



Applicant: Impala Platinum Limited

DMR Reference Number: NW 30/5/1/2/3/2/1/131EM and 133EM

SCOPING REPORT FOR THE PROPOSED SHAFT 16 WASTE ROCK DUMP EXPANSION AND OPENCAST ACTIVITIES AT PIT8C

SCOPING REPORT

Submitted with due regard to

**consultation with communities and interested and
affected parties**

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

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ACCRONYMS AND ABBREVIATIONS

Acronyms / Abbreviations	Definition
BPDM	Bojanala Platinum District Municipality
DAFF	Department of Agriculture, Forestry and Fisheries
dBA	A-weighted decibel
DEA	Department of Environmental Affairs
DEDECT	Department of Economic Development, Environment, Conservation and Tourism
DMR	Department of Mineral Resources
DRDLR	Department of Rural Development and Land Reform
DWA	Department of Water Affairs
DWEA	Department of Water and Environment Affairs
EAP	Environmental Assessment Practitioner
EAPSA	Environmental assessment practitioner of Southern Africa
EIA	Environmental impact assessment
EMP	Environmental management programme
IAPs	Interested and/or affected parties
km ²	Square kilometres
LOM	Life of mine
m	Meters
mamsl	Meters above mean sea level
m ²	Square meter
m ³	Cubic meter
MAR	Mean annual runoff
mbgl	Metres below ground level
MPRDA	Mineral and Petroleum Resources Development Act
MW	Megawatts
NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act
NEMA: WA	National Environmental Management: Waste Management Act
NWEF	North West Eco Forum
NWPTB	North West Parks and Tourism Board
°C	Degrees Celsius
ROM	Run-of-mine
SAHRA	South African Heritage Resources Agency
WRD	Waste rock dump

INTRODUCTION

Introduction to the proposed project

Impala Platinum Limited (Impala) operates a mining and processing operation approximately 16 km from Rustenburg. In 2005, the Department of Mineral Resources (DMR) approved the Environmental Impact Assessment and Environmental Management Programme (EIA/EMP) amendment report for the mining of both the UG2 and Merensky reef using opencast mining and digging methods (Metago, 2005). A portion of the farm Vaalkop 275 JQ and Beerfontein 263 JQ was omitted from the original project area. Impala is proposing to undertake opencast activities referred to as the proposed Pit8C project, located on the farms Beerfontein 263 JQ and Vaalkop 275 JQ. The proposed Pit8C project will only target the Merensky reef.

In addition to this, Impala is proposing to expand the existing waste rock dump (WRD) at Shaft 16, located on the farm Reinkoyalskraal 278 JQ. The existing WRD at Shaft 16 was constructed in accordance with the relevant approved EIA/EMP amendment report for Shaft 16 (Golder 2004), however monitoring results have since indicated that the current WRD is contributing to a pollution plume. Impala is therefore proposing the Shaft 16 WRD expansion project, which is required in order to allow for improved pollution prevention measures on the expanded section of the dump.

The projects are located within Impala's surface use area at its Rustenburg operations. This area falls within the Rustenburg Local Municipality and Bojanala Platinum District Municipality in the North West Province. The regional and local settings are presented in Figure 1 and Figure 2 respectively.

SLR, an independent firm of environmental consultants, has been appointed to manage the environmental authorisation processes.

In accordance with the requirements of the Mineral and Petroleum Resources Development Act, 28 of 2002 (MPRDA), the EIA process comprises two phases: the scoping phase and the environmental impact assessment phase combined with the environmental management programme (EIA/EMP) phase. This report describes the scoping phase for the proposed project.

Brief project motivation (need and desirability)

The addition of Pit8C as an operative opencast mining area is an economically viable option for Impala, and will optimise the extraction of mineral resources. The expansion of the Shaft 16 WRD is necessary as a pollution prevention measure. Given that existing workers will be used for the Pit8C project, the related benefit is job continuity. In the case of the WRD expansion, the strategy is to involve people from the local community as far as possible which has the potential to increase employment and procurement opportunities.

Legal Framework

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

- an environmental decision from the DMR in terms of the MPRDA on the basis of an EIA/EMP amendment;
- an environmental decision in terms of the National Environmental Management Act, 107 of 1998 (NEMA) to authorise NEMA listed activities on the basis of a basic assessment process and the associated basic assessment report; and
- an amendment to the water use license from the Department of Water Affairs (DWA) in terms of the National Water Act (NWA) 36 of 1998 on the basis of a water use license application (WULA).

This document has been prepared in accordance with the DMR Scoping Report template format as part of the EIA/EMP amendment process. The relevant criteria are indicated in Table 1.

TABLE 1: SCOPING REPORT REQUIREMENTS (MPRDA)

Mining Regulation 49 of Regulation 527 of 23 April 2004	Reference in scoping report
Describe the methodology applied to conduct scoping.	Section 6
Describe the process of engagement of identified interested and affected parties (IAPs), including their views and concerns.	Section 5
Describe the existing status of the environment prior to the mining operation.	Section 2
Describe the most appropriate procedure to plan and develop the proposed operation.	Section 3.1
Identify and describe reasonable land use or development alternatives to the proposed operation. Describe the consequences of not proceeding.	Section 4
Identify and describe the anticipated environmental, social and cultural impacts, including cumulative effects where applicable.	Sections 3.4, 3.5, 3.6, 3.7, 3.8 and 3.9
Describe the nature and extent of further investigations required in the environmental impact assessment report.	Section 6

Scoping phase objectives

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

Scoping team

SLR is an independent firm of consultants that has been appointed by Impala to undertake the environmental assessment. Caitlin Pringle, Natasha Daly and Brandon Stobart comprise the SLR team whom are the responsible SLR environmental assessment practitioners (EAPs) for managing the project and compiling the final report. Neither Caitlin Pringle, Natasha Daly nor Brandon Stobart have any interest in the project other than fair payment for consulting services rendered as part of the environmental assessment process.

The designations of the environmental scoping team are as follows:

- Brandon Stobart – Project Reviewer
- Caitlin Pringle – Project Manager
- Natasha Daly – Project Assistant.

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FIGURE 1: REGIONAL SETTING

FIGURE 2: LOCAL SETTING

1 THE METHODOLOGY APPLIED TO SCOPING

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

- key team members conducted a site visit of the proposed Pit8C and Shaft 16 WRD expansion sites;
- available studies and reports covering the Impala Platinum Mine area were reviewed;
- a project description was drafted in consultation with the client;
- potential positive and negative impacts were identified by considering the project description and site conditions;
- IAPs were identified, notified of the proposed project and consulted (the consultation process is outlined in Section 5 of this report);
- the relevant authorities were identified, notified of the proposed project and consulted (the consultation process is outlined in Section 5 of this report);
- the SLR environmental team identified the additional studies required to assess the potential positive and negative impacts (the terms of reference are included in Section 6 of this report); and
- a Scoping Report was compiled.

The main sources of information used to develop this report are discussed below.

As part of Impala's approved EIA and EMP reports various specialist studies were commissioned to cover the Impala site. The following studies were completed and have been used to inform this report:

- Biodiversity Study of the Impala-Bafokeng Mining Complex (North West University, November 2010)
- Impala Mining Development-Palaeontological Impact Assessment (University of the Witwatersrand, August 2011)
- Surface Water Assessment and Floodline Modelling for Impala Platinum Mine (Metago Environmental Engineers, September 2011)
- Impala Platinum Consolidation Project-Pedological and Land Capability Studies (Earth Science Solutions, December 2011)
- Groundwater Quality Monitoring Summary Report (Metago Environmental Engineers, December 2011)

In addition the following information was used:

- Impala Platinum Limited Environmental Design Recommendations for WRDs (Knight Piésold, 2009)
- Amendment to the Environmental Management Programme Report (EMPR) for the proposed No 16 shaft at Impala Platinum near Rustenburg in the North West Province (Golder Associates Africa, 2004)

1.1 HISTORICALLY DISADVANTAGED COMMUNITIES

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

There are no communities within 1.5 km of the proposed Pit8C project, because it is situated in between existing Impala infrastructure. Further afield, there are some communities as listed below (refer to Figure 2):

- Luka South – approximately 1.75 km north-west of the site

Communities closest to the Shaft 16 WRD expansion project site include: (refer to Figure 2)

- Kanana – approximately 600 m north-east of the site
- Freedom Park – approximately 2.5 km west of the site

1.2 HISTORICALLY DISADVANTAGED COMMUNITY LAND OWNERSHIP

Magata's Tribe, the Royal Bafokeng and Republic of Bophuthatswana are the registered owners of the farm portions on which the proposed project sites are located- refer to

Table 2. The relevant contact for the above mentioned landowners is the Royal Bafokeng Administration (RBA) Mining Committee.

1.3 DEPARTMENT OF LAND AFFAIRS INTEREST

The Department of Rural Development and Land Reform (DRDLR), formerly known as the Department of Land Affairs (DLA), has been identified as an interested and affected party (IAP) and has been consulted. Proof of consultation is attached in Appendix B.

1.4 LAND CLAIMS

The DRDLR has advised SLR that no land claims have been lodged on the farms Beerfontein 263 JQ, Vaalkop 275 JQ and Reinkoyalskraal 278 JQ (Appendix B).

1.5 RELEVANT TRADITIONAL AUTHORITY

The traditional authority identified is the Royal Bafokeng Administration.

1.6 LANDOWNERS

The title deed owners are listed in Table 2 below.

TABLE 2: LAND OWNERS IN THE PROJECT AREA

Farm Name	Portion number	Title deed number	Surface owner as per title deeds search (July 2012)
Reinkoyalskraal 278 JQ	Portion 3	T373/1992BP	Bafokeng Tribe (RBA)
Vaalkop 275 JQ	Portion 0 (whole farm)	T4/1980BP	Magata's Tribe (RBA)
Beerfontein 263 JQ	Portion 2	T373/1883BP	Republic of Bophuthatswana (RBA)

1.7 LAWFUL OCCUPIERS

Reinkoyalskraal 278 JQ, Vaalkop 275 JQ and Beerfontein 263 JQ fall within Impala's existing surface use area. The lawful occupiers of the abovementioned land are Impala (for both sites), communal cattle grazers that periodically move through the area in and around the Pit8C site, and a sunflower farmer that cultivates land at the Shaft 16 WRD expansion site. In this regard, there are no houses or other dwellings at either of these sites.

1.8 OTHER PARTIES THAT MAY BE DIRECTLY AFFECTED

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

It is not foreseen that any other parties will be directly affected by either of the projects.

Other parties that may be indirectly affected by the project and that have been identified to date include:

- downstream water users;
- surrounding mining operations; and
- surrounding communities on non-adjacent properties (including land owners and land users).

1.9 RELEVANT LOCAL MUNICIPALITY

The Bojanala Platinum District Municipality (BPDM) and Rustenburg Local Municipality (RLM).

1.10 OTHER STAKEHOLDERS

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

- Regulatory authorities:
 - Department of Mineral Resources (DMR)
 - Department of Water Affairs (DWA)
 - Department of Economic Development, Environment, Conservation and Tourism (DEDECT)

- South African Heritage Resource Agency (SAHRA);
- Department of Agriculture, Forestry and Fisheries (DAFF);
- Department of Rural Development and Land Reform (DRDLR);
- Rustenburg Local Municipality;
- Bojanala Platinum District Municipality;
- Ward councillors;
- Non-governmental Organisation (NGO):
 - North West Eco Forum (NWEF)
- Surrounding communities as represented by:
 - The RBA; and
 - Future Forum.

1.11 NOTIFICATION OF LANDOWNERS, LAWFUL OCCUPIERS AND IAPS

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

B. The following list applies:

- the landowner is the Royal Bafokeng; and
- The lawful occupiers are Impala, Mr Basi Ntsimane (sunflower farmer at Shaft 16 WRD expansion site), and ad-hoc communal grazers as represented by the RBA.

2 DESCRIPTION OF THE EXISTING STATUS OF THE ENVIRONMENT

This section has been compiled using the open pit 2005 EIA/EMP amendment report (Metago, 2005) and the EIA/EMP amendment report for Shaft 16 (GCS 2004) as well as specialist studies completed for various subsequent reports completed by SLR for Impala. In addition to this, information from the recent site visits by SLR personnel was used. This baseline information is aimed at giving the reader perspective on the existing status of the cultural, socio-economic and biophysical environment.

2.1 AGREEMENT ON EXISTING STATUS OF ENVIRONMENT

Information on the existing status of the environment was provided to IAPs during the focused meetings with the RBA Mining Committee and with the Future Forum as per the minutes attached in Appendix B. No objections were raised about the information on the existing environment to date IAPs will also have the opportunity to review this scoping report which includes details of the existing status of the environment.

2.2 EXISTING STATUS OF THE CULTURAL ENVIRONMENT

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

2.3 EXISTING STATUS OF THE HERITAGE ENVIRONMENT

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

Palaeontological 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 publicised (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 and diatoms), and unmineralized remains (for example bones of Ice Age mammals).

The project has the potential to disturb both the ground surface (through establishment of infrastructure) as well as soils and rock layers below the surface (through excavations for foundations and opencast mining). In this regard, heritage and paleontological resources could be disturbed or destroyed. As a baseline, this section identifies the presence of heritage and paleontological resources and their conservation significance.

Impala is located in the Central Bankeveld of the North-West Province of South Africa. The Bankeveld is a narrow strip of land between the northern bushveld savannah and the centrally situated Highveld. The Central Bankeveld contains numerous centuries-old remains of ancient Tswana spheres of influence. The 2007 heritage survey found the following types of heritage and cultural resources in the broader Impala area (Pistorius, 2007):

- single and clusters of stone walled settlements dating from the Late Iron Age;
- formal and informal graveyards;
- scatters of stone tools from the Middle Stone Age;
- structures such as residential houses which are older than sixty years and which qualify as historical structures; and
- remains which date from the more recent past.

Further desktop analysis for Impala's Consolidation EMP (NW30/5/1/2/2/130MR, 131MR, 132MR and 133MR), in which all heritage resources within Impala's full mine lease area were mapped, show that no heritage resources were found to occur within the Pit8C and Shaft 16 WRD expansion project areas. Nonetheless, site specific investigation is required to verify this finding.

In addition to this, given that the entire area is underlain by igneous rocks of the Rustenburg Layered Suite of the Bushveld Igneous Complex (BIC) as discussed in Section 2.6.1, these rocks are Precambrian in age and are of igneous origin and it is highly unlikely that fossils will be affected by the proposed subsurface mining development for the proposed Pit8C and the proposed Shaft 16 WRD project sites (WITS, August 2011).

2.4 EXISTING STATUS OF THE SOCIO-ECONOMIC ENVIRONMENT

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

2.4.1 CURRENT LAND USES AND THE SOCIO-ECONOMIC ENVIRONMENT

Projects of this nature have the potential to influence current land uses both on the site (through land development) and in the surrounding areas (through direct or secondary positive and/or negative impacts). In addition, mining projects have the potential to influence various aspects of the socio-economic profile of a community. As a baseline, this section provides a brief description of the existing land tenure, land uses on site, and the current socio-economic status of the region.

Pre-project land use

The relevant land uses and socio-economic factors that may be affected include the following:

Shaft 16 WRD expansion site - most of the Shaft 16 WRD expansion site is used for dryland sunflower cultivation. The immediately neighbouring land use to the north, west and south is also dryland sunflower cultivation. To the east, the existing Shaft 16 infrastructure borders on the expansion site.

Pit8C site - the area on and adjacent to Pit8C is dominated by existing Impala infrastructure (stores, offices and transportation infrastructure including roads and rail), but the undeveloped patches of veld show evidence of ad-hoc livestock grazing.

Land uses on the relevant properties and surrounding properties may be impacted upon by the proposed project. The potential positive and negative impacts are described in Sections 3.6 of the scoping report.

Mineral/prospecting rights

Impala holds an approved mining right (NW30/5/1/2/2/131MR and 133MR which covers the farms Beerfontein 263 JQ, Vaalkop 275 JQ and Reinkoyalskraal 278 JQ on which the Pit8C and Shaft 16 WRD expansion projects are proposed.

Socio-economic profile of immediate area

Royal Bafokeng

With reference to the municipal demarcation board, the Bafokeng Nation comprises most of the communities within and surrounding the Impala surface use area. Although the closest communities to the proposed Pit8C and Shaft 16 WRD expansion sites are Luka South and Kanana respectively, it is not envisaged that these communities will be directly affected. Rather, given that the proposed Pit8C and Shaft 16 WRD expansion sites are utilised for ad-hoc cattle grazing and dryland sunflower cultivation respectively, it is therefore felt that the land users at these sites are more directly affected.

Rustenburg Municipality Ward Councillors

Although the land users at the proposed project sites and the potentially affected communities (Luka South and Kanana) form part of the Royal Bafokeng Nation, the proposed project sites are also located within various Rustenburg Local Municipality Ward boundaries.

Whilst the project sites fall into the jurisdiction of ward 24, both wards 4 and 23 are neighbouring wards and have therefore been identified as being of importance. In addition to this, ward 38 is a sub-ward of ward 24. Given the above, ward councillors of all of these wards are being consulted.

2.5 EXISTING STATUS OF INFRASTRUCTURE THAT MAY BE AFFECTED

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

2.5.1 COMMUNITIES AND COMMUNITY STRUCTURES

There are no communities or community structures in the immediate vicinity of either project. It is also unlikely that communities or community structures will be directly affected by the projects. For the sake of completeness, the closest communities are listed as follows (refer to Figure 2):

- the closest community to the Pit8C project site is Luka South which is approximately 1.75 km north-west of the site and falls under the jurisdiction of ward 24; and
- the closest community to the Shaft 16 WR expansion site is Kanana which is approximately 600 m north-east of the site and also falls under the jurisdiction of ward 24.

2.5.2 MINING STRUCTURES

Impala's existing mining structures (shafts, offices, stores, roads, pipes, power lines, telecommunication lines and railway lines) are located within or adjacent to both project sites because these sites are within Impala's existing surface use area.

2.5.3 REGIONAL ROAD INFRASTRUCTURE

The regional Z523 road is situated approximately 500 m to the north-east of the proposed Shaft 16 WRD expansion site. The current WRD is located between this road and the proposed expansion, but the expansion will be visible from the road.

2.5.4 REGIONAL POWER LINE INFRASTRUCTURE

There is a regional Eskom power line situated approximately 100 m to the south of the proposed Pit8C project site. The internal Impala roads and railway lines are situated between this power line and the site.

2.6 EXISTING STATUS OF THE BIOPHYSICAL ENVIRONMENT

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

2.6.1 GEOLOGY

The geology of a particular area will determine the following factors:

- the type of soils present since the soils will be derived from the parent rock material;
- the presence and quality of groundwater and the movement of the groundwater in the rock strata;
- the presence of paleontological resources in the rock strata; and
- the potential for acid generation.

All of these aspects will be considered in the EIA/EMP report. However, a basic description of the regional geology is described below:

Soil types are discussed in Section 2.6.4, groundwater in Section 2.6.7 and paleontological resources in Section 2.3.

Regional Geology

Impala is situated in the Bushveld Igneous Complex (SRK, August 1997). The Bushveld complex is an intrusive igneous body, extending about 400 km from east to west and about 350 km from north to south. It comprises a series of ultramafic-mafic layers and a suite of associated granitoid rocks. There are four main limbs to the complex, namely the Northern Limb, the Eastern Limb, the Southern Limb and the Western Limb. Impala is located in the Western Limb, where the layers dip to the north at approximately 10 – 20 ° into the basin.

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

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

Local Geology: Pit8C project site

The proposed Pit8C project will target the Merensky reef which outcrops just below surface in the proposed project area. The Merensky chromitite layer has an average thickness of approximately 1 m and dips at an angle of between 9° and 12° in a north-easterly direction. The Merensky reef horizon comprises of a basal pyroxenitic portion, which includes a pyroxenite, a pegmatiodal pyroxenite and chromitite layers that may be present and a portion of the anorthositic norite below the chromitite layers. Overlying the pyroxenite layers is a norite grading into a spotted anorthosite and mottled anorthosite.

No faults or dykes are located within the vicinity of the proposed Pit 8C project site.

Local Geology: Shaft 16 WRD expansion site

Various dolerite dykes (up to 40 m thick) and lamprophyte dykes (0.2 to 2.0 m) occur in the region. In some cases, the lamprophyte dykes cause poor ground conditions. They tend to occur in groups, following existing jointing and do not outcrop on the surface because they are “crumbly” by nature. Some faults have also been intersected by underground workings in the region. They are typically normal faults with displacements of less than 10 m. Larger faults and reverse faults are present though less common.

2.6.2 TOPOGRAPHY

The topography of a particular area will determine the following factors:

- the flow of surface water, and in many cases, also groundwater;
- the depth of soils and the potential for soil erosion, for example, in the case of steep slopes;
- the type of land use, for example flat plains are more conducive to crop farming;
- the aesthetic appearance of the area; and
- topography can also influence climatic factors such as wind speeds and direction, for example, wind will be channelled in between mountains and along valleys.

Changes in the topography caused by the mining activities could therefore alter all of the above-mentioned aspects of the environment. Project-related activities have the potential to alter the topography of the site through the establishment of both temporary and permanent infrastructure.

This section provides brief description of the site topography to facilitate an understanding of the topographical features relevant to the project sites and surrounding area from which to measure potential change. More detailed information will be provided in the EIA/EMP report.

The proposed Pit8C and Shaft 16 WRD project sites are located in an area that is characterised by gently undulating plains at an altitude of approximately 1130 metres above mean sea level (mamsl), approximately 10 km north-east of the northern most section of the Magaliesberg Mountain Range. Peaks in this section of the Magaliesberg rise to heights of between 1400 and 1500 mamsl.

2.6.3 CLIMATE

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 brief baseline situational analysis is described below. More detailed and updated information will be provided in the EIA.

Climatic data was sourced from the Rustenburg-POL station (0511400 W).

Regional climate

Impala falls within the Highveld Climatic Zone, as defined by Schulze (1994). Temperatures in this climate are generally mild, with mean annual maximum temperatures of 26.4°C, but mean monthly maximum temperatures of more than 30°C can be experienced in summer. Low mean annual minimum temperatures of 10.9°C, and mean monthly minimums as low as 2.8°C are experienced in winter (MEE, 2010). Frost characteristically occurs in the winter months.

Weather stations

The Rustenburg-POL weather station is the closest DWA station to the site.

Rainfall and evaporation

The highest intensity rainfall per month recorded at the Rustenburg-POL weather station was 384 mm in January 1909.

Potential A-pan evaporation figures for the area exceed the rainfall, indicating the level of water deficiency in the area. The monthly evaporation figures vary from 115 mm to 214 mm.

Temperature

Temperatures in the vicinity tend to be warm to hot with average temperatures ranging from 10.9°C (winter) to 26.4°C (summer). Generally December and January are the hottest while June and July are the coldest months.

Wind

The dominant day time winds are from the north-east and north-west. The dominant night time wind is from the south and south-east. On average the south and south-easterly winds occur approximately 25% of the time and are associated with low wind speeds between 1 and 2m/s. on average, the winds from the north-east, north-west and south-west occur less frequently but are associated with higher speeds that are greater than 5 m/s on average, calm conditions are experienced approximately 14 % of this time.

2.6.4 SOIL AND LAND CAPABILITY

Soil is an important natural resource and provides ecosystem services that are critical for life, such as:

- water filtering;
- providing growth medium for plants, which in turn provide food for plant-eating animals; and
- providing habitat for a wide variety of life forms.

Soil forms rather slowly by the breaking down of rock material and is therefore viewed as a non-renewable resource. Soil determines the type of land use the area is suitable for, for example, soil with low nutrients may not be able to support crop farming.

Soil resources are vulnerable to pollution, erosion and compaction, which could be caused by project-related activities.

The baseline soil information will be used to identify sensitive soil types, to guide the project planning in order to avoid sensitive soil types where possible, to determine how best to conserve the soil resources in the area and allow for proper rehabilitation of the site once mining ceases.

The land capability of an area is based on the soil properties and related potential to support various land use activities. Mining operations have the potential to significantly transform the land capability.

A brief description of the soil types and land capability in the project areas is provided below.

Soil types within the project sites

The soils at both project sites consist of deep, dark, strongly structured, usually calcareous, swelling clay soils of the Arcadia soil form with visible cracks and either a crusting or self-mulching (crumbly) soil surface. The Arcadia soils are commonly referred to as 'black turf' soils.

The clay-rich nature of the Arcadia soils which, coupled with the clay mineralogy, gives the Arcadia soils their shrink-swell properties. The Arcadia soils have a high pH, mainly due to the high calcium and magnesium content derived from the basic parent material. The cation exchange capacity is high,

illustrating the natural fertility of these soils, despite their problematic workability. The phosphorous levels (P values) are very low, which is also usually the case in these soils.

The slopes in the area are fairly flat resulting in a low potential for soil erosion. In addition, due to the cohesive nature of the clay soils, it is not likely that the soils will be easily eroded.

The effective soil depth varies between 0.1 and > 1.2 metres. In profile the soils have a relatively homogeneous texture and structure from the surface downwards.

The very clayey nature of the Arcadia soils makes the tilling of the land difficult. The shrink-swell properties of the dominant Arcadia form means that there is a narrower moisture range for cultivation than most other agricultural soils. The intake rate and drainage in these soils is poor to moderate. Due to the low phosphorous values, fertilizer supplements will probably be required for certain crops. The dryland cultivation potential of these Arcadia soils is moderate.

The irrigation potential of the proposed project area is generally moderate with careful management. The mainly smectitic nature, with consequent shrinking and swelling properties, of the dominant Arcadia (turf) soils means that there is a narrower moisture range for cultivation than most other agricultural soils. If these swelling clay soils become wet, the pores fill up, they saturate easily and drain slowly, causing anaerobic conditions (especially under irrigation) and a deficit of oxygen in the root zone. If allowed to dry out, however, these soils can crack, damaging roots.

Land capability within the project sites

The dominant Arcadia (turf) soil forms have a narrower moisture range for cultivation than most other agricultural soils. However, these black clay soils are naturally fertile, with high cation exchange capacities and moderately high organic carbon contents. If well managed, they can be productive soils. The Arcadia soil form unit is regarded as having grazing potential and arable capability. It should however be noted that construction of infrastructure and existing mining activities adjacent to the project areas has already impacted on soils and land capability in the project area.

2.6.5 BIODIVERSITY

Biodiversity refers to the flora (plants) and fauna (animals) on earth. According to the International Union for Conservation of Nature (IUCN) (2011), biodiversity is crucial for the functioning of ecosystems which provide us with products and services which sustain human life. Healthy ecosystems provide us with oxygen, food, fresh water, fertile soil, medicines, shelter, protection from storms and floods, stable climate and recreation. Biodiversity therefore has a direct impact on human health when considering (IUCN, 2011):

- biodiversity is essential to global food security and nutrition and also serves as a safety-net to poor households during times of crisis;
- increased diversity of genes within species e.g. as represented by livestock breeds or strains of plants, reduces risk from diseases and increases potential to adapt to changing climates; and
- many plant species are used in traditional and modern medicine.

The establishment of project infrastructure as well as project-related activities have the potential to result in a loss of habitat through the destruction/disturbance of vegetation and/or contamination of soil and/or water resources, thereby reducing the occurrence of fauna and flora on site and in the surrounding areas.

The baseline information on biodiversity in the project area will be used to identify sensitive areas, to guide the project planning in order to avoid sensitive areas where possible, to determine how best to conserve the fauna and flora in the area and allow for proper rehabilitation of the site once mining ceases.

A brief description of fauna and flora in the project area is provided below.

Flora (Natural plant life)

According to vegetation mapping and the biodiversity study conducted by the North West University (North West University, 2010) the proposed Pit 8C project area and the shaft 16 WRD site are situated in Marikana Thornveld. The species that may occur within the project sites are listed below.

The proposed Pit8C site has been transformed and fragmented by previous human and mining activity. Signs of human wood harvesting and grazing are evident and the area has been fragmented by existing Impala infrastructure including stores infrastructure, offices, roads, railway and pipelines. No Red Data plant species occur in the Pit 8C project area. Species that may be found in this area include:

- *Cymbopogon plurinodis* – Narrow Leaved Turpentine Grass;
- *Aristida bipartita* – Rolling grass;
- *Botriochloa insculpta* – Creeping bluegrass;
- *Panicum coloratum* - White buffalograss;
- *Eragrostis spp* – Lovegrass;
- *Brachiaria serrate* – Velvet Signal Grass;
- *Digitaria spp* -Crabgrass species;
- *Rhus lancea (Karee)* – African Sumac;
- *Rhus pyroides* - Common wild currant;
- *Acacia tortilis* - Umbrella Thorn;
- *Acacia karoo* - Sweet Thorn; and
- *Ziziphus mucronata* - Buffalo Thorn.

Given that the majority of the Shaft 16 WRD expansion site has been transformed by sunflower cultivation and existing mine infrastructure, very little natural vegetation exists. No Red Data species are expected at this site. There is one small undisturbed section which is largely devoid of trees and bushes and comprises grazed grasses. These may include:

- *Elionurus miticus* - Wire Lemongrass;
- *Fingerhutia Africana* – Thimblegrass;
- *Hetropogon controtus* – Speargrass; and
- *Melinis nerviglumis* - Bristle-Leaved Red Top, Ruby Grass.

Fauna (Natural animal life)

The study conducted by the North West University (2010) over the general Impala mine lease area found that disturbance caused by existing mining activities in the area has resulted in severe fragmentation of the natural veld and only patches of undisturbed veld occur. The study found the following:

- mammalian species that have been reported by mine employees, farmers, and Wildlife Society rangers include kudu, jackal, ground squirrel, impala, suricate, caracal, duiker, porcupine and steenbok. Species identified during the survey included mice, shrews, mongoose, jackal, dassie, klipspringer and steenbok;
- the amphibian survey conducted indicated a total of ten common species of which only one is listed as a Red Data species, the Giant Bullfrog;
- the herpetofauna survey identified 16 reptile species in the area, including geckos, agamas, skinks, monitors, snakes and terrapin species. None of the reptile species detected is considered to be threatened or vulnerable; and
- a total of 163 species were observed in the surface use area (a total area of 330 km²) during two separate surveys conducted by North West University.

The Pit8C site is sandwiched between areas which have been transformed for mining and related infrastructure and the area itself has been used for grazing. Despite this, there is sufficient habitat to provide some of the abovementioned fauna with at least a movement corridor between the transformed areas and possibly also localised food and shelter.

Given that the majority of the Shaft 16 WRD expansion site has been transformed by sunflower cultivation and existing mine infrastructure, very little natural vegetation exists and therefore there is little potential for fauna to exist on a permanent basis. No Red Data species are expected at this site.

2.6.6 HYDROLOGY (SURFACE WATER)

Surface water resources include drainage lines and paths of preferential flow of stormwater runoff. Project-related activities have the potential to alter the drainage of surface water through the establishment of both temporary and permanent infrastructure and/or result in the contamination of the surface water resources through seepage and/or spillage of potentially polluting materials, non-

mineralised waste (general and hazardous) and mineralised wastes. Key to understanding the hydrology of the site is the climatic conditions of the site (climate is discussed in Section 2.6.3). As a baseline, this section provides a brief description of surface water resources in the project area in order to facilitate an understanding of the hydrological catchments that could be affected by the project and the status of surface water resources in the project area.

Drainage and water resources

The runoff from the Impala surface use area drains into the Elands and Hex Rivers catchments which in turn drain into the Crocodile River. The main dams downstream of Impala are the Vaalkop Dam on the Elands River and the Bospoort Dam on the Hex River. Further catchment details pertaining to the Pit8C and Shaft 16 WRD project sites are provided below.

Pit8C project site

Although there are no drainage lines on or immediately adjacent to the project site, it is located within the Elands River Catchment. This catchment is drained in a northerly direction by non-perennial drainage tributary lines of the Leragane stream which flows into the Elands River just north of the surface use area and ultimately into the Vaalkop Dam. The proposed project is located within quaternary catchment A22F. The gross Mean Annual Runoff (MAR) for the whole of quaternary catchment A22F is 14.4 million m³ covering an area of 1 690 km² (Metago, 2005 and SLR, 2012).

Shaft 16 WRD expansion site

The proposed project is located within the Hex River Catchment which is drained in an easterly direction into the Bospoort dam which is located approximately 2.5 km east of the site. The proposed project is located within quaternary A22H. The nearest major river to the proposed site is the Hex River, which is approximately 2.5 km to the south-east. The gross MAR for the whole of quaternary catchment A22H is 15.7 million m³ covering an area of 579 km² (Golder, 2004 and SLR, 2012). Following a site inspection by DWA in November 2011 (Appendix B), it was concluded that no watercourses (spring, wetland, river or stream) are located within the proposed WRD expansion area. Despite this, runoff water (after rainfall events) is channelled along a preferential flow path within the cultivated sunflower fields and this runoff water will require diversion around the proposed WRD expansion for release through the downstream culverts that are located within the embankment of an internal Impala railway line.

Surface water quality

No water sampling within either of the proposed projects sites is possible on a routine basis because there are no permanent water features. Given this, no water quality data is available, but the quality of surface runoff water after rainfall events is expected to be representative of areas where crop cultivation and cattle grazing occur.

Surface water usersPit8 project site

There are no surface water users on site. Downstream of the site, water ultimately feeds into the Leragane River and Rockwall Dam. Although communities in the region do receive reticulated water, there is some use of Rockwall Dam and the Leragane River for livestock watering and potentially also limited domestic use.

Shaft 16 WRD expansion site

There are no surface water users on site. Downstream of the site, water ultimately feeds into the Hex River and Bospoort Dam. Although communities in the region do receive reticulated water, there is some use of Bospoort Dam and the Hex River for livestock watering and potentially also limited domestic use.

Wetlands

No wetlands have been identified within the project area.

2.6.7 GROUNDWATER

Groundwater is a valuable resource and is defined as water which is located beneath the ground surface in rock pore spaces and in the fractures of lithologic formations. Understanding the geology of the area provides a basis from which to understand the occurrence of groundwater resources. As a baseline, this section provides a brief description of the pre-mining groundwater conditions to facilitate an understanding of the potential for dewatering cones of depression and pollution plumes to occur as a result of project-related activities.

Presence of groundwater

Based on the South African Aquifer Classification System (Parsons, 1995), the general aquifer underlying Impala can be classified as a Minor Aquifer System, with zones that can be classified as Major Aquifer Systems. The definition of a Minor and Major Aquifer System is as follows:

- A Minor Aquifer System can be fractures of potentially fractured rocks, which do not have a high primary permeability, or other formations of variable permeability. Aquifer extent may be limited and water quality variable. Although these aquifers seldom produce large quantities of water, they are important both for local supplies and in supplying base flow to rivers.
- A Major Aquifer System can be defined as highly permeable formations, usually with a known or probable presence of significant fracturing. They may be highly productive and able to support large abstractions for public supply and other purposes. Water quality is generally very good.

The water levels associated with the proposed Pit8C project area are assumed (from investigations done on adjacent opencast areas) to range between 10 and 15 mbgl. The average yield of boreholes previously considered was 1.34 litres per second (L/s) (Metago, 2005).

The water levels associated with the proposed Shaft 16 WRD expansion project are assumed (from investigations done on adjacent shaft and WRD areas) to vary between 6.8 and 11 m below ground level (mbgl). The average yield of boreholes within the vicinity of the proposed Shaft 16 WRD is less than 1.0 L/s (GCS 2004)

Groundwater quality

There is an existing groundwater monitoring program that covers operational areas and any future operational areas will be incorporated into this program. There is no current data specific to the proposed Pit8C project site and will be included in the detailed studies. The existing WRD at Shaft 16 was constructed in accordance with the relevant approved EIA/EMP amendment report for Shaft 16 (Golder, 2004), however monitoring results have since indicated that the current WRD is contributing to a pollution plume for which monitoring and tracking will continue.

Groundwater use

Of the boreholes in the wider region (extending further than the Impala surface use boundary), approximately half are used for monitoring and approximately a quarter are in use for domestic, irrigation or livestock watering.

2.6.8 AIR QUALITY

Identification of existing sources of emissions in the region and the characterisation of existing ambient pollution concentrations is 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 to nearby receptors.

Ambient air pollutant concentrations within the Rustenburg region occur not only due to local sources but also as a result of emissions from various remote sources. The most significant of these sources located within the Rustenburg region include:

- platinum and ferrochrome smelter operations associated with: Anglo Platinum, Impala Platinum, Lonmin (Western Platinum), Xstrata, Merafe, and International Ferro-metals;
- stack emissions from boiler operations-boiler stack emissions include particulates, NO_x, SO₂, CO, VOCs and CO₂;
- stack emissions from incineration operations;
- fugitive dust emissions from mining, tailings impoundments and mineral processing operations, which are associated with Anglo Platinum, BRPM, Aquarius Platinum, Impala Platinum, Lonmin Platinum, Xstrata and Merafe Chrome, Tharisa Minerals, International Ferro-metals, and Samancor Chrome;
- fugitive dust emissions from entrainment on paved and unpaved roads;
- vehicle tailpipe emissions-significant primary pollutants emitted by motor vehicles include CO₂, CO, hydrocarbons (HCs), NO_x, SO₂, particulate matter and lead;
- household fuel combustion by means of coal and wood;

- biomass burning; and
- various miscellaneous fugitive dust sources, including: agricultural activities and wind erosion of open areas.

In addition to this regional setting, the following existing sources are located on or in close proximity to the proposed sites.

Pit8C

- paved and unpaved roads;
- mineral processing complex and smelter;
- old tailings dam (No 1 & 2); and
- current tailings dam (No 3 & 4).

Shaft 16 WRD expansion site

- paved and unpaved roads;
- existing Shaft 16 and associated WRD;
- existing agricultural activities (resulting in exposed land); and
- transportation of ore using internal Impala railway line.

2.6.9 NOISE

Some of the noise generating activities associated with the project may cause an increase in ambient noise levels in and around the site. This may cause a disturbance to nearby receptors. As a baseline, this section provides a brief description of pre-mining conditions in the area from which to measure changes as a result of project-related noise.

Pit8C site

Current noise levels within the proposed Pit8C project site are anticipated to range between 60 dBA during the day and 50 dBA at night given that the proposed site is currently located adjacent to busy roads, railway line and stores and workshops.

Existing noise levels could be as a result of the following existing noise sources:

- Impala's current mining activities. This includes surrounding opencast and shaft operations, mineral processing complex and smelter, stores and office buildings.
- Vehicles and trains

Shaft 16 WRD expansion site

Ambient noise levels at the proposed Shaft 16 WRD expansion site are expected to range from 55 dBA during the day to 45 dBA at night. Despite the fact that that the area is representative of a rural residential

environment, the activities at Shaft 16 already generate a considerable amount of noise disturbance. In addition to the noise generated by other mining-related industry, the main sources of noise are the following:

- traffic on the local roads in the area;
- agricultural activities (i.e. noise emissions from farming equipment);
- community noise (i.e. noise emissions caused by community activities); and
- natural sounds (i.e. animals and wind in the foliage of plants).

Potential sensitive receptors include the surrounding communities discussed in Section 1.1.

2.6.10 VISUAL ASPECTS

Project-related activities have the potential to alter the landscape character of the site and surrounding area through the establishment of both temporary and permanent infrastructure. As a baseline, this section provides an understanding of the pre-mining visual character of the project area against which to measure potential change as a result of project infrastructure and activities.

Both project sites are located within the Impala surface use area and therefore the visual landscape is a combination of natural veld and mountains influenced by mining and community structures and activities. Whilst Pit8C will only be temporary in nature and will be rehabilitated as far as is practically possible to its pre-disturbed state, the Shaft 16 WRD expansion will be a permanent feature, and therefore will serve as a negative visual impact on a permanent basis. Potential sensitive receptors include the surrounding communities discussed in Section 1.1.

2.7 RELEVANT ADDITIONAL INFORMATION

None.

3 IDENTIFICATION OF THE ANTICIPATED IMPACTS

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

The potential impacts associated with all the phases (construction, operations, decommissioning and closure) have been conceptually identified and described and reference has been made to the studies/investigations that are required to provide the necessary additional information. The project description is provided first in this chapter to provide a reference when discussing the potential impacts.

3.1 PROJECT DESCRIPTION

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

The aim of the current EIA/EMP amendment process is to apply for the authorisation of opencast activities at Pit8C and the expansion of the WRD at Shaft 16. More details are provide below.

Proposed Pit8C project

Impala is proposing to undertake opencast activities on the farms Beerfontein 263 JQ and Vaalkop 275 JQ (Figure 2) and will target the Merensky reef. The proposed Pit8C project will consist of a new gravel access road, temporary topsoil stockpile area, a temporary waste rock stockpile area and will cover an area of approximately 5 hectares. The proposed Pit8C project will be mined using conventional opencast mining techniques. In this regard a boxcut will be developed when mining commences. Topsoil will be removed and stockpiled; overburden will be drilled, blasted and removed; and ore will be removed and sent for crushing at the existing crusher plant. The opencast pit will then be closed by backfilling and replacing the stored topsoil on top of the overburden and then vegetation will be re-established.

Shaft 16 WRD expansion

The existing WRD located on the farm Reinkoyalskraal 278 JQ (at Shaft 16) was constructed in accordance with the relevant approved EIA/EMP amendment report for Shaft 16 (Figure 2). Routine Impala groundwater monitoring detected pollution associated with the existing WRD. Impala is now proposing to expand the WRD to prevent additional pollution dispersion through design and construction improvements on the expanded section.

Although, the existing WRD was designed and constructed in accordance with the EMP commitments, it is believed that the prepared clay liner under the existing WRD was not adequately protected prior to waste rock dumping which allowed for exposure to the elements, drying of the clay and desiccation. The

associated cracks in the clay liner may have provided preferential emission paths for pollution to seep out of the WRD.

The proposed expansion will cover an area of approximately 19 hectares. Prior to commencement of dumping on the expanded section of the WRD, the topsoil will be stripped off the area of the footprint and stockpiled for subsequent re-use in rehabilitating the dump. The underlying black turf will then be moisture conditioned and compacted to provide a liner under the WRD. Immediately after compaction, a protective layer of suitable material will be placed over the prepared layer to maintain moisture content and prevent desiccation. Waste rock will then be dumped over this protective cover. As an added measure, the lining system will be linked to a system of seepage and runoff collection trenches.

Another improvement element is that of concurrent rehabilitation which in order to be successful requires flatter WRD side slopes. This is a significant change from the old method of dumping at the angle of repose, and only flattening the sides at the end of the operational phase during site rehabilitation. The flatter sides of the operational WRD will therefore require a significantly larger footprint.

3.1.1 CONSTRUCTION PHASE ACTIVITIES

The following significant activities will take place during construction:

Pit8C site

Activities that are expected to take place during the construction phase include:

- bush clearing in line with Impala's biodiversity management plan;
- removal and re-routing of existing infrastructure. This includes the demolition of the existing Impala storage area and fence as well as the re-routing of underground fibre optic cables and buried water pipelines that traverse the proposed opencast pit site;
- establishment of an alternative area for Impala's stores;
- stripping and stockpiling of soil resources in line with Impala's soil management programme;
- drilling and blasting associated with the development of the boxcut;
- dewatering, if required;
- establishment of the new access road using compacted clay material;
- construction of storm water management facilities, such as diversion berms; and
- transport of material using Impala's existing internal road network.

Shaft 16 WRD expansion site

Activities that are expected to take place during the construction phase include:

- selective clearing of vegetation on the proposed WRD expansion area in line with Impala's biodiversity management plan;
- stripping and stockpiling topsoil and sub-soil from the area where the proposed WRD will be expanded in line with Impala's soil management programme;

- preparation of clay liner and associated seepage/runoff collection trenches;
- construction of conveyor between Shaft 16 and WRD expansion; and
- construction of storm water management facilities such as diversion berms and channels around the WRD.

3.1.2 CONSTRUCTION PHASE SUPPORT SERVICES AND FACILITIES

Proposed Pit8C project

The proposed facilities that will be required include (Figure 3):

- new temporary gravel access road;
- temporary topsoil stockpile;
- water supply will be by pipeline and/or trucks and will be sourced from existing supply points at Impala;
- power supply will be by mobile generator if required;
- employment will not change given that existing opencast mining contractor will be used;
- site offices will not be required because existing offices will continue to be used by the contractor;
- sewage will be managed by means of portable toilets that will be routinely serviced;
- non-mineralized waste management will be done in accordance with the current system used by the mining contractor;
- temporary waste rock stockpile area;
- alternative development area for demolished Impala storage buildings, and
- material will be transported using Impala's existing internal road network.

Shaft 16 WRD expansion site

Existing infrastructure at the Shaft 16 site will be used and this includes (Figure 4):

- contractors lay down areas;
- workshops, stores, wash bays, lay-down areas, fuel handling and storage area, offices, ablution facilities such as chemical toilets or septic tanks;
- handling and storage area for construction materials (paints, solvents, oils, grease) and waste;
- stockpiles;
- water management infrastructure;
- explosives magazines;
- run of mine (ROM) pads;
- haul roads;
- access roads;
- power lines and water pipelines;
- ventilation infrastructure including fans;
- portable air compressors for sinking operations;
- settling ponds for sinking operations;
- conveyor; and

- WRD.

Construction phase employment for the WRD expansion will involve people from the local community where possible.

3.1.3 OPERATIONAL PHASE ACTIVITIES

Pit8C site

Activities that are expected to take place during the operational phase include:

- drilling and blasting;
- removal of waste rock by dozing, loading and hauling to temporary waste rock stockpile;
- removal of ROM by dump trucks and transporting to the existing crusher operations; and
- concurrent backfilling of the opencast pit using waste rock.

Shaft 16 WRD expansion site

Activities that are expected to take place during the operational phase include:

- conveying waste rock from Shaft 16 to the expanded section of the WRD;
- dumping of waste rock; and
- concurrent rehabilitation of side slopes as the dump progresses.

FIGURE 3: PROPOSED PIT8C LAYOUT

FIGURE 4: PROPOSED SHAFT 16 WRD EXPANSION LAYOUT

3.1.4 OPERATIONAL PHASE SUPPORT SERVICES AND FACILITIES

Employment

There will be no new employment at Pit8C given that the existing mining contractor will be used. There will be no new employment opportunities during the operational phase of the Shaft 16 WRD expansion project.

Transport Systems

Access to the proposed Pit8C project site will be via the new access road that will be constructed from in situ material ripped and re-compacted. The existing road to the current Shaft 16 WRD will be expanded in order to gain access to the proposed Shaft 16 WRD. Both of the proposed project access roads will form part of Impala's current road network.

Water Supply and Management

Process water associated with the proposed Pit8C project will be required for dust suppression along the new access road. This water will be sourced from pit dewatering and/or Impala's existing water circuit via pipelines and/or trucks. Potable water will be transported in by bowser. Water from the WRD expansion will be sourced from Shaft 16 via a pipeline.

Stormwater management

Water management facilities for the control of storm water and for pollution prevention will be designed to meet the requirements of Regulation 704, 4 June 1999 (Regulation 704) for water management on mines. In this regard the management of stormwater generated at both project sites will include the diversion of clean water by means of berms and/or channels and the containment of dirty water.

Power Supply

Power for Pit8C will be sourced from portable diesel generators if required. Power for Shaft 16 WRD expansion will be sourced from Shaft 16.

Sewage

Portable toilets will be provided at the proposed Pit8C project site. Routine sewage removal will be required to transport sewage from these portable toilets to one of the existing approved Impala sewage treatment plants. Existing Shaft 16 sewage facilities will be used to cater for the WRD expansion.

Non-mineralised wastes

The types of non-mineralised wastes associated with the proposed Pit8C project that could be generated include:

- General waste such as domestic waste and cleared vegetation
- Hazardous wastes such as fuel, lubricants and explosive packaging.

The types of non-mineralised wastes associated with the proposed Shaft 16 WRD project that could be generated include:

- General waste such as domestic waste and cleared vegetation and building material

No general and hazardous waste will be stored on. General and hazardous waste will be collected and removed from the proposed project sites and transported to existing Impala waste management facilities where it will be temporarily stored prior to re-use, recycling, or disposal in accordance with existing approved practices.

3.1.5 DECOMMISSIONING PHASE ACTIVITIES

Decommissioning activities associated with the proposed project sites include the demolition and the removal of infrastructure, preparation of final land forms (Shaft 16 WRD) for closure and prompting vegetation growth in order to reduce the effects of soil erosion and to re-establish landscape functionality.

3.1.6 CLOSURE PHASE ACTIVITIES

After decommissioning, closure activities will include maintenance and aftercare that is required to ensure that rehabilitation is successful. In this regard, the Pit8C site will be rehabilitated back to grazing potential land but the WRD expansion site will be permanently transformed and will not be rehabilitated to agricultural use. It will however be rehabilitated to a functional biodiversity landscape.

3.1.7 TIMING

Life of the projects

The expected life of operation associated with the proposed Pit 8C project is approximately 1 year. The proposed Shaft 16 WRD is expected to be in operation for approximately 30 years.

3.2 RELEVANT NEMA LISTED ACTIVITIES

The relevant NEMA listed activities that require authorisation in terms of Regulation 544 of Listing Notice 1 are included in Table 3 below. As discussed in the introductory section of this report a basic assessment process will be submitted in order to cater for the authorisation of the relevant listed activities.

TABLE 3: RELEVANT NEMA ACTIVITIES CURRENTLY BEING APPLIED FOR

Activity Number	Listed Activity in terms of Regulation 544, Listing Notice 1, 18 June 2010	Description of activity
23	The transformation of undeveloped, vacant or derelict land to- (ii) residential, retail, commercial, recreational, industrial or institutional use, outside an urban area and where the	Both projects have a footprint of greater than 1 ha but less than 20 ha and are located in part on vacant land.

Activity Number	Listed Activity in terms of Regulation 544, Listing Notice 1, 18 June 2010	Description of activity
	total area to be transformed is bigger than 1 hectare but less than 20 hectares; - Except where such transformation takes place for linear activities.	
28	The expansion of existing facilities for any process or activity where such expansion will result in the need for a new, or amendment of, an existing permit or license in terms of the national or provincial legislation governing the release of emissions or pollution, excluding where the facility, process or activity is included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 Of 2008) in which case that Act will apply.	The WRD expansion will require an amendment of Impala's water license.
Listed Activity in terms of Regulation 546, Listing Notice 3, 18 June 2010		
12	The clearance of an area of 300 square metres of more or less vegetation where 75 % or more of the vegetation cover constitutes indigenous vegetation. - (a) Within any critically endangered or endangered ecosystem listed in terms of Section 52 of NEMA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004	Part of the Pit8C site is located on vacant veld which falls within the Marikana Thornveld, a vegetation community which according to NEMBA is considered a key biodiversity area in need of protection.

3.3 CONFIRMATION OF IAP CONSULTATION AND AGREEMENT ON POTENTIAL IMPACTS

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

3.4 POTENTIAL CULTURAL ENVIRONMENT IMPACTS

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

3.5 POTENTIAL HERITAGE ENVIRONMENT IMPACTS

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

3.5.1 ARCHAEOLOGICAL, HERITAGE AND CULTURAL RESOURCES

Loss of or damage to heritage resources

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion

No heritage resources were identified in the desktop study of existing information, but there is potential for additional heritage and cultural resources to be found in the project area which could be affected by the proposed new activities and infrastructure. The additional work required to address this issue is described in Section 6.1.13 of the scoping report.

3.5.2 PALEONTOLOGICAL RESOURCES**Issue: Loss of or damage to paleontological resources**Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion

The entire area is underlain by igneous rocks of the Rustenburg Layered Suite of the BIC as discussed in Section 2.6.1. This complex is an intrusive igneous body comprising a series of ultramafic-mafic layers and a suite of associated granitoid rocks. As these rocks are Precambrian in age and are of igneous origin it is highly unlikely that fossils will be affected by the proposed subsurface mining development for the proposed Pit8C and the proposed Shaft 16 WRD project sites. Therefore no additional studies are proposed in this regard as outlined in Section 6.1.14.

3.6 POTENTIAL SOCIO-ECONOMIC ENVIRONMENT IMPACTS

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

3.6.1 LAND USE**Impact on existing surrounding agricultural and residential uses**Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion:

The Pit8C site is used for ad-hoc cattle grazing in the areas that have not already been transformed by Impala's existing infrastructure. Development of the Pit8C project will prevent access to this grazing land for the operational, decommissioning and vegetation re-establishment phases. In this regard, the operation and decommissioning phases are expected to last for approximately one year, but the re-establishment of suitable vegetation will take longer.

The Shaft 16 WRD expansion site is currently being use for dryland sunflower cultivation. The expansion of the existing WRD into this area will permanently displace the sunflower cultivation activities. In addition, the surrounding cultivation activities will have to continue adjacent to the activities and infrastructure associated with the WRD.

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

3.6.2 TRANSPORT SYSTEMS

Issue: Disturbance of roads by project-related traffic

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion:

The timing of opencast mining at Impala is planned such that the proposed Pit8C project will only become operative following the closure of currently mined opencast pits.

Given that there is no expected material change in traffic, no new material impacts have been identified but those associated with current traffic levels will continue.

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

3.6.3 BLASTING

Issue: damage from Blasting

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure
Not applicable		Not applicable	Not applicable

Discussion

Blasting impacts relating to the proposed Pit8C project is associated with three pathways: fly rock, vibrations and air blast. Fly rock can harm structures, people and livestock. Vibrations and air blast can damage structures.

In considering what blast related impacts could be associated with Pit8C, the following spatial analysis is relevant.

500 m	1 km	1.5 km
Impala offices, roads, railway line, pipelines, underground workings	Impala offices, roads, railway line, pipelines, underground workings, hospital	Impala offices, roads, railway line, pipelines, underground workings, hospital, hostel

Power line	Power line	Power line
Ad-hoc grazing cattle	Ad-hoc grazing cattle	Ad-hoc grazing cattle

It follows that the greatest potential for impacts is on Impala's own infrastructure and staff with some limited exposure to the power line and ad-hoc cattle grazers.

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

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

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

3.7.1 POSITIVE AND NEGATIVE SOCIO-ECONOMIC IMPACTS

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Given that existing Impala workers will be used, no additional workers will be employed in the Pit8C project at any stage. At Shaft 16 WRD expansion, there will be some opportunity to employ people from the local communities during the construction phase.

The following positive impacts are expected during the construction, operational and decommissioning phases:

- the proposed Pit8C project will optimise resource extraction thereby continuing to stimulate the local, regional and national economy through continued employment and sale of PGMs; and
- the expansion of Shaft 16 WRD will present some opportunities for employment from the local communities.

The potential for negative impacts is limited to the negative impacts on the current land users as discussed in Section 6.1.4 above.

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

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

3.8 POTENTIAL BIOPHYSICAL ENVIRONMENT IMPACTS

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

3.8.1 GEOLOGY

Issue: Loss and sterilisation of mineral resources

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

By the nature of mining projects the geology is exploited to target minerals therefore the impact that the proposed Pit8C project will have on the geology will be high in all project phases. However no mineral sterilisation is expected as a result of the proposed expansion to the Shaft 16 WRD. The additional work required to address this issue is described in Section 6.1.1 of this scoping report.

3.8.2 TOPOGRAPHY

Issue: Hazardous excavations and infrastructure

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion:

Hazardous excavations and infrastructure include all structures into or off which third parties and animals can fall and be harmed. The proposed Pit8C and Shaft 16 WRD projects have the potential to alter the topography through the introduction of new infrastructure which may present safety risks. It should however be noted that the areas adjacent to the proposed sites have already been altered due to the surrounding Impala activities.

Hazardous excavations and infrastructure occur in all mine phases from construction through operation to decommissioning and closure. Given the temporary nature of the proposed Pit8C project the presence of hazardous excavations and infrastructure will remain a safety risk for the duration of the project, however at the closure phase the proposed Shaft 16 WRD will remain in perpetuity and therefore remains a long term safety risk.

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

3.8.3 SOIL AND LAND CAPABILITY**Issue: Loss of soil and change in land capability through pollution, erosion or compaction**Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion:

Topsoil is generally a resource of high value containing a gene bank of seeds of indigenous species.

Both of the proposed projects will result in disturbance of the land surface and associated topsoil in all project phases. A loss of topsoil (through pollution, erosion or compaction) would generally result in a decrease in the rehabilitation and future land use capability of any land that is disturbed by the project.

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

3.8.4 FAUNA AND FLORA (NATURAL PLANT AND ANIMAL LIFE)**Issue: Loss of natural vegetation and animal life**Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion:

The proposed projects will require the clearing of land and habitat for the establishment of infrastructure and this has the potential to impact negatively on plant and animal life in the project sites and adjacent areas. It is also noted that existing infrastructure and farming activities have already impacted upon fauna and flora in and adjacent to the project sites.

The additional work required to address this issue is described in Section 6.1.7 of this scoping report.

3.8.5 HYDROLOGY (SURFACE WATER)**Issue: Alteration of surface drainage patterns**Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion:

The proposed projects have the potential to impede the flow of surface water resources and to change the run-off characteristics of the affected areas.

The Pit8C project site is not located within the vicinity of any water courses, it should however be noted that the diversion of clean water and the retention of water in dirty areas has the potential to impact on drainage patterns.

The Shaft 16 WRD expansion site is not located within the vicinity of any water courses according to DWA. Despite this, runoff water (after rainfall events) is channelled along a preferential flow path within the cultivated sunflower fields. It follows that the diversion of clean water and the retention of water in dirty areas has the potential to impact on drainage patterns.

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

Issue: Contamination of surface water

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion:

Projects of this nature will generally present a number of pollution sources that can have a negative impact on surface water quality throughout the duration of the projects. The potential pollution sources associated with the proposed projects include: sewage, fuel, lubricants, non-mineralised waste (hazardous and general), run-off from the WRD and erosion of particles from exposed soils in the form of suspended solids.

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

3.8.6 GROUNDWATER

Issue: Reducing groundwater levels and availability

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion:

Pumping of seepage water from pit associated with the proposed Pit8C project has the potential to cause dewatering in the operational phase which may cause a loss in water supply to surrounding borehole users. Given the nature of the WRD expansion project, dewatering is not relevant.

The additional work required to address this issue is included in Section 6.1.9 of this scoping report.

Issue: Contamination of groundwaterProject phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion:

Both the proposed Pit8C and Shaft 16 WRD projects have the potential to pollute groundwater resources through ad-hoc spills as well as point source pollution such as seepage from WRDs. Although the motivation for the proposed WRD expansion is to contain groundwater pollution, the expansion may increase the risk of groundwater contamination during the operational phase. In addition to this the WRD associated with Shaft 16 will remain in perpetuity and as such represents a potential residual impact.

The additional work required to address this issue is included in Section 6.1.9 of this scoping report

3.8.7 AIR QUALITY**Issue: Pollution from emissions to air**Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion:

The proposed Pit8C project and the Shaft 16 WRD have the potential to emit pollution into the air. The most significant emission type is dust that has the potential to negatively impact on ambient air quality which may in turn negatively impact receptors.

Emissions to air in the greater Impala mine area that are currently associated with the current pits will cease and be replaced by similar emissions for Pit8C. Such planning of opencast operations implies that the total emissions to air will remain largely unchanged. Like the current operational pits, the proposed Pit8C is not located adjacent to any third party receptors which also implies that like the current opencast pits there are unlikely to be material localised air impacts.

Once the expansion of the WRD at Shaft 16 is operational, the current older section will no longer be used. In light of this, operational type emissions are expected to remain largely unchanged.

The additional work required to address this issue is described in Section 6.1.10 of this scoping report.

3.8.8 NOISE

Issue: Increase in disturbing noise levels

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion:

The proposed Pit8C project and the Shaft 16 WRD have the potential to emit noise pollution. The more significant noise sources will be vehicle movement at both sites, blasting at Pit8C and conveying and dumping of waste rock at the WRD expansion site.

Noise emissions in the greater Impala mine area that are currently associated with the current pits will cease and be replaced by similar emissions for Pit8C. Such planning of opencast pit operations implies that the total emissions will remain largely unchanged. Like the current operational pits, the proposed Pit8C is not located adjacent to any third party receptors which also implies that like the current opencast pits there are unlikely to be material localised noise impacts.

Once the expansion of the WRD at Shaft 16 is operational, the current older section will no longer be used. In light of this, operational type noise emissions are expected to remain largely unchanged.

The additional work required to address this issue is described in Section 6.1.11 of this scoping report.

3.8.9 VISUAL ASPECTS

Issue: Negative visual impacts

Project phase/s in which impact could occur

Construction	Operational	Decommissioning	Closure

Discussion:

Given that the proposed Pit8C project site is surrounded by Impala's existing operations and that no communities are located adjacent to the proposed project site, it is unlikely that the temporary additional infrastructure associated with this project will create negative visual impacts.

The approved infrastructure at Shaft 16 (including the current WRD) has already had a negative visual impact. The expanded WRD is unlikely to materially change this impact.

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

3.9 POTENTIAL CUMULATIVE IMPACTS

Potential cumulative impacts are those for which the incremental changes associated with the proposed projects will cumulatively add to existing impacts. In this regard, the following are considered cumulative impacts and these will be assessed in accordance with the terms of reference for each individual impact set out in Section 6:

- topography – hazardous excavations and infrastructure;
- soils and land capability – loss of soil and change in land capability through pollution, erosion or compaction;
- fauna and flora – loss of natural vegetation and animal life (only temporarily);
- surface water – alteration of surface drainage patterns or contamination of surface water;
- groundwater – reduction of groundwater levels and availability or contamination of groundwater;
- air quality - pollution from emissions to air;
- noise – increase in disturbing noise levels;
- visual – negative visual aspects;
- socio-economic impacts;
- traffic and road impacts; and
- land use impacts.

4 PROJECT ALTERNATIVES

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

The main project alternatives to be considered include:

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

4.1 LAND USE ALTERNATIVES

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

Pit8C site

Some of the proposed Pit8C site is surrounded by Impala’s current mining activities and infrastructure and as such no alternative land use is considered for these areas. However, there are undeveloped areas that are vacant and are utilised for ad-hoc cattle grazing activities.

Shaft 16 WRD expansion site

The majority of this site is currently utilised for dry land sunflower cultivation. This is the alternative land use to the development of the WRD expansion.

4.2 LAND DEVELOPMENTS WHICH MAY BE AFFECTED BY THE PROPOSED PROJECT

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

Aside from the ad-hoc grazing and sunflower cultivation, no land developments have been identified which may be affected by the proposed development.

All objections, issues and concerns raised throughout the Scoping Phase have been captured into the issues and concerns report provided in Appendix D.

4.3 PROJECT ALTERNATIVES AND IAPS PROPOSAL TO ADJUST PROJECT PLAN

4.3.1 INFRASTRUCTURE LAYOUT ALTERNATIVES

Pit8C project site

The proposed new surface infrastructure is surrounded by Impala's current mining activities and as a result no alternative sites have been considered. Further to this, given the location of the ore body, no alternative sites can be considered for the location of the pit. In terms of the mining method, opencast mining is the only feasible method and no other mining method has been considered.

Shaft 16 WRD expansion site

The expansion of the WRD is fixed due to the location of the current approved WRD and constraints associated with the rail, shaft and road infrastructure located to the north, east and south of the current WRD. As such no alternative sites have been considered.

4.3.2 IAP PROPOSALS TO ADJUST PROJECT PLAN

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

All objections, issues and concerns raised throughout the Scoping Phase have been captured into the issues and concerns report provided in Appendix D. Given the issues raised to date, there is no requirement to change the project plan.

4.4 THE "NO-GO" OPTION

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

The assessment of this option requires a comparison between the options of proceeding with the project with that of not proceeding with the project. The assessment of this option requires input from the investigations described in Section 6 so that the full extent of environmental, social and economic considerations can be taken into account. The method to be used for assessing this option is outlined in Section 6.3 of the scoping report.

As a preliminary comment, the consequence of not proceeding with Pit8C is that the life of the opencast operations at Impala will be reduced which will have negative economic consequences both for the employment of opencast operations workers as well as for optimising resource extraction. The knock-on consequence will be a reduction in the stimulation of the local, regional and national economy. The consequence of not proceeding with the WRD expansion is that the current WRD will have to be used for waste rock disposal and this may perpetuate the associated pollution concerns as discussed in Section 3.1 of the report.

4.5 PROJECT PLAN

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

4.5.1 AVOIDANCE OF POTENTIAL IMPACTS

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

To date, no issues have been identified that have resulted in the need to adjust the project proposal to avoid impacts.

4.5.2 PROJECT PLAN TO AVOID POTENTIAL IMPACTS

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

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

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

5.1 INFORMATION SHARING

This section describes the information provided to community representatives, landowners, land users, and others IAPs to inform them in sufficient detail of the proposed projects, in order for them to form an opinion on related impacts.

5.1.1 DATABASE

The database for the Impala Shaft 16 WRD expansion and Pit8C project was developed using databases from previous and ongoing projects in the project area and supplemented with information on IAPs provided in the focused meetings.

5.1.2 NOTIFICATION

The landowners, land users, ward councilors, and regulatory authorities (provincial and local) were informed in writing of the proposed project. Proof of this notification is provided in Appendix A.

Site notices in English and Setswana were placed at key conspicuous positions in and around the project sites and block advertisements were placed in the Rustenburg Herald and Platinum Weekly newspapers on 17th August 2012. Photographs of the site notices and copies of the newspaper advertisements are provided in Appendix B.

5.1.3 FOCUSED MEETINGS

The following focused meetings were held for the proposed project:

- Pre-application discussions were held with the DMR to confirm the procedural aspects for the proposed projects (minutes from these discussions are included in Appendix B);
- two focused meetings were held, namely with the RBA Mining Committee and the Future Forum on 31 July and 17 2012 August respectively. The relevance of these two representative bodies are as follows: the RBA Committee represent the Royal Bafokeng Nation as the landowner, and the Future Forum is a community representative body including both municipal and traditional councillors.

The meetings provided background information for the project and the environmental process being followed. The meetings were therefore focussed on:

- informing IAPs about the proposed project;

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

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

5.1.4 REVIEW OF SCOPING REPORT

The scoping report will be made available for public review from **Thursday 13 September 2012**.

Full copies of the scoping report will be available for public review at the following venues:

- Rustenburg local municipality;
- Rustenburg Public Library;
- Impala stakeholder department on the mine;
- SLR's offices in Johannesburg;
- electronically on a CD, will be made available on request.

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

5.2 IAPS CONSULTED DURING SCOPING PHASE

This section discusses which of the identified stakeholders were in fact consulted during the Scoping Phase.

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

5.3 IAP VIEWS ON EXISTING ENVIRONMENT

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

5.4 IAP VIEWS ON POTENTIAL IMPACTS

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

5.5 OTHER IAP CONCERNS

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

- procedural related issues;
- technical/project related issues;
- land use issues;
- groundwater issues;
- rehabilitation issues; and
- blasting issues.

5.6 MEETING MINUTES AND RECORDS OF CONSULTATIONS

Copies of the minutes and attendance registers are included in Appendix B and the issues and concerns report is also provided in Appendix D.

5.7 IAP OBJECTIONS

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

6 FURTHER INVESTIGATIONS AND EIA PLAN OF STUDY

6.1 FURTHER INVESTIGATIONS

The proposed terms of reference for further investigations required for the completion of the EIA study are discussed below. The results of these studies will be collated into a combined EIA/EMP report. Where relevant, the assessments will be cumulative in nature. A list of potential cumulative impacts is provided in section 3.9.

6.1.1 GEOLOGY-DISTURBANCE AND STERILISATION OF MINERALS

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

6.1.2 TOPOGRAPHY-HAZARDOUS EXCAVATIONS AND INFRASTRUCTURE

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

6.1.3 SOIL AND LAND CAPABILITY-POLLUTION, EROSION OR COMPACTION

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

6.1.4 LAND USE-IMPACT ON EXISTING SURROUNDING AGRICULTURAL AND RESIDENTIAL USES

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

6.1.5 TRANSPORT SYSTEMS-DISTURBANCE OF ROADS BY PROJECT-RELATED TRAFFIC

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

6.1.6 BLASTING-DAMAGE FROM BLASTING

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

6.1.7 NATURAL VEGETATION AND ANIMAL LIFE (FLORA AND FAUNA)-LOSS OF NATURAL VEGETATION AND ANIMAL LIFE

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

6.1.8 HYDROLOGY (SURFACE WATER)-ALTERATION OF SURFACE DRAINAGE PATTERNS OR CONTAMINATION OF SURFACE WATER

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

6.1.9 GROUNDWATER-REDUCING GROUNDWATER LEVELS AND AVAILABILITY OR CONTAMINATION OF GROUNDWATER

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

6.1.10 AIR QUALITY-POLLUTION FROM EMISSIONS TO AIR

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

6.1.11 NOISE-INCREASE IN DISTURBING NOISE LEVELS

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

6.1.12 VISUAL ASPECTS-NEGATIVE VISUAL IMPACTS

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

6.1.13 ARCHAEOLOGICAL, CULTURAL AND HERITAGE RESOURCES

Dr Julius Pistorius will conduct a Phase 1 investigation which will be used in the EIA/EMP report. This will include the following tasks:

- identify and map (through literature review and field work) all archaeological, cultural and heritage resources in the areas demarcated for additional surface infrastructure and on the farms Reinkoyalskraal 278 JQ, Beerfontein 263 JQ and Vaalkop 275 JQ;
- assess the significance of the identified resources;

- assess the impact of the proposed project on the heritage resources; and
- provide input, together with SLR and the technical project team into project alternatives and heritage resources management measures going forward.

6.1.14 PALEONTOLOGICAL RESOURCES

It is proposed that no further specialist investigations are required. SLR will make use of the existing applicable specialist information. The impacts and detailed management measures will be provided in the EIA/EMP report by SLR.

6.1.15 SOCIO-ECONOMIC ISSUES

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

6.1.16 ECONOMIC LAND USE AND SUSTAINABILITY ANALYSIS

Strategy for Good will conduct an economic land use and sustainability analysis in order to meet the requirements of the DMR EIA and EMP report template in terms of Regulation 50 of the MPRDA. The investigation will include the following tasks:

- comparative land use assessment; and
- sustainability analysis.

6.2 METHODOLOGY FOR THE ASSESSMENT OF ENVIRONMENTAL ISSUES

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

TABLE 4: CRITERIA FOR ASSESSING IMPACTS

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

PART A: DEFINITION AND CRITERIA*		
Definition of SIGNIFICANCE	Significance = consequence x probability	
Definition of CONSEQUENCE	Consequence is a function of severity, spatial extent and duration	
Criteria for ranking of the SEVERITY of environmental impacts	H	Substantial deterioration (death, illness or injury). Recommended level will often be violated. Vigorous community action.
	M	Moderate/ measurable deterioration (discomfort). Recommended level will occasionally be violated. Widespread complaints.

	L	Minor deterioration (nuisance or minor deterioration). Change not measurable/ will remain in the current range. Recommended level will never be violated. Sporadic complaints.
	L+	Minor improvement. Change not measurable/ will remain in the current range. Recommended level will never be violated. Sporadic complaints.
	M+	Moderate improvement. Will be within or better than the recommended level. No observed reaction.
	H+	Substantial improvement. Will be within or better than the recommended level. Favourable publicity.
Criteria for ranking the DURATION of impacts	L	Quickly reversible. Less than the project life. Short term
	M	Reversible over time. Life of the project. Medium term
	H	Permanent. Beyond closure. Long term.
Criteria for ranking the SPATIAL SCALE of impacts	L	Localised - Within the site boundary.
	M	Fairly widespread – Beyond the site boundary. Local
	H	Widespread – Far beyond site boundary. Regional/ national
PART B: DETERMINING CONSEQUENCE		

SEVERITY = L

DURATION	Long term	H	Medium	Medium	Medium
	Medium term	M	Low	Low	Medium
	Short term	L	Low	Low	Medium

SEVERITY = M

DURATION	Long term	H	Medium	High	High
	Medium term	M	Medium	Medium	High
	Short term	L	Low	Medium	Medium

SEVERITY = H

DURATION	Long term	H	High	High	High
	Medium term	M	Medium	Medium	High
	Short term	L	Medium	Medium	High

			L	M	H
			Localised Within site boundary Site	Fairly widespread Beyond site boundary Local	Widespread Far beyond site boundary Regional/ national
SPATIAL SCALE					

PART C: DETERMINING SIGNIFICANCE

PROBABILITY (of exposure to impacts)	Definite/ Continuous	H	Medium	Medium	High
	Possible/ frequent	M	Medium	Medium	High
	Unlikely/ seldom	L	Low	Low	Medium
			L	M	H
CONSEQUENCE					

PART D: INTERPRETATION OF SIGNIFICANCE

Significance	Decision guideline
High	It would influence the decision regardless of any possible mitigation.
Medium	It should have an influence on the decision unless it is mitigated.
Low	It will not have an influence on the decision.

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

6.3 METHODOLOGY FOR THE ASSESSMENT OF PROJECT ALTERNATIVES

6.3.1 ASSESSMENT OF THE “NO-GO OPTION”

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

6.3.2 ASSESSMENT OF PROJECT ALTERNATIVES

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

6.4 ENGINEERING DESIGN

The WRD expansion will be designed by an appropriately qualified professional engineer at RSV in accordance with the requirements of Regulation 73 of the Mineral and Petroleum Resources Development Act, 28 of 2002, and Regulation 704 of the National Water Act, 108 of 1998.

6.5 CLOSURE COST ESTIMATE

The Shaft 16 WRD expansion and Pit8C will be updated and revised by E-TEK Consulting using the current DMR model.

6.6 WAY FORWARD FOR SCOPING

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

- distribute the scoping report and a summary thereof for review by the IAPs, the DMR and other regulatory authorities;
- receive comments from IAPs and other regulatory authorities; and
- receive comments from DMR and address in EIA phase.

6.7 PLAN OF STUDY FOR THE EIA PHASE

The section below outlines the plan of study for EIA as is relevant to the MPRDA process and the related EIA/EMP amendment. Separate but concurrent processes will be run in accordance with NEMA, and the

NWA. In the case of NEMA, a Basic Assessment process is being followed with DEDECT and in the case of NWA, a water use license application process is being followed with DWA.

6.7.1 EIA PHASE OBJECTIVES

The main objectives of the EIA phase are to:

- assess project alternatives;
- assess the potential cultural, heritage, socio-economic and biophysical impacts of the project;
- identify and describe procedures and measures that will mitigate potential negative impacts and enhance potential positive impacts;
- liaise with IAPs including relevant government departments on issues relating to the proposed development to ensure compliance with existing guidelines and regulations;
- undertake consultations with IAPs and provide them with an opportunity to review and comment on the outcomes of the environmental assessment process and acceptability of mitigation measures;
- develop an environmental management plan and a conceptual closure/decommissioning plan; and
- provide measures for on-going monitoring (including environmental audits) to ensure that the project plan and proposed mitigation measures are implemented as outlined in the detailed EIA and EMP report.

6.7.2 EIA PROJECT TEAM

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

TABLE 5: PROPOSED EIA TEAM

Team	Name	Designation	Tasks and roles	Company
Project management	Caitlin Pringle	Project manager	Management of the assessment process and report compilation.	SLR
	Natasha Daly	Project assistant		
	Brandon Stobart	Project reviewer	Report and process review	
Specialist investigations	Dr Julius Pistorius	Heritage consultant	Heritage study	Private Consultant
	Gerrie Muller	Economist	Economic assessment	Strategy4Good
	Leon Koekemoer	Closure analyst	Closure cost reporting	E-TEK

6.7.3 EIA/EMP PHASE ACTIVITIES AND TIMING

An overview of the EIA/EMP phase and corresponding activities are outlined in the table below.

TABLE 6: EIA/EMP ACTIVITIES AND TIMING

Objectives	Corresponding activities and estimated dates
<i>Further investigations (July to August 2012)</i>	
<ul style="list-style-type: none"> • Describe the affected environment 	<ul style="list-style-type: none"> • Investigations by technical project team and SLR of issues identified during the scoping stage including investigations into

Objectives	Corresponding activities and estimated dates
<ul style="list-style-type: none"> • Define potential impacts • Give management and monitoring recommendations 	alternatives.
<i>EIA/EMP phase (August to November 2012)</i>	
<ul style="list-style-type: none"> • Assessment of potential environmental impacts • Design requirements and management and mitigation measures • Receive feedback on application 	<ul style="list-style-type: none"> • Compilation of EIA and EMP report. • Distribute EIA and EMP amendment report to IAPs and other regulatory authorities for review (November 2012). • Feedback meetings with authorities and IAPs as required (November 2012). • Record comments (November 2012). • Forward IAP comments to DMR (December 2012). • Circulate record of decision to all registered IAPs

6.7.4 STAGES OF CONSULTATION WITH THE COMPETENT AUTHORITY IN EIA PHASE

Proposed consultation meetings for the EIA phase include:

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

6.7.5 PUBLIC INVOLVEMENT PROCESS IN EIA PHASE

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

Focused involvement

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

General involvement

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

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

Once the DMR has issued its decision, the IAPs will be notified by e-mail, and post in accordance with the instructions from the DMR.

7 SUMMARY AND CONCLUSIONS

The scoping phase of the EIA catering for the proposed opencast activities at Pit8C and proposed expansion of the Shaft 16 WRD has been completed. The potential impacts identified in this scoping report will be investigated by various studies to be conducted in the next phase of the EIA.

Caitlin Pringle
Project Manager

Natasha Daly
Project Assistant

Brandon Stobart (EAPSA)
Reviewer

8 REFERENCES

Earth Science Solutions, 2011: Impala Platinum Consolidation Project-Pedological and Land Capability Studies

Golder Associates Africa (Golder), December 2004: Amendment to the EMPR for the proposed No 16 shaft at Impala Platinum near Rustenburg in the North West Province.

Groundwater Consulting Services (GCS), 2004: Groundwater Numerical Model for the Shaft 16 Complex-Impala Platinum Limited

Julius Pistorius, 2012: Phase 1 Heritage Impact Assessment (HIA) study for Impala Platinum Limited's (Impala) Proposed Opencase Pit8C and the expansion of Shaft 16 WRD in the North-West Province

Knight Piesold Consulting, 2009: Impala Platinum Limited Environmental Design Recommendations for WRDs

Metago, Environmental Engineers, 2012: Opencast Mining Project, Impala Platinum Limited.

Metago Environmental Engineers, 2011: Surface Water Assessment and Floodline Modelling for Impala Platinum Mine

Metago Environmental Engineers, 2011: Groundwater Quality Monitoring Summary Report

Metago Environmental Engineers, 2005: Amendment to the Environmental Management Programme report for Impala Platinum Limited, Rustenburg Operations.

North West University, 2010: Biodiversity Study of the Impala-Bafokeng Mining Complex

University of the Witwatersrand, 2011: Impala Mining Development-Palaeontological Impact Assessment

B: IDENTIFICATION OF THE REPORT

Herewith I, the person whose name and identity number is stated below, confirm that I am the person authorised to act as representative of the applicant in terms of the resolution submitted with the application, and confirm that the above report comprises the results of consultation as contemplated in Section 16 (4) (b) or 27 (5) (b) of the Act as the case may be

Full names and surname	
Identity number	
Signature	

APPENDIX A: PROOF OF DEDECT APPLICATION AND WULA SUBMISSION

- DEDECT Application
- WULA submission

APPENDIX B: DOCUMENTATION AND PROOF OF THE CONSULTATION PROCESS

- Correspondence with Land Claims Commission
- Correspondence with DWA
- Pre-application meeting minutes with DMR (23 May 2012)
- Proof of landowner and land user notification
- Notification to relevant authorities
- Site notice in English and Tswana, and photographs showing the placement of site notices
- Advertisements placed in Rustenburg Herald and Platinum Weekly (16 August 2012)
- Meeting attendance registers and minutes with focused meetings with RBA and Future Forum (31 July and 17 August 2012)
- Comments received from relevant authorities

APPENDIX C: IAP DATABASE

APPENDIX D: ISSUES AND CONCERNS REPORT



RECORD OF REPORT DISTRIBUTION

Project Number:	710.09003.00092
Title:	Scoping report for the proposed Shaft 16 WRD expansion and opencast activities at Pit8C
Report Number:	1
Proponent:	Impala Platinum Limited

Name	Entity	Copy No.	Date issued	Issuer
Phumudzo Nethwadzi/Shadrack Fhedzisani	Department of Mineral Resources	1-6	September 2012	C Pringle
Kathryn Smuts	South African Heritage Resources Association	Electronic copy	September 2012	C Pringle
Phillip Tjale	Department of Water and Affairs	7	September 2012	C Pringle
Piet Theron	Department of Agriculture Forestry and Fishery	8	September 2012	C Pringle
Jacqueline Nkosi	Department of Rural Development and Land Reform	9	September 2012	C Pringle
Chris De Bruyn	North West Eco Forum	Electronic copy	September 2012	C Pringle
Reotshepile Tlhapane	RBA Mining Committee (public review)	10-12	September 2012	C Pringle
Reotshepile Tlhapane	Future Forum	13-16	September 2012	C Pringle
Tshepo Lenake/Kelebogile Megkoe	Rustenburg Local Municipality (public review)	17	September 2012	C Pringle
Librarian	Rustenburg Library (public review)	18-19	September 2012	
Nozi Masekwane	Bojanala Platinum District Municipality	20	September 2012	C Pringle
Johanna Tau	Impala Stakeholder Department (public review)	21	September 2012	C Pringle
SLR Johannesburg	SLR Library (public review)	22	September 2012	C Pringle
Josephine Krzyzanowska	Impala	23	September 2012	C Pringle

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