> </ul>	<ul style="list-style-type: none"> <li>Construction</li> <li>Construction</li> <li>Construction</li> <li>Construction</li> </ul>	N/A
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>	Loss of soil resources and land capability through physical disturbance and contamination	<ul style="list-style-type: none"> <li>Minimise the area of disturbance by designing and constructing the most compact infrastructure practically possible;</li> <li>Implement the soil conservation procedure as set out in Table 26-3;</li> <li>Rehabilitate in accordance with the approved mine closure plan that ensures a suitable post-closure land use is achieved;</li> <li>Establish short term perennial vegetation that will stabilise the site but allow the indigenous vegetation to establish over the site;</li> <li>Use existing established roads;</li> <li>Conduct potentially polluting activities (i.e., loading, hauling, tipping, transportation, handling and storage) in a manner that pollutants are contained at source and do not pollute soils. In this regard:                             <ul style="list-style-type: none"> <li>Service all vehicles and mobile equipment regularly in workshops, service bays and wash bays with contained impermeable, floors, dirty water collection facilities and oil traps;</li> <li>Design and operate all new and used chemical, fuel and oil storage and handling facilities in a manner that all spillages are contained in impermeable areas and cannot be released into the environment;</li> <li>Report ad hoc spills of potentially polluting substances (whether in dirty areas or in the environment) to the environmental manager immediately and clean up and/or remediate immediately;</li> <li>Implement and maintain a dirty water management system;</li> <li>Implement the waste management practices, as set out in Table 26-2;</li> <li>Educate and train all employees (temporary and permanent) and contractors in pollution prevention; and</li> <li>Implement formalised action plans to enable fast and efficient reaction to contain and remediate pollution incidents.</li> </ul> </li> <li>Consider the requirements for long term soil pollution prevention, land function and confirmatory monitoring in the design of any permanent and potentially polluting structures; and</li> <li>Implement the emergency response procedure in section Table 29-1 in the event any major spillage incident.</li> </ul>	<ul style="list-style-type: none"> <li>Construction</li> <li>Construction</li> <li>Closure</li> <li>Construction</li> <li>Construction and Operation</li> <li>All phases</li> <li>Construction</li> <li>All phases</li> </ul>	N/A
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> </ul>	Physical destruction and disturbance of floral species	<ul style="list-style-type: none"> <li>A biodiversity specialist shall do a walkdown of the project footprint prior to land clearing activities to identify protected floral species and floral SCC that may have been lying dormant during initial field observations;</li> <li>Minimise the area of disturbance by designing and constructing the most compact infrastructure practically possible;</li> <li>Ensure the removal of indigenous vegetation is restricted to what is absolutely necessary. Where possible, utilise remaining natural areas as part of landscaping of the parking area;</li> <li>Rehabilitate in accordance with the approved mine closure plan that ensures a suitable post-closure land use is achieved;</li> <li>Establish short term perennial vegetation that will stabilise the site but allow the indigenous vegetation to establish over the site;</li> </ul>	Refer to Table 24-1	Refer to Table 24-1

Activity	Potential Impact	Management Action	Time Period for Implementation	Compliance with Standards
<ul style="list-style-type: none"> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>		<ul style="list-style-type: none"> <li>Use existing established roads. Additional road construction is to be limited to what is absolutely necessary and the footprint thereof kept to a minimum;</li> <li>Ensure vegetation clearing is undertaken in phases, so as to limit the potential for erosion;</li> <li>No collection of floral species and floral SCC is allowed;</li> <li>Where formal gardens are envisioned, indigenous vegetation or ornamental alien species not listed within the NEM: BA Alien Species List (2020) must be used)</li> <li>While no protected plant or tree species were identified on site, if any species are encountered on site, the necessary permits need to be obtained from the DEDECT and/or DFFE prior to removal;</li> <li>Limit edge effects to the surrounding environment by: <ul style="list-style-type: none"> <li>Demarcating all footprint areas during construction;</li> <li>Preventing construction rubble or cleared alien vegetation and invasive species to be disposed outside of demarcated areas;</li> <li>Ensuring that construction rubble and cleared alien and invasive species are taken to a registered waste disposal facility; and</li> <li>Managing the spread of alien and invasive species.</li> </ul> </li> <li>Provide appropriate sanitary facilities and ensure the disposal thereof at a registered licenced facility;</li> <li>Ensure no temporary dump sites are created on site;</li> <li>No fires are allowed on site;</li> <li>Compile an alien invasive species management or control plan for implementation with the following recommendations: <ul style="list-style-type: none"> <li>Removal alien invasive species throughout the construction, operation and maintenance phases;</li> <li>Ensure alien vegetation is removed prior to the removal of indigenous vegetation;</li> <li>Ensure only trained personnel are involved in the chemical control of alien invasive species;</li> <li>Edge effects arising from the proposed project which may affect adjacent areas must be strictly managed;</li> <li>Ongoing alien invasive species monitoring must be undertaken throughout all phases; and</li> <li>Removed alien invasive species must not be placed on unprotected ground as seeds may disperse upon it. All cleared alien invasive species must be disposed of at a licenced waste facility.</li> </ul> </li> </ul>		
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>	Physical destruction and disturbance of faunal species	<ul style="list-style-type: none"> <li>A biodiversity specialist shall do a walkdown of the project footprint prior to land clearing activities to identify faunal species on site and to assist with the relocation thereof;</li> <li>Ensure vegetation clearing is undertaken in phases, so as to allow for faunal species to vacate the area safely;</li> <li>No collection, trapping and harming of faunal species and faunal SCC is allowed;</li> <li>Construction personnel are to undergo environmental awareness training pertaining to the potential faunal species located on site;</li> <li>While no protected faunal species were identified on site, if any species are encountered on site, the necessary permits need to be obtained from DFFE prior to removal; and</li> <li>Smaller species that are not readily able to move out of an area ahead of vegetation and ground clearing activities (such as scorpions and reptiles), will be less mobile during rainfall events and cold days. As such, care must be taken to look for these species prior to these activities and should these species be encountered, they are to be carefully and safely moved to an area of similar habitat outside of the project footprint. A suitably trained specialist shall be instructed to carry out the removal of venomous snake species.</li> </ul>	Refer to Table 24-1	Refer to Table 24-1
N/A	Alteration of natural drainage patterns	<b>INSIGNIFICANT</b>		
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> </ul>	Contamination of surface water resources	<ul style="list-style-type: none"> <li>Implement approved management actions pertaining to the containment of dirty water in accordance with Regulation 704 (June 1999);</li> <li>Prevent contamination through appropriate and effective channelling of stormwater into existing stormwater canal;</li> <li>Any sheet runoff from compacted areas must be slowed down by the strategic placement of berms;</li> <li>Ensure the inclusion of structure developed by means of soft engineering approaches such as swales, to spread, and attenuate flow and to trap sediment within the design of the parking area in order to ensure flow pattern and timing within the area are not impacted;</li> <li>Implement the emergency response procedure in section Table 29-1in the event any major spillage incident;</li> <li>Monitor surface water resources in accordance with Impala's approved surface water monitoring programme. Where monitoring results indicate that third party water supply has been polluted by Impala, ensure that an alternative equivalent water supply is provided; and</li> </ul>	<ul style="list-style-type: none"> <li>All phases</li> <li>Construction</li> <li>Construction</li> <li>Construction</li> <li>All phases</li> <li>All phases</li> <li>All phases</li> </ul>	Construction, operation and maintenance of stormwater management facilities are in accordance with the NWA.

Activity	Potential Impact	Management Action	Time Period for Implementation	Compliance with Standards
<ul style="list-style-type: none"> <li>Maintenance and aftercare</li> </ul>		<ul style="list-style-type: none"> <li>Conduct potentially polluting activities (i.e., loading, hauling, tipping, transportation, handling and storage) in a manner that pollutants are contained at source and do allow to be washed away through runoff. In this regard:                             <ul style="list-style-type: none"> <li>Service all vehicles and mobile equipment regularly in workshops, service bays and wash bays with contained impermeable, floors, dirty water collection facilities and oil traps;</li> <li>Design and operate all new and used chemical, fuel and oil storage and handling facilities in a manner that all spillages are contained in impermeable areas and cannot be released into the environment;</li> <li>Report ad hoc spills of potentially polluting substances (whether in dirty areas or in the environment) to the environmental manager immediately and clean up and/or remediate immediately;</li> <li>Implement and maintain a dirty water management system;</li> <li>Implement the waste management practices, as set out in Table 26-2;</li> <li>Educate and train all employees (temporary and permanent) and contractors in pollution prevention; and</li> <li>Implement formalised action plans to enable fast and efficient reaction to contain and remediate pollution incidents.</li> </ul> </li> </ul>		
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>	Contamination of groundwater resources	Refer to the section above.	Refer to the section above.	Refer to the section above.
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>	Air pollution	<ul style="list-style-type: none"> <li>Continue the implementation of Impala's air quality monitoring programme;</li> <li>Reduce vehicle exhaust emissions through the use of better-quality diesel;</li> <li>Implement inspection and maintenance programmes; and</li> <li>Ensure vegetation clearing is undertaken in phases, so as to limit the potential for dust generation.</li> </ul>	<ul style="list-style-type: none"> <li>All phases</li> <li>All phases</li> <li>All phases</li> <li>Construction</li> </ul>	N/A
N/A	Negative visual views	<b>INSIGNIFICANT</b>		
N/A	Road disturbance and traffic safety	<b>INSIGNIFICANT</b>		
<ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> </ul>	Loss of cultural/heritage and paleontological resources	Implement the chance find procedure (refer to Table 10-1) in the event of the discovery of cultural/heritage and/or palaeontological resources on site.	<ul style="list-style-type: none"> <li>Construction</li> </ul>	In the event of chance finds, compliance will be in accordance with the NHRA.
N/A	Inward migration and economic impact	<b>INSIGNIFICANT</b>		
N/A	Change in land use	<b>INSIGNIFICANT</b>		

Additional procedures to manage waste and conserve soil resources are provided in Table 26-2 and Table 26-3. These measures must be implemented in the relevant phases, in addition to those already mentioned in afore-mentioned sections.



**Table 26-2: Waste Management Procedures for General Waste**

Items to be considered		Intentions
General	Specific	
Classification and record keeping	General	Impala’s general and hazardous waste management procedure will cover the collection, storage, handling, transportation and disposal of waste to and from the mine. Impala will ensure that the responsible contractor(s) are made aware of these procedures.
	Waste opportunity analysis	In line with the DWS’ strategy to eliminate waste streams in the longer term, Impala will assess each waste type to see whether there are alternative uses for the material. This will be done as a priority before the disposal option.
	Safety data sheets	Impala will maintain, where required in terms of the regulations, the safety data sheets for hazardous waste (prepared in accordance with SANS 10234).
	Inventory of wastes produced	Impala will keep an accurate and up to date record of the waste that is generated, which records must reflect: <ul style="list-style-type: none"> <li>• The classification of the wastes;</li> <li>• The quantity of each waste generated, expressed in tons or cubic metres per month;</li> <li>• The quantities of each waste that has either been re-used, recycled, recovered, treated or disposed of; and</li> <li>• By whom the waste was managed.</li> </ul>
	Disposal record	Written evidence of safe disposal of waste will be kept.
	Record keeping	Records will be retained for a period of at least five years and will be made available to the DWS on request.
Waste management	Collection points	Designated waste collection points will be established on site. Care will be taken to ensure that there will be sufficient collection points with adequate capacity and that these are serviced frequently.
	Laydown/ salvage areas	During construction, operations, decommissioning and closure, lay down areas for re-usable non-hazardous materials will be established.
	General (Non-hazardous) waste	Will be stored in designated skips and removed by an approved contractor for disposal at a licenced facility.
	Hazardous wastes	Medical waste, laboratory chemicals and related packaging, used chemicals and chemical containers will be temporarily stored in sealed containers in a bunded store before removal by an approved waste contractor and disposed of in a licenced facility.
	Used and/or spilled hydrocarbons such as oil and grease	Used and/or spilt oil and grease will be collected in suitable containers at designated collection points. The designated collection points will be bunded and underlain by impervious materials to ensure that any spills are contained. In general areas used and/or spilt oil and grease will be collected in suitable containers and deposited in a designated storage area. Notices will be erected at each waste oil point giving instructions on the procedure for waste oil discharge and collection. An approved subcontractor will remove oil from site.

Items to be considered		Intentions
General	Specific	
	Any soil polluted by a spill	<p>If soil (whether stockpiled or in its undisturbed natural state) is polluted, the first management priority is to treat the pollution by means of in-situ bioremediation at the designated site. In situ remediation is generally considered to be the preferred option because with successful in situ remediation the soil resource will be retained in the correct place. The in-situ options include bio-remediation at the point of pollution, or removal of soils for washing and/or bioremediation at a designated area after which the soils are returned.</p> <p>If remediation of the soil in-situ is not possible, the soils will be classified as a waste in terms of the Waste Regulations and will be disposed of at an appropriate permitted waste facility.</p>
	Mixing of wastes	Waste will not be mixed or treated where this would reduce the potential for re-use, recycling or recovery; or result in treatment that is not controlled and not permanent.
Disposal	Offsite waste disposal facilities	<p>Waste will be disposed of at appropriate licenced waste disposal facilities.</p> <p>Unless collected by the municipality, the mine must ensure that the disposal of their waste to landfill is in accordance with the Norms and Standards for Disposal of Waste to Landfill set in terms of Section 7(1) of the NEM: WA.</p>
Waste transport	Contractor	A qualified, reputable waste management subcontractor will undertake the waste transport. The contractor will provide an inventory of each load collected and of proof of disposal at a licenced facility.
Banned practices	Long-term stockpiling of waste	Stockpiling of waste is a temporary measure. Waste stockpiling sites must have an impervious floor, be bunded and have a drainage system for collection and containment of water on the site.
	Burying of waste	No wastes will be placed on site.

**Table 26-3: Soil Conservation Procedures**

Steps	Factors to consider	Detail
Delineation of areas to be stripped		Stripping will only occur where soils are to be disturbed by activities that are described in the EMP, and where a clearly defined end rehabilitation use for the stripped soil has been identified.
Stripping	Planning	Wherever possible, stripping and replacing of soils will be done in a single action. This is both to reduce compaction and to increase the viability of the seed bank contained in the stripped surface soil horizons.  All machines will be in efficient and safe working condition and only operated when ground conditions enable their maximum operating efficiency.
	Topsoil	A thickness of 150 cm of topsoil will be stripped.
	Soft and hardpan carbonate horizons	Soft and hardpan carbonate horizons (deeper than 150cm) will be stripped separately and not mixed with the A and B horizons.
Delineation of stockpiling areas	Designation of the areas	All topsoil will be stockpiled in areas clearly demarcated on the infrastructure layout and should be defined as no-go areas.
Stockpile management	Vegetation establishment and erosion control	The upper material of topsoil does not have high nutrient values, and their primary value is due to the presence of seed bank.  Stockpiles will be examined after a reasonable rainy period/season, and then annually to determine whether vegetation has naturally established itself on the stockpiles. In the case of no or sparse vegetation establishment, geo-textiles or other methods will be used on the topsoil stockpiles to prevent wind erosion.
	Slope	The stockpile side slopes should be flat enough to promote vegetation growth and reduce runoff related erosion. In addition to this, the topsoil stockpiles need to be established on a gradual slope if possible. Should erosion be noted, the slopes should be stabilised with geotextiles or other appropriate methods.
	Waste	No waste material will be placed on the soil stockpiles.
	Vehicles	Equipment movement on top of the soil stockpiles will be limited to avoid topsoil compaction and subsequent damage to the soils and seedbank.
Management of disturbed land	Erosion control	To prevent the erosion of topsoil, management actions may include one or more of the following; vegetation, berms, soil traps, hessians and storm water diversions away from areas susceptible to erosion.
Rehabilitation of disturbed land: restoration of land capability	Placement of soil	Areas to be rehabilitated should be ripped in order to reduce soil compaction. As a general rule, a minimum layer of 50 cm of topsoil must be replaced unless a soils expert advises otherwise.
	Restore land function and capability	Apply landscape function analysis and restoration interventions to areas where soil has been replaced as part of rehabilitation, but the land function and capability has not been effectively restored.

## 27. FINANCIAL PROVISION

The aim of this chapter is to outline the closure objectives, the rehabilitation plan and the financial liability determined for the proposed project.

### 27.1 DETERMINATION OF THE AMOUNT OF FINANCIAL PROVISION

#### 27.1.1 Closure Objectives Description and the Alignment with the Baseline Environment

The preliminary closure plan objectives and principles have been developed for the project against the background of the location in the North West. These objectives are in line with current approved consolidated EMPr and include the following:

- That environmental damage is minimised to the extent that it is acceptable to all parties involved;
- That contamination beyond the project area by surface run-off, groundwater movement and wind will be prevented;
- That the project closure is achieved efficiently, cost effectively and in compliance with the law; and
- That the social and economic impacts resulting from project closure are managed in such a way that negative socio-economic impacts are minimised.

Any additional and more specific closure objectives tied to the final land use for the entire Impala operations, will be determined in collaboration with local communities and other stakeholders during the ongoing operations at Impala.

#### 27.1.2 Confirmation that Closure Objectives Have Been Consulted with I&APs

The closure objectives are outlined in this report and is made available to I&APs for review and comment (refer to section 7.2).

To date, no comments regarding the closure objectives have been received from I&APs (refer to Table 7-2).

#### 27.1.3 Rehabilitation Plan

The proposed project does not require the development of an annual rehabilitation plan as outlined in the Financial Provisioning Regulations, 2015 (GNR 1147 of 20 November 2015) that focusses on rehabilitation for the forthcoming 12 months. The Shaft 16 Complex, inclusive of the proposed parking area, will be operational for many years to come and the rehabilitation of this area would only be considered nearer to the end of life of mine, in approximately 20 years.

#### 27.1.4 Compatibility of the Rehabilitation Plan with the Closure Objectives

It is confirmed that Impala's rehabilitation plan is compatible with the closure objectives given that the closure objectives were taken into account during the determination of the financial provision. The rehabilitation plan is in line with the minimum requirement of the EMPr.

### 27.1.5 Calculate and State the Quantum of the Financial Provision

The financial provision represents a ten-year forecast of the proposed project. The financial provision takes into consideration the proposed project schedule for implementation (12 months). Impala is to financially provide for the highest liability figure out of the ten-year closure forecast, which has been calculated at **R 1 915 011.83** (Rounded Closure Forecast (Y2021)). This figure includes P&Gs (6%), Contingencies (10%) and VAT (15%).

### 27.1.6 Confirmation that the Financial Provision will be Provided

The financial provision is provided in the form of an insurance guarantee.

## 28. MECHANISMS FOR MONITORING COMPLIANCE AND PERFORMANCE AGAINST THE EMPR

The aim of this section is to outline the monitoring programme that will need to be implemented during the proposed project.

There are no environmental impacts specifically associated with the proposed project that require monitoring. Impala currently has monitoring programmes in place for its existing mining operations. It is recommended that the implementation of those monitoring programmes be continued.

As a general approach, Impala will ensure that existing monitoring programmes comprise the following:

- Adherence to a formal monitoring procedure;
- Use of appropriately calibrated equipment by personnel trained to use the equipment;
- The preservation of samples according to laboratory specifications, where samples require analysis;
- The identification of monitoring parameters in consultation with a specialist in the relevant field and/or the relevant authority;
- The amendment or removal of monitoring parameters, where necessary, following the initial monitoring results and in consultation with a specialist and/or the relevant authority; and
- The interpretation of data and reporting of trends will be undertaken by an appropriately qualified person.

### 28.1 FREQUENCY OF PERFORMANCE ASSESSMENT REPORT

Impala will, for the period during which the EA and the EMPr is valid, submit environmental audit reports to the DMRE. These audits will focus on the mine's compliance with the conditions of the EA and the commitments in the EMPr. These audits will be undertaken by a qualified independent person and will comply with the relevant EIA Regulations, 2014 (as amended).

The Environmental Manager will conduct internal management audits against the commitments in the EMPr in accordance with an annual audit plan. During the operation phase, these audits will be conducted on a quarterly basis. The audit findings will be documented for both record keeping purposes and for informing continual improvement.

### 28.2 CLOSURE COST REPORTING

The financial provision for the mine will be updated on an annual basis and be submitted to the DMRE for the duration of the operation in accordance with the relevant legislation.

## 29. ENVIRONMENTAL AWARENESS PLAN

This chapter outlines the environmental awareness plan that has been developed for the proposed project.

### 29.1 MANNER IN WHICH THE APPLICANT INTENDS TO INFORM EMPLOYEES OF THE ENVIRONMENTAL RISKS

This section includes an environmental awareness plan for the proposed project. The plan describes how employees will be informed of environmental risks which may result from their work, the manner in which the risk must be dealt with in order to avoid pollution or degradation of the environment and the training required for general environmental awareness and the dealing of emergency situations and remediation measures for such emergencies. All contractors that conduct work on behalf of Impala are bound by the content of the EMPr and a contractual condition to this effect will be included in all such contracts entered into by Impala. If contractors are used, the responsibility for ensuring compliance with the EMPr will remain with Impala.

The purpose of the environmental awareness plan is to ensure that all personnel and management understand the general environmental requirements of the site. In addition, greater environmental awareness must be communicated to personnel involved in specific activities which can have a significant impact on the environment and ensure that they are competent to carry out their tasks on the basis of appropriate education, training and/or experience. The environmental awareness plan should enable Impala to achieve the objectives of the environmental policy.

### 29.2 ENVIRONMENTAL POLICY

Impala will display the environmental policy. To achieve world class environmental performance in a sustainable manner, Impala is currently committed to:

- Integrating environmental management into all aspects of our business, including the entire product life cycle;
- Complying with all applicable legislation and other requirement to which Impala subscribes;
- Practising responsible stewardship by adopting world class standards;
- Proactively identifying and managing significant environmental aspects in order to:
  - Minimise emissions to atmosphere;
  - Minimise the release of effluent;
  - Optimise resource consumption;
  - Mitigate our impacts on climate change;
  - Minimise waste;
  - Rehabilitate disturbed land and protect environmental biodiversity; and
  - Protect cultural heritage resources.
- Ensuring environmental awareness and appropriate competency among employees and promoting environmental awareness in the community;
- Engaging with I&APs towards the shared goal of improving the environment; and
- Setting objectives and, where possible, quantitative targets, to determine continual improvement in environmental performance and the prevention of pollution.

### 29.3 STEPS TO ACHIEVE THE ENVIRONMENTAL POLICY OBJECTIVES

Impala's environmental policy will be realised by setting specific and measurable objectives. It is proposed that new objectives are set throughout the life of mine, but initial objectives are as follows:

- Management of environmental responsibilities:
  - Impala will establish and appoint Managers at senior mine management level at each site, who will be provided with all necessary resources to carry out the management of all environmental aspects of the site irrespective of other responsibilities, for example:
    - Compliance with environmental legislation and EMPr commitments;
    - Implementing and maintaining an environmental management system with the assistance of the appointed Environmental Management System Area Coordinator and the Area Waste Coordinator;
    - Developing environmental emergency response procedures and coordinating personnel during incidents;
    - Manage routine environmental monitoring and data interpretation;
    - Environmental trouble shooting and implementation of remediation strategies; and
    - Closure planning.
- Communication of environmental issues and information:
  - Meetings, consultations and progress reviews will be carried out, and specifically Impala will:
    - Set the discussion of environmental issues and feedback on environmental projects as an agenda item at all company board meetings;
    - Provide progress reports on the achievement of policy objectives and level of compliance with the approved EMPr to the DMRE;
    - Ensure environmental issues are raised at monthly mine management executive committee meetings and all relevant mine wide meetings at all levels; and
    - Ensure environmental issues are discussed at all general liaison meetings with local communities and other interested and affected parties.
- Environmental awareness training:
  - Impala will provide environmental awareness training to individuals at a level of detail specific to the requirements of their job, but will generally comprise:
    - Basic awareness training for all prior to granting access to site (e.g., short video presentation requiring registration once completed). Employees and contractors who have not attended the training will not be allowed on site;
    - General environmental awareness training will be given to all employees and contractors as part of the Safety, Health and Environment induction programme. All non-Impala personnel who will be on site for more than three days must undergo the SHE induction training; and
    - Specific environmental awareness training will be provided to personnel whose work activities can have a significant impact on the environment (e.g., workshops, waste handling and disposal, sanitation, etc.).
- Review and update the environmental topics already identified in the EMPr which currently includes the following purpose



- Topography (hazardous excavations);
- Soil and land capability management (loss of soil resource);
- Management of biodiversity;
- Surface water management (alteration of surface drainage and pollution of surface water);
- Groundwater management (reduction in groundwater levels/availability and groundwater contamination);
- Management of air quality (dust generation);
- Noise (specifically management of disturbing noise);
- Visual aspects (reduction of negative visual impacts);
- Surrounding land use (traffic management, blast management, land use loss);
- Heritage resources (management of sites); and
- Socio-economic impacts (management of positive and negative impacts).
- All mine projects will be designed to minimise impact on the environment and to accomplish closure/rehabilitation objectives; and
- Impala will maintain records of all environmental training, monitoring, incidents, corrective actions and reports.

## 29.4 TRAINING OBJECTIVES OF THE ENVIRONMENTAL AWARENESS PLAN

The environmental awareness plan ensures that training needs are identified, and that appropriate training is provided. The environmental awareness plan should communicate:

- The importance of conformance with the environmental policy, procedures and other requirements of good environmental management;
- The significant environmental impacts and risks of individuals work activities and explain the environmental benefits of improved performance;
- Individuals' roles and responsibilities in achieving the aims and objectives of the environmental policy; and
- The potential consequences of not complying with environmental procedures.

### 29.4.1 General Contents of the Environmental Awareness Plan

To achieve the objectives of the environmental awareness, plan the general contents of the training plans are as follows:

- Module 1 – Basic training plan applicable to all personnel entering the site:
  - Short (15 min) presentation to indicate the site layout and activities at specific business units together with their environmental aspects and potential impacts; and
  - Individuals to sign off with site security on completion in order to gain access to the site.
- Module 2 – General training plan applicable to all personnel at the site for longer than 3 days:
  - General understanding of the environmental setting of the Shaft 16 Complex (e.g., local communities and industries and proximity to natural resources such as rivers);
  - Understanding the environmental impact of individuals activities on site (e.g., excessive production of waste, poor housekeeping, energy consumption, water use, noise, etc.);
  - Indicate potential site-specific environmental aspects and their impacts;
  - Impala's environmental management strategy;

- Identifying poor environmental management and stopping work which presents significant risks;
- Reporting incidents;
- Examples of poor environmental management and environmental incidents; and
- Procedures for emergency response and cleaning up minor leaks and spills.
- Module 3 – Specific training plan:
  - Environmental setting of the workplace (e.g., proximity of watercourses, vulnerability of groundwater, proximity of local communities and industries, etc.);
  - Specific environmental aspects such as:
    - Spillage of hydrocarbons at workshops;
    - Spillage of explosive liquids in the open pits;
    - Poor waste management such as mixing hazardous and general wastes, inappropriate storage and stockpiling large amounts of waste;
    - Poor housekeeping practices;
    - Poor working practices (e.g., not carrying out oil changes in designated bunded areas);
    - Excessive noise generation and unnecessary use of hooters; and
    - Protection of heritage resources (including palaeontological resources).
- Impact of environmental aspects, for example:
  - Hydrocarbon contamination resulting in loss of resource (soil, water) to downstream users;
  - Groundwater contamination also resulting in loss of resource due to potential adverse aesthetic, taste and health effects; and
  - Dust impacts on local communities (nuisance and health implications).
- Impala’s duty of care (specifically with respect to waste management); and
- Purpose and function of Impala’s environmental management system.

Individuals required to complete Module 3 (Specific training module) will need to complete Modules 1 and 2 first. On completion of the Module 3, individuals will be subject to a short test (written or verbal) to ensure the level of competence has been achieved. Individuals who fail the test will be allowed to re-sit the test after further training by the training department.

The actual contents of the training modules will be developed based on a training needs analysis. Key personnel will be required to undergo formal, external environmental management training (e.g., how to operate the environmental management system, waste management and legal compliance). In addition to the above Impala will:

- Conduct refresher training/presentations on environmental issues for mine employees (permanent and contractors) at regular intervals;
- Promote environmental awareness using relevant environmental topic posters displayed at strategic locations on the mine. These topics will be changed monthly, and will be reviewed annually by the Environmental Department Manager to ensure relevance; and
- Participate and organise events which promote environmental awareness, some of which will be tied to national initiatives e.g., National Harbour Week, World Environment Day and National Water Week.

## 29.5 MANNER IN WHICH RISKS WILL BE DEALT WITH TO AVOID POLLUTION OR DEGRADATION

### 29.5.1 Ongoing Monitoring and Management Actions

Implementation of Impala's existing monitoring programmes, as mentioned in chapter 28, will be continued to provide early warning systems necessary to avoid environmental emergencies.

### 29.5.2 Procedures in Case of Environmental Emergencies

Emergency procedures apply to incidents that are unexpected and may be sudden, and which may lead to serious danger to employees/contractors, the public and/or potentially serious pollution of, or detriment to the environment (immediate and delayed). Procedures to be followed in case of environmental emergencies are described in the sections below.

#### 29.5.2.1 General Emergency Procedure

The general procedure that should be followed in the event of all emergency situations is as follows.

- Applicable incident controller, defined in Impala's existing emergency plans, must be notified of an incident upon discovery;
- Area to be cordoned off to prevent unauthorised access and tampering of evidence;
- Undertake actions defined in Impala's existing emergency plans to limit/contain the impact of the emergency;
- If residue facilities/dams, stormwater diversions, etc., are partially or totally failing and this cannot be prevented, the emergency siren is to be sounded (nearest one available). After hours the Operations Engineer on shift must be notified;
- Take photographs and samples as necessary to assist in investigation;
- Report the incident immediately to the Environmental Department for emergencies involving environmental impacts or to the safety department in the case of injury;
- The Environmental Department must comply with Section 30 of the NEMA such that:
  - The Environmental Department must immediately notify the relevant departments of:
    - The nature of the incident;
    - Any risks posed to public health, safety and property;
    - The toxicity of the substances or by-products released by the incident; and
    - Any steps taken to avoid or minimise the effects of the incident on public health and the environment.
- The Environmental Department must, as soon as is practically possible, after the incident:
  - Take all reasonable measures to contain and minimise the effects of the incident including its effects on the environment and any risks posed by the incident to the health, safety and property of persons;
  - Undertake clean up procedures;
  - Remedy the effects of the incident;
  - Assess the immediate and long-term effects of the incident (environment and public health); and
  - Within 14 days, the Environmental Department must report to the Director-General DWS and DFFE, the provincial head of DFFE, the regional manager of the DMRE, the head of the

district and local municipalities and the head of the regional DWS office such information as is available to enable an initial evaluation of the incident, including:

- The nature of the incident;
- The substances involved and an estimation of the quantity released;
- The possible acute effects of the substances on the persons and the environment (including the data needed to assess these effects);
- Initial measures taken to minimise the impacts;
- Causes of the incident, whether direct or indirect, including equipment, technology, system or management failure; and
- Measures taken to avoid a recurrence of the incident.

#### Identification of Emergency Situations

The project-specific emergency situations that have been identified together with specific emergency response procedures are outlined in Table 29-1.

**Table 29-1: Emergency Response Procedures**

Item	Emergency situation	Response in addition to general procedures
1	Spillage of chemicals, engineering substances and waste	<ul style="list-style-type: none"> <li>● Where there is a risk that contamination will contaminate the land (leading to a loss of resource), surface water and/or groundwater, Impala will:                             <ul style="list-style-type: none"> <li>○ Notify residents/users downstream of the pollution incident;</li> <li>○ Identify and provide alternative resources should contamination impact adversely on the existing environment;</li> <li>○ Cut off the source if the spill is originating from a pump, pipeline or valve (e.g., refuelling bays) and the infrastructure 'made safe';</li> <li>○ Contain the spill (e.g., construct temporary earth bund around source such as road tanker);</li> <li>○ Pump excess hazardous liquids on the surface to temporary containers (e.g., 210 litre drums, mobile tanker, etc.) for appropriate disposal; and</li> <li>○ Remove hazardous substances from damaged infrastructure to an appropriate storage area before it is removed/repaired.</li> </ul> </li> </ul>
2	Discharge of dirty water to the environment	<ul style="list-style-type: none"> <li>● Apply the principals listed for Item 1 above.</li> <li>● To stop spillage from the dirty water system, Impala will:                             <ul style="list-style-type: none"> <li>○ Redirect excess water to other dirty water facilities where possible;</li> <li>○ Pump dirty water to available containment in the clean water system, where there is no capacity in the dirty water system;</li> <li>○ Carry out an emergency discharge of clean water and redirect the spillage to the emptied facility; and</li> <li>○ Apply for emergency discharge as a last resort.</li> </ul> </li> </ul>
3	Pollution of surface water (where relevant)	<ul style="list-style-type: none"> <li>● Apply the principals listed for Item 1 above;</li> <li>● Absorbent booms will be used to absorb surface plumes of hydrocarbon contaminants;</li> <li>● Contamination entering the surface water drainage system will be redirected into the dirty water system; and</li> <li>● The Environmental Department will collect in-stream water samples downstream of the incident to assess the immediate risk posed by contamination.</li> </ul>
4	Groundwater contamination	<ul style="list-style-type: none"> <li>● Apply the principals listed for Item 1 above; and</li> <li>● Investigate the source of contamination and implement control/management actions.</li> </ul>

Item	Emergency situation	Response in addition to general procedures
5	Falling into hazardous excavations	<ul style="list-style-type: none"><li>• Personnel discovering the fallen individual or animal must mobilise the emergency response team to the location of the incident and provide a general appraisal of the situation (e.g., human or animal, conscious or unconscious, etc.);</li><li>• The injured party should be recovered by trained professionals such as the Shaft 16 emergency response team; and</li><li>• A doctor (or appropriate medical practitioner)/ambulance should be present at the scene to provide first aid and transport individual to hospital.</li></ul>
6	Uncovering of graves and sites and fossils	<ul style="list-style-type: none"><li>• Refer to the Chance Find Procedure provided in Table 10-1.</li></ul>

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## 29.6 TECHNICAL, MANAGEMENT AND FINANCIAL OPTIONS

Technical, management and financial options that will be put into place to deal with the remediation of impacts in cases of environmental emergencies are described below:

- Impala will appoint a competent management team with the appropriate skills to develop and manage the proposed project of this scale and nature;
- To prevent the occurrence of emergency situations, the Impala will implement, as a minimum ,the mine plan and mitigation measures as included in this BAR and EMPr;
- Impala has an environmental management system in place where to identify, report, investigate, address and close out environmental incidents;
- As part of its annual budget, Impala will allow a contingency for handling of any risks identified and/or emergency situations; and
- Where required, Impala will seek input from appropriately qualified people.

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### **30. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY**

As mentioned in chapter 28, Impala will, for the period during which the EA and the EMPr is valid, submit environmental audit reports to the DMRE. These audits will focus on the mine's compliance with the conditions of the EA and the commitments in the EMPr. These audits will be undertaken by a qualified independent person and will comply with the relevant EIA Regulations, 2014 (as amended).

The Environmental Manager will conduct internal management audits against the commitments in the EMPr in accordance with an annual audit plan. During the operation phase, these audits will be conducted on a quarterly basis. The audit findings will be documented for both record keeping purposes and for informing continual improvement.

Furthermore, the financial provision for the mine will be updated on an annual basis and be submitted to the DMRE for the duration of the operation in accordance with the relevant legislation.



### 31. UNDERTAKING

We, Sharon Meyer and Rizqah Baker, undertake that:

- The information provided herein is correct;
- Comments and inputs from I&APs have been included and correctly recorded in this report;
- Inputs and recommendations from the specialist reports have been included, where relevant; and
- Any information provided to I&APs and any responses to comments or inputs made is correct or was correct at that time.



Signature of Report Author

2 September 2021

Date



Signature of EAP

2 September 2021

Date

To be included in revised BAR (hard copy)

Signature of Commissioner of Oaths

Date

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## 32. REFERENCES

- Airshed Planning Professionals, 2020. *Air Quality Specialist Report for the Proposed Increase of the Flash Dryer Capacity and Associated Feed Circuit Modifications at the Impala Rustenburg Smelter Complex.*
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University of Witwatersrand, 2021. *Request for Exemption of any Paleontological Impact Assessment for the Proposed Parking Phase 1 for Impala Platinum Limited, Shaft 16 Complex, Rustenburg Operation, North West Province.*



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