Booysendal South Expansion Project: Phase 2

Draft Scoping Report in support of the applications for Environmental Authorisations; the amendment of an Environmental Management Programme and a Waste Management License for the proposed Booysendal South Expansion Project: Phase 2 in terms of the National Environmental Management Act, 107 of 1998 and the National Environmental Management: Waste Act, 59 of 2008

Booysendal North Mining Right Reference No: LP 30/5/1/3/2/1 (188) EM)

Booysendal South MP 30/5/1/2/3/2/1 (127) EM).

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0. Executive Summary

0.1 Introduction and Background

Booysendal operates a platinum group metal ("**PGM**") mine ("**Booysendal Mine**") approximately 33km west of Mashishing (Lydenburg), 40km south-southwest of Steelpoort, 32km north of Dullstroom and 21km northeast of Roossenekal. The Booysendal Mine operates under two mining rights ("**MR**"), namely Booysendal North MR (Department of Mineral Resources ("**DMR**") reference number: LP 30/5/1/3/2/1 (188) EM) and Booysendal South MR (DMR reference number: MP 30/5/1/2/3/2/1 (127) EM). The Booysendal South MR was acquired from Aquarius Platinum (Pty) Ltd in 2015. Although the two MRs have not been consolidated, the Booysendal Mine is managed as one integrated operation – the Booysendal Mine.

The northern section of the Booysendal North MR falls in the Limpopo Province, while the southern section of the Booysendal North MR and the entire Booysendal South MR falls in the Mpumalanga Province. The operational division for day-to-day management is in accordance with the provincial divide, where the northern section of the Booysendal North MR is managed as Booysendal North ("**BN**") and the southern section (which is a combination of the southern section of the Booysendal North MR and the entire Booysendal South MR) as Booysendal South ("**BS**"). BS consists of **BS1/2**, the Booysendal South Merensky adits (referred to as "**BCM1 and BCM2**"), and the Ex Everest Mine ("**BS4**").

Booysendal has identified an opportunity to increase PGM production to meet short to medium term projected demands for platinum with the expansion of BS in two phases ("**Booysendal South Expansion Project**"). Phase 1 of the Booysendal South Expansion Project involved the development of a portal complex at BS1/2, two adits at BCM1 and BCM2, upgrade of stormwater management measures, reprocessing of the tailings and backfilling of the underground workings at BS4 and linear infrastructure components (road, aerial rope conveyor ("**ARC**") and 132kVA powerline) between the operational areas. An environmental authorisation ("**EA**") for this Phase 1 of the Booysendal South Expansion Project was granted in terms of section 24G of the National Environmental Management Act, No 107 of 1998 ("**NEMA**") on 05 January 2018 ("**Section 24G EA**").

As part of Phase 2 of the Booysendal South Expansion Project ("**Booysendal South Expansion Project: Phase 2**" or "**Phase 2 Project**"), Booysendal plans to develop: a) portals with surface infrastructure at BCM1 and BCM2, an Emergency Escape Portal, an ARC, water pipelines between BS1/2 and BN; and access roads to the ARC Towers on the Remainder of the Farm Buttonshope 51 and Farm Booysendal 43 JT; and b) a Backfill Plant with an access road, three water pipelines, and three emergency backfill ponds along the tailings pipeline .

The planned location of the BCM 2 adit on the Farm Booysendal 43 JT has also been changed and the temporary power line that traverse the Remainder of the Farm Buttonshope 51 needs to be retained permanently. This infrastructure is situated on properties held under the Booysendal North MR and was included in the Section 24G EA. The Environmental Management Programme ("**EMP**") approved as part of the Section 24G EA ("**Section 24G EMP**") needs to be amended to cater for this.

This Phase 2 Project presently requires the following:

- An application for approval for a substantive amendment to the Section 24G EMP ("**EMP Amendment Application**"), in terms of NEMA and the 2014 Environmental Impact Assessment Regulations, published under Government Notice R982 in Government Gazette 38282 of 4 December 2014 (as amended under Government Notice 326 in Government Gazette 40772 of 7 April 2017) ("**2014 EIA Regulations**");
- Two applications for environmental authorisations ("**EAs**") in terms of NEMA and the 2014 EIA Regulations ("**EA Applications**"),

- Integrated Water Use License ("**IWUL**") in terms of the National Water Act, No 36 of 1998 ("**NWA**") for the entire Booysendal South Expansion Project;
- A Waste Management Licence ("**WML**") under the National Environmental Management: Waste Act (59 of 2008) ("**Waste Act**") and the 2013 List of Waste Management Activities that have, or are likely to have, a Detrimental Effect on the Environment (the 2013 WML Regulations); and
- Additional permits such as biodiversity permits that may be required,

(referred to collectively as the "**Phase 2 Project Applications**").

This Scoping Report has been prepared for Booysendal in support of an integrated application for a WML ("**WMLA**"); two EA Applications and one EMP Amendment (the "**Phase 2 NEMA and Waste Act Applications**").

0.2 Motivation for an Integrated Environmental Authorisation Process

The EA, WMLA and EMP Amendment process for the Phase 1 Booysendal South Expansion Project was done as one consolidated, integrated application due to the interconnectivity of Booysendal Mine's activities. This approach provided for a holistic view assessment of the baseline conditions and identification of potential cumulative impacts; and one consolidated set of management measures, which is more practicable to implement.

It is proposed that the same approach be followed for the Phase 2 Project.

As the Phase 2 Project is situated in both the Limpopo and Mpumalanga Provinces, two separate integrated applications may however need to be submitted to the DMR for the Phase 2 NEMA and Waste Act Applications as follows:

- *DMR Limpopo Regional Office* - one EA Application and the EMP Amendment Application for the activities on properties held under the Booysendal North MR; and
- *DMR Mpumalanga Regional Office* - the WMLA and one EA Application for the activities on properties held under the Booysendal South MR.

Booysendal is however in discussions with the above DMR Regional Offices as to only one Regional Office being appointed as the competent authority ("**CA**") to approve the Phase 2 Project Applications.

Given the interconnectivity of the activities and areas pertaining to the Phase 2 Project, a single, consolidated Scoping Report for the Phase 2 Project Applications has been prepared that will be submitted to both DMR Regional Offices (unless one of the DMR Regional Offices is appointed as the CA).

The Scoping Report does however distinguish between the proposed activities pertaining to each of the MRs in separate sub-sections.

0.3 Purpose of the Scoping Report

This Scoping Report is a combined technical summary of the Phase 2 Project. The purpose of the Scoping Report is to provide decision makers, stakeholders and potential Interested and Affected Parties ("**I&APs**") with information that will aid the decision-making process going forward. The Scoping Report details the proposed expansion activities; documents the existing baseline conditions; identifies potential impacts which may result from the proposed expansions; and provides justification for scoping out impacts which are deemed not significant. The Scoping Report details the Terms of Reference ("**ToR**") for the Environmental Impact Assessment ("**EIA**") and EMP Amendments.

0.4 Baseline Conditions

This section summarises the most pertinent environmental status quo and socio-economic baseline conditions pertaining to the Phase 2 Project.

0.4.1 Topography

The landscape of the region is mountainous, traversed by deep river valleys in the vicinity of BCM1, BCM2 and the Emergency Escape Portal. The Steenkampsberge lies to the east, south and west of the Booysendal Mine. The valley areas at BS4 are approximately 1 052 metres above mean sea level ("**mamsl**") and the Steenkampsberg 2 024 mamsl.

0.4.2 Climate

The Booysendal Mine is located in a temperate region, with warm summers and cold winters. Winds are topographically induced due to the steep topography, which leads to anabatic and katabatic winds. Rainfall occurs between October and March and is usually in the form of intense thunderstorms, leading to large volumes of run-off in the Dwars River Valley. Evaporation exceeds rainfall, making it a water deficit area.

0.4.3 Surface Water

The Booysendal Operation falls in Quaternary Catchment B41G, with a mean annual run-off of 66mm/a. The catchment is classified as a Freshwater Priority Area ("**FEPA**"). The main river draining the Project area, is the Groot Dwars River and its tributaries. Water quality of the Groot Dwars River is near pristine but deteriorates as it flows past the mining operations.

0.4.4 Geology

At BS4 structural geology shows the presence of several significant regional structures that could act as groundwater flow paths. Several dolerites, diabase and syenite intrusions form dykes that intersect the area.

There are two major geological faults associated with the Project area: the first major fault, namely the St. Georges fault, has a down-throw of an unknown quantity towards the east; and the second is a graben structure, with a down-throw of 100m. Towards the south of BS1/2, the geological structure is extremely complex with development of several synforms and antiforms

0.4.5 Groundwater

There are two main aquifers in the Project Area:

- An upper weathered aquifer with a depth that varies from surface to 20 metres below ground level ("**mbgl**"), which provides groundwater to surrounding communities. Due to the near-surface contact of the aquifer numerous springs arise, which are used for drinking purposes. The aquifer also contributes to recharge of surface water resources. Any contamination of this aquifer could result in contamination of the surface water resources.
- A deep fractured rock aquifer, which is associated with secondary fracturing forming discrete pathways along the fractures. Groundwater levels vary between 40 to 50mbgl.

  The groundwater quality is generally within the SANS241 drinking water standards. Nitrate levels of the water associated with underground working or mine waste (e.g. tailings facilities, waste rock dumps) at times exceed the SANS241 limits.

0.4.6 Geochemistry

Geochemical analysis indicates that the tailings and ore bodies at the Booysendal Mine are not acid generating. Leachate results showed exceedances in LCT0 values only for chromium, antimony and vanadium.

0.4.7 Terrestrial Ecology

The Project is located in the Sekhukhune Centre of Plant Endemism ("**SCPE**") and falls within Critical Biodiversity Areas ("**CBA**"). The presence of 80 conservation important ("**CI**") flora taxa, of which two are Vulnerable ("**VU**") and several Near Threatened ("**NT**"), has been recorded in the Project Area.

Alien vegetation settlement in disturbed areas is an area of concern.

The area is very rich in fauna. A total of 23 CI species over all fauna groups have been recorded in the Project Area. A total of 46 mammal species, 321 bird species, 24 reptile species, 7 frog species, 64 butterflies, 27 dragonflies, 4 scorpions and 4 baboon spider species have been recorded in the Project Area. The Groot Dwars River's valleys also houses the *Pycna sylvia*, previously thought to be extinct.

0.4.8 Aquatic Ecology

Moving from south to further north, the Present Ecological Status ("**PES**") of the Project catchment areas varies from pristine, to moderately modified, to largely modified as the impacts of mining activities influences water regimes. The Ecological Sensitivity ("**ES**") of the Project Area's sub-catchment is very high, which can be attributed to a variety of factors, including the very high levels of sensitivity of the expected fish and aquatic macroinvertebrate communities to flow modifications and impacts on water quality.

The Groot Dwars River upstream of BS1/2 constitutes critical habitat for the small minnow species *Barbus motebensis* (Marico barb). This species is currently listed as VU on the International Union for Conservation of Nature ("**IUCN**") Red List of Threatened Species. The river system is also habitat to six fish species, which are intolerable to change in water quality or flow.

0.4.9 Wetlands

There are five types of wetlands in the Project Area. Most of the wetlands are unmodified and in a natural condition, with a PES of between B and C.

0.4.10 Soil, Land Use and Land Capability

Due to the topography of the Project Area, the soil forms are highly variable. In the flatter areas soil forms are dominated by clay-loams, with a weak to moderate structure. These soils are suitable for agricultural production. The hill slopes contain young soils characterised by shallow, rocky lithic soils. The soils in the area are generally susceptible to erosion when disturbed.

0.4.11 Cultural Heritage

The area is very rich in cultural heritage sites from the Middle Iron Age, Middle Stone Age to historic sites. Graves can be expected anywhere in the landscape.

0.4.12 Traffic

The roads near BS4 have very low traffic flow. Surfaced road conditions are generally good.

0.4.13 Visual

The Project Area has a rural sense of place.

0.4.14 Air Quality

Baseline air quality falls within the limits for residential areas. Little impact on air quality is experienced.

0.4.15 Noise

In general, it was found that the present noise levels were 34.0dBA to 35.4dBA during the day and 28.8dBA to 32.0dBA during the night. Potential sensitive noise receptors are located mainly to the east of BS4.

0.4.16 Socio-economic Context

The population in the Greater Tubatse and Thaba Chweu Local Municipalities, in which the Project Area falls, is mainly rural. The socio-economic conditions can generally be described as dire. The unemployment rates are high (between 41 and 47%), whilst the education levels are low. Services (tap water, electricity, municipal sewage, hospitals) are either scarce or absent. A large percentage of the community are younger than 15 years old.

There is a high dependency on social grants and on mines to provide jobs.

0.5 Impact Identification

The main impacts anticipated to result from the proposed Phase 2 Project are:

- Increase in noise levels which could constitute a nuisance to surrounding communities and disturbance of fauna;
- Destruction of the sensitive SCPE and CBAs;
- Habitat fragmentation, creation of migration barriers and fauna fatalities;
- Loss of CI fauna and flora species;
- Loss of CI aquatic species;
- Deterioration in water quality that will impact on the aquatic biodiversity;
- Contamination of groundwater resources;
- Reduction of groundwater levels and associated baseflow of surface water resources;
- Increase in soil erosion and siltation;
- Destruction of soil properties, which form the basis for the unique flora in the area;
- Loss of wetlands and wetland functionality including its purification and flow retention properties;
- Contamination of surface water resources from pollution control dam overflows;
- Increase in nitrate and chromium levels in surface-and groundwater;
- Increase in dust and fugitive emissions;
- Dust outfall on sensitive flora;
- Loss of the rural sense of place;

- Damage to graves and cultural heritage sites;
- Increase in road incidents and accidents;
- Deterioration of road conditions;
- Benefits of the Project are not transferred to the communities; and
- Increase in transmittable diseases, crime, illegal settlement.

0.6 Public Participation Process

The Project was introduced to stakeholders and I&APs from 12 February 2018 onwards. Site notices were placed and background information documents ("**BIDs**") distributed by hand on the 15 February in the Project Area. An advertisement was placed in the Steelburger on the 23rd of February. Public meetings took place on the 21st, 22nd and 23rd of February 2018.

The Draft Scoping Report will be made available from 28 February until 30 March 2018. Registered I&APs will be kept informed of the application processes going forward, including the availability of reports for review.

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List of Abbreviations

Abbreviation	Description
ABA	Acid Base Accounting
AEL	Air Emissions License
AIS	Alien and Invasive Species
AMD	Acid Mine Drainage
AoI	Area of Influence
ARC	Aerial Rope Conveyor
ARD	Adsorption /Regeneration/Desorption
AQIA	Air Quality Impact Assessment
BBBEE	Broad Black Based Economic Empowerment
BIC	Bushveld Igneous Complex
BID	Background Information Document
BN	Booysendal North – existing approved Booysendal Operation located *inter alia* on the Farm Booysendal 43JT and Portion 2 of the Farm Der Brochen 7JT
BS	Booysendal South (excluding Booysendal North)
BS1/2	Main Booysendal Central Mining Complex on the farm Buttonshope 51JT
BS3	Possible Future Underground Mine on the Farm Buttonshope 51JT
BS4	The ex-Everest Mine
CA	Competent Authority
CARA	Conservation of Agricultural Resources Act, 43 of 1998
CBA	Critical Biodiversity Areas
CEO	Chief Executive Officer
CI	Conservation Importance
CITES	Convention on International Trade in Endangered Species
CMA	Catchment Management Agency
CRR	Comments and Response Report
CSI	Corporate Social Investment
DEA	Department of Environmental Affairs
ºC	Degrees Centigrade
DBA	A-weighted decibels
DMR	Department of Mineral Resources
DMS	Dense Medium Separation
DWAF	Department of Water Affairs and Forestry (previous name)
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EC	Electrical Conductivity
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EIS	Ecological Importance and Sensitivity
EMP	Environmental Management Programme (in terms of section 24N and Appendix 4 of National Environmental Management Act, 107 of 1998: EIA Regulations (GN R982) or previously approved under the MPRDA prior to the enactment of the 2014 EIA Regulations
EMS	Environmental Management System
EN	Endangered
EPCM	Engineering Procurement and Construction Management
EPS	Environmental Performance Standards
ES	Ecosystem Service
FREPA	Freshwater Ecosystem Priority Area
FS	Feasibility Study
GG	Government Gazette
GGP	Gross Geographic Product
GHG	Greenhouse Gas Emissions
GN	Government Notice

Abbreviation	Description
GN R	General Notice Regulation
GTLM	Greater Tubatse Local Municipality
Ha	Hectares
H&S	Health and Safety
HDPE	High density polyethylene
HDSA	Historically Disadvantaged South Africans
IA	Impact Assessment
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IFC PS	International Finance Corporation Performance Standards on Environmental and Social Sustainability, 2012
I&APs	Interested and Affected Party/ies
ISO	International Standards Organisation
IUCN	International Union for Conservation of Nature
IWUL	Integrated Water Use License
IWULA	Integrated Water Use License Application
IWWMP	Integrated Waste & Water Management Plan
JSE	Johannesburg Stock Exchange
ktpm	Kilo tonne per month
LCPE	Mashishing Centre of Plant Endemism
LEDET	Limpopo Department of Economic Development, Environment and Tourism
LoM	Life of Mine
mamsl	Metres above mean sea level
MAP	Mean Annual Precipitation
MAR	Mean Annual Runoff
mbgl	Metres below ground level
mbs	Meters below surface
MDEDET	Mpumalanga Department of Economic Development and Tourism
MEL	Mechanical Equipment List
mg/l	Miligram per litre
MHSA	Mine Health and Safety Act, 29 of 1996
MPRDA	Mineral and Petroleum Resources Development Act, 28 of 2002
MR	Mining Right
MTPA	Mpumalanga Tourism and Parks Agency
MWP	Mining Works Programme
NEMA	National Environmental Management Act, 107 of 1998
NEMBA	National Environmental Management: Biodiversity Act, 10 of 2004
NEMAQA	National Environmental Management: Air Quality Act, 39 of 2004
NEMPAA	National Environmental Management: Protected Areas Act, 57 of 2003
NEMWA	National Environmental Management: Waste Act, 59 of 2008
NFA	National Forestry Act, 84 of 1998
NFEPA	National Freshwater Ecosystem Priority Area
NGO	Non-government organisation
NHRA	National Heritage Resources Act, 25 of 1999
NT	Near Threatened
NWA	National Water Act, 36 of 1998
OEL	Occupational Exposure Levels
PCD	Pollution Control Dam
PES	Present Ecological Status
PGM	Platinum Group Metal
PM_{10}	Particulate matter with an aerodynamic diameter of less than 10 µm
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of less than 2.5 µm
OSHA	Occupational Health and Safety Act, 85 of 1993
RoM	Run of Mine
RSA	Republic of South Africa
SANBI	South African National Botanical Institute
SANRAL	South African National Road Agency

Abbreviation	Description
SAWIC	South African Waste Information System
SAHRA	South African Heritage Resources Agency
SCPE	Sekhukhune Centre of Plant Endemism
Section 24G	Section 24G as provided for in terms of NEMA
SEP	Stakeholder Engagement Plan
SHEQ	Safety, Health, Environment and Quality
SIA	Social Impact Assessment
SR	Scoping Report
SLP	Social and Labour Plan
SMP	Social Management Plan
SMME	Small, Medium and Micro-Sized Enterprises
SRO	Stakeholder Relations Officer
SWMP	Storm Water Management Plan
TCLM	Thaba Cheweu Local Municipality
ToR	Terms of Reference
TSF	Tailings Storage Facility
VIA	Visual Impact Assessment
WESSA	Wildlife and Environment Society of South Africa
WMA	Water Management Area
WML	Waste Management Licence
WRD	Waste Rock Dump
WUL	Water Use Licence

1. Introduction

Booysendal, a subsidiary of Northam Platinum Ltd ("**Northam**"), operates the Booysendal Mine, a platinum group metal ("**PGM**") mine complex located in the Eastern Limb of the Bushveld Igneous Complex. It purchased the southern section of the Der Brochen Mine from Rustenburg Platinum Mines Ltd (Anglo Platinum) early in 2008. Development of the Booysendal Mine commenced in 2010 in the area known as Booysendal North (BN). Booysendal also purchased the bordering ex- Everest Mine from Aquarius Platinum Pty Ltd in 2015.

The Booysendal Mine operates under two MRs, namely the Booysendal North MR (DMR reference number: LP 30/5/1/3/2/1 (188) EM) and the Booysendal South MR (DMR reference number: MP 30/5/1/2/3/2/1 (127) EM). Although the two MRs have not been consolidated, the Booysendal Mine is managed as one integrated operation.

The Booysendal Mine is located approximately 33km west of Mashishing (Lydenburg), 40km south-southwest of Steelpoort, 32km north of Dullstroom and 21km north-east of Roossenekal. It is situated in both the Limpopo and Mpumalanga Provinces and, as a result, fall within the Greater Tubatse Local Municipality ("**GTLM**") of the Sekhukhune District Municipality (Limpopo Province), as well as the Thaba Chweu Local Municipality ("**TCLM**") of the Ehlanzeni District Municipality (Mpumalanga Province). The northern section of the Booysendal North MR falls in the Limpopo Province, while the southern section falls in the Mpumalanga Province. The entire Booysendal South MR falls within the Mpumalanga Province.

It is divided into two main operational areas, namely Booysendal North ("**BN**") and Booysendal South ("**BS**"). BN falls in Limpopo Province and consists of the northern section of the Booysendal North MR, while BS falls in the Mpumalanga Province and consists of the entire Booysendal South MR and the southern section of the Booysendal North MR. BN is a fully operational underground PGM and Merensky Mine, whilst the development of BS is ongoing.

BS is further subdivided into **BS1/2**"), the old Everest Mine ("**BS4**") and two new Booysendal Merensky adits (referred to as "**BCM1 and BCM2**") just north of BS1/2. BS1/2 and the BCM1 and BCM2 adits form part of the Booysendal North MR, while BS4 and its associated developments form part of the Booysendal South MR. Refer to Figure 1-1 for general location and Figure 1-2 for illustrations of the operational subdivision.

Booysendal plans to further expand its current operations through further developments that pertain to both the Booysendal North MR and Booysendal South MR (the Booysendal South Expansion Project: Phase 2). For this purpose, Booysendal has appointed Amec Foster Wheeler (now part of the Wood plc) to undertake the following necessary Phase 2 Applications

- Approval of a substantive amendment to the Section 24G EMP in terms of NEMA and 2014 EIA Regulations (the EMP Application);
- EAs in terms of NEMA and the 2014 EIA Regulations (the EA Applications);
- IWULA in terms of the NWA for the entire Booysendal South Expansion Project;
- A WMLA in terms of the Waste Act and the 2013 WML Regulations; and
- Additional permits such as biodiversity permits that may be required.

This Scoping Report has been prepared for Booysendal in support of the Phase 2 Applications process. These applications are compiled and submitted in terms of Chapter 4 and Chapter 5 of NEMA, the 2014 EIA Regulations, the Waste Act and the 2013 WML Regulations.

An IWULA is also being prepared for the water uses associated with the larger Booysendal South Expansion Project and will be submitted to the DWS in order for the IWULA process to run concurrently with that of the integrated WMLA, EA and EMP Amendment Applications.

As the Phase 2 Project is situated in both the Limpopo and Mpumalanga Provinces, two separate applications may need to be submitted to the DMR as follows:

- *DMR Limpopo Regional Office* - one EA Application and the EMP Amendment Application for the activities on properties held under the Booysendal North MR; and
- *DMR Mpumalanga Regional Office* - the WMLA and one EA Application for the activities on properties held under the Booysendal South MR.

Booysendal is however in discussions with the above DMR Regional Offices as to only one Regional Office being appointed as the CA to approve the Phase 2 NEMA and Waste Act Applications.

Given the interconnectivity of the activities and areas pertaining to the Phase 2 Project, a single, consolidated Scoping Report has been prepared that will be submitted to both DMR Regional Offices (unless one of the DMR Regional Offices is appointed the CA).

The Scoping Report does however distinguish between the proposed activities pertaining to each of the MRs in separate sub-sections.

As part of the authorisation process, Amec Foster Wheeler prepared the application forms for submission to the relevant Regional Offices of the DMR with the Draft Scoping Report. The Scoping Report is the second requirement (after the application) for the Phase 2 NEMA and Waste Act Applications process the proposed Booysendal South Expansion Project: Phase 2. This Report contains the findings of the Scoping Study and the associated TOR for the Phase 2 NEMA and Waste Act Applications required for the Phase 2 Project.

1.1 Background

Booysendal identified an opportunity to expand its operations and increase production to meet the projected short to medium term platinum market demands. Having acquired the MRs for the full extent of the Project Area earmarked for the expansion, mining expansion commenced in 2016 with further expansions planned. This total expansion project is known as the Booysendal South Expansion Project.

The Booysendal South Expansion Project is divided into two phases:

1.1.1 Booysendal South Expansion Project: Phase 1

An integrated EA, EMP Amendment and WML was granted in terms of section 24G of NEMA (being the Section 24G EA) by the DMR Limpopo Regional Office on 05 January 2018 for this Phase of the Project. The Section 24G EA was granted for the following activities, which pertain to both the Booysendal North and the Booysendal South MRs:

- The development of the BS1/2 portal and supporting infrastructure (consisting of a mining portal and terrace complex, seven adits, workshops, offices, water and related infrastructure and co-disposal stockpile);
- BCM1 and BCM2 without any surface infrastructure components;
- A 132kVA powerline from BN to BS1/2;
- Upgrade and new storm water management infrastructure at BS4;
- Reworking of tailings at the current BS4;
- Replacement of tailings on existing TSF 1 at BS4;
- Backfilling of the underground workings with tailings;

- The construction of associated surface and linear infrastructure, including a 13.2m wide bitumen access road, an ARC system, water pipelines between BS1/2 and the Valley Boxcut (which relate to the Booysendal South MR).

1.1.2 Booysendal South Expansion Project: Phase 2

1.1.2.1 Booysendal North Mining Right Activities

The following proposed activities are applicable to the Booysendal North MR:

- An Emergency Escape Portal north of BS1/2 that will serve as an emergency escape way and return airway system;
- Surface infrastructure associated with BCM1 and BCM2, including a terrace, conveyor systems, silo, crusher, workshops, offices, change house, transformer and substation, a pollution control dam ("**PCD**") and settlers, clean and process water storage facilities, ore stockpiles, access roads, compressors, sewage treatment plant ("**STP**"), concrete bunded waste collection area and emulsion, oil and diesel storage bays;
- Potable and process water lines for BS1/2 and the BCM1 and BCM2, sourced from the existing Lebalelo allocation and running along the existing gravel access road along the Groot Dwars River between BS1/2 and BN; and
- ARC from BS1/2 to BN with associated access roads and towers.

Figure 1-1 Booysendal Mine - General Locality (Source: Booysendal Presentation, 2016)

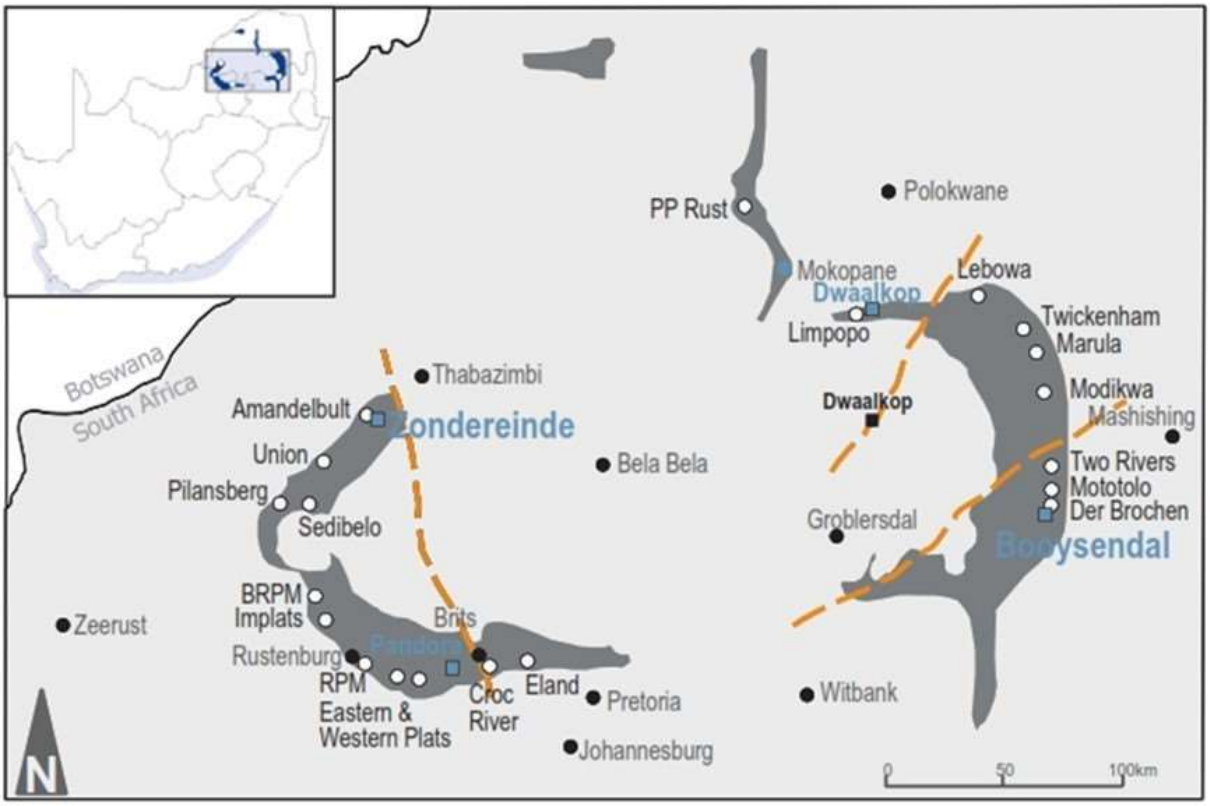
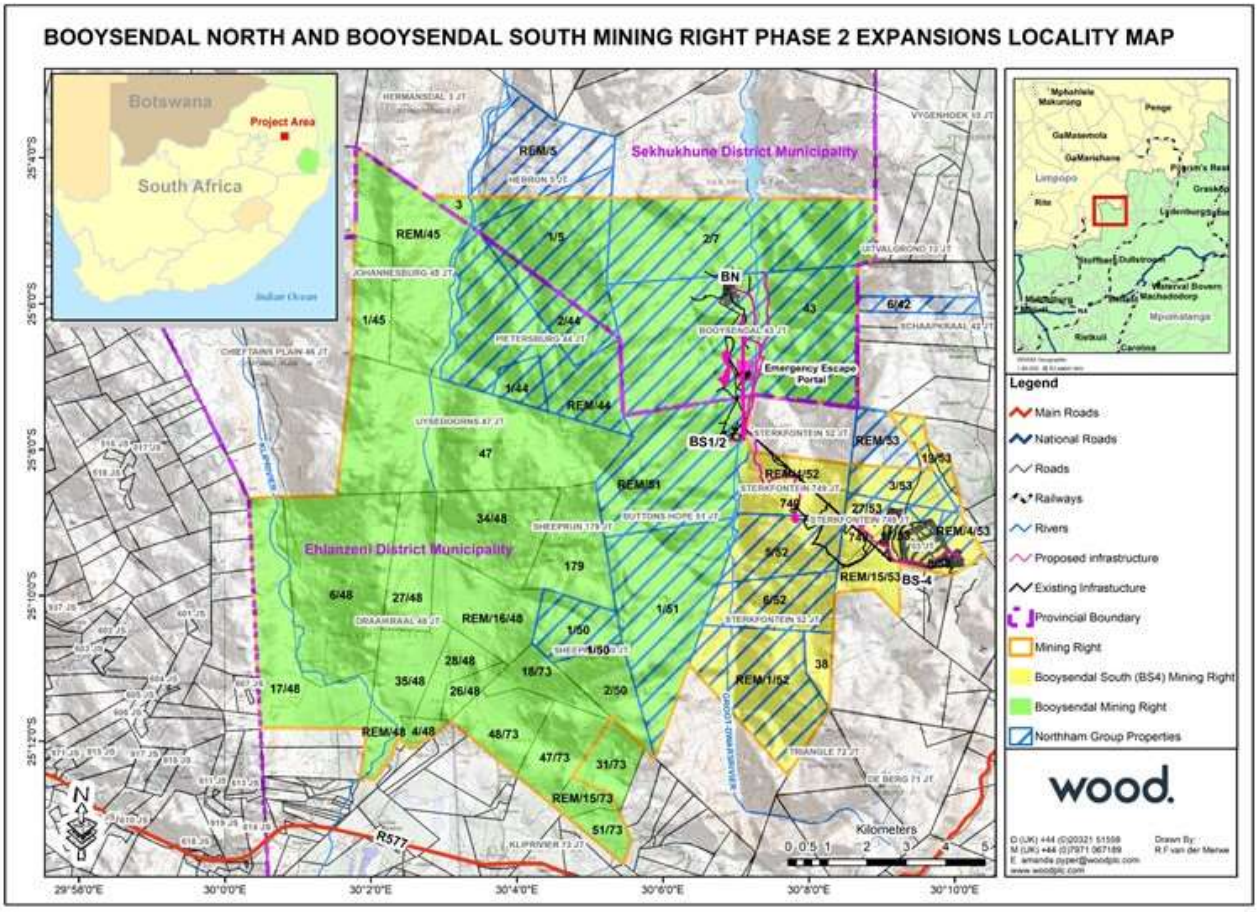


Figure 1-2 Booysendal Mine Location, Operational Division and Surface and Mining Rights



1.1.2.2 Booysendal South Mining Right Activities

The following proposed activities are applicable to the Booysendal South MR at BS4:

- Backfill Plant and access road;
- Slurry and process water pipelines between the Process and Backfill Plant, the RWD and the silt trap ("**BS4 Pipelines**");
- Three emergency backfill ponds along the Tailings Pipeline.

1.2 Location and Property Details

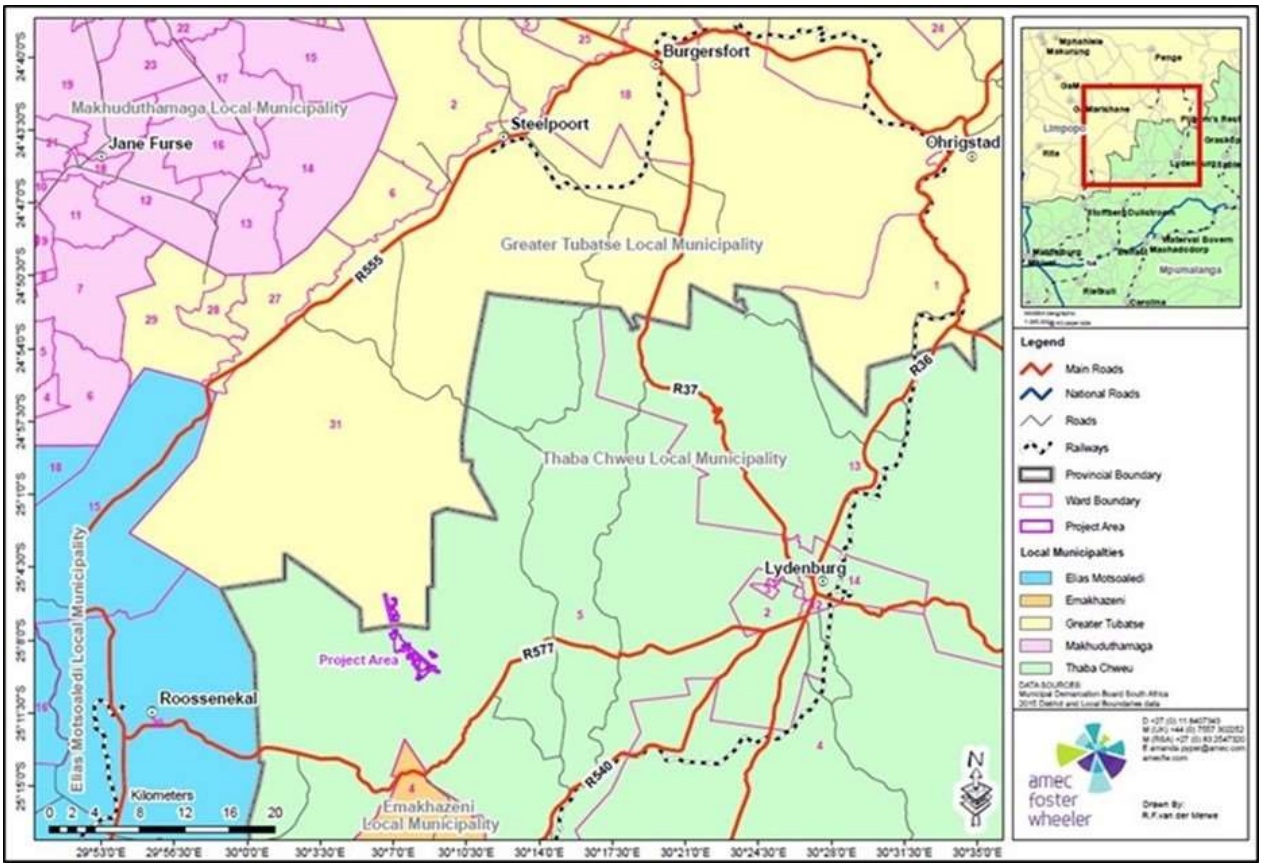
1.2.1 Location

BN falls within Ward 31 of the GTLM of the Sekhukhune District Municipality in the Limpopo Province. BS is located in Ward 5 of the TCLM of the Ehlanzeni District Municipality in the Mpumalanga Province. The details of the applicable district and local municipalities for the activities covered by this Scoping Report are included in Table 1-1. The ward and municipal demarcations are depicted in Figure 1-3. The proposed expansion for the Booysendal North MR falls in both the district and local municipalities' jurisdictions.

Table 1-1 Local and District Municipalities

Mpumalanga Province		
District Municipality	Ehlazeni District Municipality	Acting Municipal Manager: Mr Hubert Shabangu T: (013) 759 8531 M: 0825345653 E: hshabangu@ehlanzeni.gov.za
Local Municipality	Thaba Chweu Local Municipality	Municipal Manager: Mr Lesley Mokwena T: (013) 235 7307 M: 0794977466 E: lesleymphaka@gmail.com
Limpopo Province		
District Municipality	Sekhukhune District Municipality	Manager : Ms Mapule Makoko T : (011) 262 7300 M: 0823041629 E: Mahlangu@sekhukhune.gov.za
Local Municipality	Greater Tubatse Local Municipality	Municipal Manager : Mr JNT Mohlala T : (013) 231 1121 / 1000 M: 0828031629 E: jntmohlala@tubatse.gov.za

Figure 1-3 Towns, Wards and Municipalities of the Booysendal Operation



1.2.2 Property Details

The properties applicable to the Phase 2 Project and the relevant CA and Booysendal MR are set our below.

Limpopo Regional DMR Office: the Farm Booysendal 43JT; and the Remaining Extent of the Farm Buttonshope 51JT (held under the Booysendal North MR) (the "**Booysendal North MR Phase 2 Project Area**"). Booysendal holds surface rights to these properties (refer to Figure 1-4 and Table 1-2).

Mpumalanga Regional Office: the Farm Sterkfontein 749 JT; and Remaining Extents of Portions 4 and 15 and Portion 8, 17 and 27 of the Farm De Kafferskraal 53 JT (held under the Booysendal South MR) (the "**Booysendal South MR Phase 2 Project Area**"). Booysendal and the Bakoni CPA" hold surface rights to these properties (refer to Figure 1-4 and Table 1-3). Booysendal has entered into a lease agreement with the Bokoni CPA in respect of the properties the Bokoni CPA owns.

The Booysendal North MR Phase 2 Project Area and Booysendal South MR Phase 2 Project Area are collectively referred to in this Scoping Report as the "**Phase 2 Project Area**".

Other properties over which the Booysendal North MR and Booysendal South MR are held are also included in Figure 1-4 for reference purposes to specifically provide an understanding of the potential area of influence ("**AoI**") of the actual expansion.

Figure 1-4 Booysendal Operation Surface and Mining Rights

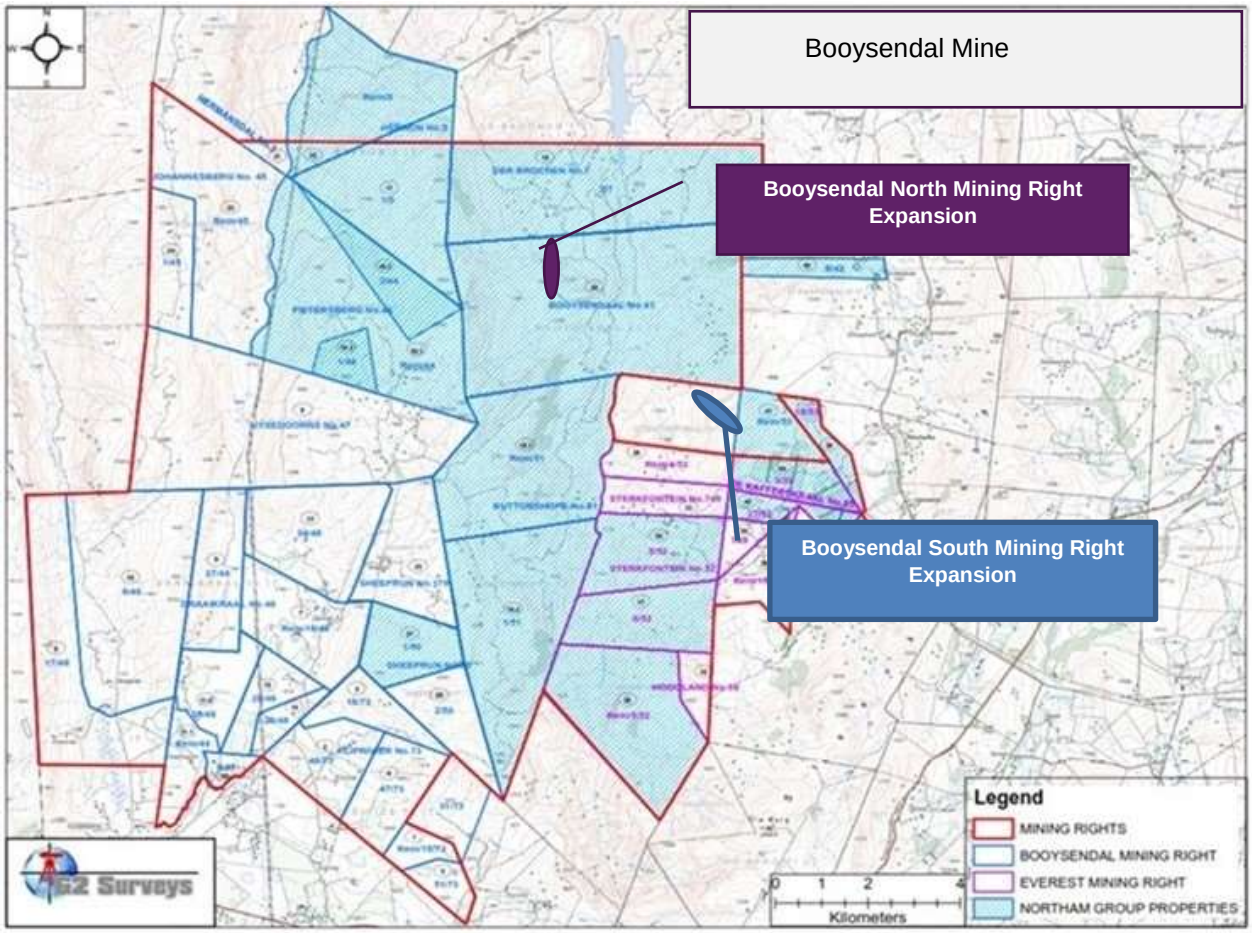


Table 1-2 Booysendal North MR Expansion - Property Details

Farm	Property Description	Owner	Province	Title Deed Number	Surveyor General Code	Extent (ha)
Buttonshope 51JT	Remaining Extent	Booysendal	Mpumalanga	T6075/2009	T0JT00000000005100000	934.8152
Booysendal 43JT	Farm	Booysendal	Limpopo	T38487/2009	T0JT00000000004300000	1807.2269

Table 1-3 Booysendal South MR - Property Details

Farm	Property Description	Owner	Province	Title Deed Number	Surveyor General Code	Extent (ha)
Sterkfontein 749 JT	Farm	Bakoni CPA	Mpumalanga	T171108/2006	T0JT00000000074900000	248.5382
De Kafferskraal 53JT	Remaining Extent of Portion 4	Bakoni CPA	Mpumalanga	T173287/2006	T0JT00000000005200004	178.6939
De Kafferskraal 53JT	Remaining Extent of Portion 15	Bakoni CPA	Mpumalanga	T7052/2016	T0JT00000000005300015	179.8717
De Kafferskraal 53 JT	Portion 8	Bakoni CPA	Mpumalanga	T7052/2016	T0JT00000000005300008	131.9059
De Kafferskraal 53JT	Portion 17	Bakoni CPA	Mpumalanga	T7052/2016	T0JT00000000005300017	24.9550
De Kafferskraal 53JT	Portion 27	Booysendal	Mpumalanga	T16257/2016	T0JT00000000005300027	122.8744

The above properties collectively constitute the "**Phase 2 Project Area**".

1.3 Purpose of the Scoping Report

The purpose of this Scoping Report is to:

- Provide a combined technical summary of the proposed infrastructure development and activities which form part of the Phase 2 Project, as it is currently defined in the early stages of planning and design;
- Document potential impacts which may be significant and which should be investigated further during the EIA phase;
- Provide justification for scoping out impacts which are deemed not significant. The SR furthermore details the Terms of Reference
- Detail the ToR for the EIA, including the required specialist investigations and the scope of work ("**SoW**") required for these investigations, considering the extensive recent and historic studies undertaken for the Phase 2 Project Area;
- Provide a summary of the scope for the amendment to the 24G EMP; and
- Allow the CAs to assess the applicability and comprehensiveness of the ToR to cover all concerns that may be relevant to this proposed Project as defined in Section 2.

1.3.1 Objectives of the Scoping Report

The objectives of the Scoping Study and Scoping Report are to:

- Provide a description of the relevant activities of the Booysendal South Expansion Project: Phase 2;
- Provide a description of the current known environmental and social status quo of the Phase 2 Project Area;
- Define the potential AoI associated with the Phase 2 Project and its associated activities;
- Identify all potential aspects which may be associated with the different phases of the life of the Phase 2 Project and which may lead to impacts;
- Identify potential pathways that can lead to biophysical and social receptor impact;
- Distinguish between impacts which may be significant and impacts which are deemed to have a low significance and validate these findings;
- Determine which potential impacts require further investigation during the EIA phase; and
- Develop ToR for the EIA.

The scope of the EIA may have to be amended or expanded as the technical studies advance (Feasibility Studies and Specialist Investigations) or in light of additional input from stakeholders and communities. The CA will be consulted should changes be required.

1.3.2 Applicable Competent Authorities

Although the Booysendal North MR falls within both the Limpopo and Mpumalanga Provinces, the CA historically has and continues to be the Regional Manager of the DMR Limpopo Regional Office (Polokwane). The CA for the Booysendal South MR is the Regional Manager of the DMR Mpumalanga Regional Office (Witbank).

The CA for the IWULA, which is done concurrently with the Phase 2 NEMA and Waste Act Applications WMLA and EMP Amendment and EA Applications is the Olifants River Catchment Management Agency ("**CMA**") of the DWS located in Mashishing (Lydenburg).

In terms of the provisions of Section 24K of NEMA the foundation for corporative governance is laid where the CA should also *"consult with any organ of state responsible for administering the legislation relating to any aspect of an activity that also requires environmental authorisation under this Act in order to coordinate the respective requirements of such legislation and to avoid duplication."*

With respect to this application the following authorities should therefore be consulted as a minimum, the:

- The National Department of Environmental Affairs (DEA);
- The Department of Agriculture, Forestry and Fisheries(DAFF)
- The South African Heritage Resource Agency (SAHRA);
- DWS;
- Provincial Road Agency;
- Department of Rural Development and Land Reform;
- GTLM and TCLM;
- Ward Council for Ward 31 of the Greater Tubatse Local Municipality and the Ward Council of Ward 5 of the Thaba Chweu Local Municipality;
- Ehlanzeni and Sekhukhune District Municipalities;
- Wildlife and Environment Society of South Africa ("**WESSA**");
- Olifants River CMA of the DWS;
- Limpopo Department of Economic Development, Environment and Tourism (LEDET);
- Mpumalanga Department of Economic Development, Environment and Tourism (MEDET);
- The Mpumalanga Parks and Tourism Agency (MPTA; and
- ESKOM Holdings SOC Limited.

1.4 Applicant Details

Northam, a mid-tier mining company listed on the Johannesburg Stock Exchange, is the holding company of Booysendal. However, Booysendal is the registered holder of the Booysendal North and Booysendal South MRs. Booysendal's company details are included in Table 1-4.

Table 1-4 Booysendal Company Details

Name of Applicant	Booysendal Platinum (Pty) Ltd
Contact Person	Willem Johannes Theron
Company Registration No	2002/016771/07
Postal Address	PO Box 412694, Craighall, 2024
Project Physical Address	Farm Booysendal 43JT; the Remaining Extent of the Farm Buttonshope 51JT; the Farm Sterkfontein 749JT; and Remaining Extents of Portions 4 and 15 and Portion 8, 17 and 27 of the Farm De Kafferskraal 53 JT

Telephone No	011 325 4795
Mobile No	0828088364
Email	Willie.Theron@norplats.co.za

1.5 Details of the Independent Environmental Assessment Practitioner

Amec Foster Wheeler was initially appointed by Booysendal as the EAP to undertake the processes for Phase 2 NEMA and Waste Act Applications and the IWULA for Phase 1 of the Booysendal South Expansion Project. An integrated application was submitted under section 24G of NEMA in September 2017 and the Section 24G EA subsequently granted.

The scope of the Booysendal South Expansion Project has since been expanded to include the Phase 2 Project activities associated with both the Booysendal North MR and the Booysendal South MR. Amec Foster Wheeler was then appointed to revise the IWULA and to undertake the Phase 2 NEMA and Waste Act Applications . The IWULA process is being undertaken concurrently to these processes for all NWA section 21 water uses associated with the overall Booysendal South Expansion Project, as advised by the DWS during a pre-consultation meeting held on 28 Mach 2017.

The details of the EAP are included in Table 1-5. A declaration of independence by the EAP is included in Section 12.

Table 1-5 Details of the Environmental Assessment Practitioner

Name of EAP	Amec Foster Wheeler South Africa Pty. Ltd.
Contact Person	Amanda Pyper-Rocher
Postal Address	Building 2, Silver Stream Business Park, 10 Muswell Road South, Bryanston, 2021, South Africa
Physical Address	Second Road, Midrand, Gauteng 1683
Telephone No	+27 (0)11 840 7457
Mobile No	+44 (0) 7557 302252
Email	Amanda.pyper@amecfw.com

1.5.1 EAP Statement

Amec Foster Wheeler and the project team acts as an independent company in the Phase 2 NEMA and Waste Act Applications processes for the Booysendal South Expansion Project: Phase 2. We are performing the work relating to the Phase 2 NEMA and Waste Act Applications in an objective manner, even if this results in views and findings that are not favourable to the applicant.

We declare that there are no circumstances that may compromise our objectivity in performing such work. We have expertise in conducting the Scoping Study, EIA process for the EAs and WML, EMP Amendment process and the relevant reports. We confirm that we have knowledge of the relevant environmental acts, regulations and guidelines that have relevance to the proposed project and the various application processes will comply with the requirements therein.

We have no, and will not engage in, conflicting interests in the undertaking of the activity and:

- undertake to disclose to the Applicant and the CA all material information in our possession that reasonably has, or may have, the potential of influencing any decision to be taken with respect to the application by the CA; and
- Ensure the objectivity of any report, plan or document to be prepared by myself/ourselves for submission to the competent authority;

All particulars furnished by us in this report are true and correct. We realise that a false declaration is an offence in terms of section 49A of NEMA and is punishable in terms of section 24F of the Act.

1.6 EAP Credentials

Amanda Pyper is a Principal Environmental Scientist with 27 years' experience, of which the past 11 years have been as an environmental and social scientist. Her experience spans the whole project life cycle and includes strategic advisory roles; due diligence assessments; prefeasibility, feasibility and bankable feasibility input; environmental compliance audits; external IFC reviews; managing large international ESIAs and ESMPs, often in remote locations and involving large multidisciplinary specialist teams; and developing closure and rehabilitation plans. This experience gives her a detailed understanding of overall Project requirements through all stages of development.

Her experience includes roles in the extractive, linear infrastructure, water sector and industrial developments for both greenfields and brownfields projects. Her role furthermore involves business development and strategic advisory services. She has undertaken several EIAs in South Africa, amongst others the 2010 EMP Amendment for Booysendal North and the Section 24G for Phase 1 of the Booysendal South Expansion Project.

Amanda Pyper has worked on projects in Liberia, Côte d'Ivoire, Republic of Congo (Brazzaville), South Africa, Mozambique, Morocco, Guyana, Taiwan, Singapore, Malawi, Angola, Kyrgyzstan and the Kingdom of Saudi Arabia. She holds a Master's Degree in Environment and Society, completed at the University of Oulu (Finland) and the University of Pretoria, and an Honours Degree in Environmental Impact Assessment and Environmental Management. She is a qualified QEF for Chevron and holds an ISO 14001 Advanced EMS Lead Auditor qualification.

Amanda Pyper's full CV is included as Annexure A.

1.6.1 EAP Definition

Any EMP Amendment and/or EIA process is required to be undertaken by an independent EAP and independent specialists. Regulations in terms of the registration of EAPs with an Environmental Assessment Practitioners Associated have been published.

An independent EAP is defined in terms of section 1 of NEMA as:

"*the individual responsible for the planning, management, coordination or review of environmental impact assessments, strategic environmental assessments, environmental management programmes or any other appropriate environmental instruments introduced through regulations*".

A specialist, in terms of Regulation 1 of the 2014 EIA Regulations, means:

"*a person that is generally recognised within the scientific community as having the capability of undertaking, in conformance with generally recognised scientific principles, specialist studies or preparing specialist reports, including due diligence studies and socio-economic studies.*"

Regulation 13 of the 2014 EIA Regulations outlines the general requirements for EAPs and specialists as follows:

"*(1) An EAP and a specialist, appointed in terms of regulation 12(1) or 12(2), must –*

(a) be independent;

(b) have expertise in conducting environmental impact assessments or undertaking specialist work as required, including knowledge of the Act, these Regulations and any guidelines that have relevance to the proposed activity;

(c) ensure compliance with these Regulations;

(d) perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the application;

(e) take into account, to the extent possible, the matters referred to in regulation 18 when preparing the application and any report, plan or document relating to the application; and

(f) disclose to the proponent or applicant, registered interested and affected parties and the competent authority all material information in the possession of the EAP and, where applicable, the specialist, that reasonably has or may have the potential of influencing –

(i) any decision to be taken with respect to the application by the competent authority in terms of these Regulations; or

(ii) the objectivity of any report, plan or document to be prepared by the EAP or specialist, in terms of these Regulations for submission to the competent authority;

unless access to that information is protected by law, in which case it must be indicated that such protected information exists and is only provided to the competent authority."

1.6.2 Contributing Specialists

The specialist contributions from the companies shown in Table 1-6 will be incorporated into the EIR for the Phase 2 NEMA and Waste Act Applications (which will be prepared as a combined document). Each specialist will include a declaration of independence in their reports, in terms of Appendix 6 of the 2014 EIA Regulations, and a qualification of expertise to carry out the various studies.

Table 1-6 Specialists Contributing to the Booysendal Authorisation Processes

Specialist Study	Specialist/ Specialist Team
Terrestrial Flora and Fauna	Natural Scientific Services [**CC**] ("**NSS**")
Aquatic Flora and Fauna	Clean Stream Biological Services (Pty) Ltd
Pycna Sylvia	Richard D. Stephen
Water Quality	Aquatico Scientific (Pty) Ltd
Wetlands	Wetland Consulting Services (Pty) Ltd
Hydrology	Letsolo Water and Engineering Services CC
Hydrogeology	Future Flow Groundwater and Project Management Solutions CC
Soil, Land Use and Land Capability	Terra-Africa Consult CC
Air Quality and Greenhouse Gas Emission	Airshed Planning Professional (Pty) Ltd
Noise	dBAcoustics CC
Traffic	Hamatino Consulting Engineers
Visual	GISM (Pty) Ltd
Social	Social Enterprise Solutions
Cultural Heritage	Heritage Contracts and Archaeological Consulting cc ("**HCAC**")
Public Consultation	Anelle Lötter Communications
Waste	Jones & Wagener Engineering and Environmental Consultants (Pty) Ltd

1.7 Structure of the Scoping Report

Section 1: Introduction and Background (this section)

Section 2: Project Description

Section 3: Legislation, Policies and Guidelines

Section 4: Scoping and Environmental Impact Reporting ("**S&EIR**") Methodology

Section 5: Description of the Receiving Environment

Section 6: Project Area of Influence

Section 7: Public Participation Process

Section 8: Need and Desirability

Section 9: Alternatives

Section 10: Potential Impacts

Section 11: Plan of Study for EIA

Section 12: Summary

Section 13: Declaration by the EAP

Section 14: Bibliography

Annexures

2. Project Description

Booysendal embarked on expanding its Booysendal Mine through the Booysendal South Expansion Project with the aim to increase mining of the PGM minerals from the UG2 and Merensky Reefs. The Booysendal South Expansion Project specifically focusses on four development areas (BS1/2, BCM1 and BCM2, BS4 and Valley Boxcut) with linear and supporting infrastructure between the various development areas. The Section 24G EA for Phase 1 of this Project was granted on 5 January 2018 and construction activities are ongoing.

Booysendal has identified further expansion needs (the Phase 2 Project), for which the Phase 2 Project Applications are required. Listed activities in terms of the Waste Act are only applicable to the Booysendal South MR while other applicable waste management activities for the Booysendal South Expansion Project have been approved under the Section 24G EA. An IWULA under the NWA for all proposed future and current section 21 water uses is carried out concurrently with the Phase 2 NEMA and Waste Act Applications.

With the implementation of the Booysendal South Expansion Project, the Booysendal Mine's LoM is approximately 40 years. The total BS reserve is estimated at 105.88Mt.

The following sections provides further details around the Booysendal South Expansion Project: Phase 2. These details are preliminary, as the finalisation of the Booysendal South Expansion Project Phase 2's design is still ongoing.

2.1 Booysendal Mining Right Expansion Activities

The layout of the proposed Booysendal North MR expansion is included in Figure 2-1 and involves:

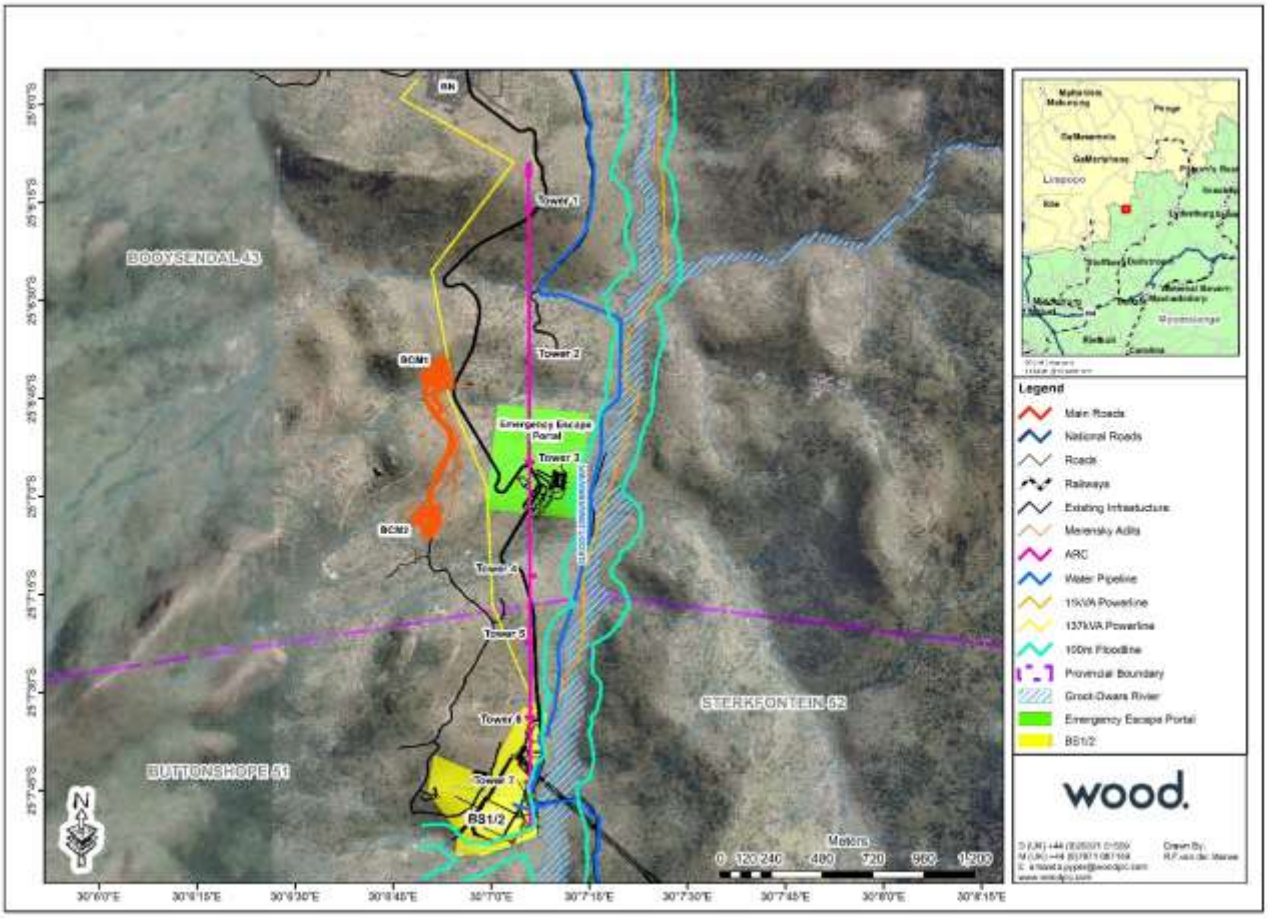
- Development of surface infrastructure at BCM 1 and BCM2, detailed further below;
- Development of an Emergency Escape Portal to serve BCM1, BCM2 and the BS1/2 underground complex, as an emergency escape way and return airway system;
- Retaining a 11VA powerline from BN to BS1/2;
- Relocation of the BCM2 from the footprint approved in the Section 24G EA;
- Potable and process water lines for BS1/2 and the Merensky adits, sourced from the existing Lebalelo allocation and running along the existing gravel access road along the Groot Dwars River between BS1/2 and BN;
- Access roads to the BCM1 and BCM2 Adits and the ARC Towers; and
- An ARC system from BS1/2 to BN.

2.1.1 BCM1 and BCM2 Surface Infrastructure

The BCM1 and BCM2 Adit development and mining were approved as part of the Section 24G EA. This included authorisation for: vegetation clearance of 4.5ha for the development of the Adits; and on-reef, mechanised board-and-pillar mining at a rate of 22,500tpm.

The location of BCM2 has since been moved north of its location that was approved under the Section 24G EA. The impacts of this relocation will be assessed by the various specialists.

Figure 2-1 Booysendal North MR Expansion Activities



As part of further Phase 2 developments, Booysendal identified the need for surface infrastructure components at BCM1 and BCM2 (located on the Farm Booysendal 43 JT). Surface infrastructure at each of the Adits include:

- Construction of a terrace;
- Conveyors:
  - A dip conveyor system, which will transport ore from underground to the crusher feed conveyor from where the ore will be transferred to the crusher plant located between BCM1 and BCM2. The dip conveyor belts will be 1200mm wide with an electric drive of 2 x 132Kw. The conveyors will have a capacity of 450tph;
  - The crusher ore will be transported via an overland conveyor to a silo just east of BCM2. From here the ore will be transferred via an ARC feed conveyor through a chute onto the ARC, which will transport the ore either to the process plant at BN or to the process plant at BS4;
- Silo with a capacity of 4,200t;
- Crusher: A grizzly crusher plant will be installed between the BCM1 and BCM2. The grizzly will reduce the particle size to -300mm and the crusher to -150mm. A dust suppression system will be installed at the crusher. It is indicated that maintenance and inspection procedures have been developed for the crusher. The crusher has a capacity of 50 tonnes;

- Infrastructure at the terrace areas will include the following:
  - An office complex, consisting of a combination of pre-fabricated containerised and brick buildings;
  - A workshop: the flooring will be concrete, with a combination of steel and brick building. Cut-off trenches will be constructed at the workshop's entrances. The areas surrounding the workshop will be paved. All run-off from the workshop will report to an oil separator. The workshop will be constructed with bunded areas in which hydrocarbons and other chemicals will be stored separately. A temporary tyre bay will be provided at the workshop;
  - A brick change house (for 300 people) and access control building;
  - Transformer and substation;
  - Emulsion storage tanks: emulsion will be offloaded by tanker at an offloading containment area, which will be specifically bunded, provided with an impervious base and cut-off trenches on the open sides. The cut-off trenches will be sized to accommodate a 1:100-year flood event. There will be two tanks at each of the terraces. The volume of the two tanks will be 5,000l. Loading of the emulsion will be on a specially prepared loading area, which will have the same design parameters as the offloading containment area. The emulsion area will be fenced through security fencing with access control;
  - Oil and hydraulic fluids storage areas: all dangerous and hazardous goods will be stored in bunded areas. Diesel will be stored in containerised bunker and self-bunded storage areas. The volume of dangerous and hazardous material which will be stored at each of the portals are: 45,000l diesel; 5,000l hydraulic fluids, 5000l engine oil, 5000 l dirty oil;
  - A concrete bunded waste collection area;
  - Security fencing with access control;
  - A sewage treatment plant (STP) with a throughput capacity of 24m^3/day at BCM1 and 23m^3/day at BCM2. The treated effluent from both STPs will be discharged into the Groot Dwars River. A modular package type potable STP will be installed to treat water to SANS 241:2011 drinking water standards. The treatment process will consist of a chemical dosing pre-treatment, followed by a clarification phase in settlers, followed by filtration through pressure filters and final disinfection by chlorine dosing from where the water will be discharged into the environment;
  - A high-density polyethylene (HDPE lined PCD and settler dam will be constructed at each of the Adit complexes. The combined capacity of the PCD (2,500m^3) and settler dam (1,000m^3) is 3,500m^3. The PCD and settler dam covers an area of 2,000m^2 (PCD 1,500m^2 and settler 500m^2) at each of the Adits;
  - Fire water and potable water storage tanks with a combined indicative volume of 80m^3 at BCM1 and 80m^3 at BCM2;
  - Compressors;
  - Hard top bus stop and parking bays;
- BCM1 and BCM2 will be accessed via 6m wide access roads off the main access road. All other access roads will be 4m wide; and
- Off-stream water storage will be less than 50,000m^3.

Construction Phase:

During the construction phase, vegetation will be cleared along the conveyor routes, at the silo and crusher footprints, access roads and additional areas at the portals. Topsoil will be stripped and stored on designated topsoil stockpiles, the locations of which will be determined based on the outcome of the soil and terrestrial ecology surveys. The topsoil will be used during final closure and rehabilitation.

There is a non-perennial drainage line to the south and north of the BCM1 terrace complex and south of the BCM2 terrace complex. The terrace area and some of the associated infrastructure will be constructed within 100m from both these unnamed tributaries of the Groot Dwars River. Refer to Figure 2-2 and Figure 2-3 for layout of the BCM1 and BCM2 Adit complexes respectively. Excavations and infilling will be done in this area for the establishment of the terraces. This will be followed by the construction of the surface infrastructure on the terrace.

The main 6m access roads to the Adits will be tarred. V-drains, culverts and erosion control measures will be put in place to protect the watercourses and sensitive soils. This will also assist in reducing dust mobilisation.

BCM1 and BCM2 Operational Phase:

The BCM1 and BCM2 mines will operate on a 24-hour, 365 days per year basis. They will be operated in two 10-hour shifts.

Every day logistics and administration will be take place from the offices at each of the operations. Waste management will be done in terms of the existing waste management policy under the existing waste management license. Waste will be separated at source. The storage areas will depend on the class of waste and will be done in accordance with best practice.

All materials handing will be undertaken in terms of existing policies and in accordance with the existing integrated water and waste management plan (IWWMP).

Ore will be transported from the underground via conveyor system. From here the ore will report to a transfer station from where it will be transported through a feed conveyor to the crusher plant, located between BCM1 and BCM2. The crushed ore will be transported via feed conveyor to a silo east of BCM2. From here the ore will be transferred via an ARC feed conveyor through a chute onto the ARC, which will transport the ore to the process plant at BS4.

Mining activities and design of BCM1 and BCM2 have been approved as part of the Section 24G EA and will involve mechanical board and pillar mining. Up to a depth of 100 mbs, pillars will be 10m wide and 10m long. From 100 to 300mbs, pillars will be 13m wide and 12m long; from 300 to 500mbs, pillars will be 10m wide and 38m long; and deeper than 500mbs all pillars will be wider than 10m.

BCM1 and BCM2 Decommissioning and Closure Phase:

During the closure phase all surface infrastructure, above and underground pipes, cables and conveyors will be removed. All concreted, paved, and artificial surfaces will be removed. Where surfaces pose a contamination risk, it will be decontaminated or disposed of in accordance with best practice. Liners will be removed and disposed at a licensed landfill site.

The Adits will be plugged to avoid decanting in the long term.

All areas will be ripped and shaped, to avoid erosion and to blend with natural contouring and flow patterns. Topsoil will be applied shaped areas which will be revegetated with an endemic seed mix.

Figure 2-2 BCM1 Layout

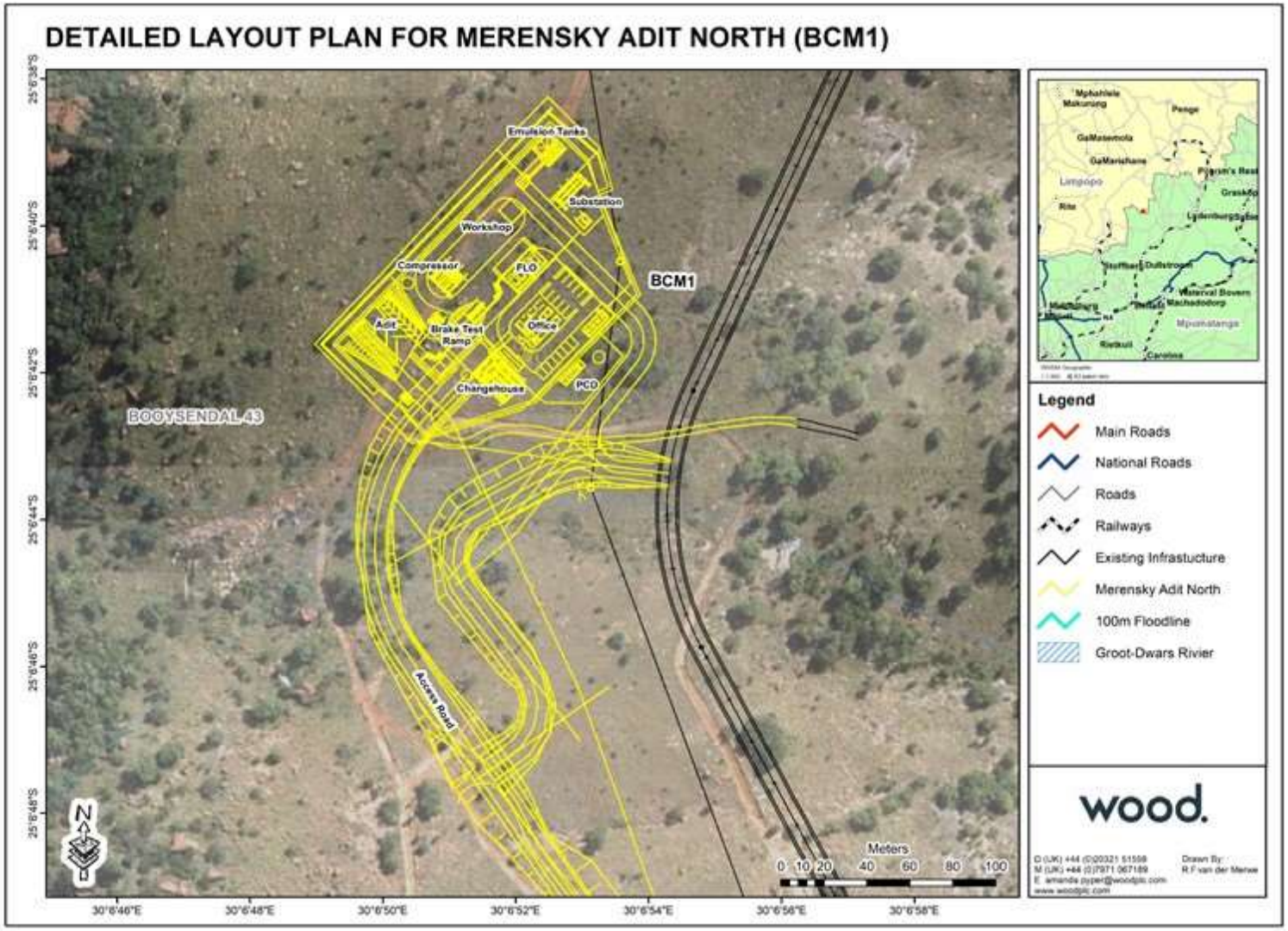
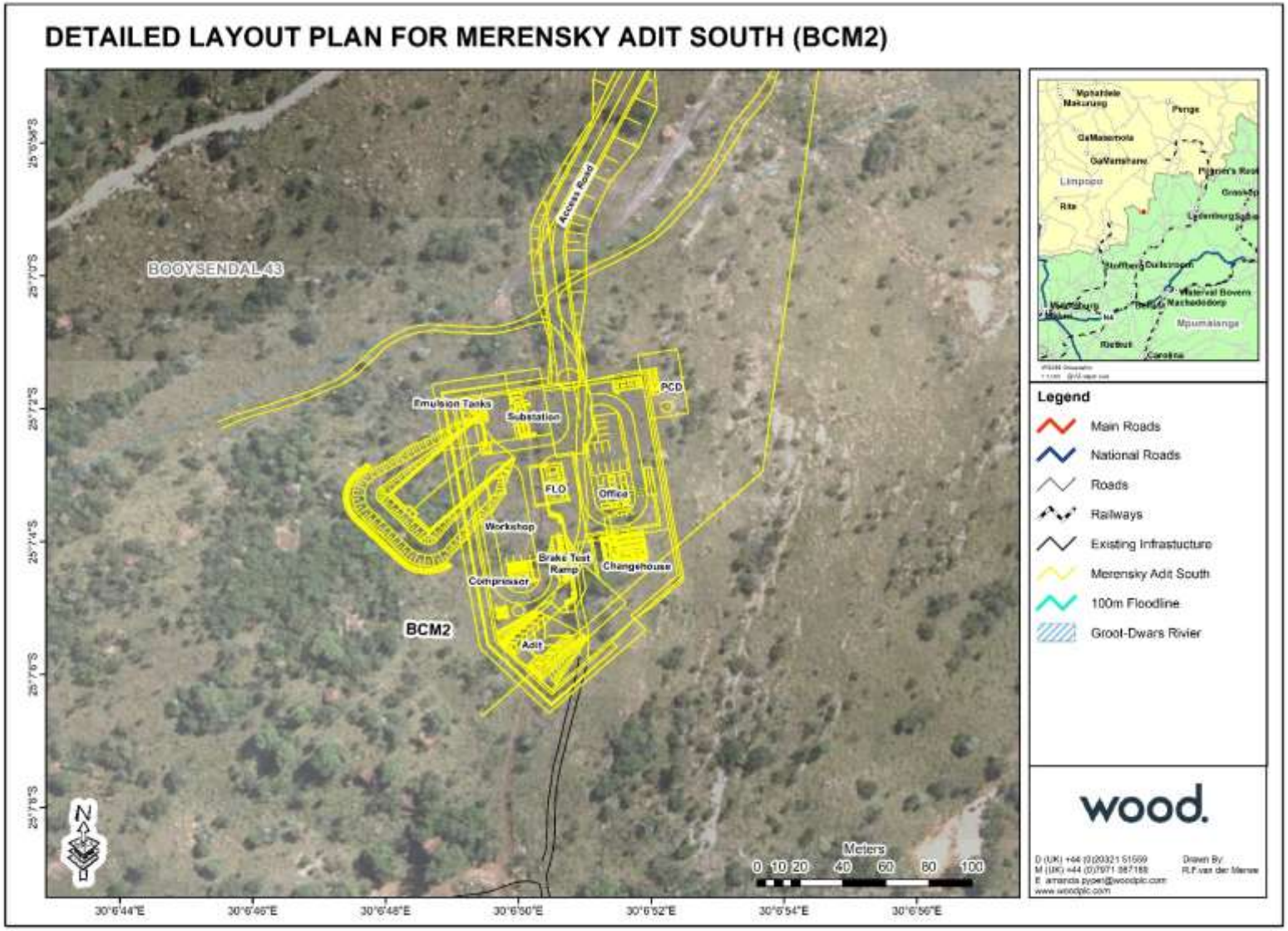


Figure 2-3 BCM2 Layout



2.1.2 Emergency Escape Portal

An Emergency Escape Portal is planned just east of the BCM1 and BCM2 complexes (see Figure 2-1) on the Farm Booysendal 43 JT. It will serve as a return airway system for BS1/2, BCM1 and BCM2 and as emergency escapeway. This is to comply with the mine health and safety requirements. The Emergency Escape Portal will have a development footprint area of 1.3ha. Access will be gained from the main access road onto a 4m wide bitumen road.

Construction Phase:

During the construction phase vegetation at the portal will be cleared. Topsoil will be stripped and stockpiled and a designated specially prepared topsoil stockpile. A clean and dirty water cut-off trench will be constructed upstream of the portal to ensure that clean water is diverted around the portal. Excavations and infilling will be done to establish the portal. The faces will be stabilised through concrete and mesh. Rock from the portal excavation will be used to establish the portal and for the construction of associated infrastructure e.g. roads.

The return airways and ventilation system will be installed in the underground workings. Seepage water will be pumped out and collected in a sump to ensure that there is no release into the environment.

Operational Phase:

Activities at the emergency escape portal will be limited to maintenance work on the ventilation system and the portal areas itself.

Decommissioning and Closure Phase:

The vent pipes, cables and water pipelines will be removed and sold as scrap material or otherwise disposed. The portal will be sealed to avoid post-closure decanting. The areas around the portal and vent shaft will be ripped, contoured and graded. Rehabilitation and revegetation will be done.

2.1.3 Aerial Rope Conveyor (ARC)

An ARC will be constructed from BS1/2 to BN on the Farm Booysendal 43 JT and Remainder of the Farm Buttonshope 51JT (refer to Figure 2-1). This will serve to transport ore from BCM1 and BCM2 to the process plant at BS4. Conveyor designs will be in accordance with international standard ISO 5048 and installation in terms of the Mine Health and Safety Act Regulation 8.9 (1-10). The ARC consists of seven towers, with the conveyor system strung in the air between the towers.

Construction Phase:

To develop the ARCs vegetation clearance more than 300m^2 in a CBA will be require at the tower footprint, access road, anchor block and drive station areas. The areas to be cleared for the ARC and associated infrastructure are included in Table 2-1.

The tower footprint areas will be excavated to an average depth of 2.0m, which may vary depending on the underlying geology. Once the excavation is done concrete foundations will be laid. 200 tonne cranes will be required for the assembling and installation of the towers. The height of the towers ranges between 2.36 to 37.50m from ground level. Once the towers are established the conveyor system will be strung in the area, using cranes and trucks.

Infilling and excavations within a drainage line will be required at Tower 3 on the Farm Booysendal 43 JT, which is in a non-perennial drainage line of the Groot Dwars River, and Towers 6 and 7 on the Farm JT which are both located within 100m from the Groot Dwars River and delineated riparian wetland. For these three towers excavation and infilling more than 10m^3 will be required. As the design is not yet finalised the volumes will be confirmed during the EIA phase.

Table 2-1 Clearance Requirements for the ARC Towers and Infrastructure (Booysendal, 09 February 2018)

Component	Clearance Area (Ha)	Component	Clearance Area (Ha)
Tower 1	0.056	Tower 2	0.038
Tower 3	0.1035	Tower 4	0.1250
Tower 5	0.1	Tower 6	0.25
Tower 7	0.045	Anchor block	0.04
Anchor tower blocks	0.065	Drive station	0.25
Total ARC Clearance Area (Ha)	**1.072**		

Operational Phase:

The conveyor system will run from the underground workings at the BS1/2, BCM1 and BCM2 underground workings to the feed silo from here a supply conveyor will transfer the ore via a chute onto the ARC. Average tonnage from BS1/2 to the silo will be 663tph, with a maximum tonnage of 1,977tph. A light spray will be installed at the tail of the ARC to bind the top layer when ore is transported. This together with the existing 8% moisture content of the ore should be sufficient to contain potential dust.

The ARC will be powered by two 2,000kVA transformers. It is indicated that the ARC will be operational for 17.1hours per day and that ore will be transported to BN at rates of 1,150tph. The monthly capacity of the ARC only from BS1/2 and the BN has been simulated at 464,225tpm. Ore will be tipped onto the stockpile at BN.

In terms of the DRA Risk Assessment Review Report (JZASM0413-SHE-FO-36, 05/11/2015), the following operational measures will be put in place:

- The feed conveyors and the silos will be covered to avoid the mobilisation of dust particles;
- Dust suppression at the ARC loading points;
- Spillages will be avoided through vibrating feeders with controlled feed to the conveyor, belts scales, feeder limits;
- A spillage conveyor with reloading facility onto the ARC will avoid spillages at the loading points;
- Where the ARC crosses roads and against steep gradients a cover will be constructed to capture any potential spillages. The belt design also includes for skirts and cleats;
- To avoid runback of the belt, the ARC will be installed with multiple brake systems, an out-of-balance force and fail-to-safe breaks;
- The ARC will be provided with sufficient earthing to avoid lightning strikes;
- Visual markers will be added on the higher towers as warning system to aircraft, in accordance with the Civil Aviation Authority's requirements;
- Areas where the ARC is lower than 6m will be fenced to avoid access and danger to communities;
- A maintenance methodology will be developed, to ensure effective long-term maintenance and integrity of the system; and
- Maintenance on the ARC will be undertaken using an aerial inspection car.

Bi-weekly conveyor maintenance will be conducted, in accordance with the maintenance procedures implemented at BN.

Decommissioning and Closure Phase:

The ARC system (including silos, feed conveyors and access roads) will be removed and all disturbed areas rehabilitated.

2.1.4 Water Pipeline

A HDPE process water pipeline will be constructed from the BS1/2 portal complex to BN on the Farm Booysendal 43 JT and Remainder of the Farm Buttonshope 51 (see Figure 2-1) ("**BS1/2 / BN Pipeline**"). The purpose of the pipeline will be to transfer excess water from the 14,000m^3 PCD at BS1/2 and the PCDs at BCM1 and BCM2 in the event of high rainfall to the 2.6 megaliter ("**Ml**") cement dam at BN to avoid spillage of untreated process water into the Groot Dwars River. The pipeline will run along the existing gravel access road next to the Groot Dwars River. The pipeline will have a diameter of 250mm with a throughflow of less than 120l/s, therefore outside of a NEMA Listed Activity.

Potable water will be provided from the 2.6Ml storage tank at BN to BS1/2. Potable water will also be offtake at BCM1 and BCM2. The source of the portable water is the current Lebalelo pipeline, for which Booysendal holds an existing allocation. The pipeline will follow the same alignment as the process water pipeline. The pipeline will have a diameter of 250mm with a throughput of less than 120l/s, therefore outside of thresholds of the NEMA Listed Activities. Water will be treated to drinking standards with either a filer or a water treatment plant system.

Construction Phase:

During the construction phase a corridor along the existing gravel access road running next to the Groot Dwars River will be cleared. The total pipeline footprint will be 7.5Ha. The designs indicated that the pipeline will run above ground. This should assist in reducing environmental impacts. The potable water line will be a steel pipe with a 210mm diameter.

Operational Phase:

The water balance provided by DRA (GBP-ENG-REP-001(design) – Rev1 and PZASM0413 Booysendal Integrated Water Balance Analysis_Rev1) indicates that there will be the following offtakes from the Lebalelo source:

- BCM 1: average daily offtake of 109m^3/day;
- BCM2: average daily offtake of 110m^3/day; and
- BS1/2: 233m^3/day.

The offtake point is the 2.6ML storage tank at BN, from where the water will gravity flow and be pumped to the water treatment plant storage tanks at BS1/2, BCM1 and BCM2.

The estimated volume of process water which will be transported between BS1/2 and BN will still be determined during the following design phase.

Decommissioning and Closure Phase:

At the end of the Booysendal South LoM, the pipelines, booster pumps and air release valves will be removed and disposed, in accordance with best practice at that point in time. The corridor will be ripped and graded. Topsoil will be applied and a seed mix consisting of local seeds will be applied.

2.1.5 Access Roads

Access roads will be constructed to access the ARC towers ("**ARC Roads**") and the conveyors between BCM1 and BCM2 ("**Conveyors Roads**") on Farm Booysendal 43 JT and on the Remainder of Sterkfontein 52. The access roads to BCM1 and BCM2 will be 6m wide while all other access roads will be 4m wide. Roads for maintenance purposes will not be tarred while permanent roads at the operations will be tarred. The total clearance requirement was indicated as 1.03Ha for access roads. Alignments are included in Figure 2-1, Figure 2-2 and Figure 2-3.

Construction Phase:

Vegetation clearance in the CBA will be required to establish the access roads. The designs are still in the process of being finalised and will be included in the EIR. However, the road designs will include the necessary storm water and erosion control measure.

Operational Phase:

The access roads will mainly be used for busses to transport employees during the two shifts, with some delivery vehicles and light vehicles of office and workshop personnel.

Decommissioning and Closure Phase:

All access roads will be ripped. Areas will be shaped and topsoil will be applied for rehabilitation and re-vegetation.

2.1.6 11kVA Powerline

A temporary powerline runs from BN to BS1/2 (see Figure 2-1) This line provides electricity to the BS1/2 operation during the construction phase. Booysendal wants to retain this powerline in the long term to make provision for potential future development at Booysendal South. The powerline routing and that of the water pipelines are approximately the same.

Operational Phase:

The powerline will provide permanent power to the BS1/2 complex.

Decommissioning and Closure Phase:

The powerline will be removed and areas along the pylons will be rehabilitated and revegetated.

2.2 Booysendal South Mining Right Expansion

BS4 has been under care-and-maintenance since 2012 due to the collapse of a southern section off the main underground workings. Before ceasing operations, BS4 was a fully operational mine, consisting of two mine declines at the main operational area from where mining took place prior to 2012 and a decline at the Valley Boxcut. The ore was then transported via conveyor systems to an ore stockpile, from where it was then transported to the process plant. There are two silos on route to the process plant: a RoM silo close the declines; and a crushed ore silo at the process plant. The ore was crushed through a single jaw crusher and then transported the RoM silo, while further crushing was done through a ball mill crusher at the process plant.

A conventional flotation process was then used to extract the PGMs from the ore. The concentrate was then filtered to produce a filter cake with approximately 14% moisture contents. The fine factions (slime) resulting from the cyclone plant was then sent to a spiral plant next to the process plant from where chrome was recovered. The coarse tailings from the flotation circuit were then thickened with thickeners, water recovered for re-use and the tailings pumped to the TSF via a slurry pipeline. Once the chrome was recovered from the fine tailings, it was then also directed to the thickeners and pumped with the coarse tailings to the TSF via a slurry pipeline. Water from the tailings were drained to the RWD.

To support the mining facilities various auxiliary infrastructure was put in place, including workshops, offices, sewage treatment plants etc. The existing mine infrastructure has been maintained in an operational readiness state since 2012.

As part of the future Booysendal South Expansion Project: Phase 2, Booysendal has identified the need to rework the tailings from the existing TSF to recover PGMs and chrome and to backfill the collapsed and worked out underground workings. This will assist in freeing up space on the existing TSF, thereby

extending its life and the immediate need for a new TSF. To enable this future expansion the following will be required:

- A Backfill Plant and access road;
- The associated BS4 Pipelines between the Process and Backfill Plant, the RWD and the silt trap; and
- Three emergency ponds along the Tailings Pipeline between the Backfill Plant and Process Plant, and cut-off trenches along the slurry pipeline.

The layout of this development is included in Figure 2-4.

2.2.1 BS4 Backfill Plant, Tailings and Process Water Pipelines and Access Road

Construction Phase:

On the process plant side, a new pump station with a number of centrifugal pumps will be installed to pump the tailings to the Backfill Plant on the Farm Sterkfontein 749. It will also require the construction of a new seal water tank for water supply to pump the tailings to the Backfill Plant.

The Backfill Plant will be established next to the existing compressor house, fuel farm and shaft at the western side of the main mining complex, approximately 2.9km from the process plant. This area is therefore already disturbed and is not a greenfields site. The Plant will consist of an agitated, backfill holding tank in which the tailings from the process plant will be received. The holding tank will be connected to the new pump station, consisting of six centrifugal pumps which will distribute the tailings to the underground. Underground pumps will be installed to pump the water filtering from the tailings back to surface. A water tank for flushing purposes will also be constructed as part of the Backfill Plant.

The new BS4 Pipelines that will be constructed are as follows:

- The Tailings Pipeline between the Process Plant and the Backfill Plant, which will traverse the Farm Sterkfontein 749 and Remainders of Portions 15 and 4 and Portion 8 and 17 of the Farm De Kafferskraal 53 JT and will consist of steel pipes of 250mm in diameter for the transport of the tailings between the two Plants. The pipeline will be contained in an emergency casing, which will contain spillages in the event of an emergency where it crosses drainage lines. A cut-off trench will also be constructed along the trench to ensure that in the event of an emergency the tailings is diverted away from drainage lines. An emergency shut-off system will be provided for the pipeline, to ensure that in the event of spillage the feed to the pipeline is stopped. In addition, three emergency ponds have been designed along the pipeline route to further contain spillages in the unlikely event that it should occur. Flow meters will be provided on the line to ensure that any losses in flow is picked up immediately.
- A 200mm HDPE water pipeline will be constructed from the sump located next to the northern decline to the water tank backfill plant, which will traverse the Farm Sterkfontein 749 and Portion 27 of the Farm De Kafferskraal 53 JT ("**BS4 Pipeline 1**"). This water will be used to flush the backfill pipelines before each shift.
- Next to this a new 200mm HDPE pipeline will pump excess water from the underground back to the sump on Portions 27, 17 and 8 of the Farm De Kafferskraal 53 ("**BS4 Pipeline 2**").
- A new 200mm HDPE pipeline will also be constructed from the existing PCD to the north of the mine site (MCC1) to the RWD, which will traverse the Farm Sterkfontein 749 and Portions 17 and 8 of the Farm De Kafferskraal 53 ("**BS4 Pipeline 3**"). Excess water from the sump will flow into this PCD. From here the water will be pumped to the RWD for reuse in the process. Current designs indicated that none of the pipelines will have a throughput capacity in excess of 120l/s.

Existing underground pipelines will be used for the deposition of the tailings into the underground workings.

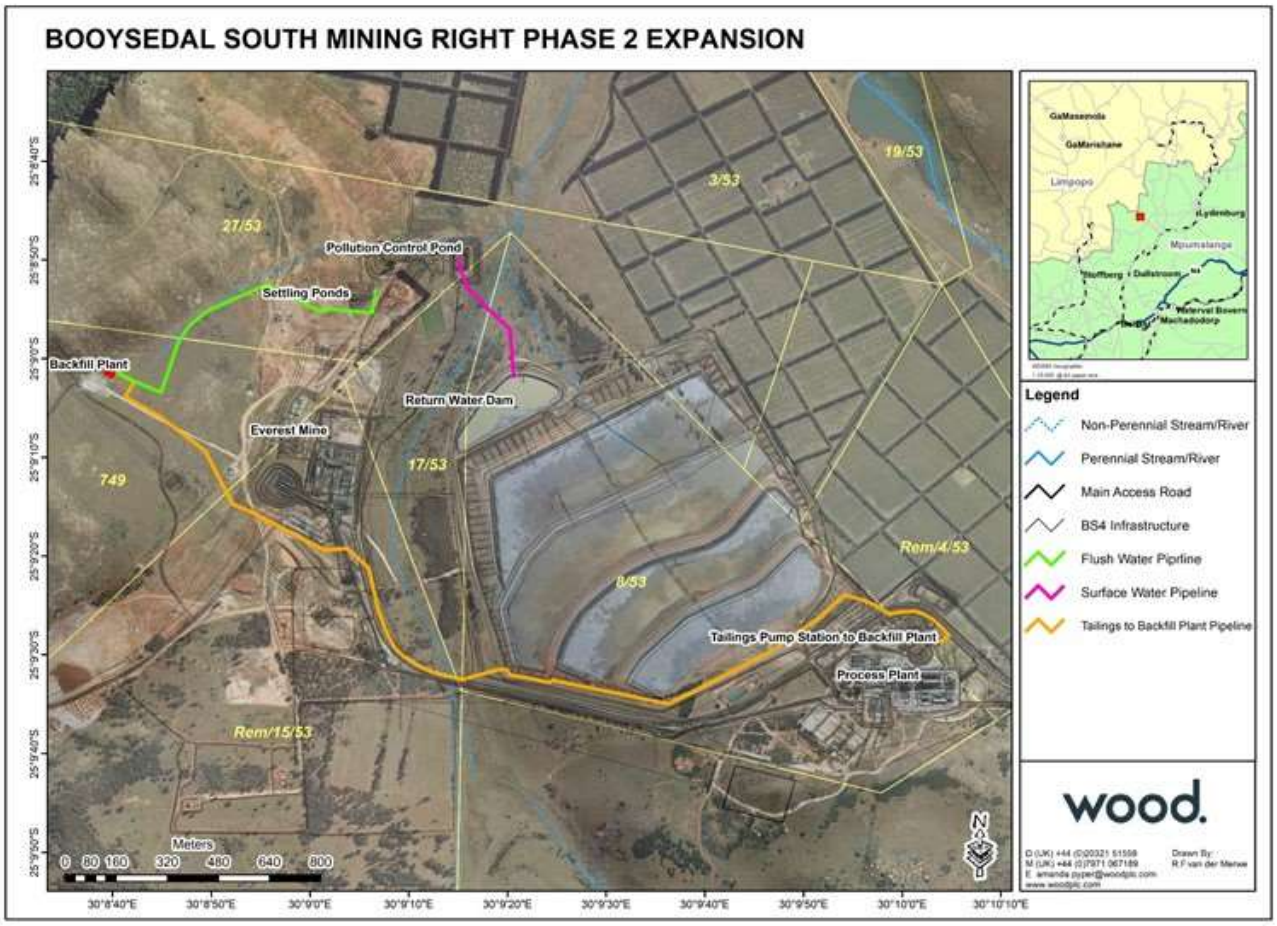
A 4m wide access road will be constructed to give access to the Backfill Plant on the Farm Sterkfontein 749JT ("**Backfill Plant Road**"). Sewage generated in the Plant will be treated at the existing STP of BS4.

Operational Phase:

The operational life of the Backfill Plant will be approximately 2 years, after which the underground workings will reach its capacity. The Plant will no longer be required and concurrently rehabilitated. The Plant will operate during day times for 16.2 hours per day, 360 days per year.

The backfill process is illustrated in Figure 2-5. The process will involve the mobilisation of tailings on the existing TSF through hydro-mining. The tailings will be pumped to the process plant where the tailings will be re-processed in the floatation (to recover PGMs) and spiral (to recover chrome) plants. Coarse tailings from the flotation plant will be pumped to the dewatering plant at the process plant and from here it will be pumped to the Backfill Plant. The fine tailings which is a by-product from the flotation process will be pumped to the spiral plant. The fine tailings will be redeposited on the existing TSF.

Figure 2-4 Booysendal South Mining Right Phase 2 Expansion

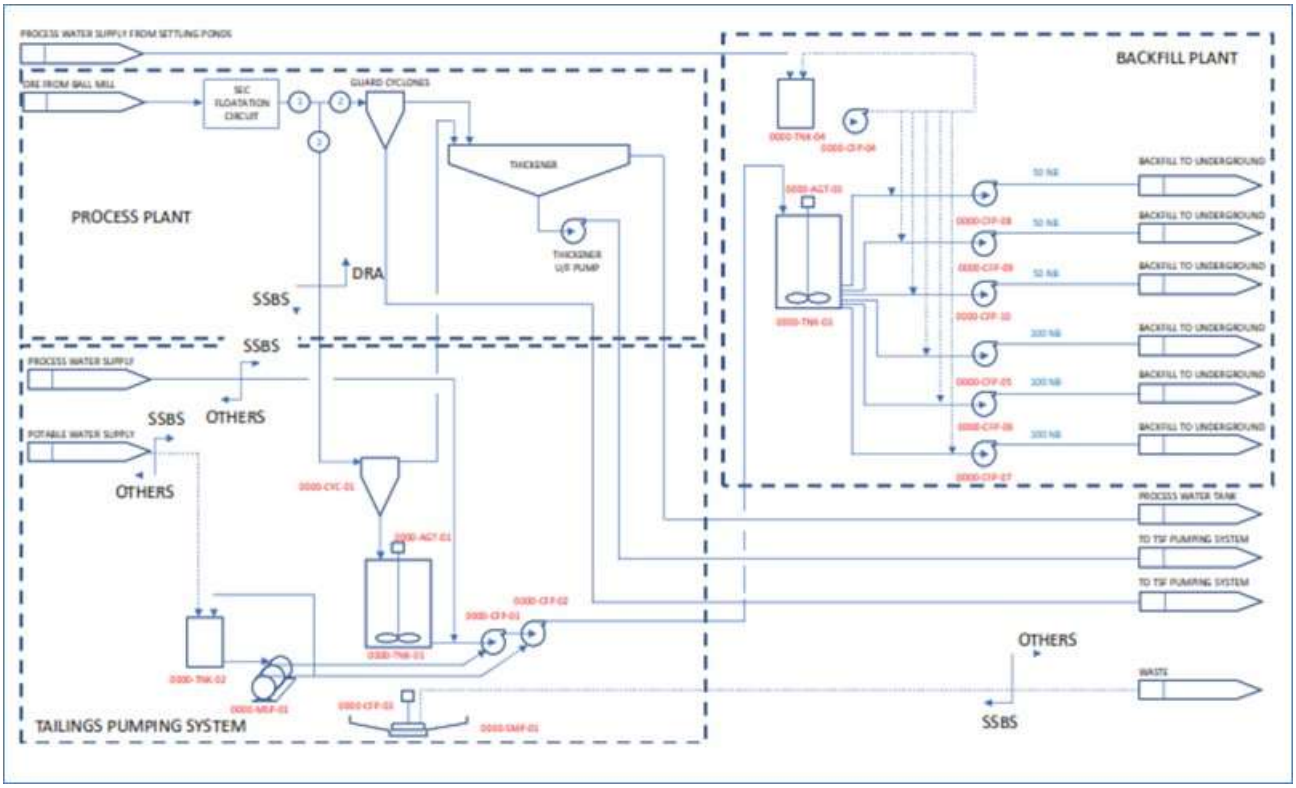


The coarse tailings will be transferred to the backfill plant at a rate of 247 dry tonne per hour (tph) or a total volume of 250m^3 per day. Tailings will only contain flocculants and no cement, as deposition will take place hydraulically. The tailings will be received in the holding tank from where it will be pumped to the underground workings. Excess water filtrating from the tailings in the underground workings will be pumped to the sump, which gravity feeds into MCC1, from where it will be pumped to the RWD for reuse in the plant process.

Decommissioning and Closure Phase:

After two years the backfill plant and associated infrastructure will be dismantled and the areas rehabilitated.

Figure 2-5 Backfill Process (Source: Sustainable Slurry and Backfill Solutions, 2017)



2.2.2 Emergency Backfill Ponds

Construction Phase:

Three emergency backfill ponds will be constructed along the tailings pipeline on the Farm Sterkfontein 749 and Remainder of Portions 15 of the Farm De Kafferskraal 53 JT between the process and backfill plant in areas which could be sensitive to emergency spillage. The purpose of these ponds is to contain any spillages, which may occur in the unlikely event of an emergency.

The ponds have been designed with a 1mm HDPE liner, but future source-pathway-receptor analysis will be carried out during the EIA and IWULA phases to inform liner requirements. The location of the emergency backfill ponds is included in Figure 2-6. The ponds will be 3mx3m.

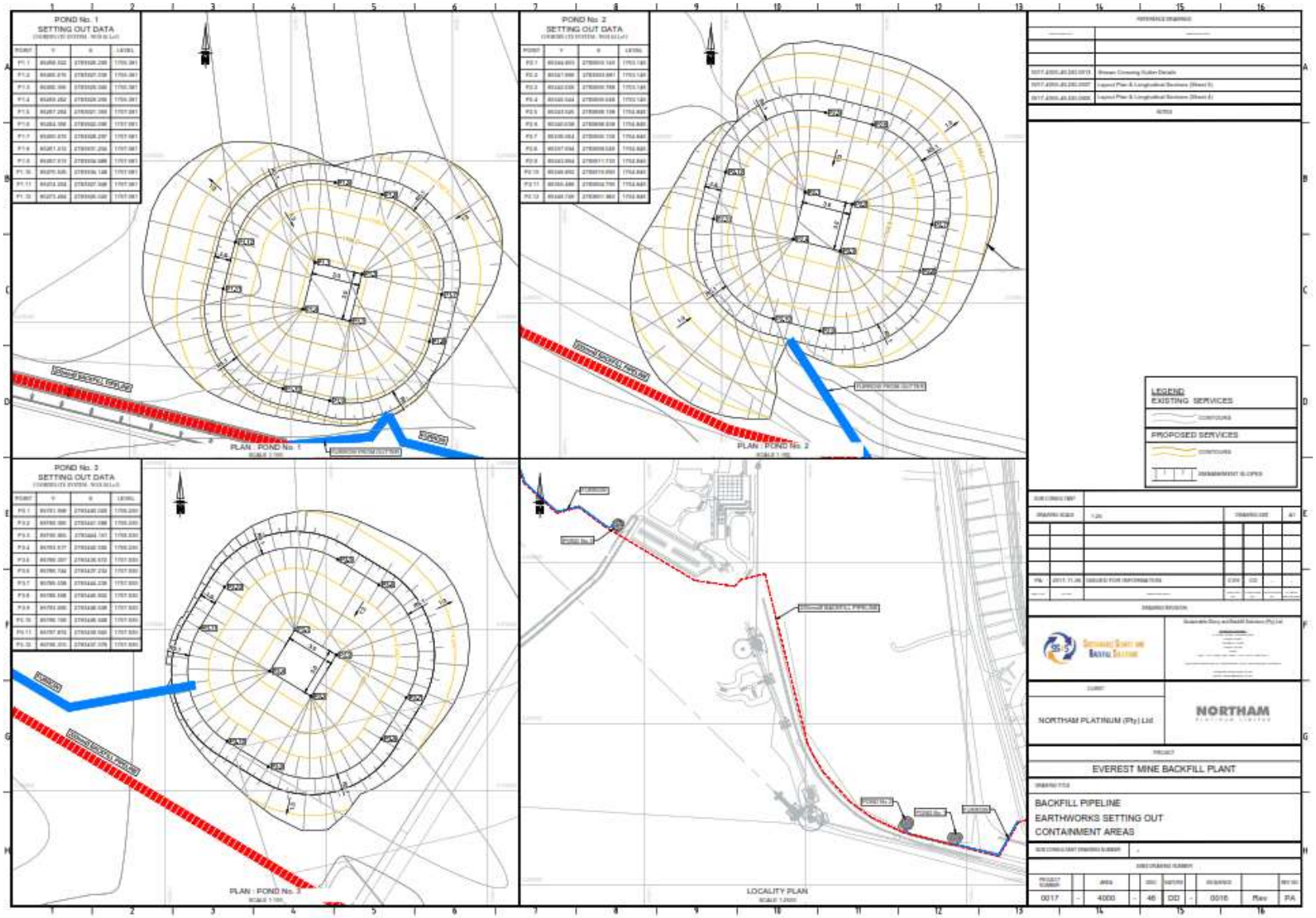
Operational Phase:

The ponds will serve as emergency containment measure in the unlikely event of potential tailings spillage from the pipe. The integrity of the ponds will be monitored as part of the maintenance programme of the Booysendal Operation. The ponds will be operated at empty always.

Decommissioning and Closure Phase:

The liner will be removed and disposed of at a licensed landfill site. The excavation will be filled, compacted, graded and shaped to support natural run-off and to control erosion. The areas will be revegetated.

Figure 2-6 Emergency Ponds at Booysendal South MR (Source: Sustainable Slurry and Backfill Solutions, 2018)



3. Environmental Legal Framework

Various authorisations / permits / licenses ("**Environmental Consents**") are required in terms of South African environmental law to commence with the activities associated with Booysendal South Expansion Project: Phase 2, including:

- An EMP Amendment in terms of Chapter 5 of NEMA (previously under section 102 of the MPRDA) for all mining related activities;
- EAs in terms of Chapter 5 of NEMA for all activities listed under Listing Notices 1, 2 and 3 of the 2014 EIA Regulations ("**EIA Listing Notice**s") (published under Government Notices R983 ("**Listing Notice 1**"), R984 ("**Listing Notice 2**") and R985 ("**Listing Notice 3**") in Government Gazette 38282 of 4 December 2014, as amended under GN R324, GN R325 and GN R327 in Government Gazette 40772 of 7 April 2017);
- An IWUL for water uses listed under section 21 of the NWA and exemption for certain activities under GN 704 in Government Gazette of 4 June 1999 ("**GN 704**");
- A permit to remove protected species within the development footprints in terms of section 23 of the National Forests Act, No 84 of 1998 ("**NFA**"); and
- a WML under the Waste Act and the 2013 WML Regulations.

NEMA makes provision for an integrated environmental application process for a WML and EA but not a IWULA. The IWULA process will be undertaken in terms of the NWA and concurrently with the integrated application process (refer to Figure 3-1). This will ensure that a holistic understanding of the Project aspects and impacts are obtained and that all potential impacts are communicated to all I&APs.

This section of the Scoping Report details the various environmental legislative and regulatory requirements applicable to Booysendal South Expansion Project Phase 2. It includes a description of the EIA process (applicable to the Phase 2 NEMA and Waste Act Applications) and provides details on how this the Scoping Report process ties into the IWULA, which runs concurrently with this environmental authorisation process.

The South African environmental legislation that applies to the Booysendal South Expansion Project: Phase 2 and which are considered in the Environmental Consents applications is listed in Table 3-1. The requirements of the main acts are further described in this section.

Table 3-1 Applicable South African Environmental Legislation for Booysendal South Expansion Phase 2

- The Constitution of South Africa Act, 1996
- Minerals and Petroleum Resources Development Act, No 28 of 2002
- National Environmental Management Act, No 107 of 1998
  - GNR 982 of 4 December 2014 – Environmental Impact Assessment Regulations
  - GNR 983 of 4 December 2014 – Listing Notice 1: List of Activities and Competent Authorities
  - GNR 984 of 4 December 2014 – Listing Notice 2: List of Activities and Competent Authorities
  - GNR 985 of 4 December 2014– Listing Notice 3: List of Activities and Competent Authorities
  - GN 1147 of 20 November 2015 – Financial Provision Regulations for Prospecting, Exploration, Mining or Production Operations ("**Financial Provision Regulations**")
- National Environmental Management: Biodiversity Act No, 10 of 2004
  - GNR 151 of 23 February 2007 – Lists of Critically Endangered, Endangered, Vulnerable and Protected Species
  - GNR 598 of 1 August 2014 – Alien and Invasive Species Regulations, 2014
  - GN 864 of 29 July 2016 – Alien and Invasive Species Lists, 2016
  - GNR 152 of 23 February 2007 – Threatened or Protected Species Regulations
  - GN 447 of 19 May 2015 – Bio-Prospecting, Access and Benefit-Sharing
- National Environmental Management: Waste Act, No 59 of 2008
  - GN 921 of 29 November 2013 – List of Waste Management Activities with a Detrimental Effect on the Environment
  - GNR 625 of 13 August 2012 – National Waste Information Regulations, 2012
  - GNR 634 of 21 August 2013 – Waste Classification and Management Regulations, 2013 ("**Waste Classification Regulations**")
  - GNR 635 of 23 August 2013 – National Norms and Standards for the Assessment of Waste for Landfill Disposal ("**Norms and Standards for Landfill Waste Assessment**")
  - GNR 636 if 23 August 2013 – National Norms and Standards for Disposal of Waste to Landfill ("**Norms and Standards for Disposal of Waste to Landfill**")
  - GN 926 of 29 November 2013 – National Norms and Standards for the Storage of Waste
  - GN 331 of 2 May 2014 – National Norms and Standards for Screening and Assessing Contaminated Sites
- National Environmental Management: Air Quality Act, No 39 of 2004
  - GN 1210 of 24 December 2009 – National Ambient Air Quality Standards
  - GN 486 of 29 June 2012 – National Ambient Air Quality Standard for Particulate Matter <PM2.5
  - GNR 827 of 1 November 2013 – National Dust Control Regulations, 2013
  - GN 351 of 8 May 2014 – Phasing-out and Management of Ozone-depleting Substances
  - GNR 533 of 11 July 2014 – Regulations regarding Air Dispersion Modelling
- Environment Conservation Act, No 73 of 1989
- National Water Act, No 36 of 1998 (NWA)
  - GNR 704 of 4 June 1999 – Regulations on Use of Water for Mining and Related Activities
  - GNR 267 of 24 March 2017 – Water Use License Application and Appeals Regulation. 2017
- South African National Standards (SANS)
  - 10210:2004 – Standard for Road Traffic Noise
  - 10103:2008 – Guidelines for Prevailing Noise Levels
  - 241:2011 - Water Quality Guidelines
- National Forests Act, No 84 of 1998
- National Heritage Resources Act, No 25 of 1999
- Removal of Graves and Dead Bodies Ordinance, 7 of 1925
- National Health Act, No 61 of 2003
- Mountain Catchment Areas Act, No 63 of 1970
- National Veld and Forest Fire Act, No 101 of 1998
- Conservation of Agricultural Resources Act, No 43 of 1983
- Hazardous Substance Act, No 15 of 1973
- Mine Health and Safety Act, No 29 of 1996
- Provincial Legislation –
  - Mpumalanga Nature Conservation Act, No 10 of 1998
  - Mpumalanga Tourism and Parks Agency Act, No 5 of 2005
  - Limpopo Environmental Management Act, No 7 of 2003.

3.1 Existing Environmental Authorisations

Several Environmental Consents are in place or have been submitted for the Booysendal North MR and Booysendal South MR. Table 3-2 provides a summary of these authorisations. Table 3-3 provides a summary of the Environmental Consents that are in place for the Booysendal South MR.

Table 3-2 Environmental Authorisations and EMPs for Booysendal North Mining Right

Approval	Activities	Status
2003 EMP	Shafts and surface infrastructure (access road, services, water pipeline, conveyor system) on the Farms Booysendal 43JT and Buttonshope 51JT. Total area of 81.2ha.	Approved 20 June 2003
2008 EMP Addendum	Repositioning of mine portal on the Farm Booysendal 43JT	Approved 3 February 2009
2009 EMP Amendment	150kt/month PGM underground mine with expansion up to 240kt/month and associated surface infrastructure on the Farm Booysendal 43JT and the Farm Der Brochen 7JT.	Approved 14 September 2010
2015 EMP Amendment	A new shaft area (extent of 0.4 ha) that will fall outside of the current disturbed area but within the approved mining area; Extension to the existing plant area within the approved footprint to include: ► Additional conveyors; ► Ore processing facilities and ► Expansion of the existing TSF by approximately 12.7ha to increase the current capacity and life of the TSF.	Approved 11 August 2017
Section 24G EA	Phase 1 of the Booysendal South Expansion Project to increase production from 220,000ktpm to 450,000ktpm focussing on three development areas: ► The development of the BS1/2 portal and supporting infrastructure consisting of a mining portal and terrace complex, seven adits, workshops, offices, water and related infrastructure, co-disposal stockpile; ► BCM1 and BCM2 without any surface infrastructure components; ► A 132kVA powerline from BN to BS1/2; ► Upgrade and new storm water management infrastructure at BS4; ► Reworking of tailings at the current BS4; ► Replacement of tailings on existing TSF1 at BS4; ► Backfilling of the underground workings with tailings; ► The construction of associated surface and linear infrastructure, including a 13.2m wide bitumen access road, an ARC, water pipelines between BS1/2 and BS4 (which relates to the Booysendal South MR).	Granted 5 January 2018

Table 3-3 Environmental Authorisations and EMPs for the Booysendal South Mining Right

Approval	Activities	Status
2003 EMP	Original EMP for the mine	Approved June 2003
2009 EMP Addendum and EA	Valley Project approved by DMR and an EA granted by MDEDET	Approved May 2010
2009 EMP Amendment	Decline project	Approved December 2009
2018 24G EMP	See above	Approved December 2018

3.2 The Constitution of South Africa, 1966

Environmental legislation is shaped by the Bill of Rights of the Constitution of the Republic of South Africa ("**Constitution**"). Section 24 of the Constitution, known as the 'environmental right,' guarantees every person the right to an environment that is not harmful to their health or well-being, provides for the protection of the environment against pollution and degradation and centres sustainable development as the cornerstone of South Africa's environmental law regime. This right is binding on the state and people, both natural and juristic.

In fulfilment of its constitutional mandate to take reasonable legislative measures that gives effect to Section 24 of the Constitution, the government has promulgated several environmental laws. These laws provide a legal framework that embodies internationally recognised legal principles.

The principal act governing activities that affect the environment is NEMA.

3.3 Minerals and Petroleum Resources Development Act, 28 of 2002

The MPRDA aims at the equitable access and the sustainable development of the country's mineral resources. It provides mechanisms that will ensure the protection of the environment throughout the LoM.

Social and environmental sustainability is enhanced through the requirement to submit a Social and Labour Plan ("**SLP**"), which records a company's commitment to sustainable social development. This includes a commitment to training and social investment with the goal of transferring skills that can be used after mine closure.

Section 5A of the MPRDA indicates that: "*No person may prospect for or remove, mine, conduct technical co-operation operations, reconnaissance operations, explore for and produce any mineral or petroleum or commence with any work incidental thereto on any area without – (a) an environmental authorisation*".

Section 37 of the MPRDA requires all mining and prospecting operations and related activities to be carried out in terms of the environmental management principles set out in section 2 of NEMA.

Section 102(1) of the MPRDA states that:

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

Approvals for amendments of EMPs were previously required under section 102 of NEMA however the DMR now requires EMPs to be amended in terms of Chapter 5 of the 2014 EIA Regulations.

The Booysendal South Expansion Project: Phase 2 will require approval for the amendment to the existing Section 24G EMP in respect of properties held under the Booysendal North MR.

Booysendal will request approval that the EMP Amendment Application may proceed in terms of Chapter 4 of the 2014 EIA Regulations, to allow for one streamlined process.

3.4 National Environmental Management Act, No 107 of 1998

In terms of sections 24(2) and 24D the Minister of Environmental Affairs promulgated certain activities that may not commence without an EA. Activities promulgated in terms of Listing Notice 1 and Listing Notice 3 require a basic assessment process, while activities promulgated in terms of Listing Notice 2 require that a fully Scoping and EIA process be conducted. The requirements for an EIA and EMP are clearly stated in Appendix 3 and Appendix 4 of the 2014 EIA Regulations.

Section 24C(2A) of NEMA indicates that where listed activities are directly related to the extraction and primary processing of a mineral or petroleum resource that the Minister of Mineral Resources is the CA or officials at the DMR to whom he has delegated his authority, being the Regional Managers. The approval of the Phase 2 NEMA and Waste Act Applications will thus be made by both the Regional Managers of DMR Limpopo Regional Office for the Booysendal North MR and the DMR Mpumalanga Regional Office for the Booysendal South MR (unless agreed to otherwise with the Regional Managers). Reference is made to what has been stated above as to which Regional Manager is the CA in respect of each of the Phase 2 NEMA and Waste Act Applications. The relevant authorities under NEMA must be consulted in the process.

The Financial Provisioning Regulations, published under Government Notice R1147 under Government Gazette 39425 of 20 November 2015 ("**FP Regulations**"), set out the requirements for the development of a closure and rehabilitation plan; and the financial provision for rehabilitation and closure (which will only be applicable to Booysendal from 2019). A closure and rehabilitation plan will be developed as part of the EIA process and submitted with the EIR and EMP.

3.4.1 2014 EIA Regulations

Chapter 6 of the 2014 EIA Regulations provides for the requirements for public consultation which must be carried out as part of the Phase 2 NEMA and Waste Act Applications process. In terms of Regulations 21 and 23, the outcome of the public consultation process must be reported in the Scoping Report and EIR submitted to the CA. This process "*must give all potential or registered interested and affected parties, including the competent authority a period of at least 30 days to submit comments on each of the basic assessment report, EMPr, scoping report and environmental impact assessment report, and where applicable the closure plan, as well as the report contemplated in regulation 32, if such reports or plans are submitted at different times*" (Regulation 40 (1)).

The public participation process must also:

- Provide access to all information that reasonably has or may have the potential to influence any decision regarding an application;
- Consult with the CA, every state department that relates to the environment relevant to the application, all relevant organs of state and all potential and registered I&APs; and
- Provide opportunity for I&APs to comment on reports and plans prior to submission of an application.

The process must include:

- Notification of the application to all I&APs, as stipulated in Regulation 41;

- Registration of all I&APs, as required in Regulations 42 and 43; and
- A record of comments and responses and records of meetings, as outlined in Regulation 44.

For this Project, an integrated public participation process will be undertaken to make provision for the consultation process during the Phase 2 NEMA and Waste Act Applications and IWULA for both the Booysendal North and Booysendal South MRs. The integrated and concurrent application process for the Booysendal South Expansion Project is illustrated in Figure 3-1.

Regulation 39 of the 2014 EIA Regulations requires that:

"*(1) If the proponent is not the owner or person in control of the land on which the activity is to be undertaken, the proponent must, before applying for an environmental authorisation in respect of such activity, obtain the written consent of the landowner or person in control of the land to undertake such activity on that land.*"

All land related to the activities associated with the Booysendal North MR is owned by Booysendal. The properties held under the Booysendal South MR activities are owned by the Bakoni CPA and one by Booysendal. Booysendal has concluded a lease agreement with the Bakoni CPA in respect of the properties the Bakoni CPA owns, which allows Booysendal to conduct mining and mining related activities on these properties. The Bakoni CPA will be consulted through a focus group meeting.

3.4.2 NEMA Listed Activities

The EIA Listing Notices list the activities that require a Basic Assessment and a Scoping Report/EIR.

The listed activities applicable to the Booysendal North MR are given in Table 3-4. The listed activities applicable to the Booysendal South MR are included in Table 3-5.

Table 3-4 Listed Activities Applicable to the Booysendal North Mining Right

NEMA Listed Activities	
Activity No(s):	**Government Notice No. R983 Listing Notice 1 As Amended in GNR327 of 7 April 2017** **Details of Activity(ies) requiring Basic Assessment**
12	The development of – (i) dams or weirs, where the dam or weir, including the infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs- (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse *Applicable activities* – • Portions of the BCM1 and BCM2 associated infrastructure; • ARC Towers 3, 6 and 7; and • Pipeline crossings between BS1/2 and BN; and • ARC Roads at BS1/2 and BN; (on the Farm Booysendal 43JT and the Remaining Extent of the Farm Buttonshope 51JT).
14	The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres; *Applicable activity* – At BCM1 and BCM2 the storage of an estimated 150 cubic meters of dangerous goods including - volumes emulsion, diesel, oil, dirty oil and hydraulic oils (5,000l).

19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of inter alia soil, sand, pebbles or rock of more than 10 cubic metres from a watercourse *Applicable activities* – • Possibly infilling and excavation for the establishment of the BCM 1 and BCM2 Adit (on the Farm Booysendal 43JT) • Excavation and infilling for ARC Towers 3 (on the Farm Booysendal 43JT),Tower 6 and 7 (on the Remainder of the Farm Buttonshope 51JT).
27	The clearance of an area of between 1 and 20 hectares of indigenous vegetation *Applicable activity:* • Clearance for the emergency escape portal and infrastructure components around BCM1 and BCM2, including crusher plant, conveyors, Conveyor Roads and silos on the Farm Booysendal 43JT • Clearance for the water pipelines between from BN to BS1/2 on the Farms Booysendal 43JT to the Remainder of the Farm Buttonshope 51JT • ARC Roads and ARC Towers on the Farms Booysendal 43JT and Remainder of the Farm Buttonshope 51JT.
30	Any process or activity identified in terms of section 53(1) of NEMBA *Applicable activity* – All the associated mining activities will take place in the Sekhukhune Centre of Endemism which is classified as a threatened ecosystem.
Activity No(s):	**Government Notice No. R984 Listing Notice 2 as Amended by GNR 325 of 7 April 2017 Details of Activity(ies) requiring a Scoping / EIA Report**
6	The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding: activities which are identified in Listing Notice 1 of 2014 EIA Regulations; activities which are included in the list of waste management activities published in terms of section 19 of the Waste Act in which case the Waste Act applies; or the development of facilities or infrastructure for the treatment of effluent, wastewater or sewage where such facilities have a daily throughput capacity of 2, 000 cubic metres or less, as contained in 2014 Listing Notice. *Applicable activity* – • PCDs and settlers at BCM1 and BCM2 • STPs at BCM1 and BCM2 with treated effluent to be discharged into the environment at a throughput rate of 100m^3/day, on the Farm Booysendal 43JT
7	The development and related operation of facilities or infrastructure for the bulk transportation of dangerous goods – (i) in liquid form, outside an industrial complex, using pipelines, exceeding 1000 metres in length, with a throughput capacity of more than 50 cubic metres per day; *Applicable activity* – • Process water pipeline from the BS1/2 portal complex to BN on the Farm Booysendal 43 JT and Remainder of the Farm Buttonshope 51 at a rate of 100m^3 per day
17	Any activity including the operation of that activity which requires a mining right as contemplated in section 22 of MPRDA including associated infrastructure, structures and earthworks directly related to the extraction of a mineral resource, including activities for which an exemption has been issued in terms of section 106 of MPRDA. *Applicable activity* – Emergency Escape Portal (Farm Booysendal 43 JT)
19	The removal and disposal of minerals in terms of section 20 of the MPRDA, including – (b) the primary processing of mineral resources including winning, extraction, classifying, concentrating, crushing, screening or washing. *Applicable activity* – Crusher plant between BCM1 and BCM2 which has a capacity 50t (Farm Booysendal 43JT)
Activity No(s):	**Government Notice No. R985 Listing Notice 3 as Amended by GNR 324 of 7 April 2017 Details of Activity(ies) requiring Basic Assessment Report**
4	*The development of a road wider than 4 metres with a reserve less than 13,5 metres*

	f) Mpumalanga and Limpopo *Outside urban areas:* *(ee) CBAs as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.* *Applicable Activity:* • BS is in a critical biodiversity area in terms of the Terrestrial Assessment (2014) of the MTPA ("**MTPA Terrestrial Assessment**") and the Sekhukhune Mountainlands are listed as an endangered ecosystem in terms of Regulation GN 1002 of 9 December 2011 promulgated in terms of section 52 of NEMBA ("**GN 1002**"). • On the Farm Booysendal 43JT and Remainder of the Farm Buttonshope 51JT the permanent and temporary ARC Roads to the ARC will be 4m wide; • the Conveyor Access Roads at BCM1 and BCM2 will be 6m wide on the Remainder of the Farm Buttonshope 51JT.
8	The development and related operation of above ground cableways and funiculars e. Limpopo and f. Mpumalanga i. All areas outside urban areas; *Applicable activity* – ARC from BS1/2 to BN on the Farms Booysendal 43JT and Remainder of the Buttonshope 51JT
12	The clearance of an area of 300 square metres or more of indigenous vegetation, except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. e. Limpopo and f. Mpumalanga ii. Within CBAs identified in bioregional plans; *Applicable activity* – • BS is in a CBA in terms of the Terrestrial Assessment (2014) of the MTPA Terrestrial Assessment and the Sekhukhune Mountainlands are listed as an endangered ecosystem in terms of GN 1002; • BS emergency escape portal, silos and surface infrastructure at BCM1 and BCM2 (including conveyors, ARC Towers, pipeline and Conveyor Access Roads and ARC Roads) exceed 300 square meters.
14	The development of- (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or (ii) infrastructure or structures with a physical footprint of 10 square metres or more; Where such development occurs - (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse e. Limpopo and f. Mpumalanga i. Outside urban areas, in: (ff) CBA or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; *Applicable activity* – • ARC Tower 3, 6 and 7 within watercourses exceeding 10 square meters each in size; • Conveyors, • On the Farm Booysendal 43JT and Remainder of the Farm Buttonshope 51JT the permanent and temporary ARC Roads to the ARC will be 4m wide; • The Conveyor Access Roads at BCM1 and BCM2 will be 6m wide on the Remainder of the Farm Buttonshope

	51JT; and • Pipeline watercourse crossings between BS1/2 and BN crossing drainage lines

Table 3-5 NEMA Listed Activities Applicable to the Booysendal South Mining Right

NEMA Listed Activities	
Activity No(s):	**Government Notice No. R983 Listing Notice 1 As Amended in GNR327 of 7 April 2017** **Details of Activity(ies) requiring Basic Assessment**
12	The development of – (i) dams or weirs, where the dam or weir, including the infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs- (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse *Applicable activities* – The three BS4 Pipelines and the Tailings Pipelines crossing watercourses on Sterkfontein 749 JT; and the Remainders of Portions 4 and 15 and Portions 8, 17 and 27 of the Farm De Kafferskraal 53 JT.
27	The clearance of an area of between 1 and 20 hectares of indigenous vegetation *Applicable activity:* Clearance for the Backfill Plant Road, Tailings Pipeline and the two BS4 Pipelines and backfill emergency ponds on Sterkfontein 749 JT; and the Remainders of Portions 4 and 15 and Portions 8, 17 and 27 of the Farm De Kafferskraal 53JT.
30	Any process or activity identified in terms of section 53(1) of NEMBA *Applicable activity* – All the associated mining activities will take place in the Sekhukhune Centre of Endemism which is classified as a threatened ecosystem.
Activity No(s):	**Government Notice No. R984 Listing Notice 2 as Amended by GNR 325 of 7 April 2017** **Details of Activity(ies) requiring a Scoping / EIA Report**
6	The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding: activities which are identified in Listing Notice 1 of 2014 EIA Regulations; activities which are included in the list of waste management activities published in terms of section 19 of the Waste Act in which case the Waste Act applies; or the development of facilities or infrastructure for the treatment of effluent, wastewater or sewage where such facilities have a daily throughput capacity of 2, 000 cubic metres or less, as contained in 2014 Listing Notice. *Applicable activity* – • Emergency backfill ponds and the Tailings Pipeline (section 21(g) water uses); and • The three BS4 Pipelines (section 21(g) water uses), on Sterkfontein 749 JT; and the Remainders of Portions 4 and 15 and Portion 8, 17 and 27 of the Farm De Kafferskraal 53 JT.
7	The development and related operation of facilities or infrastructure for the bulk transportation of dangerous goods – (i) in liquid form, outside an industrial complex, using pipelines, exceeding 1000 metres in length, with a throughput capacity of more than 50 cubic metres per day; *Applicable activity* – • The Tailings Pipeline will exceed 1km in length and have a throughput capacity of 250 cubic metres per day; and • The three BS4 Pipelines, on Sterkfontein 749 JT; and the Remainders of Portions 4 and 15 and Portions 8, 17 and 27 of the Farm De Kafferskraal 53 JT.

Activity No(s):	**Government Notice No. R985 Listing Notice 3 as Amended by GNR 324 of 7 April 2017 Details of Activity(ies) requiring Basic Assessment Report**
4	*The development of a road wider than 4 metres with a reserve less than 13,5 metres* *f) Mpumalanga* *Outside urban areas:* *(ee) CBAs. as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.* *Applicable Activity:* • Farm Sterkfontein 749JT is within a CBA in terms of the MTPA Terrestrial Assessment and the Sekhukhune Mountainlands are listed as an endangered ecosystem in terms of Regulation GN 1002 of 9 December 2011 promulgated in terms of section 52 of NEMBA ("**GN 1002**"). • The Permanent Backfill Plant Road to the Backfill Plant 4m wide on the Farm Sterkfontein 749JT
12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. e. Mpumalanga ii. Within CBAs identified in bioregional plans; Applicable activity – BS4 - Clearance for the Tailings Pipeline and two BS3 Pipelines on Farm Sterkfontein 749JT exceeds 300 square meters
14	The development of- (iii) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or (iv) infrastructure or structures with a physical footprint of 10 square metres or more; Where such development occurs - (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse e. Mpumalanga i. Outside urban areas, in: (ff) CBA or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; Applicable activity – BS4 Pipelines and Tailings Pipeline between BS4 Backfill Plant crosses watercourses in various areas on Sterkfontein 749 JT; and the Remainders of Portions 4 and 15 and Portions 8, 17 and 27 of the Farm De Kafferskraal 53 JT.

3.4.3 FP Regulations

The purpose of the FP Regulations is the determination and making of financial provision for the costs associated with the undertaking of management, rehabilitation and remediation of environmental impacts through the lifespan of operations and latent or residual environmental impacts that may become known in the future. These regulations replace section 41 of the MPRDA and regulations 53 and 54 of the Mineral and Petroleum Resources Development Regulations, published under Government Notice R527 in Government Gazette 26275 of 23 April 2014. Draft Regulations have been published on 10 November 2017 that may significantly change the requirements for financial provision.

Regulation 4 of the FP Regulations require:

"*An applicant or holder of a right or permit must determine and make financial provision to guarantee the availability of sufficient funds to undertake rehabilitation and remediation of the adverse environmental impacts of prospecting, exploration, mining or production operations, as contemplated in the Act and to the satisfaction of the Minister responsible for mineral resources*."

Under Regulation 5, financial provision must be made for:

"(a) rehabilitation and remediation;
(b) decommissioning and closure activities at the end of prospecting, exploration, mining or production operations; and
(c) remediation and management of latent or residual environmental impacts which may become known in future, including the pumping and treatment of polluted or extraneous water."

The FP Regulations provide:

- The method of determining financial provision through detailed itemisation of all activities and costs for annual and final rehabilitation and remediation of latent or residual impacts determined by means of an environmental risk assessment;
- Financial provision vehicles;
- The need for a specialist(s) to determine, review and assess the financial provision and to submit this as part of an application for an EA, with proof of payment or arrangements prior to commencing mining or production operations;
- For an annual review, assessment and adjustment of financial provision, audited by an independent auditor included in the environmental audit report as required in terms of the 2014 EIA Regulations and an increase in the financial provision should there be a shortfall;
- The contents of the annual rehabilitation plan, the final rehabilitation, decommissioning and mine closure plan and the environmental risk assessment report;
- The responsibility to make the environmental management programme submitted in terms of section 24N of NEMA and any approved amendment available to the public;
- for the chief executive officer or designated person to be responsible for implementing the approved plans; and
- The EA by the Minister once the financial provision is determined, checked and proof of payment is provided.

Booysendal is currently only required to submit an assessment of the rehabilitation and closure costs liability required under the FP Regulations in February 2019 and update its financial provision once this assessment has been reviewed by the DMR. It will include the activities in such assessment, or a later assessment, dependant on when the Phase 2 NEMA and Waste Act Applications are granted.

3.5 National Environmental Management: Waste Act, 59 of 2008

The purpose of the Waste Act is to assist in regulating waste management, to ensure the protection of human health and to prevent pollution and environmental degradation through sound waste management principles and guidelines. It furthermore provides for:

- National norms and standards for regulating the management of waste by all spheres of government;
- Licensing and control of waste management activities;
- Remediation of contaminated land;

- A national waste information system; and
- Provision for compliance and enforcement.

NEMWA defines waste broadly as "*any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered*". NEMWA regulates mining residue deposits or stockpiles.

NEMWA imposes a general duty upon waste holders to take reasonable measures to avoid waste generation and, where this is impossible, to: minimise the toxicity and quantities of waste generated; re-use, reduce, recycle and recover waste; and ensure that it is treated and disposed of in an environmentally-sound way. Failure to do so is a criminal offence, with a maximum fine of R10 million or imprisonment of up to 10 years, or both.

It is necessary to hold a WML for defined waste management activities.

The DEA promulgated the WML List, which provides that a WML is required for undertaking certain waste management activities ("**Waste Listed Activities**"). The Waste Listed Activities are separated into three categories, namely Category A, Category B and Category C. Category A and B Waste Listed Activities require a WML, for which either a Basic Assessment or an EIA process needs to be undertaken that complies with the 2014 EIA Regulations. The procedures for licensing Waste Listed Activities are stipulated in Chapter 5 of NEMWA and will have to be considered in the overall EIA process.

Category C activities do not require a WML but must comply with *inter alia* the Norms and Standards for Storage of Waste, 2013. Such facilities need to be registered with the DEA 90 days before construction commences.

Classification of waste streams is required in terms of the Waste Classification and Management Regulations, published under Government Notice R634 in Government Gazette 36784 of 23 August 2013, to ensure that the correct waste management standards and disposal methods are implemented.

The National Norms and Standards for the Assessment of Waste for Landfill Disposal, published under Government Notice R635 in Government Gazette 36784 of 23 August 2013, and the National Norms and Standards for the Disposal of Waste to Landfill, published under Government Notice R636 in Government Gazette 36784 of 23 August 2013, provide the norms and standards for disposal of waste to landfill. This includes liner requirements and design specifications.

In 2014 the National Environmental Management: Waste Amendment Act, No 26 of 2014 was promulgated to include residue deposits and residue stockpiles from:

- Mineral excavation;
- Physical and chemical processing of metalliferous minerals;
- Physical and chemical processing of non-metalliferous minerals; and
- Drilling operations.

Residue deposits are defined as "*any residue stockpile remaining at the termination, cancellation or expiry of a prospecting right, mining right, mining permit, exploration right or production right*".

Residue stockpiles, in turn, are defined as "*any debris, discard, tailings, slimes, screening, slurry, waste rock, foundry sand, beneficiation plant waste, ash or any other product derived from or incidental to a mining operation and which is stockpiled, stored or accumulated for potential re-use, or which is disposed of, by the holder of a mining right, mining permit, production right or an old order right*".

The Regulations regarding the Planning and Management of Residue Stockpiles and Residue Deposits ("**Residue Regulations**"), published under Government Notice R632 in Government Gazette 39020 of 24 July 2015, provide for the planning, management and reporting of residue stockpiles and residue deposits, which obligations include:

- The assessment of impacts and analyses of risks relating to the management of residue stockpiles and residue deposits;
- Characterisation of residue stockpiles and residue deposits;
- Classification of residue stockpiles and residue deposits;
- Investigation and the selection of site for residue stockpiling;
- Design of the residue stockpiles and residue deposits;
- Impact management;
- Duties of the holder of right or permit;
- Monitoring and reporting system for residue stockpiles and residue deposits;
- Dust management and control; and
- Decommissioning, closure and post closure management of residue stockpiles and residue deposit.

The Residue Regulations provide the tools for and correspond to the statutory provision relating to managing residue stockpiles and residue deposits in the manner prescribed in Section 43A of NEMWA.

A WML under NEMWA is not required for activities undertaken as part of the Phase 2 Project in relation to the Booysendal North MR. Waste Listed Activities applicable to the Booysendal South Expansion Project: Phase 1 were applied for and authorised under the Section 24G EA. This included:

- Category B, Activity 3: the recovery of waste including the refining, utilisation or co-processing of the waste at a facility that processes in excess of 100 tons of general waste per day or in excess of 1 ton of hazardous waste per day;
- Category B, Activity 9: The disposal of inert waste to land in excess of 25 000 tons;
- Category B, Activity 11 the disposal of tailings at BS4.

As part of Phase 2 Project the three emergency backfill ponds require a WML. The activities are included in Table 3-6.

Table 3-6 Booysendal South Mining Right Waste Management Activities

GN R921 of 29 November 2013 Listed Waste Management Activities	
Category B, Activity 10	Construction of a facility for a waste management activity listed in Category B *Applicable activities*: Construction of the three emergency ponds at BS4
Category B, Activity 11	The establishment of a residue stockpile or residue deposit resulting from activities which require a mining right in terms of MPRDA *Applicable Activities:* Three emergency ponds at BS4

The rest of the Waste Listed Activities will be undertaken in terms of the existing WML for BN and Section 24G EA.

3.6 National Environmental Management Biodiversity Act, No 10 of 2004

The purpose of the National Environmental Management: Biodiversity Act, No 10 of 2004 ("**NEMBA**") is to ensure the sustainable management and conservation of biodiversity in South Africa. It also provides for the protection of species and ecosystems and sustainable use of indigenous biological resources. Certain portions of the activities of the Phase 2 Project fall within the Sekhukhune Centre of Plant Endemism ("**SCPE**") and Critical Biodiversity Areas ("**CBAs**") as identified in the Mpumalanga Biodiversity Sector

Plan. The impact assessment therefore should consider the following regulations promulgated in terms of NEMBA:

- National List of Ecosystems that are Threatened and in need of Protection ("**TOPS List**"), published under Government Notice 1002 in Government Gazette 34809 of 9 December 2012, which contains the National List of Ecosystems that are threatened and in need of protection;
- Threatened and Protected Species Regulations, published under Government Notice R152 in Government Gazette 29657 of 23 February 2007. The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction. This includes preventing further degradation and loss of structure, function and composition of threatened ecosystems and preserving witness sites of exceptionally high conservation value;
- Lists of Critically Endangered, Endangered, Vulnerable and Protected Species, published under Government Notice R151 in Government Gazette 29567 of 23 February 2007; and
- Alien and Invasive Species Regulations ("**A&IS Regulations**"), published under Government Notice R598 in Government Gazette 37885 of 12 February 2014, read with the Alien and Invasive Species List, published under Government Notice 864 in Government Gazette 40166 of 29 July 2016. Sections 70 to 77 of NEMBA specifically deals with the control of species which could pose a threat to biodiversity. The A&IS Regulations, which separate alien and invasive species ("**A&IS**") into different categories requires the:
  - immediate eradication of Category 1a listed invasive species;
  - control of Category 1b listed species;
  - management of Category 2 listed species in the same manner as Category 1b species, except where a permit was granted to allow for these species, in which case the spreading of the species must be controlled; and
  - control of Category 3 listed species, where species within riparian zones must be controlled as per Category 1b.

An A&IS management programme must be put in place for all categories of A&IS. Any A&IS found in the Booysendal South Expansion Project Area will be managed in accordance with the A&IS Regulations.

South Africa has ratified the Convention on International Trade in Endangered Species ("**CITES**") and has published the CITES Regulations, published under Government Notice R173 in Government Gazette 33002 of 5 March 2010, which regulate the import and export of endangered species.

The sensitivities around the biodiversity of the area will have to be considered during the life of the Project.

3.7 National Environmental Management: Protected Areas Act, No 57 of 2003

Certain areas are protected from development under NEMPAA, including those declared national parks, nature reserves, protected environments and world heritage sites.

NEMPAA provides that, despite other legislation, no person may conduct prospecting or mining activities in certain protected areas without the prior consent of the Minister of Mineral Resources and Minister of Environmental Affairs. NEMPAA binds all state organs and trumps other legislation, including the MPRDA in the event of a conflict concerning the development of protected areas.

The Booysendal South Expansion Project, though situated in a CBA, will not traverse any area protected under NEMPAA and consent is therefore not required.

3.8 National Environmental Management: Air Quality Act, No 39 of 2004

The National Environmental Management: Air Quality Act, No 39 of 2004 ("**NEMAQA**") was promulgated to ensure the protection and regulation of air quality and to provide measures that will prevent pollution and sustainability. Under NEMAQA, the Minister of Environmental Affairs must identify substances in ambient air which present a threat to health, well-being or the environment and establish national standards for ambient air quality, including the permissible quantity or concentration of each substance in ambient air.

The following regulations promulgated under NEMAWA were considered for the Phase 2 Project:

- Listed Activities and Associated Minimum Emission Standards, published under Government Notice 893 of 22 November 2013, which lists activities that could result in atmospheric emissions requiring an Atmospheric Emissions Licence ("**AEL**") before being undertaken. Examples of such activities include: the use of combustion installations; storage of petroleum products; slag processes; carbonisation and coal gasification; mineral processing and disposal of hazardous and general waste by way of incineration. An AQIA was undertaken for the entire Booysendal South Expansion Project to determine whether the Project involves any listed activities under NEMAQA and if any of its emissions exceed the allowable thresholds. The AQIA indicates that an AEL under NEMAQA is not required.
- National Dust Control Regulations, published under Government Notice R827 in Government Gazette 36974 of 1 November 2013, which provide that an acceptable dust fall rate for a non-residential area is considered to be more than 600 mg/m2/day but less than 1200 mg/m2/day (30-day average), with maximum allowable two exceedances per year, provided these exceedances do not take place in consecutive months. A dust fall monitoring programme as prescribed in terms of the Regulations must include:
  - The establishment of a network of dust monitoring points using method ASTM D1739:1970 (or equivalent), sufficient in number to establish the contribution of the person to dust fall in residential and non-residential areas in the vicinity of the premises, to monitor identified or likely sensitive receptor locations, and to establish the baseline dust fall for the district; and
  - A schedule for submitting to the air quality officer, dust fall monitoring reports annually or at more frequent intervals if so requested by the air quality officer.

The Phase 2 Project Area does not fall within an air quality priority area contemplated in section 18(1) of NEMAQA.

Greenhouse gases have been declared priority pollutants under the Declaration of Greenhouse Gases as Priority Air Pollutants published Government Notice 710 in Government Gazette 40996 of 21 July 2017 in terms of NEMAQA, with potential reporting requirements for the mine.

3.9 National Water Act, No 36 of 1998

The purpose of the NWA is to ensure that the country's water resources are allocated, protected, used and managed to the benefit of current and future generations taking into consideration the growing demand, the human and ecological reserve needs whilst promoting economic development to the benefit of all. The DWS and relevant delegated Regional Managers of the DWS and Water Management Agencies (WMA) have been appointed as the national trustees to oversee the governance of the country's water resources.

In terms of section 21 of the NWA, certain consumptive and non-consumptive water uses are identified and can only commence once authorised. Where a water use constitutes a Scheduled 1 Use (permissible use without an authorization requirement), a permissible water use in terms of Section 22 of the NWA or is authorised in terms of a General Authorisation, a Water Use Licence is not required.

Eleven consumptive and non-consumptive water uses have been identified under section 21 of the NWA. These water uses are included below. The water uses specifically applicable to the Booysendal South Expansion Project IWULA are include in Table 3-7.

Detail around the water uses will be included in the IWULA, which will be made available to the public for a 60-day comment period.

Table 3-7 Booysendal South Expansion Project Water Uses

Section 21 Water Use	Description of the Water Uses
Section 21 (a) taking water from a water resource	• Associated with dewatering at BCM1, BCM2, BS1/2 and BS4
Section 21 (b) storing water	• Potable water and fire water storage tanks at the BS1/2 and the BCM1 and BCM2 • Potable and make-up water storage at BS4
Section 21 (c) impeding or diverting the flow of water in a watercourse **Section 21 (i) altering the beds, banks, course or characteristics of a water resource**	• Six of the ARC towers are located on the edge of watercourses (21 i) and one in a wetland (21 c and i), where excavations will be made for the base on the towers • Drainage line crossings for the main access road, including the Groot Dwars River crossing. Culverts will be installed (21 c and i) • Main access road wetland crossings (21 c and i) • Diversion of two streams upstream of the portal complex at the Remainder of Buttonshope (21 c and i) • Several internal access road crossings which will be provided with culverts (Section 21 c and i) at BN and BS • Water and process water pipelines crossing drainage lines on the BN and BS4 (Section 21 c and i)
Section 21 (f) discharging of waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit	• Discharging of water from the BCM1 and BCM2 STPs into the environment
Section 21 (g) disposing of waste in a manner which may detrimentally impact on a water course	• 14,000m^3 PCD BS1/2 • PCDs at the BCM1 and BCM2 • STPs for the BCM1 and BCM2 • Mine PCD at BS4 • Process water tank at the BS1/2 • PCD BS4 • Ore stockpile at BS4 • ROM stockpile at the BS1/2 • Reworking of tailings at BS4 • Backfilling of tailings into the underground workings at BS4 • RWD at BS4 • 2 Plant PCDs at BS4 • Erickson dam at the north decline (343m^3) at BS4 • Four settling ponds at the north decline (350m^3 each) at BS4 • Sink dam at the north decline (286m^3) at BS4 • BCM1 and BCM2 sewage treatment plants • Three emergency backfill ponds along the backfill line at BS4
Section 21 (j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity of for the safety of people	• Removing of groundwater from the underground workings at BS1/2, BCM1, BCM2, and BS4

The NWA further requires that:

- A motivation in terms of section 27 be submitted as part of the IWULA. This will be included in the main application report;
- The necessary water use application forms be compiled and submitted in support of the IWULA;
- The requirements of GN704 and detail surrounding these activities will be considered in the IWULA; and

- An IWWMP be submitted in support of the IWULA. For this purpose, the existing IWWMP for BS4 will be updated to make provision for new waste streams or changes in waste streams associated with BS4.

The IWULA process timelines will be integrated with the overall EIA process. An IWULA will be prepared to make provision for all water uses related to the Booysendal South Expansion Project (Phase 1 and Phase 2) and some historic water uses associated with BS4.

3.9.1 GN704

GN 704 was promulgated in terms of section 26(1) of the NWA, specifically aimed at the protection of water resources associated with mining related activities. GN704 provides minimum requirements which need to be adhered to in aid of the protection of the water resources on a mine. It regulates the use of water, management of dirty and clean water infrastructure and related activities at mines. This includes minimum requirements for infrastructure that holds dirty water. A mine can apply for exemptions of these requirements and could be granted approval should sufficient management measures be put in place to ensure the protection of the environment.

Regulation 4 of GN704 places some restrictions in terms of the locality of certain infrastructure which could have an impact on water resources. The activities applicable to the Booysendal South Expansion Project from which exemption will be applied for as part of the IWULA include:

"*(a) locate or place any residue deposit, dam, reservoir, together with any associated structure or any other facility within the 1:100-year floodline or within a horizontal distance of 100 metres from any watercourse or estuary, borehole or well, excluding boreholes or wells drilled specifically to monitor the pollution of groundwater, or on water-logged ground, or on ground likely to become water logged, undermined, unstable or cracked;*

(b) Place or dispose of any residue or substance which causes or is likely to cause pollution of a water resource, in the workings of any underground or opencast mine excavation, prospecting diggings, pit or any other excavation, prospecting diggings, pit or any other excavation."

The BN and BS4 sections each hold an IWUL. The BS4 IWUL was transferred to Booysendal in 2016. As such, the water uses of the whole of the Booysendal Mine is now managed as one integrated entity. The current status is:

- The BN IWUL was issued in May 2011 and amended in November 2011, with a further amendment application submitted in 2015 for the Merensky Expansion, which is awaiting approval; and
- The BS4 IWUL was issued in 2006 and an amendment application submitted in 2015, which is awaiting a response from the DWS.

Detail around the existing lawful water uses will be included in the IWULA. IWWMPs have been approved for the BN section (2011) and the BS4 section (2010). This will be updated as part of the overall IWULA.

3.10 National Forestry Act, No 84 of 1998

Section 12 of the National Forests Act, No 84 of 1998 ("**NFA**") gives power to the Minister of Agriculture, Forestry and Fisheries to declare certain trees as protected species. A list has been promulgated under GN R908 of 21 November 2014. There are several known protected tree species in the Phase 2 Project Area, which have been or will have to be removed as part of the development. For this purpose, it will be necessary to submit an “Application for a License Regarding Protected Trees” to the Department of Agriculture, Forestry and Fisheries ("**DAFF**").

Section 15 of NFA indicates that no protected species may be cut, disturbed, damaged or destroyed without a license granted by the DAFF.

3.11 National Heritage Resources Act, No 25 of 1999

The purpose of NHRA is to ensure that the heritage resources of cultural significance, as described in Section 3 of the Act, will be protected. The protection of heritage resources is overseen nationally by SAHRA with delegated powers to provincial heritage resources authorities.

Section 38 of the NHRA requires that any proposed development that exceeds 5000m^2 must be communicated to SAHRA prior to the undertaking of the development. SAHRA has may advise that a Heritage Impact assessment ("**HIA**") be conducted before it consents to the development.

The NHRA states that human remains older than 60 years and younger than 100 years are protected by the NHRA with reference to section 36. Procedures for the removal of graves are clearly delineated in section 36 which includes procedures for consultation regarding burial grounds and graves where such graves are situated outside a formal cemetery administrated by a local authority. If the grave is not situated inside a formal cemetery, but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws, set by the local authority, must be adhered to.

Booysendal was granted authorisation to move graves which were associated with the BS1/2 portal. This was process was conducted in consultation with the relevant families as required under the NHRA.

Under section 34 of the NHRA, structures which are older than 60 years may not be demolished without a permit issued by the relevant provincial heritage resources authority. No structures older than 60 years were recorded in the HIA for the Phase 2 Project Area.

Section 35 of the NHRA deals with archaeological, paleontological and meteorite heritage resources and requires that for any archaeological or paleontological objects that are found the sites must be reported to the provincial heritage resources authorities. The discovered archaeological or paleontological objects may not be removed, damaged or destroyed without obtaining a permit from the heritage resources authority.

Due to the heritage rich nature of the Phase 2 Project Area, the Heritage Phase 1 assessment will be undertaken as part of the authorisation application process.

3.12 Conservation of Agricultural Resources Act, No 43 of 1998

In terms of the Conservation of Agricultural Resources Act, No 43 of 1998 ("**CARA**"), landowners are legally responsible for the control of weeds and alien vegetation. The Act makes provision for three categories of A&Is:

- Category 1a A&IS must immediately be removed and destroyed;
- Category 1b A&IS need to be immediately be removed and contained;
- Category 2 A&IS require a permit to retain the species on site and must ensure that they do not spread. All category 2 plants in riparian zones need to be removed; and
- Category 3 A&IS require a permit to retain these species. All category 3 plants in the riparian zone need to be removed.

CARA is also clear in terms of the conservation of soil and states that degradation of the agricultural potential is illegal. It furthermore requires the protection of land against soil erosion and the prevention of water logging and associated salinization.

3.13 Noise Control Regulations

Noise Control Bylaws, published by the municipalities in Limpopo and Mpumalanga, provide the limit of exceedance at which noise levels becomes a disturbance. According to the Regulations an exceedance of 7.0dBA above the prevailing ambient noise levels are allowed before a noise disturbance is created.

3.14 Spatial Development Policies

3.14.1 The National Development Plan 2030

The National Development Plan ("**NDP**") is a long-term development framework and plan for South Africa, and was released in August 2012. All major development policies and strategies of district and local municipalities find expression in the NDP and it must be referred to when determining the socio-economic impacts of a development or project on the surrounding area.

3.14.2 Mpumalanga Economic Growth and Development Plan

The primary objective of the Mpumalanga Economic Growth and Development Plan ("**MEGDP**") is to foster economic growth that creates jobs and reduces poverty and inequality in the Province. The objectives of the MEGDP will be considered in the Social Impact Assessment ("**SIA**").

3.14.3 Mpumalanga Integrated and Spatial Development Plans

The Mpumalanga Spatial Development Framework ("**SDF**") serves as a guideline for the following: land-use management systems, infrastructure investment directive, address socio-economic inequalities, effective and efficient land use and land use integration. The SDF is a road map for all infrastructural development and it must inform all infrastructure projects. Three town planning schemes relevant to the Booysendal South Expansion Project include:

- Lydenburg Town Planning Scheme, 1995;
- Sabie Town Planning Scheme, 1984; and
- Graskop Town Planning Scheme, 1992.

Local Economic Development ("**LED**") is central to the IDP of a municipality. The aim of the LED process is to create employment, alleviate poverty, redistribute resources and most importantly keep money generating in the Local Municipality. Mines are expected to take into consideration the LED strategies of the local municipalities when developing programmes for their SLPs.

3.15 Other Legislation, Policy & Guidelines

Other legislation and associated regulations (where applicable) considered as part of the EA process include:

- Hazardous Substance Act, No 15 of 1973, which is aimed at the requirements related to hazardous substances, including the need for licensing;
- Mine Health and Safety Act, No 29 of 1996, which is administered by the Mine Health and Safety Inspectorate of the DMR;
- The DMR Consultation Guidelines, which have been compiled for use by applicants for prospecting and mining rights. The Guidelines give a broad and general definition of what constitutes consultation, namely *"a two-way communication process between the applicant and the community or interested and affected party wherein the former is seeking, listening to, and considering the latter's response, which allows openness in the decision-making process*". They also provide that I&APs include, but are not limited to: host communities; landowners; traditional authorities; land claimants; lawful occupiers; the Department of Land Affairs; any other person (including on adjacent and non-adjacent properties) whose socio-economic conditions may be directly affected by proposed prospecting or mining operations; the relevant local municipality; and the relevant government departments, agencies and

institutions responsible for the various aspects of the environment and for infrastructure which may be affected by the proposed project (Sibisi & Tucker, 2012);

- The Extension of Security of Tenure Act, No 62 of 1997, which confers certain rights to non-landowning residents of a property, which such rights are linked to the period in which persons have been resident on the land;
- The Spatial Planning and Land Use Management Act, No 16 of 2013, which provides the framework for spatial planning and land use management in South Africa, including norms and standards, policies, principles for spatial planning and development and the monitoring, coordination and review of spatial planning and land use management system;
- Traditional Leadership and Governance Framework Amendment Act, No 41 of 2003 and National House of Traditional Leaders Act, No 22 of 2009. These acts provide for the recognition and establishment of traditional communities and councils, as well as to provide a framework for leadership and the roles and responsibilities of traditional leadership;
- Municipal Systems Act, No 32 of 2000, which amongst other things, provides for the core principles, mechanisms and processes that are necessary to enable municipalities to move progressively towards the social and economic upliftment of local communities, and ensure universal access to essential services that are affordable to all;
- Provincial Legislation and Policy –
  - Mpumalanga Nature Conservation Act, No 10 of 1998 and the Mpumalanga Tourism and Parks Agency Act, No 5 of 2005. The former sets out how wild species are to be managed in terms of human use, such as collecting, fishing, hunting, capture, transport and trade. It deals with rare and endangered species and the powers needed to protect them, and the protection of sensitive natural sites from damage and exploitation. The latter establishes the MTPA and governs its mandate of managing and promoting the sustainable use of natural resources, tourism and conservation of biodiversity;
  - Limpopo Environment Act, No 7 of 2003, which makes provision for the protection of terrestrial and aquatic biodiversity;
  - Limpopo Environmental Implementation Plan 2015-2020 (published under PN 64 in PG 2715 of 10 June 2016). Describes policies, plans and programmes of the department that perform functions that may impact on the environment and how this department's plans will comply with the NEMA principles and national environmental norms and standards;
  - Mpumalanga Environmental Implementation Plan 2015-2020, published under Provincial Notice 15 in Provincial Gazette 2657 of 29 February 2016), which identifies the policies, plans and programmes within each of the provincial and relevant national departments in the province that could have significant impacts on the environment, and indicates measures that these departments are putting into place or planning to put in place, to improve their environmental performance and co-operative environmental governance; and
  - Various municipal by-laws.

3.16 Standards and Guidelines

3.16.1 South African National Standards – SANS 10103 of 2008

SANS 10103 provides the requirements for noise measurement and rating of environmental noise with respect to annoyance and to speech communication.

3.16.2 South African National Standards – SANS 10210 of 2004

This national standard is used when calculating or predicting increased road traffic noise during new developments International Finance Corporation Environmental, Health and Safety Guidelines for Mining ("**IFC Guidelines**").

The IFC Guidelines' recommended noise levels for noise sensitive areas is 55.0dBA during the day and 45.0dBA during the night.

3.16.3 United States Bureau of Mines – USBM 1980. Structure response and damage produced by ground vibration from surface mine blasting.

USBM 1980 provides limits for ground vibration levels resulting from blasting. Ground vibration levels as a result of blasting should not exceed 10,0m/s for clay huts and 25.0mm/s for brick or formally constructed buildings.

3.16.4 NEMA Implementation Guidelines: Sector Guidelines for Environmental Impact Assessment Regulation (published under Government Notice 654 in Government Gazette 3333 of 29 June 2010).

These guidelines provide guidance on how to compile EIAs containing information and analysis of a high quality and which is sufficiently comprehensive to enable the decision-maker to make a well-informed decision. It explains the requirements in the EIA Regulations and provides practical guidance and tools for the EIA process.

3.16.5 Department of Environmental Affairs and Tourism (2004); Cumulative Effects Assessment, Integrated Environmental Management, Information Series 7, Department of Environmental Affairs and Tourism (DEAT), Pretoria

This document provides information on cumulative effect assessments, integrated environmental management, and highlights the potential approaches for incorporating cumulative effects into EIAs.

3.16.6 Department of Environmental Affairs (2011); A user friendly guide to the National Environmental Management: Waste Act, 2008. South Africa, Pretoria

This guide gives a simplified overview of the contents and application of the Waste Act. It also covers processes or directions on how to manage polluted land and develop industry waste management plans. It provides guidance and information on the licensing of waste management activities, waste information, compliance and the consequences for non-compliance the Waste Act.

3.16.7 DEAT (2004): Criteria for determining Alternatives in EIA, Integrated Environmental Management, Information Series 11

This document provides an overview of the key criteria for determining project alternatives, in the EIA process.

3.16.8 Guideline for Implementation: Public Participation in the EIA Process (published in under Government Notice 807 in Government Gazette 35769 of 10 October 2012)

Assists applicants, interested and affected parties and environmental assessment practitioners to under their roles in the Public Participation Process ("**PPP**"). It provides information on the benefits of the PPP and guidance on conducting the PPP.

3.16.9 International Finance Corporation Standards, Guidelines and Requirements

During the SIA, IFC Performance Standards were taken into consideration. These standards articulate a company's strategic commitment to sustainable development, and are an integral part of the IFC's approach to risk management.

3.17 Integrated Authorisation Processes

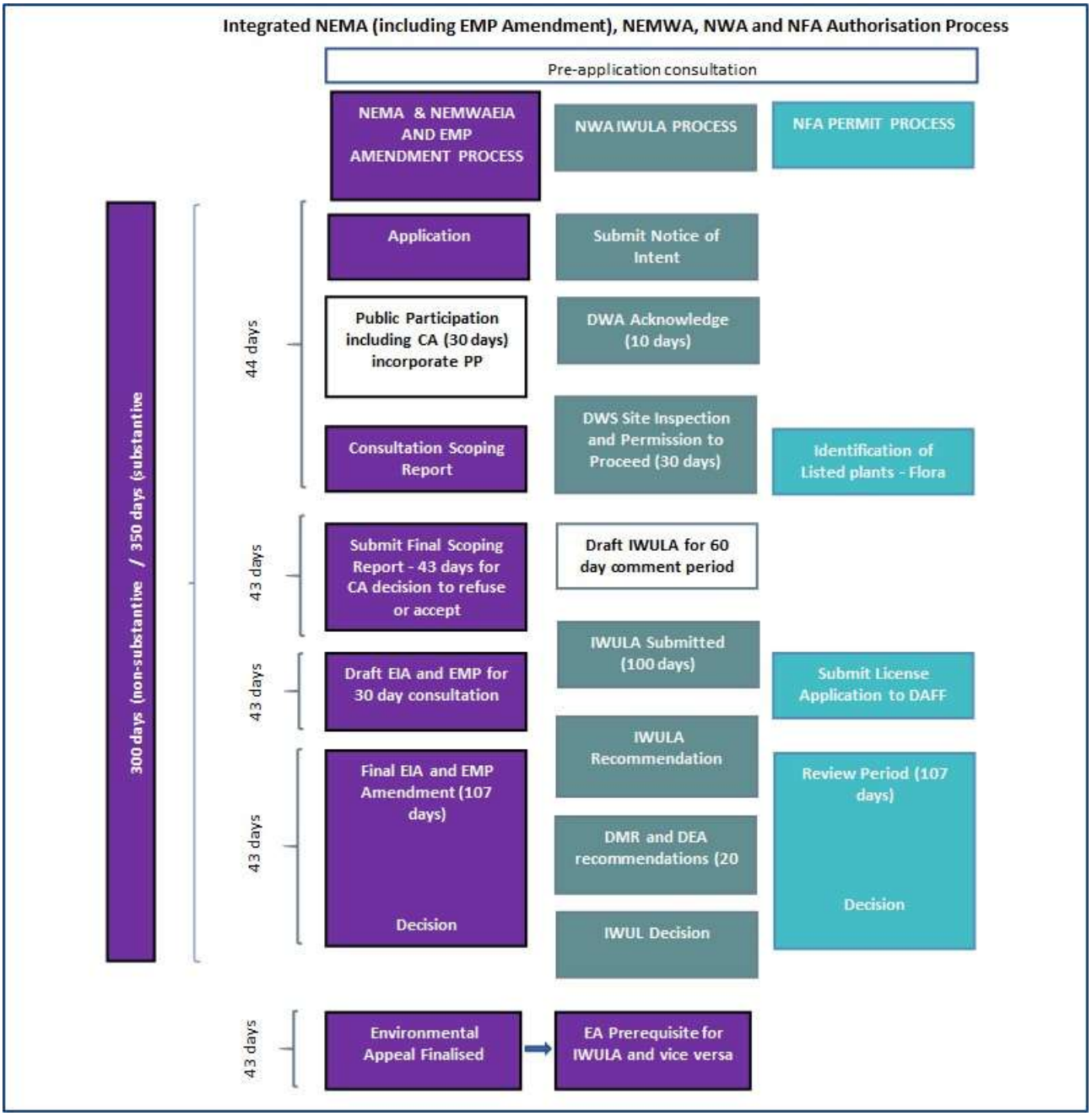
Before the enactment of the 2014 EIA Regulations, separate EAs for environmental and mining related activities were required. Co-operative governance and the integration of previously separate applications has now been streamlined through Section 24C of NEMA where it states that:

"*2A The Minister responsible for mineral resources must be identified as the competent authority in terms of subsection (1) where the listed or specified activity is directly related to –*

(a) extraction and primary processing of a mineral or petroleum resource."

The integrated application process set out in Figure 3-1 make provision for the WML Application, EA and EMP Amendment Applications, the IWULA process in terms of the NWA and the Plant Permit in terms of the NFA.

Figure 3-1 Integrated and Concurrent Phase 2 NEMA and WML Application Process for Booysendal Expansion



4. Scoping and Environmental Impact Assessment Methodology

In terms of section 24 of NEMA the potential consequences for, or impacts on, the environment of listed activities or specified activities must be considered, investigated, assessed and reported to the CA. The 2014 EIA Regulations govern the procedure and criteria for the preparation, evaluation, submission, processing and consideration for, and decision on, applications for EAs for the commencement of activities subjected to an environmental impact assessment. Due to the nature of the Listed Activities to be undertaken as part of the Phase 2 Project, a scoping, environmental impact reporting ("**S&EIR**") and EMP process must be followed.

The Integrated Authorisation Process in Figure 3-1 shows the steps of the different processes to meet the requirements of the:

- EA Applications;
- Section 24G EMP Amendment Application;
- IWULA;
- WMLA; and
- NFA application.

The main phases of the process undertaken for this project are:

- Phase 1: Pre-application
- Phase 2: Application
- Phase 3: Public Participation throughout Scoping Phase
- Phase 4: Develop and Submit Scoping Report
- Phase 5: Undertaken Specialist Studies
- Phase 6: Develop and Submit EIR & EMPr, subsequent to public comments (Refer to Section 11 of this Report for detailed description).

These phases are described in more detail below.

4.1 Phase 1: Pre-application

Due to the complexities of the project, specifically in terms provincial cross-boundary and NEMA-NEMWA-NWA process integration, pre-application meetings were held from 21 to 23 February 2018. These meetings ensured that the processes were streamlined and agreed to in writing; and the requirements and recommendations of all I&APs are incorporated into the concurrent process.

The outcomes of the pre-application meetings are reported in Section 9.1.6.

4.2 Phase 2: Application

At a pre-consultation meeting held with the DMR Limpopo Regional Office on 18 August 2017, as part of the submission of the Section 24G EA application, it was indicated that, as the proposed activities are dealt with by two Regional Offices under the respective Booysendal MRs, one Regional Manager does not have the authority to process this application as the sole CA. The DMR Mpumalanga Regional Office

however indicated telephonically that the application forms and Scoping Report for the Booysendal South MR and Booysendal North MR can be submitted concurrently for the Phase 2 NEMA and Waste Act Applications.

The Regional Managers of the Limpopo Regional and Mpumalanga Regional DMR Offices have subsequently recently conveyed that one of the Regional Managers may be delegated the authority to process the Phase 2 NEMA and Waste Act Applications.

Pending any delegation as to one of the Regional Manager being the competent CA, the following applications were made in relation to the:

- Booysendal North MR, an integrated EA and the Section 24G EMP Amendment Application to the Limpopo DMR Regional Office on 28 February 2018. A response to either proceed or to amend the Scoping Report is expected within 45 days from submission;
- Booysendal South MR, an integrated WML and EA Application to the DMR Mpumalanga DMR Regional Office on 28 February 2018. A response to either proceed or to amend the Scoping report is expected within 45 days from submission; and
- Notice of Intent to apply for an IWUL on 28 February 2018 to the DWS. A Notice of Intent acknowledgement is expected within 10 days of submission.

4.3 Phase 3: Public Participation

Public consultation was undertaken throughout the scoping phase and will continue throughout the EIA EMP Amendment, IWULA, and DAFF processes. Consultation will only end with final notification of the decisions of the applications.

The most important objective of the PPP is to provide sufficient and accessible information to assist I&APs in an objective manner to:

- Raise issues of concern and suggestions for enhanced benefits and commenting on reasonable alternatives;
- Verify that their issues have been recorded in the Comments and Responses Report ("**CRR**") and considered in investigations; and
- Contribute relevant local information and traditional knowledge to the process.

The process followed thus far and the proposed process for the next phases is described in Section 9 of this report.

4.4 Phase 4: Develop and Submit Scoping Report

According to Appendix 2 of the 2014 EIA Regulations, the objective of scoping, through a consultative process, is to achieve the following:

- An understanding of the policies and legislation relevant to the activity;
- A motivation for the need and desirability of the proposed activity and its desired location;
- The preferred activity and technology alternatives;
- Confirmation of the preferred site through a detailed site selection process;
- Identification of key issues to be addressed in the assessment phase;

- Agreement on the level of assessment to be undertaken, including the methodology to be applied, the expertise required and the extent of further consultation to be undertaken to determine the impacts and risks of the activity; and
- Suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

The focus in the scoping phase is to identify environmental issues and concerns (biophysical and socio-economic) related to the Phase 2 Project. Information collected from historical studies, the recently obtained Section 24G EA studies and data from the specialist studies already completed was reviewed to create an understanding of the social and physical environmental characteristics of the Phase 2 Project Area in which the developments are planned (reported under Section 7). The Project activities and alternatives to be considered are described in Section 5 of this Report.

During scoping, a social scan was undertaken to determine if there are any significant changes since the completion of the 2017 social baseline assessment and development of the public consultation strategy and plan. This is included under Section 9.

A Project AoI was determined for each of the specialist study areas (see Section 8).

A gap analysis and consideration of additional information required for the various studies was undertaken and the specialist scopes of work refined and are included in Section 11. The results of these scoping phase activities informed the ToR for the EIA phase which is contained in Section 11.

The contents of this Scoping Report consists of, amongst others:

- The detailed description of the Project;
- A description of the environmental legal framework for the Project;
- A motivation for the need and desirability of the Project;
- A description of the alternatives and the alternative analysis to arrive at a preferred alternative;
- A summary of the environmental, social and cultural-heritage baseline conditions;
- A description of the stakeholder consultation and the issues raised;
- Identification and preliminary assessment of potential environmental, social and other issues /impacts from the project development;
- The stakeholder engagement plan for the project; and
- The plan of study to undertake the integrated IWULA and Phase 2 NEMA and WML Applications. The plan of study will include a summary of the impact assessment methodology.

This Report constitutes the Scoping Report for Phase 2 Project and has been prepared according to the requirements of Appendix 2 of the 2014 EIA Regulations. The Draft Scoping Report will be made available to all I&APs for comment. Comments received will be included and responded to in the Final Scoping Report in the form of the CRR. The Final Scoping Report will be submitted to the relevant Cas, or the CA which has been delegated the authority to process the Phase 2 NEMA and WML Applications for approval to continue to the EIA stage.

4.5 Phase 5: Specialist Studies

The scopes of the specialist studies are defined in the Scoping Report and each specialist will undertake field surveys, data analysis and interpretation, impact assessment, management planning and reporting. It is anticipated that the following specialist areas will be covered:

Biodiversity and terrestrial ecology	Aquatic ecology and wetlands
Soil, land use and land capability	Surface water hydrology
Surface water quality	Ground water quantity and quality
Climate and air quality	Greenhouse gas emissions
Noise and vibration	Traffic
Archaeology and cultural heritage	Socio-economic situation
Visual aspects	Mine closure

The AoI applicable to the various specialist studies is defined in Section 8 of this Scoping Report and investigations have been planned around these AoI. The study area for the specialist investigations will comprise the physical footprint of the Phase 2 Project.

The specialist reports will be prepared according to Appendix 6 of the 2014 EIA Regulations and will contain:

- Details of the specialist and a declaration of independence;
- The scope of the report and details of the investigations undertaken and methodology;
- The sensitivity of the site and area to be avoided or buffered, with maps;
- Description of the findings, impacts and mitigation measures;
- Any conditions and monitoring requirements;
- A description and record of any consultation process undertaken; and
- An opinion on whether the proposed activity should be authorised.

The specialist studies will be incorporated into the integrated EIR and IWULA reports prepared in Phase 6 (see Section 4.6).

At this stage (Phase 5), by using the information obtained from the relevant specialist studies, an application for a license regarding protected trees will be submitted in terms of the NFA to DAFF for the removal protected trees in the Phase 2 Project Area, where applicable.

4.6 Phase 6: Develop and Submit EIR and EMPr Report

The EIR and EMPr will follow the Scoping Report. This will be prepared according to Appendices 3 and 4 of the 2014 EIA Regulations. Detail around the EIA and EMP is included in Section 11, which contains the ToR for this Phase.

5. Project Motivation: Need and Desirability

Northam is a mid-tier, integrated PGM producer, with two flagship, mining operations - Zondereinde and Booysendal - and its own metallurgical facilities (base metals plant and smelter) based at Zondereinde with a planned smelter expansion. The company has a strong balance sheet and an aggressive growth plan, illustrated by the acquisition of BS4, amongst others.

Paul Dunne, Chief Executive Officer of Northam, in his presentation of the company results on 26th August 2016 (reported in Mining Weekly, 26th and 29th August 2016) believes that there is a steady PGM demand. He predicts a lower primary mine supply than predicted due to the underinvestment in replacement and new platinum mining capacity, the challenging orebodies left behind and the reduction of the higher quality Merensky reef, which has generally being mined out. This situation provides an opportunity for significant organic and greenfields growth opportunities, with an advantage if construction effort is started now and not on the day the market turns. The Northam Board has therefore approved a capital expenditure of R5.5Billion on four growth projects, with the biggest being the R4.2Billion, six years, 240 000 oz/y Booysendal South Expansion Project.

With the Booysendal South Expansion Project, Northam will be able to expand organically by targeting the mining area in the BS orebody, which contains some 60Moz of PGMs. With fully funded growth projects, Northam intend to be "first to market" when the platinum supply-demand changes (Northam Platinum Limited – Strategic Update: Strengthening the NHM Investment Case. Paul Dunne, CEO, Northam Investor Day, 30 June 2016).

Booysendal indicated that at least 2,132 direct and contract employment opportunities will be created through the Booysendal South Expansion Project; with a further 13,750 indirect employment opportunities. With the high dependency ratio in the area, it is expected that a total of 49,476 people will benefit from the Project. Currently 60% of the workforce employed at Booysendal comes from local communities. This means that a significant amount of the current annual wages of R505,372,151 filters through to the local communities.

In addition, preferential procurement from Historically Disadvantaged South Africans (HDSA) at Booysendal is currently 87.18%. The Booysendal South Expansion Project will increase the demand for further procurement and will enhance benefits and business development in communities. In addition to the local economy, Booysendal also contributes R86,639,513 to government revenues in the form of taxes.

LED spent by the mine since 2014 is R8,926,913. Booysendal indicates that the expansion of the Mine will assist in continuous development spend, including investment into schools and development centres.

At the peak of construction, a labour force of up to 3,200 will be required. The Project has an estimated capital spend of R4,199,800,000 over 5 years. The projected turnover (2016 values) is R2.7 billion of which some 8-10% (about R250 million) will represent ongoing capital investment for the projected LoM.

The Project has economic benefits for South Africa due to increased platinum production and local socio-economic benefits because of job creation, capital expenditure on contractors, materials and equipment, and ensuring an extension of the LoM in the long term which will prevent retrenchments and early mine closure.

The local Government Handbook (Source: http://www.localgovernment.co.za/locals/view/145/Thaba-Chweu-Local-Municipality#demographic) indicates that the dependency ratio for the TCLM is in the order of 43%. In addition, the official unemployment is 20.5% and the youth unemployment is 27.10%. The trickle-down effect, being an additional approximately 6,000 jobs will have in the area, will be significant.

In addition to this, Booysendal also undertakes the following as part of their approved 2016 – 2020 SLP:

- Technical skills training which will lead to further empowerment of the employees;

- The adult based education and training (ABET) programme will be expanded into the community;
- Offering learnerships as part of the skills development strategy;
- Portable skills training which can be applied outside of the mining industry, including amongst others basic training in: welding; electricity; plumbing; finance; leadership; and entrepreneurship;
- Career progression plans to develop the skills of individuals;
- Employee mentorship programmes to fast track on the job training and skills development;
- Skills and qualification enhancement through internships and bursary plan; and
- Implementation of an employee equity programme.

The value of these training programmes in the rural communities will further contribute to employment and marketability.

6. Alternatives

6.1 Booysendal Mining Right Alternatives

For the Booysendal South Expansion Project, the following alternatives were considered in relation to the Booysendal North MR:

- Process and potable water pipeline alternative route;
- Locality alternatives for the BCM2 (southern Merensky Adit) development; and
- Alternative technologies for the transport of ore.

6.1.1 BS1/2 to BN Pipeline

Two alternative routes were considered for the process and potable water line between BS1/2 and BN (refer to Figure 2-1).

- Alternative 1: Pipelines to run along the main access road;
- Alternative 2: Pipelines to run along the existing gravel access road next to the Groot Dwars River; and
- No-go option: Existing PVC water supply line along the Groot Dwars River remains with no changes.

The purpose of the process water line is to pump excess water from the PCD at BS1/2 during high rainfall events to BN, thereby avoiding overtopping and spillage into the Groot Dwars River.

Potential impacts which could emanate from the pipelines are related to soil, vegetation and drainage lines. In assessing the preferred alternatives these three aspects are of specific importance due to the sensitives of these components. A preliminary assessment of the alternatives is included in Table 6-1.

Table 6-1 Potable and Process Water Pipeline Route Alternatives

Alternative 1 – Along the Groot Dwars River Surface	**Alternative 2 – Along the Main Access Road**	**No-Go Option**
Additional clearance of CBA vegetation in relative undisturbed area	Areas along the road has already been disturbed thereby disturbance to soil, vegetation and potential impacts on the watercourses should be less significant.	No additional disturbance
Disturbance of soil could lead to additional siltation of the sensitive Groot Dwars River system	Stormwater and erosion control management measure are installed along the road	No additional disturbance to soil
Pipeline crosses the Groot Dwars River which could lead to additional impacts	Crossings and culverts are already in place.	Limited current disturbance
Sensitive wetlands along the pipeline route will be impacted	Existing disturbance of wetlands with limited additional disturbance	No additional disturbance
Risk of spillage of process water into the Groot Dwars River will be reduced	Risk of spillage of process water into the Groot Dwars River will be reduced	A water treatment plant will have to be installed downstream of the BS1/2 PCD to ensure that any

	overflow is treated Potential overflow of the PCD could contribute to contamination of the Groot Dwars River should there be no means to transfer the water to BN

From available information it is likely that Alternative 2 will contribute to less environmental impacts than Alternative 1 of the current status quo within the contents of the Phase 2 Project. This alternative should be further investigated by the engineering team and will be further assessed in the EIA phase.

6.1.2 BCM2 Location

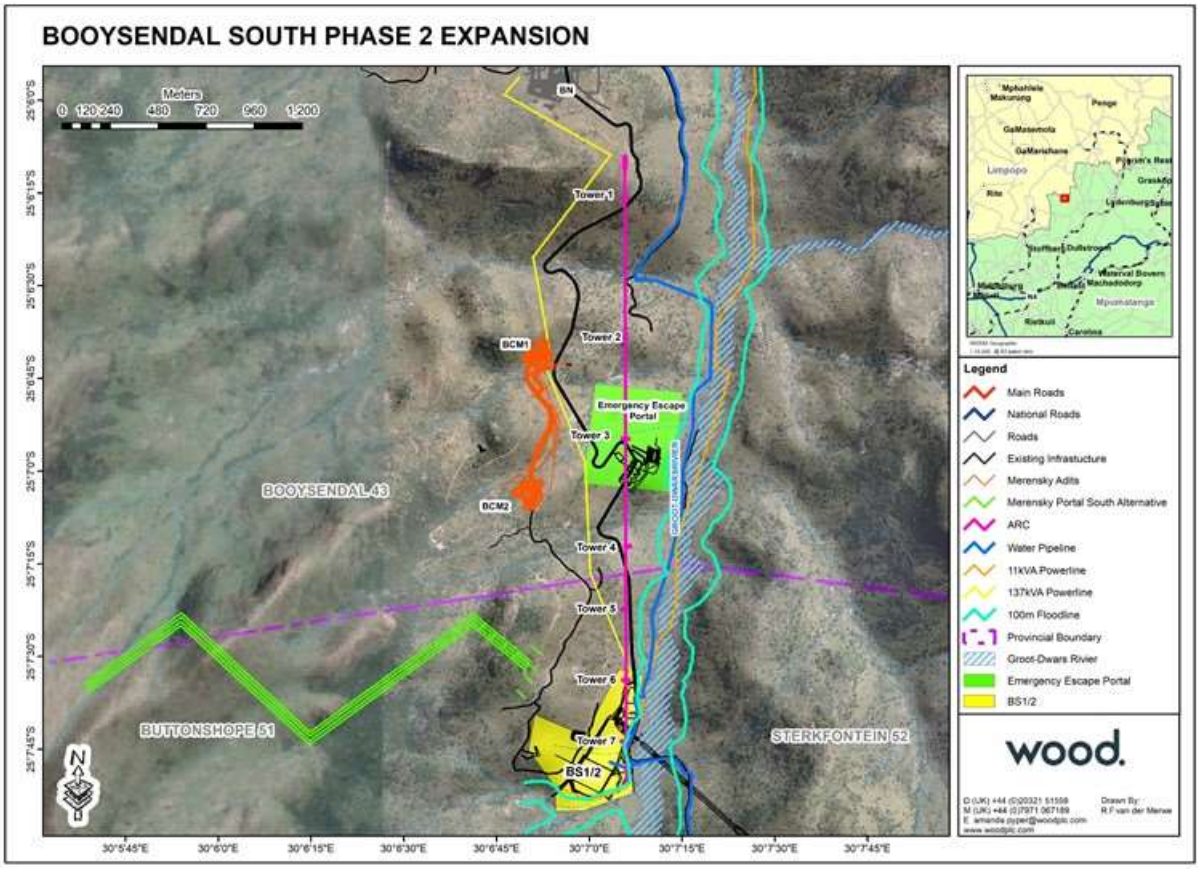
The location of the Adit is to a large extent reliant on the location of the ore. The surface infrastructure components associated with the Adit is, however, located in a sensitive ecological area. Potential impacts on watercourse, vegetation and soil properties is of concern. The location approved as part of the section 24G EA is just north of the BS1/2 complex (see Figure 6-2). The position has now been moved closer to BCM1. A comparison of the potential impacts associated with the two alternatives is included in Table 6-2.

Table 6-2 BCM2 Alternative Locations

Alternative 1 – Approved Location	**Alternative 2 – New Location**	**No-Go Option**
Sensitive CBA vegetation	Sensitive CBA vegetation	Approved location will prevail
Undermining of an unnamed tributary of the Groot Dwars River	Undermining of an unnamed tributary of the Groot Dwars River	Approved location will prevail as per Alternative 1
Closer to current disturbance areas. Habitat fragmentation concentrated over a smaller area	Additional fragmentation of habitat	Approved location will prevail as per Alternative 1

Both the proposed locations will potentially have significant impacts on the environment.

Figure 6-1 BSM2 Alternative Locations



6.1.3 Transport of Ore

Visual, fauna, flora, noise and air quality are the most significant aspects which could be negatively impacted by the transportation of ore. Three alternatives have been considered for the transportation of ore from BCM1/BCM2 to either the Process Plant at BN or the Process Plant at BS4:

- Alternative 1: Transport of ore via the proposed road between BCM1/BCM2 and BN;
- Alternative 2: Transport of ore via an ARC;
- Alternative 3: Transport of ore via overland conveyor; and
- No-go option: No transportation of ore.

A preliminary assessment of the three alternatives technologies are included in Table 6-3.

Table 6-3 Ore Transportation Alternatives

Alternative 1 – Road	**Alternative 2 – ARC**	**Alternative 2 – Overland Conveyor**	**No-Go Option**
Increase in traffic on the main access road between BN and BS4 could pose a risk to accidents. Road killings of animals may increase	Golden-mole population at the start of a proposed access road for the ARCs at the north starting point is a protected species	Higher noise level than the ARC (continuous noise level) Crossing of various water courses	No additional disturbance to soil, air, fauna and flora or visual
Existing road for which no additional clearance will be required	Additional clearance of CBA vegetation for the ARC towers and access roads	Clearance of large sections of CBA	Protection of CBA
Limited visual impact	The ARC could remain aesthetically incompatible with surrounding landscape	The overland conveyor may create a visual disturbance, though less significant than the ARC.	No visual impact
Increase in noise levels from large trucks.	Lower noise levels compared to overland conveyor or road traffic	Higher noise level than ARC and continuous noise level	No impact
Culverts and water crossing measures already being put in place	Three towers fall within watercourses	New impedance in water courses	No impact
The increase in CO_2 air pollutants should not be significant	Eskom power with indirect increase in carbon emissions	Eskom power with indirect increase in carbon emissions	No impact
Transport and processing of ore which will lead to revenue	Transport and processing of ore which will lead to revenue	Transport and processing of ore which will lead to revenue	No job creation Loss of revenue Loss of local and national taxes

Alternative 1 seems like the most feasible option with the least significant environmental and social impacts. These options will be further investigated during the EIA phase.

6.2 Booysendal South Mining Right Alternatives

For the Booysendal South MR one alternatives technology is applicable, namely alternative technologies for the tailings backfill material was considered,

A preliminary assessment of the alternative is included in the following sub-sections. These alternatives will be further assessed as part of the EIA phase.

6.2.1 Tailings Backfill Material

Two technologies were considered for the backfill material:

- Alternative 1: Cemented tailings;

- Alternative 2: Floatation cyclone tailings; and
- No-go option: TSF remains and no backfilling

For the purpose of cemented tailings, a thickener will firstly to be added to the floatation tailings after which approximately 4% of cement will have to be added to the tailings as part of the backfill stream. No additional additives are required for the flotation cyclone tailings. A comparison of the two alternatives is included on Table 6-4.

Table 6-4 Backfill Material Alternatives

Alternative 1 – Cemented Tailings	**Alternative 2 – Floatation Tailings**	**No-Go Option**
Negligible volumes of drainage water resulting from material in the backfilled underground workings	High volumes of drainage water from tailings. Underground dewatering system required to pump water to surface	Existing TSF management to continue as presently
Limited seepage of nitrates or chromium as water source which can transport chemicals is reduced	Potential seepage of nitrates and chromium into groundwater with potential decanting at the Valley Boxcut should underground pumping not be sufficient	Management of current TFS
Lower wear rate in pipeline system	More corrosive action and higher wear rate which will require more pipe maintenance	No additional pumping of tailings

Reworking of the existing TSF will assist in creating additional capacity thereby reducing the immediate need for an additional TSF. With the correct management measures in place either Alternative 1 or 2 seems feasible.

7. Environmental and Social Status Quo

A significant amount of baseline studies has been undertaken in relation to the Booysendal North MR and the Booysendal South MR. Additional baseline studies were carried out in 2016 and 2017 in support of the application for the Section 24G EA for Phase 1 of Booysendal South Expansion Project, covering the integrated Booysendal North MR and Booysendal South MR areas. The baseline status quo presented in this section is applicable to both the MRs and the Booysendal South Expansion Project Phase 2. The purpose of this section is to provide an overall view of the characteristics and sensitivities of the environmental and social components applicable to the Projects, which requires further investigation during the update of the specialist investigations. This baseline description will be updated during the EIA phase.

7.1 Geology

7.1.1 Regional Geology

The Booysendal South Expansion Project is set in the Bushveld Igneous Complex ("**BIC**"), an intrusive igneous body extending approximately 400 km from east to west and about 350 km from north to south. There are two lithologically distinct units: a lower sequence of layered ultramafic-mafic layers, known as the Rustenburg Layered Suite; and an overlying unit of granites, known as the Lebowa Granite Suite. There are four main limbs to the complex, namely the Northern Limb, the Eastern Limb, the Southern Limb and the Western Limb. The Project is located on the Eastern Limb.

The Rustenburg Layered Suite is subdivided into the Marginal, Lower, Critical, Main and Upper zones. Rocks in the Suite range from ultravasic pyroxenites and norites in the lower parts to norite, gabbro and magnetite gabbro in the upper parts. The Critical Zone pyroxenites, norites and anorthosites host all the significant PGMs and chromite deposits. The Lower, Critical and Main Zones become attenuated towards the southern end of the Eastern Limb.

In the Eastern Bushveld there are two major lineaments, the Steelpoort and Wonderkop faults, which divide the Eastern Bushveld into three zones: the southern, central and western zones. The surface expression of the Steelpoort fault occurs 40km to the north of the Project area. The Project area has been the focus of intensive recent exploration for both UG2 and Merensky Reef Platinum Group Element bearing horizons.

7.1.2 Local Geology

Approximately 12.5 km of Merensky and UG2 Reef strike outcrops in the Groot Dwars River valley in which the Booysendal South Expansion Project mining areas are located. The strike is in a north-south direction on the Farms Booysendal 43JT in the north and Sterkfontein 52JT in the south, and dips between 10° and 12° to the west. The main economic horizons in the Southern Upper Critical and Main Zones are the PGMs located in the Merensky Reef and the underlying UG2 Chromitite Reef.

The terrain consists of steep relief, with two main rivers, the Groot Dwars and the Klein Dwars Rivers flowing northwards through the area. The igneous rocks in the area consist of gabbro, norite, anorthosite, pyroxenite and chromitite which form part of the Dwars River Suite and the Dsjate Sub-suite (Main Zone) of the BIC. From BS4 the ore body forms an elongated erosional remnant that projects eastwards under the Groot Dwars River and is preserved within a basin-like structure on the eastern site of the valley. The reef outcrops and sub-crops around almost the entire perimeter of the basin except for the western part of the southern flank, where the UG2 reef is downthrown along a fault, and the western side of the ore body where the reef passes under the Groot Dwars River and merges with the rest of the UG2 reef that underlies the entire western side of the river valley.

7.1.2.1 BS4

At BS4 the Bushveld floor rocks are mainly sandstone of the Steenkampsberg Formation, Transvaal Supergroup. These erosion resistant rocks form much of the Steenkampsberg mountain range located to the east of the Project area. Pre-Bushveld sills and the Marginal Zone have intruded these rocks in places. A large sill (over 200 m thick) forms part of the Steenkampsberg. The underlying geology of the plant and tailings dam areas consist mainly of the Marginal Zone and Critical Zone rocks of the Rustenburg Layered Suite. The Marginal Zone consists of fine-grained gabbro and norite. Large detached fragments of Transvaal Supergroup sediments are locally present in this unit. To the north of the main BS4 complex the geology is mainly comprised of Quaternary surficial deposits, alluvium and scree, while to the west of the valley there is medium- to coarse-grained gabbro and norite with subordinate anorthosite of the Dsjate Subsuite.

According to the Future Flow geohydrological report (2017) which was undertaken as part of the Booysendal Phase 1 Expansion Project, the structural geology shows the presence of several significant regional structures that could act as groundwater flow paths. Several dolerites, diabase, and syenite intrusions form the dykes that intersect the area.

GCS (2009) found that the faults are represented by two prominent strike directions e.g. north-northwest and north-northeast. From experience and previous investigations in this area it is known that the north-northeast faults are normally associated with open fractures and brittle deformation, indicating that they are of a much younger age.

7.1.2.2 BCM1 and BCM2

The Merensky Reef is located at the top of a thick pyroxenite (-5m) sequence and is consistent with a thin chromitite stringer (marker) located about 30cm from the top of the Merensky pyroxenite. The mineralised layer is characterised by an abrupt transition from norite to pyroxenite, a single narrow chromitite stringer, coarser semi-pegmatoidal textures and the presence of visible base metal sulphides.

The Merensky Reef hanging wall is geotechnically competent, with gradational contacts between the handing wall lithologies. Although rare, jointed reef and poorer hanging wall conditions are normally associated with faulting, dykes and potholes. This is also the case at BCM1 and BCM2.

The UG2 Reef is strikingly different, with a single thick chromitite layer followed stratigraphically in its immediate hanging wall with pyroxenite and a series of chromitite stringers classified as the Triplet chromitite stringers. In most instances, these chromitite stringers are located more than 1m above the top of the UG2 Reef and hence do not pose a threat to safety or UG2 Reef dilution. Conversely, jointed reef and poorer hanging wall conditions are commonly associated with faulting, dykes, potholes and slump features. Typically, the areas near the Helena and Buttonshope slumps have a higher incidence of low angle, thrust type shear or joint planes.

7.1.2.3 Structural Geology

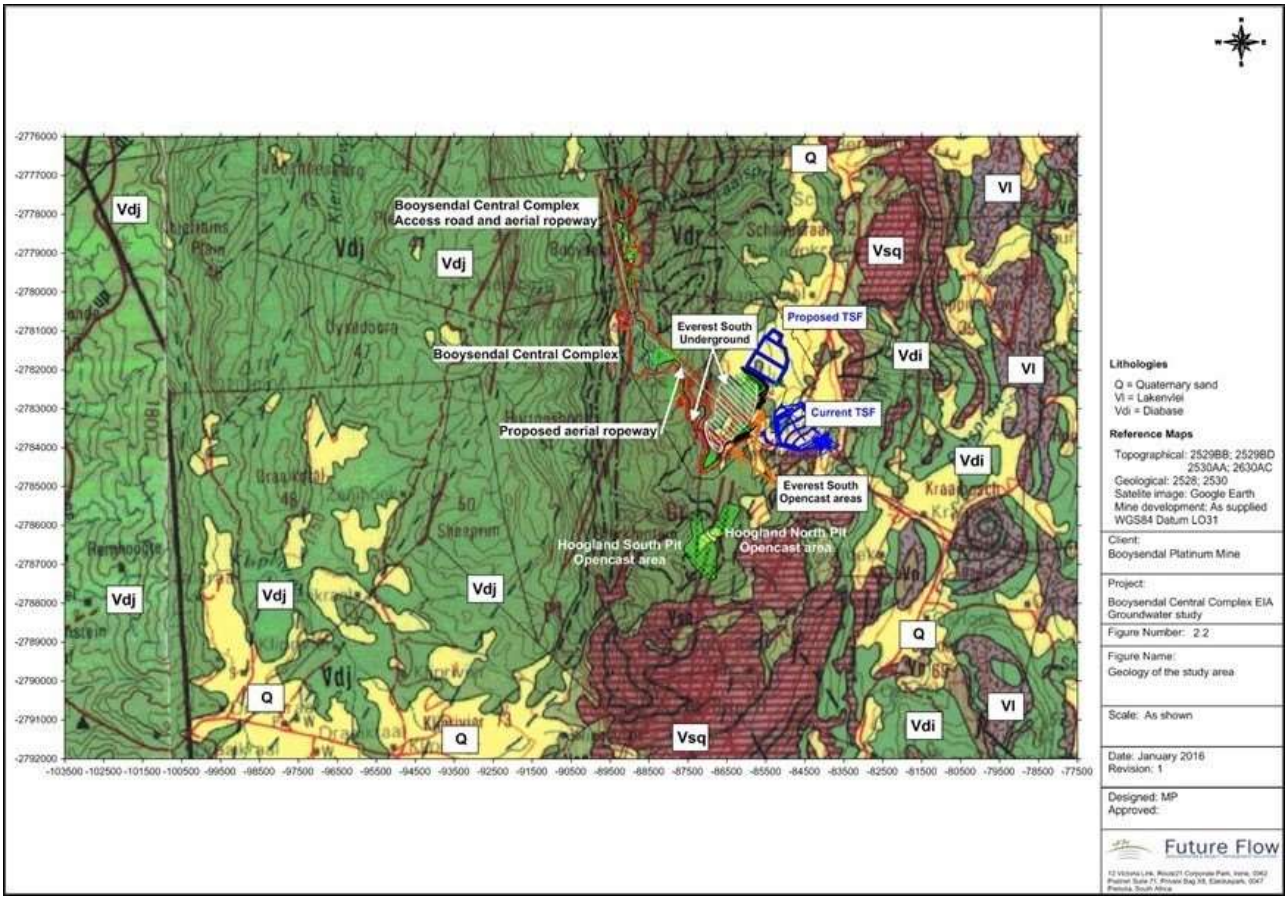
Several faults and dolerite dykes have been identified in the area, generally associated with higher yielding ground water occurrences (refer to Figure 7-1). Packer testing performed on exploration boreholes in the valley also confirmed the presence of zones of high hydraulic conductivity associated with these structures.

There is some evidence of minor faulting. The dominant fracture zone is a north-south trending zone underlying the Groot Dwars River. There is some suggestion that a fractured zone up to 900m wide is extensively intruded by dolerite dykes, narrowing southwards.

BCM1, BCM2 & Emergency Escape Portal: There are two major faults associated with this area, the first major fault, namely the St. Georges fault, has a down-throw of an unknown quantity towards the east and the second is a graben structure with a down-throw of 100m. Towards the south of BS1/2, the geological structure is extremely complex with development of several synforms and antiforms.

In addition to this, the ground geophysical survey performed during the 2011 Future Flow Fairway study in the Groot Dwars River valley shows the presence of several geological structures that could act as preferential groundwater flow paths. Packer testing performed on exploration boreholes in the valley also confirmed the presence of zones of high hydraulic conductivity associated with these structures.

Figure 7-1 Geology of the Project Area (Future Flow, 2016)



7.2 Climate

The Booysendal Operation (including BCM1, BCM2 and BS4) is located on the eastern escarpment, on the border of the Highveld and Northern Transvaal climatic zones of South Africa (Schulze, 1974). The area is a summer rainfall area with most of the rainfall occurring from October to March as showers and thunderstorms. The winter months are normally dry. The area is characterised by a temperate climate with warm summers and cold winters.

Most of the Phase 2 Project Area is in the Groot Dwars River valley where temperatures are characteristic of valley climates. While BS4 is mainly on the plato. Daily temperatures can be high and winds are localised within the valley.

The site does not fall within an air quality priority area declared in terms of section 18(1) of NEMAQA, but dust fall monitoring may be required. The activities planned on site also do not trigger requirements for an AEL.

There is a weather station on site at BN from 2012 and data was sourced as follows:

- Long term data sets on wind and temperature from the South African Weather Service ("**SAWS**") station at Lydenburg (WO554816), Mpumalanga Province, 35 km east of the site as the crow flies;
- Mean annual precipitation, general precipitation and evaporation data was sourced from the Water Resources of South Africa (WR2005) Water Research Commission (reports TT380 to 382/08) and from the DWS Hydrological Information Systems for Station B4E003 (Buffelshoek Dam) (1 October 1971 to 1 January 2016) approximately 25 km to north east of the site;
- Monthly evaporation was sourced from the Roossenekal weather station (DWS No B4E004; SAWS No. 553762 W); and
- Short term data set (two years) taken from the Booysendal Weather Station located at BN.

7.2.1 Regional Temperature

The temperature of Lydenburg has average temperatures ranging between highs of 18.3ºC and 25.9ºC in the warmer summer months and lows of 2.7ºC and 14.7ºC in the winter months (Table 7-1). The annual average temperatures range between 9.5ºC and 22.9ºC. Extreme temperatures of 34.5ºC have been experienced in summer and lows of 5.9ºC in winter.

Table 7-1 Average, Minimum and Maximum Daily Temperatures (0C) for Lydenburg (SAWS, 1962-1990)

MONTH	**TEMPERATURE**		
	Average maximum (ºC)	**Average minimum (ºC)**	**Average (ºC)**
January	25.9	14.7	20.3
February	25.5	14.2	19.8
March	24.8	12.9	18.8
April	22.6	10.0	16.3
May	20.8	6.0	13.4
June	18.3	2.8	10.6
July	18.8	2.7	10.7
August	20.9	4.8	12.8
September	23.6	8.1	15.9
October	24.0	10.8	17.4
November	24.2	12.7	18.4
December	25.2	14.1	19.6

7.2.2 Regional Precipitation and Evaporation

The Mean Annual Precipitation (MAP) is calculated from between 648 and 721 mm for the area, whilst the Mean Annual Evaporation (MAE) ranges between 1800 and 2000mm (A-Pan estimate) and between 1400

and 1500mm (S-Pan estimate). From Table 7-2 it is clear that evaporation greatly exceeds rainfall in the area both on a monthly and on an annual basis. The more significant rains occur in summer in the form of thunderstorms.

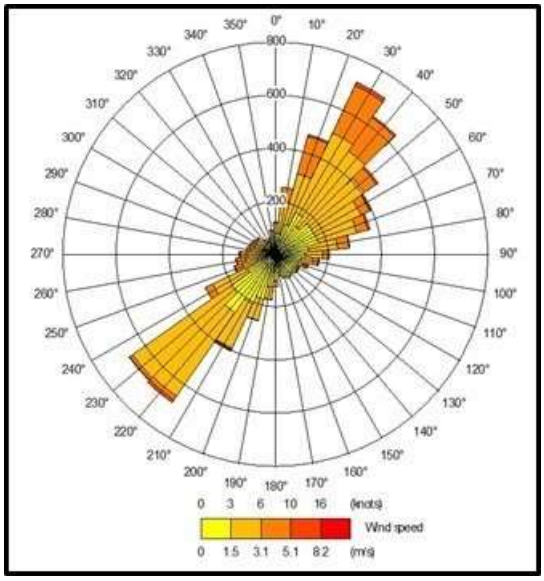
Table 7-2 Average Rainfall and Evaporation (DWS Station No. B4E003 – Buffelshoek Dam: Oct 1971 to Dec 2015)

Month	Average Monthly Rainfall (mm)	Average Evaporation (mm)
January	133.4	182.1
February	82.1	157.5
March	70.8	150.5
April	49.1	122.1
May	14.7	105.9
June	7.2	89.4
July	5	104.9
August	9.7	139.2
September	24.4	169.6
October	71.4	185.9
November	133.3	167.6
December	128.9	181.6
Total	**730**	**1756.3**

7.2.3 Regional Wind Speed and Direction

Regional wind flow can be characterised by the wind data from Lydenburg, although these winds will not indicate the local wind flows in the valley where the Phase 2 Project Area is located. The annual wind rose for Lydenburg is given in Figure 7-2. The dominant winds are from the north east and the south west with wind speeds over 8 m/s for short periods of time. Most wind speeds are low, mainly below 6 m/s.

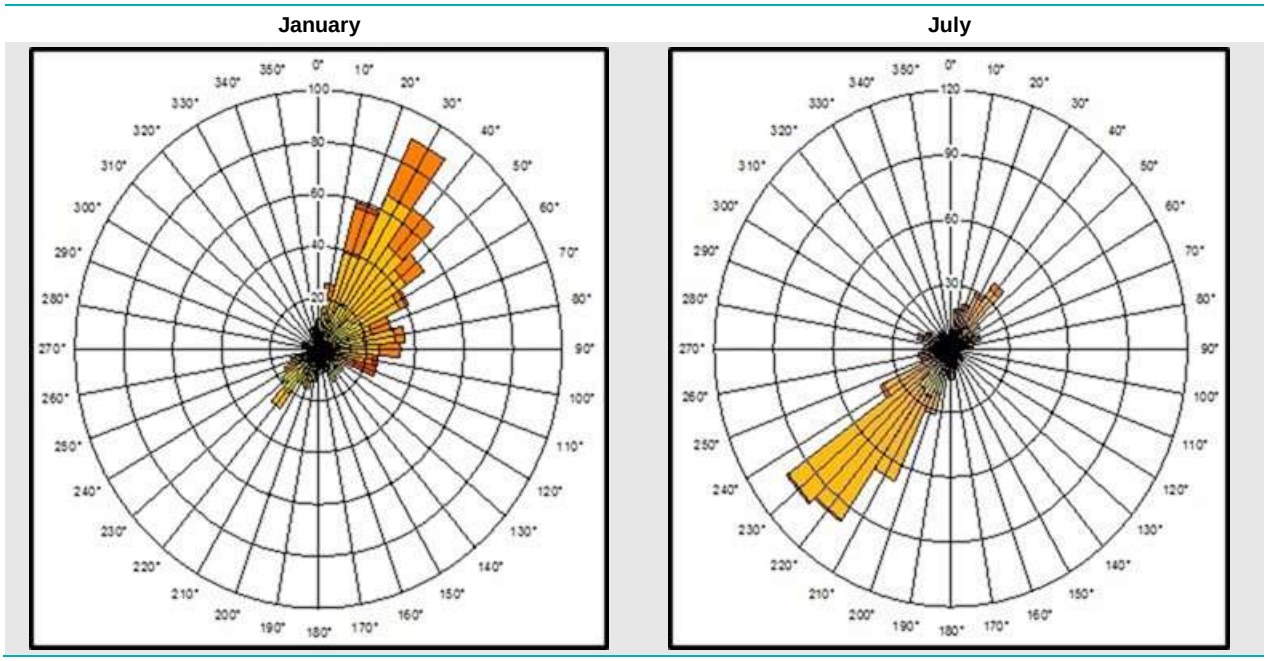
Figure 7-2 Annual Wind Rose for Lydenburg (SAWS, hourly data, 2014)



From Figure 7-3 it can be seen that the winds at Lydenburg are predominately from the north east in January (summer) and from the south west in July (winter). Highest wind speeds are experienced during

the summer (3 - 8 m/s), probably associated with thunderstorm activity. Temperature inversions are likely during the cooler months of winter with a stable atmosphere and low wind speeds. At these times pollutants can be trapped in the atmospheric layer close to the earth's surface (boundary layer) and concentrated with minimal vertical mixing and dilution.

Figure 7-3 Wind Rose for January (summer) and July (winter) for Lydenburg (SAWS, hourly data, 2014)



7.2.4 Local Climate

The local climate data was obtained from Booysendal's on-site weather station at BN which was established in 2014 and has collected data for over four years. Winds were calculated from MM5 data. Its location at the top of the Groot Dwars River valley means that the weather station is outside the valley itself and the micro climate of the valley experienced by the Project will not be recorded. It will, nonetheless, provide a more relevant description of the area's climate than a regional station over 30 km distant.

7.2.4.1 Temperature and Relative Humidity

The average temperatures for Booysendal as per the onsite weather station are shown in Table 7-3. This is taken from two years' data (with a data availability of greater than 99%). The overall average temperature for the two years is 19.7ºC. The highest maximum over the two-year period was 35.3ºC (November 2015) and the lowest minimum was 4.4 ºC (June 2014).

7.2.4.2 Local Rainfall and Evaporation

Rainfall measured at the Booysendal Station for the years 2014 and 2015 indicates an annual average rainfall of 691.7mm (Figure 7-4; Table 7-4). Little to no rain is experienced in the winter months with most of the rainfall between December and March.

Table 7-3 Average, Maximum and Minimum Temperatures (^{0}C) and Relative Humidity – Booysendal Weather Station

Month	2014				2015			
	Temperature (ºC)	Temperature (ºC) Maximum	Temperature (ºC) Minimum	Relative Humidity	Temperature (ºC)	Temperature (ºC) Maximum	Temperature (ºC) Minimum	Relative Humidity
January	23.43	31.32	16.14	71.71	22.47	31.46	15.41	69.99
February	22.73	30.97	15.14	64.58	23.15	32.97	14.23	66.22
March	20.97	31.09	13.12	74.56	21.56	30.93	11.81	64.29
April	18.48	28.48	10.60	62.08	18.90	27.88	10.99	70.67
May	17.51	27.60	8.78	52.69	19.06	25.72	10.80	48.50
June	15.05	27.21	4.37	43.59	14.46	18.68	5.71	49.50
July	14.24	24.63	4.70	46.35	15.13	24.77	6.10	52.08
August	16.83	29.30	4.49	39.02	18.25	30.96	5.46	46.54
September	20.07	33.92	6.89	42.93	19.67	33.52	8.71	54.35
October	19.53	33.32	9.93	57.07	22.64	34.48	10.55	51.67
November	20.76	30.61	10.21	65.47	22.25	35.31	10.40	51.48
December	22.05	33.15	13.78	70.02	24.39	33.95	10.40	62.39

Figure 7-4 January 2014 to December 2015 Rainfall (Booysendal Weather Station)

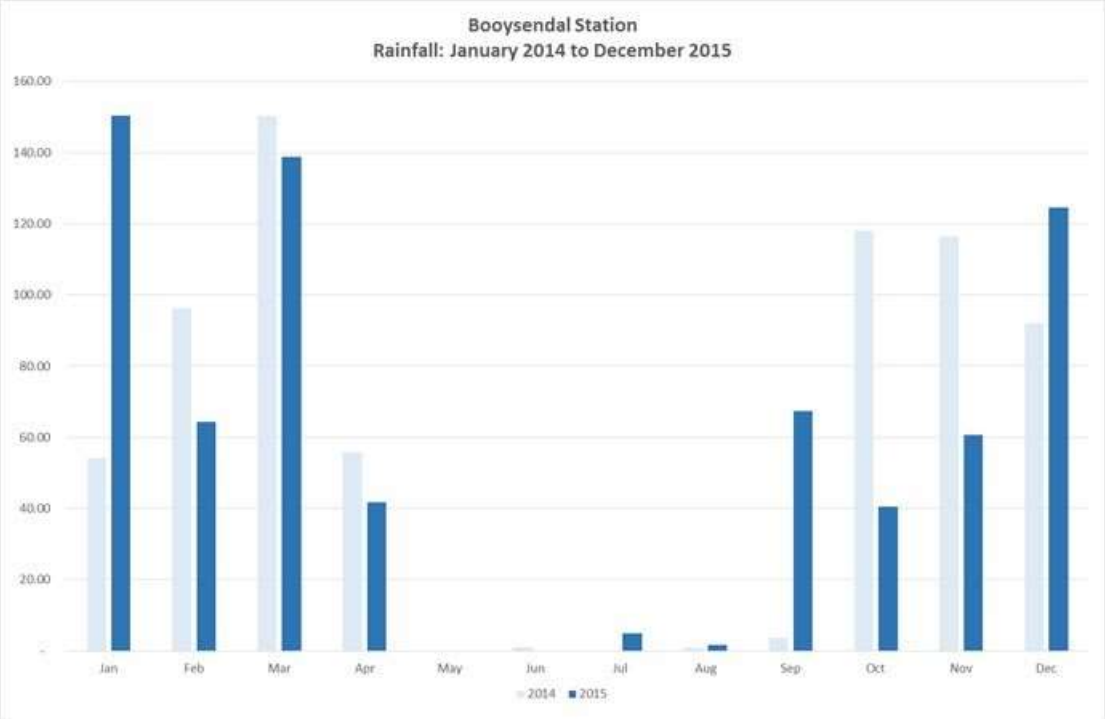


Table 7-4 Monthly Rainfall Distribution for Booysendal (DWAF B4004 and Booysendal Weather Stations)

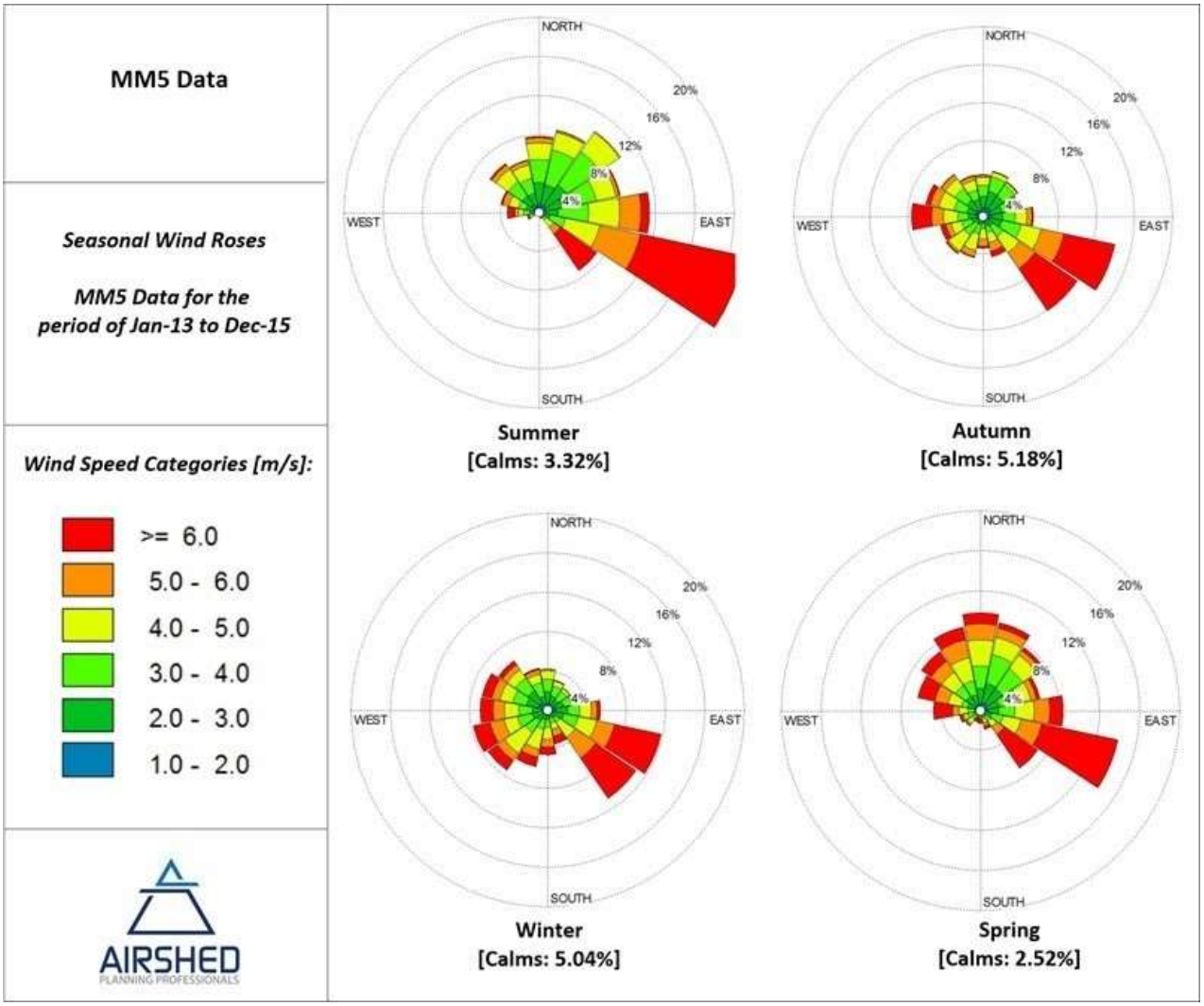
Month	Rainfall (mm)		Lake Evaporation (mm)
	DWAF Station No.4004	Booysendal Station	DWAF Station No.4004
January	120.9	102.3	118.2
February	93.4	80.3	110.4
March	74.0	144.6	103.1
April	34.6	48.8	83.8
May	13.4	0.0	71.2
June	7.3	0.5	56.4
July	3.1	2.4	58.4
August	7.4	1.2	73.9
September	17.4	35.5	94.1

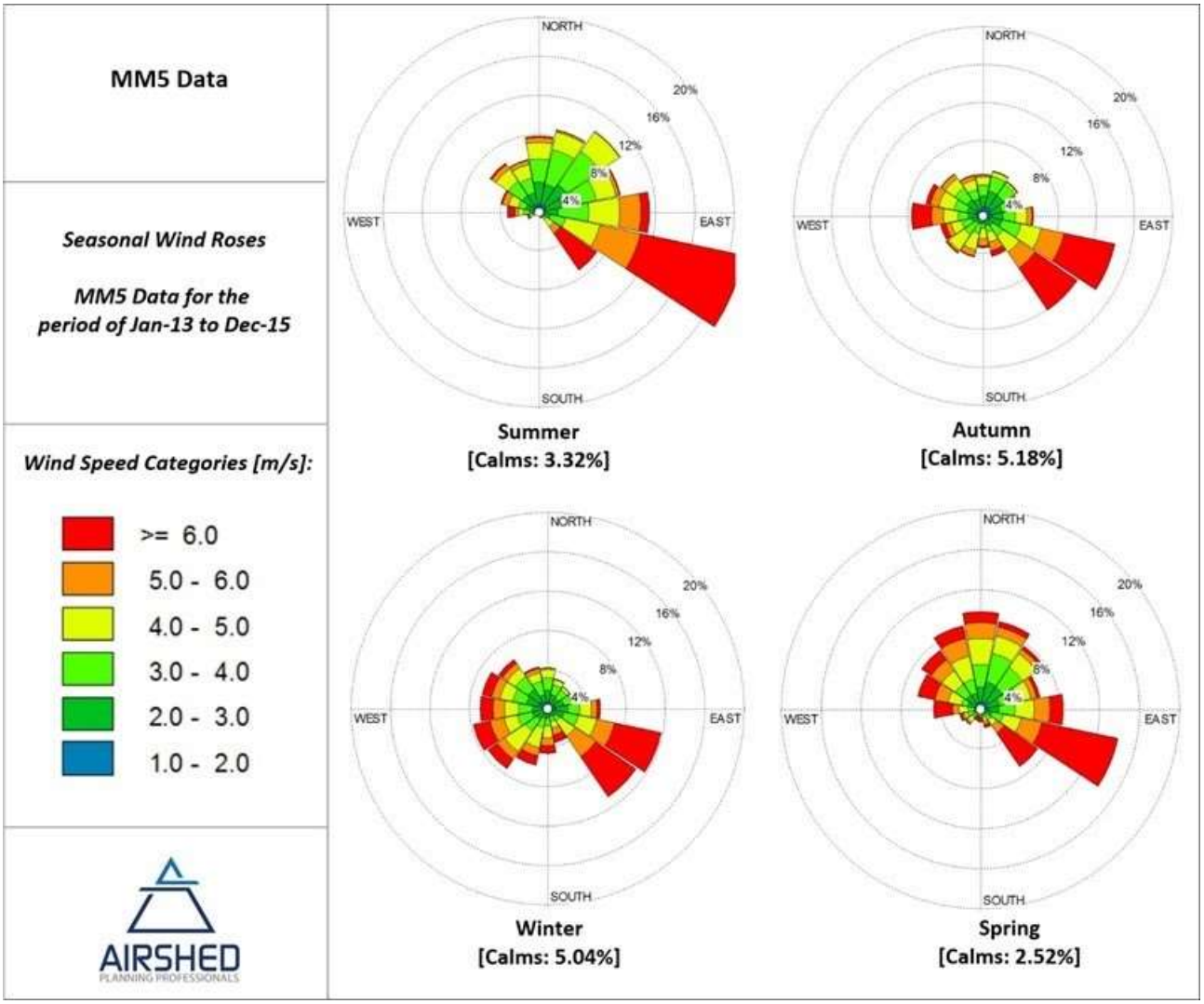
Month	Rainfall (mm)		Lake Evaporation (mm)
	DWAF Station No.4004	Booysendal Station	DWAF Station No.4004
October	68.8	79.3	107.9
November	123.8	88.5	108.0
December	117.0	108.3	116.0
Total	**683.0**	**691.7**	**1101.4**

7.2.4.3 Local Wind Speed and Direction

Winds will be topographically induced due to the steep valleys encountered at the Phase 2 Project Area. Anabatic and katabatic flows will be present, influenced by the degree of heating and cooling of the valley sides and the gradient of the valley floor. Refer to Figure 7-5 for modelled wind speed and direction.

Figure 7-5 Local Wind Rose for BS (MM5 data) for 2013 to 2015 (Airshed, 2016)





In general, the wind-field is dominated by south-easterly winds, with calms 2.77% of the time (Figure 7-5). The slope of the terrain accounts for the increased frequency of occurrence of northerly and north-westerly wind during the day-time and increased south-easterly winds during the night-time. The differential heating and cooling of the air along a slope typically results in down-slope flow at night (from BS4 into the valley), with low-level up-slop airflow occurring during the day (from the BCM complexes to BS4). Winds are mainly south easterly in the winter and swing to north east and northerly in the summer. Calms increase to 4.39% in winter as opposed to 1.71% in summer. Wind speeds between 3 and 10 m/s dominate with exceedances of 10 m/s occurring less than 1% of the time.

The main part of the Phase 2 Project Area is situated in a secluded river valley with minimal development and no other activities. The potentially sensitive receptors have been identified as those occupying the dwellings near BS4 (homesteads, schools and educational centres) and individual homesteads the east of the Phase 2 Project Area in the higher land above the Klein Dwars River valley.

7.3 Noise

The Project Area falls largely within the Groot Dwars River valley with links to BN and some activities occurring on BS4, both located on the valley edge to the north and the south east respectively. The BN complex is the only operational mine in the immediate vicinity of the proposed Project, with BS4 still being

on care-and-maintenance. Noise emissions would be expected from BS4 when operations from the proposed, concentrator plant and associated infrastructure becomes operational again as part of the Booysendal South Expansion Project Phase 2.

Disregarding the present construction activities being carried out at BS1/2 and between BN and BS1/2, as well as between BS1/2 and BS4, there were no mechanical noise sources in the vicinity apart from traffic at BN and BS4. Existing construction noise is limited to daytime.

7.3.1 Ambient Noise Levels

According to the noise study which was undertaken in 2002 by Francois Malherbe (FM/AC) for the establishment of the Booysendal Mine, the daytime noise level was recorded as 35.0dBA and during the night 26.6dBA. The study found that the use of mechanised activities in the valley will cause a significant increase in the prevailing ambient noise levels with an increase at 500m from BN by 10.0dBA, at 1 000m by 7.0dBA, at 1 500m by 5.0dBA and at 2 000m by 3.0dBA. The results of this noise study showed that the proposed mining development will increase the prevailing ambient noise levels but this will be restricted to the Groot Dwars River Valley which is hemmed in by tall hills and mountains (Malherbe, 2002).

The 2011 noise survey done by Acusolv for the proposed expansion of BS4, the arithmetic average of the daytime noise levels was 46.0dBA and during the night time 41.0dBA. These measurements were obtained from farms, residential settlements and near roads and reflect a noticeably higher noise environment than that of the undeveloped Dwars River Valley.

The prevailing noise levels in the vicinity of the Project Area (not taking the existing construction activities into consideration) are shown in Table 7-5. These levels were obtained from the follow-up studies undertaken by dBAcoustics in 2016 and 2017. The noise sources are:

- BN – mining, processing plant, traffic (haul vehicles, busses, light motor vehicles), ground vibration from blasting, mine ventilation;
- BS1/2 – drilling and exploration activities, road evaluation activities, traffic along existing roads; and
- BS4 – mining and concentrator (not yet operational).

Table 7-5 Prevailing Noise Levels (dBA) in the Project Area (dBAcoustics, 2017)

Mine	*Area*	*Noise Level (dBA)*	*Time of day*
BN	Boundary of plant footprint	62.2dBA - 79.5dBA	Day and Night
BN	Plant footprint	49.7dBA	Day
BN	Access road to mine	63.5dBA	Day
		58.4dBA	Night
BS2	At source with excavations/ earthworks	74.1dBA	Day
		35.4dBA	Day
		28.8dBA	Night
BS4	Conveyor and concentrator plant (not operational)	30.7dBA	Day
		37.8dBA	Night
BS4	Residential area to east of concentrator	33.8 - 38.6dBA	Day
		28.2 - 37.4dBA	Night
BS4	Residential area to north of concentrator	27.4 - 33.7dBA	Day
		36.0 – 36.5dBA	Night
BS4	Access road to mine	50.1 – 54.7dBA	Day
		34.5 – 53.4dBA	Night

In general, it was found that the present noise levels were 34.0dBA to 35.4dBA during the day and 28.8dBA to 32.0dBA during the night.

7.3.2 Closest Noise Receptors

The noise sensitive receptors to the south and east of the Phase 2 Project Area are illustrated in Figure 7-6. The distances between the different project components will play a major role amongst other physical attributes in the noise propagation from the different noise sources to the noise sensitive areas (Table 7-6). These residential areas were exposed to mine activity noise sources during the time BS4 was in production.

Figure 7-6 Closest Noise Receptors (dBAcoustics, 2017)

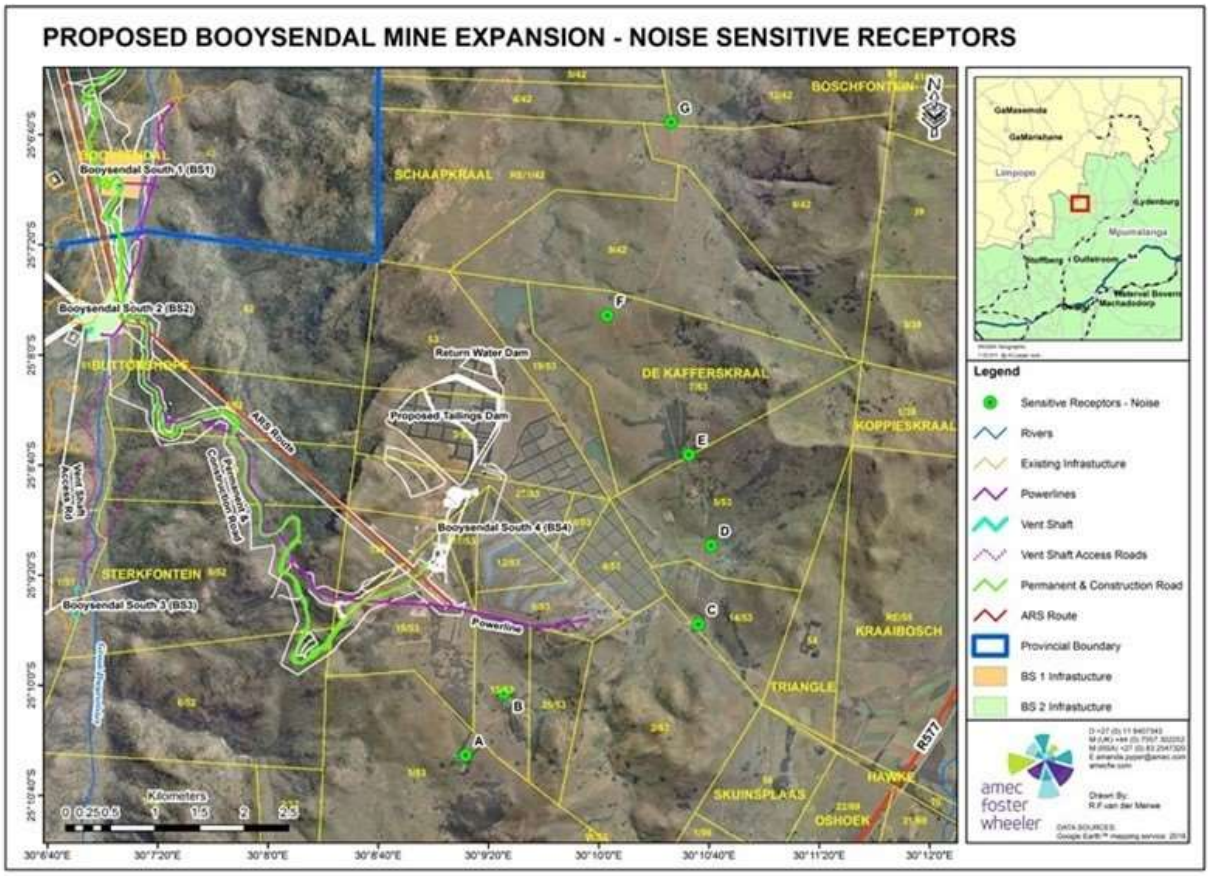


Table 7-6 Distance (m) between Noise Receptors and Project Activities

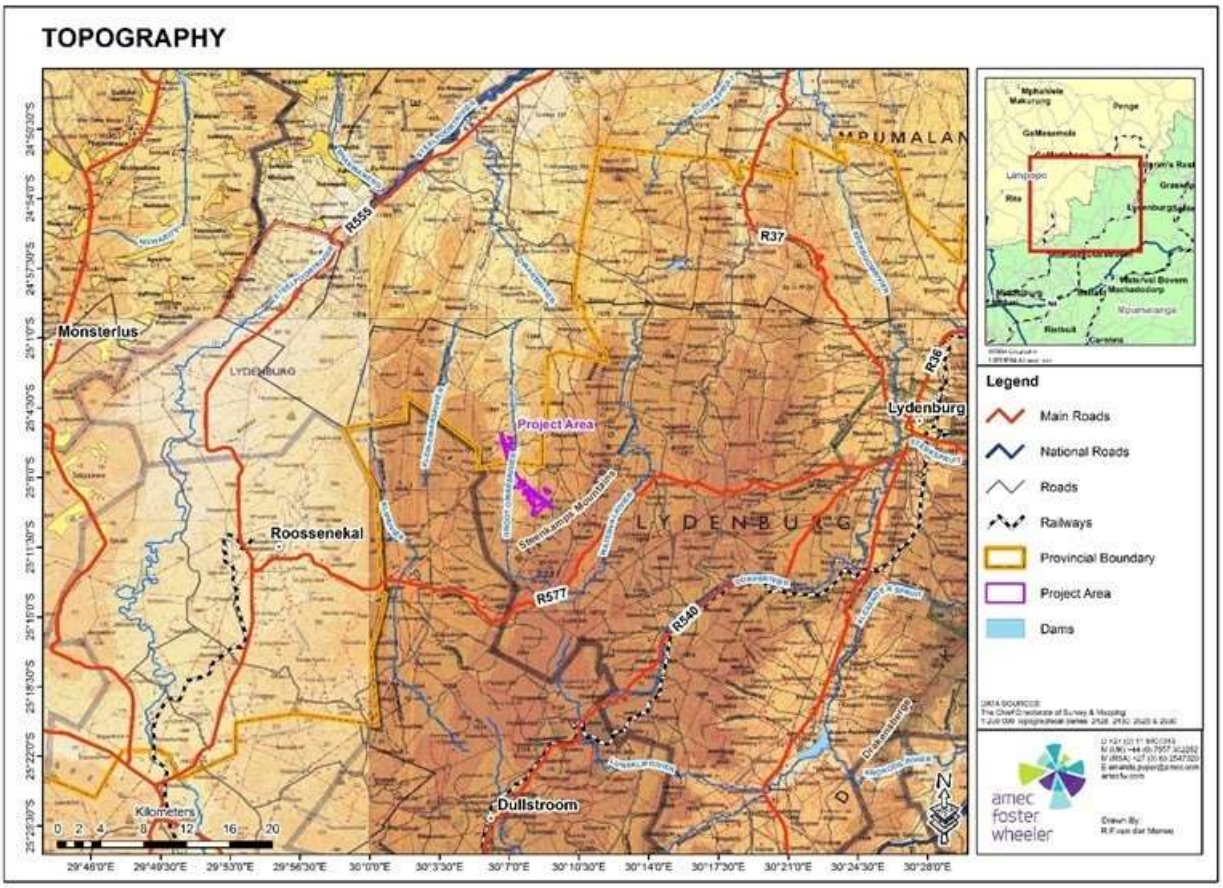
Noise Receptor	Distance to Sensitive Noise Receptor (meters)						
	BN	**BS1**	**BS2**	**BS3**	**BS4**	**Aerial conveyor (Ropecon)**	**Bus route**
A	6 370	6 117	6 514	2 430	5 349	5 485	5 762
B	8 866	5 557	6 236	2 542	1 195	1 223	1 610
C	9 609	6 888	7 393	4 594	1 225	3 611	4 324
D	9 016	6 485	7 084	4 825	1 329	3 397	8 992
E	8 138	5 969	6 500	4 782	1 895	3 250	4 055
F	6 338	4 943	5 432	5 080	3 507	3 602	3 978
G	6 370	6 117	6 238	7 073	5 349	5 485	5 762

7.4 Landscape and Topography

The landscape of the region can be described as mountainous traversed by deep river valleys which drain north to the Steelpoort River. The Dwars River is one of its main tributaries and is a perennial river easing on the western slopes of the north-south trending Drakensburg Mountains.

The Steelpoort River is one of the sub basins of the Olifants River basin and lies mainly on an escarpment between 1 500 and 2 400 mamsl. The Steenkampsberge are one of the main mountainous areas of the basin (refer to Figure 7-7).

Figure 7-7 Regional Landscape and Topography

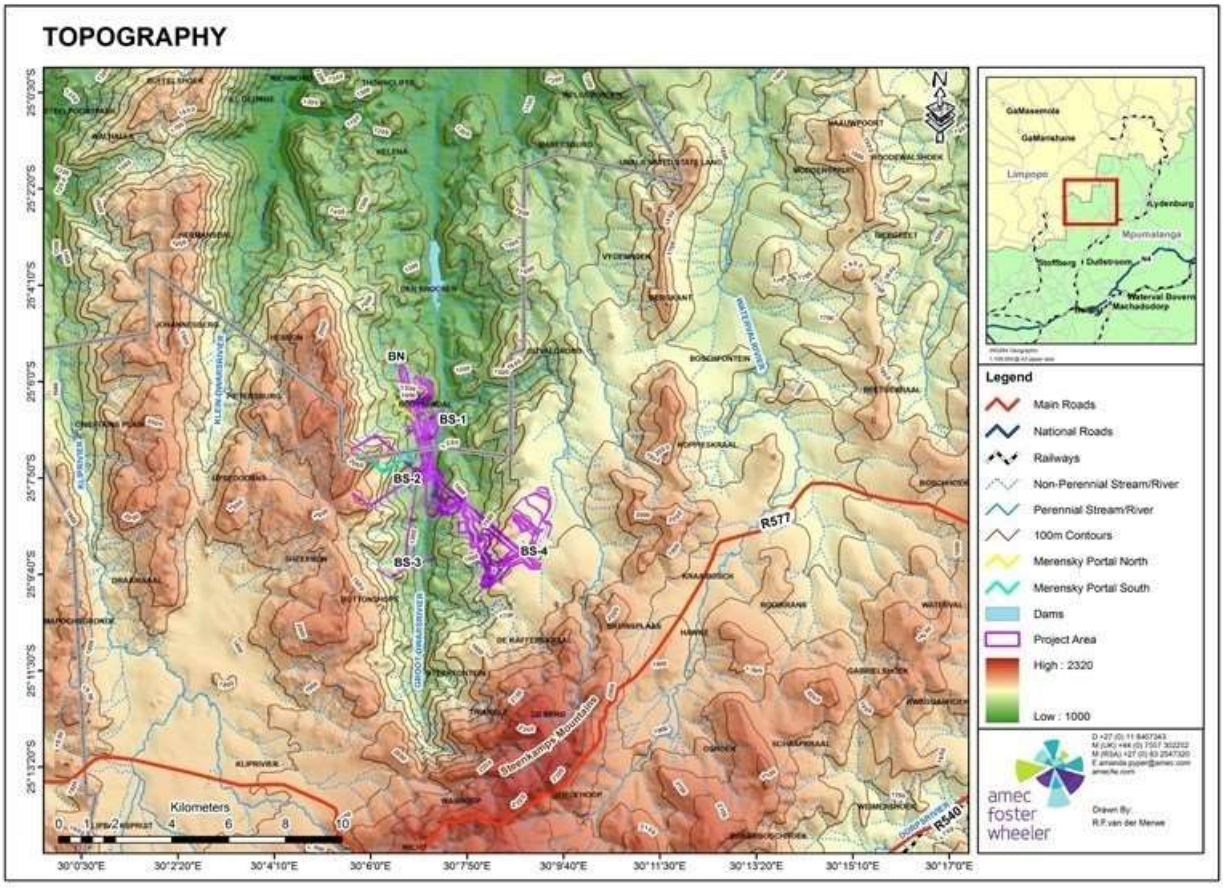


The topography of the Phase 2 Project Area comprises rugged mountains with steep sided river valleys with the following topographical features:

- BCM1 and BCM2 development, as well as the ARC and services, will occur in the Groot Dwars River valley. This valley runs north-south and is located south of the BN mine and to the west of BS4. From west to east, the steep valley ranges in altitude from 1 052 metres above mean sea level ("**mamsl"**) at valley bottom to 1 760 mamsl at the edge of the ridges on the eastern and western side of the valley.
- BS4: The Steenkampsberge form a prominent feature stretching north-south to the east of the area rising to 2 2024 mamsl with BS4 located on a terrace between 1 600 and 1 700 mamsl near the foot of the De Berg peak. The mountain range is a curvilinear erosional feature over 25 km long, located up to 7 km east of the Groot Dwars River.
- The Klein Dwars River valley which flows parallel to the Groot Dwars River in a steep valley to the west.

- The terrace in the northern part of the Phase 2 Project Area where the BN complex is situated to the west above the river between 1 300 and 1 400 mamsl.
- The ruggedness of the terrain increases further south of the Phase 2 Project Area. The general steep gradient, the lack of availability of large gently sloped areas and the many drainage lines present several challenges in terms of the construction and placement mining and mining related infrastructure. The topography of the Project area is shown in Figure 7-8.

Figure 7-8 Topography of the Project Area



7.5 Surface Water

7.5.1 Rivers and Catchments

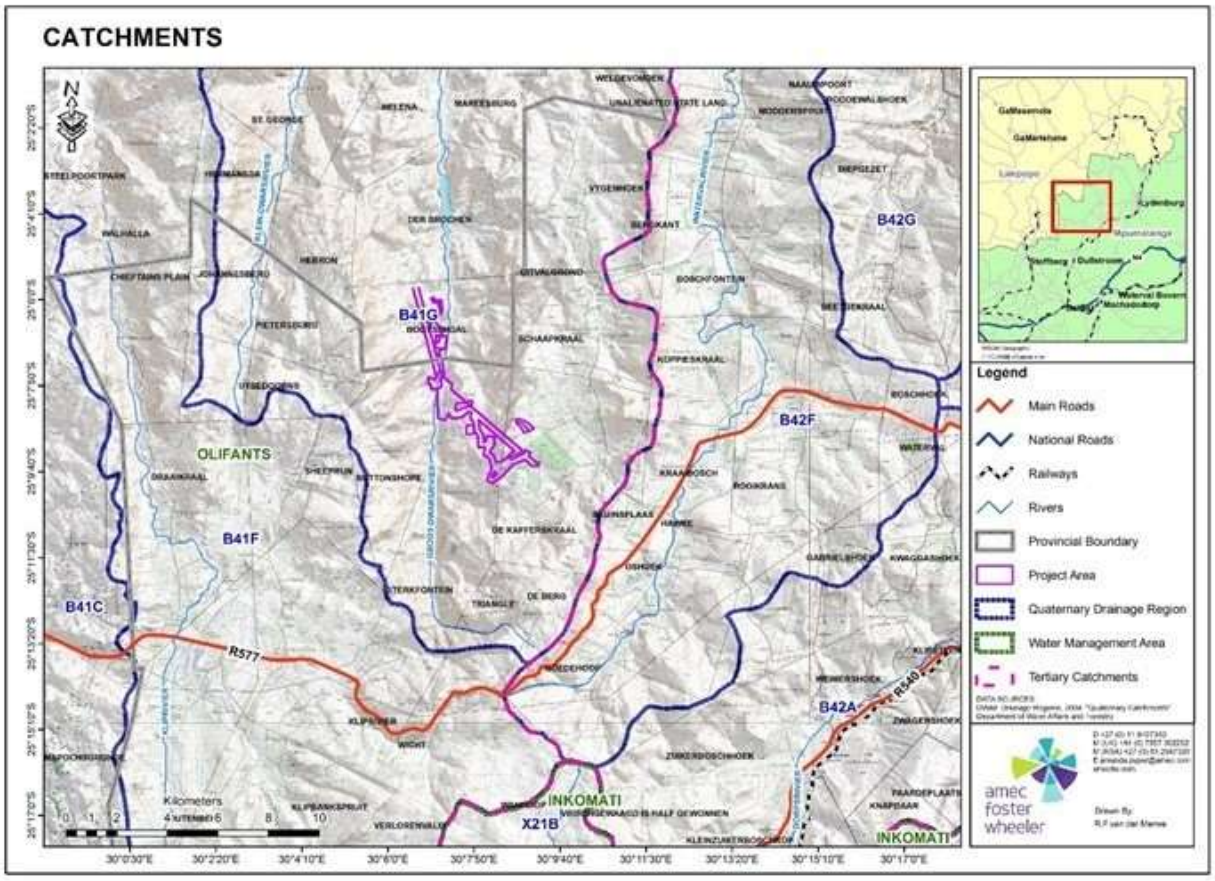
The Phase 2 Project Area falls within the Groot Dwars River quaternary drainage catchment (B41G) in the Olifants River Water Management Area 4 (WMA4) (Figure 7 9). The Groot Dwars River, and several of its non-perennial drainage lines run through the Booysendal Operation flowing from south to north. The Groot Dwars flows into the Der Brochen Dam 2 km north of BN. The Groot Dwars River is the most significant surface water resource in this quaternary catchment joining the Klein Dwars to the north before joining the Steelpoort River approximately 2 km downstream of the De Hoop Dam.

The Steelpoort River ultimately flows into the Olifants River Basin. The Olifants Catchment covers about 54 570 km^2 and is subdivided into 9 secondary catchments. The Olifants River originates near Bethal in the Highveld of Mpumalanga and initially flows northwards before curving in an easterly direction through

the Kruger National Park and into Mozambique where it joins the Limpopo River before discharging into the Indian Ocean. WMA4 falls within three provinces - Gauteng, Mpumalanga and the Limpopo Province.

The river system within which the Booysendal Operations is located is therefore of significant national importance. The quaternary catchment delineation for the Booysendal South Expansion Project is shown in Figure 7-9.

Figure 7-9 Quaternary Catchment B41G Olifants River Water Management Area



The hydrological characteristics of B41G and the Groot Dwars River within which BCM1, BCM2 and BS4 fall, are summarised in Table 7-7 and Table 7-8.

Table 7-7 Hydrological Characteristics of Catchment B41G (Letsolo Hydrological Report, 2016)

Surface Area	443.6 km^2
Mean Annual Precipitation (MAP)	721 mm/a
Mean Annual Runoff (MAR)	66 mm/a

Table 7-8 Hydrological Characteristics of the Groot Dwars River (Letsolo Hydrological Report, 2016)

Surface Area	*176.5 km^2*
Mean Annual Rainfall	721 mm/a
Mean Annual Runoff	66 mm/a
Longest Watercourse	28.2 km (measured to the inlet of the De Brochen Dam)
1085 Slope	0.017 m/m

There are at least 27 smaller catchment areas within the Phase 2 Project Area.

BS4:

These small, mainly ephemeral tributaries have no names and are crossed a number of times by the infrastructure components of BS4. BS4 is drained by two perennial streams, referred to as the East (De Kafferspruit) and West (Everest) streams with two dams, namely the TKO dams, located on the East Stream downstream of BS4's infrastructure but fed as well by the West Stream. The East Stream then flows in a northerly direction before joining the Groot Dwars River upstream of the Der Brochen Dam.

BCM1, BCM2 and Infrastructure:

A large number of non-perennial and perennial streams are associated with the Booysendal North MR. These streams have their origins against the steep slopes, with high velocityrun-off. Several of the proposed infrastructure components cross or are located within of less than 100m from some of these watercourses.

Using the Smithers and Schulze method, based on data taken from the six nearest rain stations which have similar mean annual precipitation and altitudes, the depth-duration-frequency rainfall estimates were calculated for the Project Fairway EMP (SLR, 2011). The calculated rainfall estimates are provided in Table 7-9 for various durations.

Table 7-9 Depth Duration Frequency Estimate - Smithers and Schulze (2002) Method (Source: SLR, 2011)

Duration (hours)	**Rainfall Depth (mm)**						
	1:2yr	**1:5yr**	**1:10yr**	**1:20yr**	**1:50yr**	**1:100yr**	**1:200yr**
0.08	8.4	11.1	13.1	15	17.7	19.8	22.1
0.167	12.2	16.2	19.1	21.9	25.8	28.9	32.2
0.25	15.3	20.3	23.8	27.3	32.2	36.1	40.2
0.5	19.4	25.7	30.2	34.7	40.9	45.9	51
0.75	22.3	29.6	34.7	39.9	47.1	52.7	58.7
1	24.6	32.7	38.3	44.1	52	58.2	64.8
1.5	28.3	37.5	44.1	50.7	59.8	67	74.5
2	31.3	41.5	48.7	56	66	73.9	82.2
4	36.6	48.6	57	65.6	77.3	86.6	96.3
6	40.2	53.3	62.5	71.9	84.8	95	105.6
8	42.9	56.9	66.8	76.8	90.5	101.4	112.8
10	45.1	59.8	70.3	80.8	95.2	106.7	118.7

12	47	62.4	73.2	84.2	99.3	111.2	123.7
16	50.2	66.6	78.2	89.9	106	118.8	132.1
20	52.8	70.1	82.3	94.6	111.5	125	139
24	55.1	73	85.8	98.6	116.3	130.3	144.9

7.5.2 Floodline Delineations

A floodline delineation for BS4 and the Groot Dwars River was done. Delineation for BCM1 and BCM2 still needs to be undertaken. The floodlines in relation to the proposed infrastructure will be analysed in detail during the will be included in the EIA phase.

7.5.3 Hydrological Sensitivities

The provisions of the NWA require that no development may take place within the 1:100yr floodline or 100m from the edge or drainage line and further prescribes that a water use needs to be applied for within a 500m buffer between wetland areas and areas of where development is set to commence. These buffers are therefore deemed as sensitive areas from a hydrological perspective. The 100m buffer for the smaller drainage lines and the buffers for the wetland sensitivities will be determined as part of the hydrological assessment during the EIA phase.

The upstream catchment of the Groot Dwars River is also considered as a sensitive environment due to the pristine nature of the surface water resource. The whole of the Groot Dwars River system is regarded as a Freshwater priority area ("**FREPA**").

7.5.4 Surface Water Quality

Surface and groundwater quality monitoring at the Booysendal Operations commenced in 2003 at BS4 and 2009 at BN. A trend analysis for the Booysendal South Expansion Project Phase 1 was carried out by Aquatico in 2017. The baseline results are detailed in this Section.

7.5.4.1 BS4 Process Water Dams

There are various process water dams at BS4 of which the RWD, settling pond and MCC1 will be used as part of this specific phase of the expansion. The trend analysis found that the process water quality at the BS4 is good, as these areas mainly contain storm run-off due to the mine being under care and maintenance for several years. The process water dam qualities are summarised as follows:

- The pH varies between 7 and 10, indicative of neutral to alkaline ranges. The ideal water quality ranges for process water to be re-used in industrial processes are between 7 and 8. Higher alkalinity could lead to scaling of equipment;
- The EC-values for the BS4 process water dams were below 100mS/m, which is within the acceptable range of the Special Limit for waste water discharge. A decrease in water quality of the process water dams at BS4 can be expected once the mine becomes operational again; and
- The BS4 process water dams generally complied with the Dwars River limits for Mg, Cl and K with only slight exceedances of the Ca and Na limits. The SO_4 concentrations were mainly.

7.5.4.2 BS4 Tributaries and Dams

The Western (NBS W1 & NBS W2) and Eastern tributaries (NBS E3, NBS E2 and NBS E1) flow around the BS4 operations, where both flow towards the TKO1 and TKO2 dams downwards to Everest Tributary (NBSW03) into the Groot Dwars River. This locality is vital as any spills or seepage that occurs at BS4 will

be picked up at this downstream locality. Refer to Figure 7-10 for monitoring points. The general water quality trends of the dams and tributaries indicate that:

- The receiving environment localities which include the TKO dams, western- and eastern tributaries, indicated neutral pH-values which fluctuate between 7 and 8.5;
- The electrical conductivity had high levels at NBSW03 during January 2015 and March 2015 with concentrations that decreased and remained stable towards the end of 2017; and
- All the selected variables had indicated the same spike in concentrations at NBSW03 with only slight variations recorded towards 2017. The concentrations mainly complied with the Instream Dwars River values for Ca, Mg, K and Na. Locality NBS W1 was recorded as dry October 2016, after which slightly higher SO_4 concentrations were measured during November 2016 and December 2016.

7.5.4.3 Booysendal North MR Process Water Dams

As there are currently no process operating water dams in the vicinity of BCM1, BCM2 or BS1/2, the water quality of the Frog PCD at BN was regarded as representative operating water qualities of Booysendal North MR. As with BS4 the pH is neutral ranging between 7 and 10. The electrical conductivity (EC) value ranges between 100mS/m and 400mS/m. This level exceeds the DWS 2013 special limits for section 21(f) and section 21(g) water uses. The SO_4, NO_3_N and Cl concentrations also at times exceed acceptable water quality limits.

7.5.4.4 Booysendal North MR Rivers and Streams

There are many smaller watercourses in the AoI of which the water quality is near to pristine and which serves as habitat to sensitive aquatic organisms (refer to aquatic section). An analysis of the water qualities of the Groot Dwars River was done as part of the Section 24G EA EIA phase by Aquatico, 2017. A summary of the results indicates that:

- The pH-values in the Groot Dwars River were neutral to alkaline during the baseline assessment and correlates with the other natural water system in the area);
- The EC, Ca, Mg, Na, K and NO_3_N recorded very low concentrations even compared to the DWS Water Quality Standards, 1996;
- During February 2015, the NBSW04 (refer to Figure 7-10) locality has an outlaying value in all the measured concentrations, which can be related to the higher concentrations measured at the BS4 East Tributary (NBSW03) during the same period;
- The Al concentrations at all the localities in the Groot Dwars River indicated similar fluctuations during December 2016 to February 2017; and
- After heavy rainfall in December 2016 and January 2017, the water quality improved in the entire river system, with only NBSW02, the Der Brochen dam downstream area, which remained the same. The water quality in the Groot Dwars River catchment varies during seasonal changes as the up-and downstream localities displayed similar trends throughout the assessment period.

Although the water quality remains generally good, it is a sensitive environment and portrays any impacts in the trends quickly.

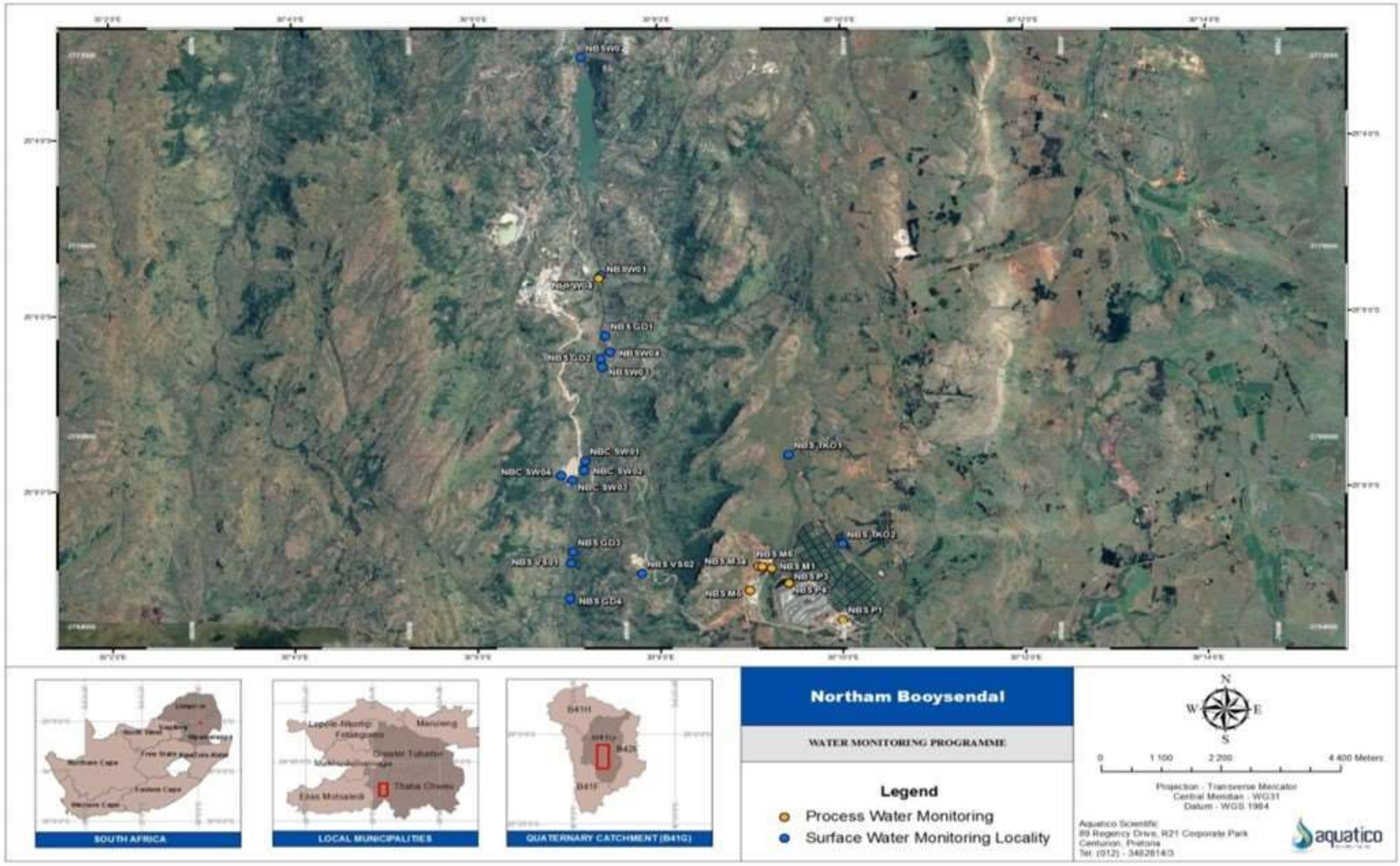
In summary trend analysis indicates that water quality in the Groot Dwars River catchment varies during seasonal changes as the up-and downstream localities displayed similar trends throughout the assessment period.

The natural water systems within the mining operations indicated water quality with a neutral to alkaline pH-value as well as very low to low anion and cation loads. The natural water quality fluctuates with the changes in seasons as well as rainfall in the area. Slightly higher aluminium concentrations seem to be a natural occurrence and the measured Al concentrations are most likely to be in a suspended state (due to

the neutral pH at all the localities) rather than in solution as would be the case under more acidic pH conditions.

The process water quality at BS4 indicates similar water quality to that measured at the natural water systems, as the process facilities have not been operational because of the BS4 mining operations being under care and maintenance. The NBPW03, Frog PCD, is a process water locality situated in the valley and process water from BN is stored for re-use. The water quality at the process water locality is an indication of typical process water, with very high to elevated anions and cations, and more alkaline pH-values.

Table 7-10 Surface Water Monitoring Points at the Booysendal Operation (Aquatico, 2017)



7.6 Groundwater

Previous groundwater studies that were done in the area as part of larger EIA or feasibility studies covered a large portion of the current study area, including: current mining development at BN; BS4 and the "Fairway" expansion; BS1/2; BCM1; BCM2; and the area south of BS1/2. Hydro-census and pump tests carried out with these studies assist in providing an overall good understanding of the groundwater regime of the larger Booysendal Operation.

7.6.1 Aquifer Description

There are two main aquifers in the Phase 2 Project Area, an upper weathered aquifer and a deeper fractured rock aquifer.

The upper weathered aquifer is recharged by vertical infiltration of rainfall through the weathered material, retarded by underlying material of lower permeability. Groundwater then migrates down gradient along the contact to lower lying areas, daylighting in places where the contact is near surface as one of the many springs that occur in the area. It can also seep as base flow into the surface water bodies. The aquifer is expected to be seasonally variable with increased groundwater levels and availability during the rainy season. During the dry season, groundwater levels and yields would tend to decline. However, the hydro census (Future Flow, 2017) revealed many springs used by surrounding landowners for domestic and stock watering purposes which indicates that this aquifer yields a sustained water supply year-round. Groundwater can daylight on surface as one of the many springs that occur in the area, or seep as baseflow. This aquifer, therefore plays an important role in water provision to communities within 2km from the Phase 2 Project Area, mainly in the BS4 surrounding areas. This aquifer also contributes to recharge of surface water resources. Any contamination of this aquifer could result in contamination of the surface water resources. The shallower weathered zones are associated with the steep valley sides. Because of the steep valley sides, the recharge of the aquifer is low. The depth to groundwater/ water table ranges between surface and 12m below ground level.

The depth of weathering is expected to be around 20 m below ground level in high lying, relatively flat areas. Areas affected by fault zones could show deeper weathering. Valley slopes have less weathered material and rock outcrops, with reduced infiltration.

7.6.2 Deep Fractured Rock Aquifer

Groundwater flows in the deeper aquifer are associated with secondary fracturing forming discrete pathways along the fractures. The geological data and maps of the study area (refer to Figure 7-1) shows a large number of faults and dykes occurring in the study are. Faults that have a north-northeast to south-southwest strike direction are the main water bearing structures in the area (Future Flow, 2017).

Most of groundwater flows in this aquifer are expected to be along the upper 40 to 50m. Previous studies show that groundwater flows along fractures and faults at depths below around 80m depth below surface decrease markedly due to the weight of the overlying rock material closing the fractures and lowering the yields.

Faults and fractures in the host geology can be a significant source of ground water if they have not been closed by secondary mineralisation. Yields from this aquifer are normally much more consistent than the seasonably variable upper aquifer and this is the aquifer that is targeted by boreholes of the surrounding water users.

7.6.3 Groundwater Levels and Properties

From the hydro-census surveys performed in the area as part of previous studies, it has been established that the depth to groundwater level ranges from surface to 20 metres below ground level ("**mbgl**"), with the

groundwater levels at surface representing the springs that were recorded. Most, if not all, groundwater lies within the weathered material aquifer. Plotting the groundwater level against topographical elevation indicates a 99.76 % correlation. It can therefore be said that ground water levels in the study area mimic topography.

Regional groundwater level and flows are directed from the high lying areas towards the valleys. Groundwater flow gradients are slightly lower than topography and range between 1:5 on the valley slopes and 1:20 in the high lying plateaus and low-lying river valleys. It can therefore be expected that water from BS4 will flow into the Groot Dwars River Valley.

The calculated aquifer hydraulic conductivity for the aquifers in the area range from 0.001 to 4.3 m/day. Two ranges of hydraulic conductivity can be distinguished from the data:

- Hydraulic conductivities less than 0.03m/day – this is associated with the general host geology; and
- Hydraulic conductivities more than 0.1 m²/day – this is associated with fractured zones in the host geology.

Higher conductivity values are associated with open fracture zones. It is assumed that the fracturing extends to at least to the depth of the proposed declines underlying the Groot Dwars River at around 60 to 70m in depth. The conceptual groundwater model in Figure 7-10 depicts the groundwater flow in the Project areas.

7.6.4 Groundwater Quality

It is important to understand the groundwater quality in the Phase 2 Project Area. A groundwater quality monitoring program with 32 monitoring points is in place and an analysis of results from 2009 to December 2015 were undertaken as part of the Future Flow, 2016 specialist study. An overall assessment of the water quality using Piper diagrams indicates that the groundwater samples represent recently recharged water where little to no ion exchange associated with contamination from external sources has taken place. The water quality is homogenous and very good. Most of the chemical parameters fall within the SANS:241 of 2011 drinking water standards. Nitrate levels of the water associated with the underground workings at BS4 at times exceed the SANS:241 limits. This can be attributed to the blasting agents used as part of the previous mining activities. Iron levels in one borehole exceeded SANS:241 limits. As there is no obvious link to contaminants, it is derived that the borehole casing might be the reason for this elevated level. A summary of water quality results at 10 representative sampling points are included in Table 7-11 and the location of the sampling points in Figure 7-11.

7.6.5 Groundwater Users

Landowners and other occupants in the area are dependent on groundwater for water supply purposes. The water is used for a variety of purposes, including domestic use, stock watering and artisanal mining. Hydro-census surveys show that, together with surface water, groundwater is abstracted for domestic and stock water use through boreholes, as well as the damming of springs.

Approximately 24 boreholes or springs are used by the surrounding land owners (refer to Figure 7-12) with an estimated average volume of 1 000l/day abstracted from each point, calculated as 24m^3 of water a day which equates to 8 760m^3/annum. The sub-catchments within which the Booysenda Operation falsl span approximately 812 Mm^2. Using the recharge values stated in various previous studies, where recharge percentages of up to 5% of mean annual rainfall (MAR) is mentioned, as well as the mean annual rainfall value of 709 mm (0.709 m) it is calculated, is could be expected that 28.754 Mm^3 of water annually recharges the aquifers in the sub-catchments. The calculated ground water abstracted by land owners equates to less than 1% of the average annual ground water recharge.

Figure 7-10 Conceptual Hydrogeological Characteristics of the Project Area (Future Flow, 2017)

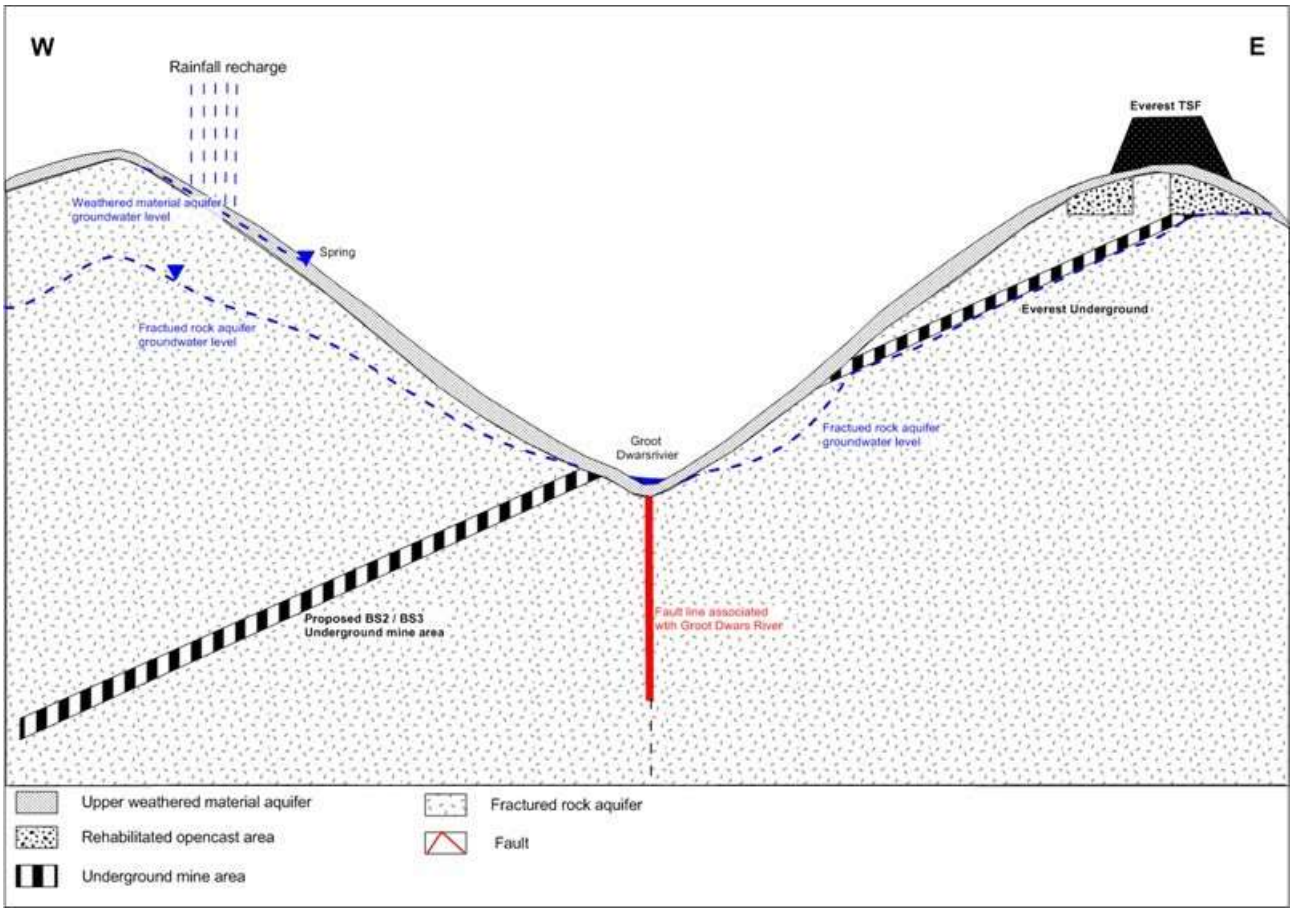
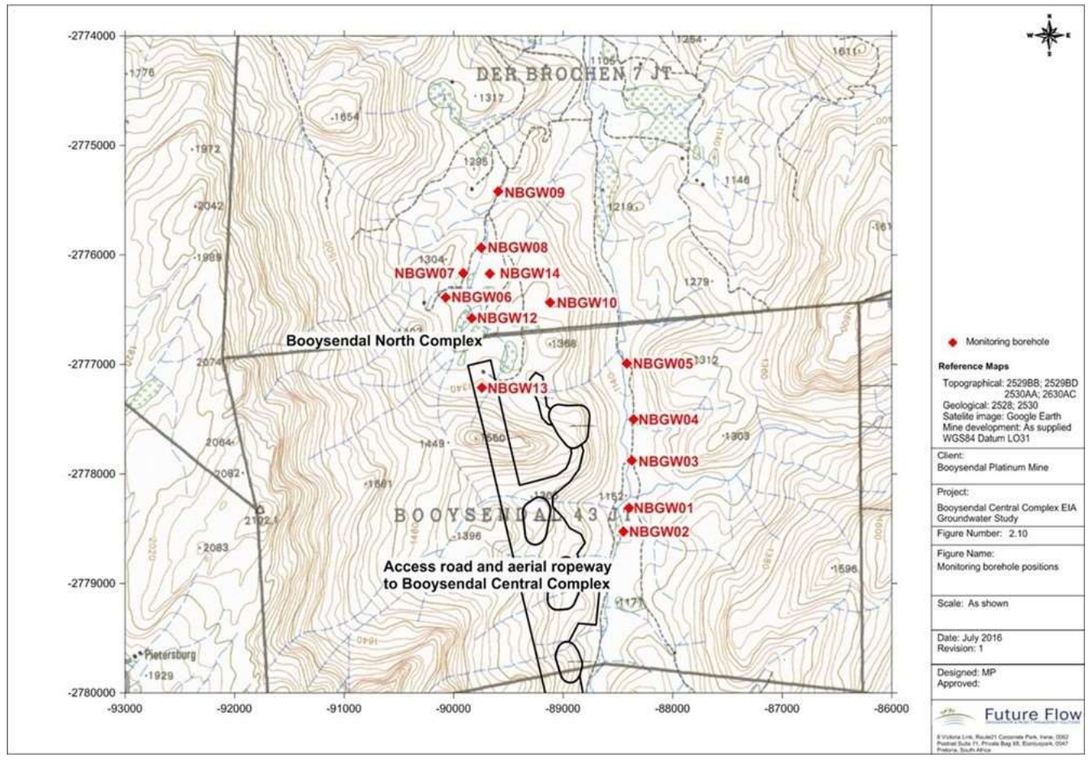


Table 7-11 Representative Groundwater Quality Result for October 2009 to December 2015 (Future Flow, 2016)

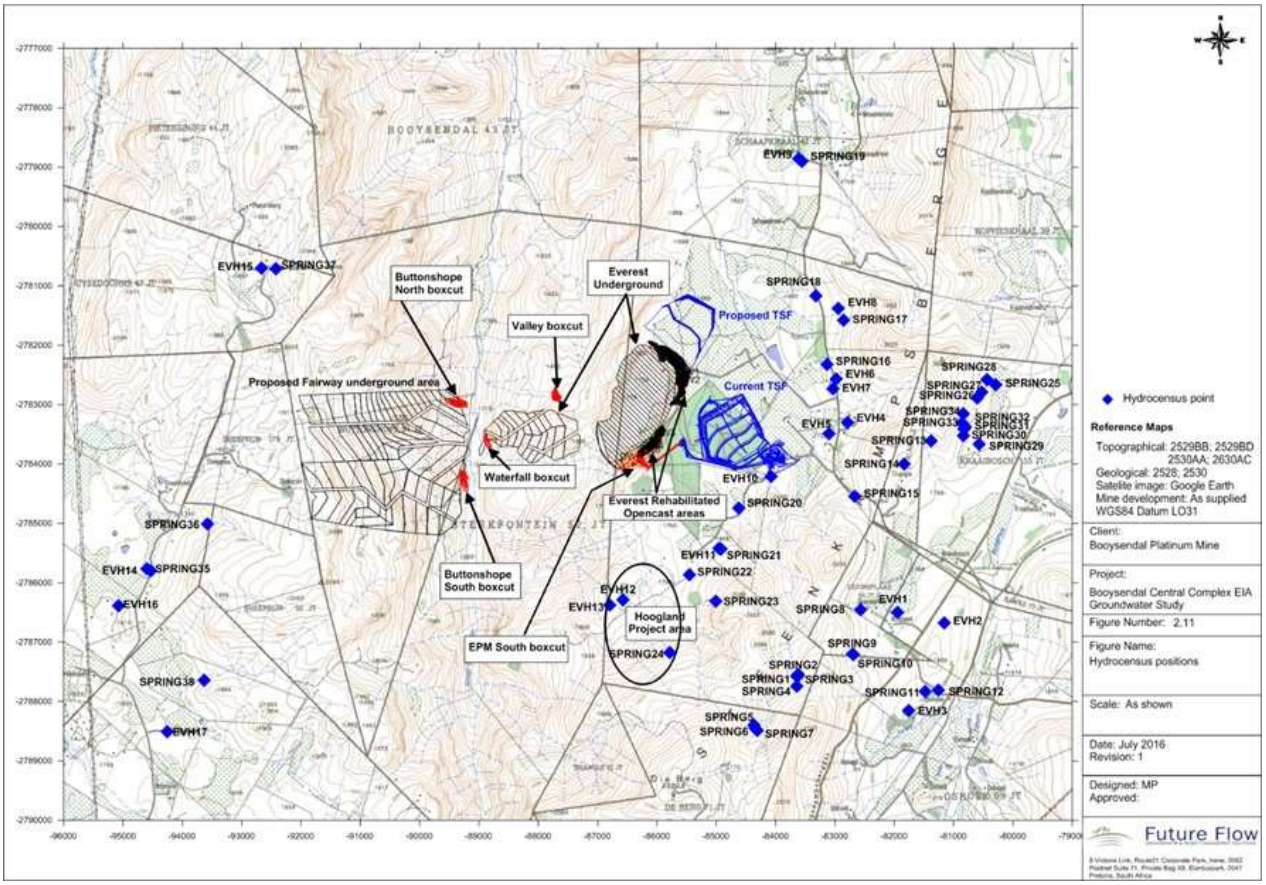
Borehole	pH	EC mS/m	TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	M-ALK CaCO3/L	Cl mg/l	SO4 mg/l	NO3-N mg/l	F mg/l	Al mg/l	Fe mg/l	Mn mg/l	N_Amonia mg/l	Total Hardness mg/l	NO2-N mg/l	PO4 mg/l	B mg/l	Cr mg/l	Cr6+ mg/l	Pb mg/l	Si mg/l	Zn mg/l	Turbidity NTU	Bicarb alkalinity CaCO3/L	Carb-alkalinity mg/l
SANS241 Guideline	≥5to≤9.7	≤170	≤1200	N/S	N/S	≤200	N/S	N/S	≤300	≤500	≤11	≤1.5	≤0.3	≤2	≤0.5	≤1.5	N/S	≤0.9	N/S	N/S	≤0.05	N/S	≤0.01	N/S	≤5	≤1	N/S	N/S
NBGW02	8.34	54.4	340	46.8	35.2	20.4	0.397	303	9.79	0.957	0.428	0.472	0.005	0.009	0.004	0.1	262	0.094	0.006	0.019	0.008	0.004	0.007	15	0.005	99[1]	297	6.16
NBGW03	7.96	56.7	376	66.6	33.1	12.2	0.44	296	8.83	18.2	0.587	0.472	0.005	0.009	0.004	0.099	302	0.094	0.006	0.015	0.008	0.004	0.007	19.8	0.005	0.879	293	2.53
NBGW05	7.8	50.4	327	53.1	29.9	9.5	0.329	276	9.35	1.08	0.432	0.472	0.005	0.275	0.109	0.074	256	0.093	0.006	0.013	0.008	0.004	0.007	19.7	0.005	294	275	1.62
NBGW06	7.8	30	250	34.7	17.9	7.05	0.359	176	4.58	1.82	0.705	0.472	0.005	0.009	0.004	0.072	161	0.097	0.006	0.012	0.008	0.004	0.007	26.9	0.005	0.799	175	1.04
NBGW07	7.67	42.1	307	49.7	22.9	9.37	0.565	221	8.44	5.48	1.58	0.472	0.005	0.009	0.004	0.091	218	0.092	0.006	0.012	0.008	0.004	0.007	25.3	0.005	1.08	220	0.967
NBGW08	8	41.5	293	45.1	23.7	8.62	0.658	231	9.05	0.957	0.541	0.472	0.005	0.009	0.004	0.077	210	0.091	0.006	0.013	0.008	0.004	0.007	23	0.005	113	228	2.16
NBGW09	7.98	65.1	435	68.7	37.6	17.8	0.757	315	17.1	33.3	1.44	0.472	0.005	0.009	0.004	0.088	326	0.095	0.006	0.028	0.008	0.004	0.007	22.5	0.005	0.919	312	2.83
NBGW10	7.76	61.8	399	85.3	20.6	15.1	0.363	261	17.2	15.4	6.58	0.472	0.005	0.009	0.004	0.246	298	0.099	0.006	0.023	0.008	0.004	0.007	20.8	0.005	0.615	260	1.41
NBGW12	7.76	78.1	492	86.3	45.1	14.8	0.394	437	15.3	10.1	0.426	0.472	0.005	0.009	0.004	0.067	401	0.086	0.006	0.02	0.008	0.004	0.007	18.8	0.005	0.677	435	2.35
NBGW13	8.1	66.1	439	58.3	46.7	13.5	0.588	356	9.59	15.9	0.622	0.472	0.005	0.009	0.004	0.068	338	0.087	0.006	0.02	0.008	0.004	0.007	27.4	0.005	1.09	351	4.16

Figure 7-11 Groundwater Monitoring Locations



[1] Grey blocks indicates water qualities exceeding SANS241 Guideline limits

Figure 7-12 Groundwater Users within the Aare of Influence of the Booysendal Operations (Future Flow, 2016)



7.7 Geochemical and Waste Characterisation

Various waste characterisations have been undertaken on the ore and tailings from the larger Booysendal Operation with the purpose to establish if the ore and mine waste has the potential to generate acid rock drainage.

Leach testing results of the tailings of BS4 has been assessed by Jones and Wagner (2016) to be non-acid forming. This can be attributed to low sulphide sulphur levels, which are below the limits (<0.01%(m/m)). Acid Base Accounting ("**ABA**") results furthermore demonstrated a Neutralisation Potential ("**NP**") of 5.96 kg $CaCO^3$ per tonne resulting in a Neutralisation Potential Ratio ("**NPR**") of 19. This can be compared with a ratio of 4 used in international standards as a threshold for non-acid forming material. A paste pH of 8.7 confirms the low alkalinity indicated by the NP result.

Elemental analyses were compared with Alloway Earth's Crustal Abundance concentrations, with arsenic and cadmium both 44 times and chromium 480 times the concentration of Crustal Abundance. In the case of chromium, this is consistent with the XRD results showing a chromite mineral content of 15.5% (m/m). Elemental analyses were also compared with their respective Total Concentration Threshold ("**TCT**"). In terms of TCT's, the concentrations of arsenic, cobalt, chromium, nickel, vanadium and fluoride exceed their respective TCT0 values, such that on this basis the tailings are classified as a Type 3 (low hazardous) waste which must be disposed of on a Class C landfill.

The results obtained from leachate test work, however, demonstrate that none of the constituents exceed the lowest Leach Concentration Threshold, LCT0, such that only the Total Concentration values have resulted in the tailings being assessed as a Type 3 waste.

Geochemical analysis was also carried out on the ore bodies by Future Flow, 2017. Sulphur analyses indicated detection limit of 0.01% total sulphur. Based on these low sulphur values alone, these samples are defined as Non-Acid forming, although no NP test work data was available.

Leach testing performed on the samples showed exceedances in LCT0 values only for chromium, antimony and vanadium, with detection limits for arsenic, nickel, lead and selenium above the LCT0 values but below LCT1 values.

Elemental analysis using aqua regia digestion and leach testing based on a 20:1 liquid to solid ratio was performed on the six rock samples and two tailings samples, following the GN 635 guidelines to include metals, anions and key organics relevant to the operation. From the results of this test work, the elemental concentration of cadmium, cobalt, copper, manganese, nickel, lead, antimony, vanadium and fluoride exceeds the TCT0 guidelines in most of the samples but all samples comply with TCT1 guidelines.

From the leachate test work, total chromium exceeds the LCT0 guideline concentration of 0.1 mg/l for one of the two ore samples and both tailings samples by a factor of 3, with the other ore sample showing a chromium concentration of <0.025 mg/l. All leachates were below the LCT1 guideline concentration.

Based on these results, from the set of samples from BN, these materials are classified as Type 3 Waste following the GN 634 classification requiring disposal at a site complying with Class C landfill regulations.

7.8 Terrestrial Ecology

7.8.1 Flora

The Booysendal Operation falls within the \SCPE, a floristic region restricted to ultramafic substrates of the Rustenburg Layered Suite, forming part of the BIC (Siebert, 2002). The Project area falls in the Roossenekal sub-centre of the SCPE with a small northern section located in the Steelpoort sub-centre. The Roossenekal sub centre forms a unique ecotone between the Highveld and the Lowveld of South Africa. Plant species in the Phase 2 Project Area are representative of both Highveld and Lowveld species. Development is threatening and putting pressure on the Sekhukhune Center for Endemism ("**SCE**"), which is the third richest in ultramafic induced endemic plant species in South Africa. Undescribed endemic plant taxa are discovered on a regular basis.

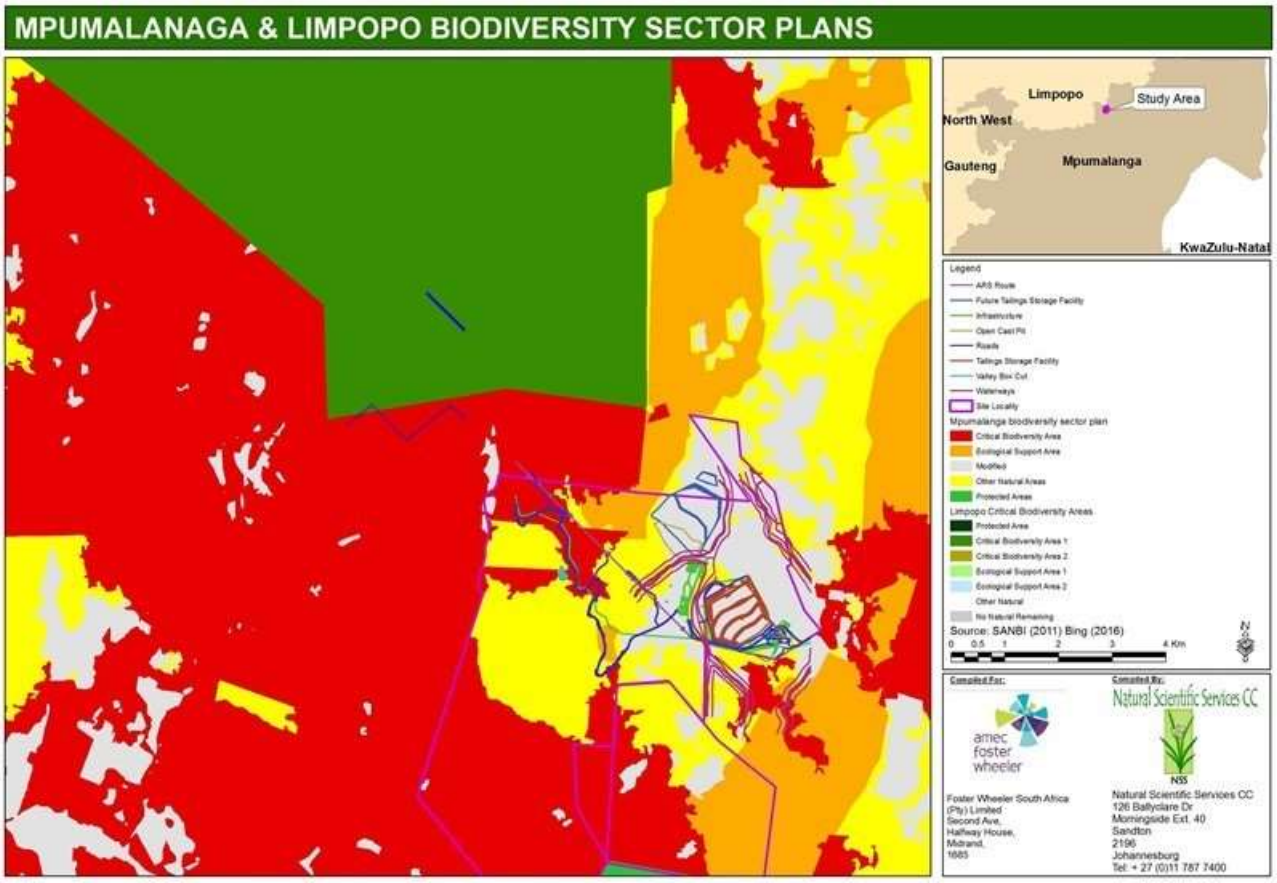
In terms of the Limpopo Conservation Plan (2013) and Mpumalanga (2013) Biodiversity Sector Plans, the area around BCM1, BCM2 and the linear infrastructure components are in CBAs, while BS4 is in a heavily modified habitat with the exception of the western area close to the proposed backfill plant which is also within a CBA (refer to Figure 7-13).

A study undertaken by NSS in 2016 and 2017 found that, except for BS4, that most the floral communities within the valley occurred largely in a natural to pristine state. Most floral communities that remain in a natural state extend beyond the current perimeter fence around BS4.

Four main habitats and 16 floral communities were identified in the study area. More than 100 Conservation Important (CI) floral taxa occur in the region, of which, NSS recorded more than 80 located within and/or near BS, including almost 30 locally endemic, two Vulnerable ("**VU**"), several Near Threatened ("**NT**"), numerous Declining and 60 Protected Species ("**PS**"). The information obtained from the 78 vegetation sampling points were comprehensive enough to allow for a floral community and habitat analysis.

Species lists will be updated as part of a flora study for this project and will be included in the EIR.

Figure 7-13 Ecological Sensitivity of the Booysendal Operation (Limpopo Conservation Plan, 2013 and Mpumalanga Biodiversity Sector Plan, 2013)



7.8.1.1 Alien Vegetation

There is a limited amount of alien and invasive species associated with BCM1, BCM2 and the linear infrastructure component, although some settlement has commenced in disturbed footprint areas which are currently under construction as approved in the previous EA.

There are many alien and invasive species which have been identified at BS4. Category 1 species which require removal include:

- *Xanthium spinosum L*
- *Opuntia ficus-indica (L.) Mill*;
- *Datura stramonium* L; and
- *Verbena brasiliensis and V bonariensis Vell*.

7.8.2 Fauna

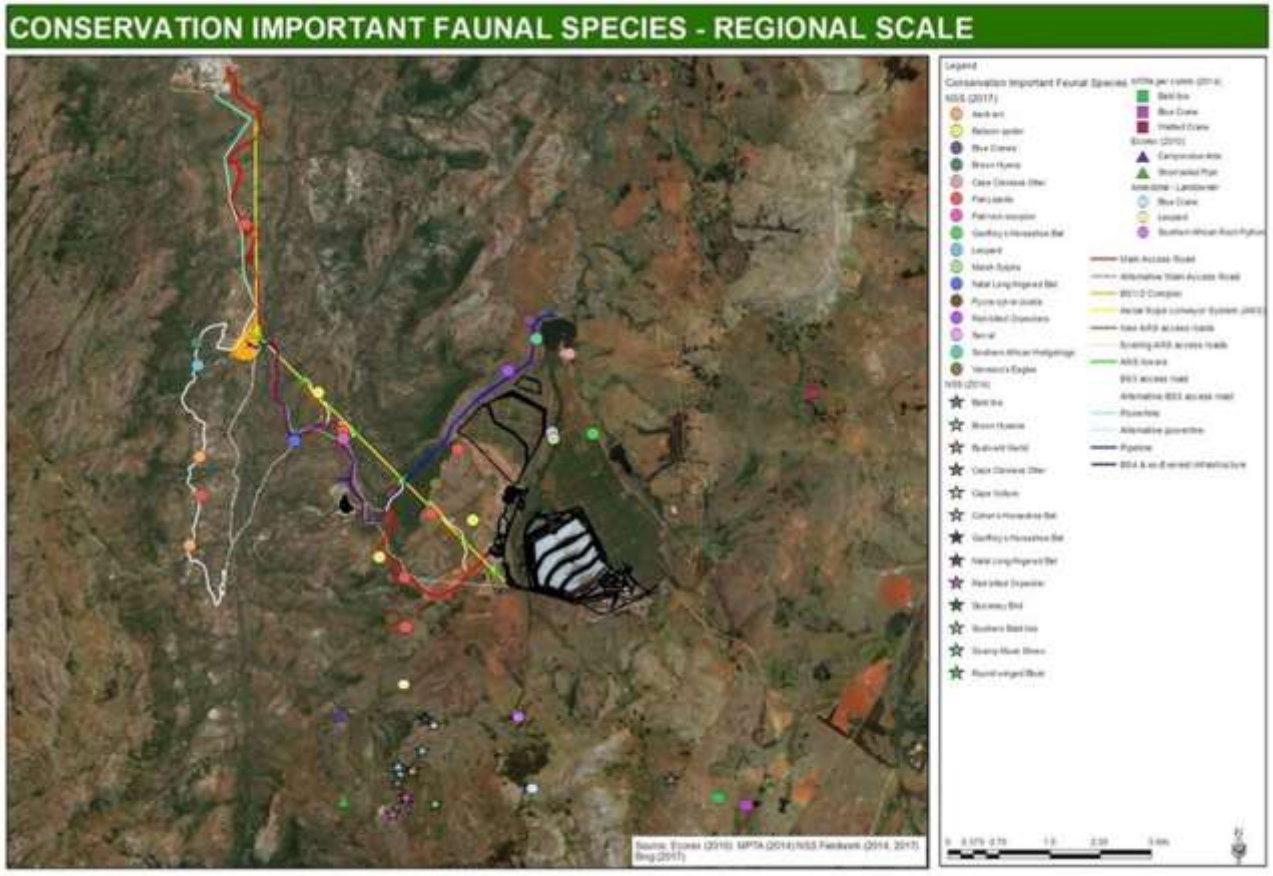
The Phase 2 Project Area is also very rich in fauna species. A study carried out by NSS in 2017 indicated that a large number (20) of conservation important ("**CI**") species are associated with the wetland habitats. Approximately thirteen CI and geographically restricted species are associated with the rocky, grassy hillslopes and ridges. These habitats are, therefore, very sensitive. Additionally, the cliff face habitat to the west of BS4 is an important habitat for various CI bird species, including the NT Natal Long-fingered Bat,

Geoffroy's Horseshoe Bat, the VU Cohen's Horseshoe, Vereaux's Eagle, the Southern Bald Ibis, Lanner Falcon and the endangered ("**EN**") Cape Vulture.

The sheet rock is critical habitat for the NT locally endemic Sekhukhune Flat Lizard, the NT FitzSimon's Flat Lizard, the VU *Hadogenes polytrichobothrius* scorpion and the PS Southern African Python.

The valley bushveld habitat has also been identified as important for the VU recorded Leopard, the NT Brown Hyena and locally endemic *Pycna sylvia* cicada. It is also anticipated that the VU Crowned Eagle and Wolkberg Dwarf Chameleon could also be found within this area. The location of the recorded CI species within the Phase 2 Project Area is included in Figure 7-14. Detail around the various taxa within the BS areas is summarised in the following sub-sections.

Figure 7-14 Booysendal South Operation - Conservation Important Fauna Species (NSS, 2017)



7.8.3 Mammals

A total of 46 mammal species were recorded by NSS (2017) and other specialists (previous studies). Overall 88 mammal species are expected to occur within the study area. Species which commonly occur throughout the study area include: the Black-backed Jackal, Bush Duiker, Four-striped Grass Mouse, Cape Porcupine, Scrub Hare, Slender Mongoose and Steenbok.

A commonly occurring species associated with wetlands throughout BS4 is the Marsh/Water Mongoose. The TKO Dam provided sightings of the NT African/Clawless Otter and Serval species. The NT African Hedgehog is reported to also commonly occur within the area.

Species recorded in the Groot Dwars River Valley included the Charcma Baboon, Eastern Rock Elephant Shrew, Namaqua Rock Mouse, Klipspringer, Red Rock Hares, and Rock Hyrax. In the valley, south of BS1/2 the VU Leopard, NT Brown Hyena, Kudu, Waterbuck, Bushbuck, Bush Pig and Cane Rats were

detected. Vervet Monkeys were also found within the alien vegetation areas at BS4. Cattle were recorded at BS4 and in the valley between BS1/2 and BS3.

Through the mist netting and acoustic recordings, the Cape Serotine, Dusky and Rusty pipistrelles and the Schlieffen's Twilight Bats were found in the riparian-woodland areas while the NT cave-roosting Long Fingered Bat, the NT Geoffroy Horseshoe Bat were found in the cave areas close to Hoogland.

7.8.4 Birds

A total of 321 bird species could occur within the study area. Between the findings made by NSS (2017) and Ecofin (2015) respectively, a total of 219 species were recorded during the 2016 and 2017 surveys. 35 species which were not previously recorded have been observed, including the Ashy Flycatcher, Knysna Turaco, Lesser Spotted Eagle, Red-billed Oxpecker, Red-chested Flufftail and Scaly-throated Honeyguide.

The habitat diversity supports a diverse bird assemblage ranging from water birds, typical Highveld grassland birds and Bushveld and Lowveld birds. The Booysendal South Expansion Project and particularly the development of the ARC poses a risk to various bird species in the area.

7.8.5 Reptiles

A total of 82 reptile species are expected to occur in the BS study area of which 24 species were confirmed. CI species are included in Table 7-15.

7.8.6 Frogs

The desktop study undertaken by NSS (2017) indicated that there are 14 frog species which could potentially occur within the Phase 2 Project Area. At least 7 species were identified on site either through their calls or through sightings throughout BS, including the Guttural Toads, Raucous Toads and Red Toads, often at a significant distance away from the nearest wetland. Mozambique Rain Frogs, Bubbling Kassinas and Boettger's Cacos were heard calling in the grassland areas in and around BS4. Juvenile and adult specimens of potentially the Bushveld Rain Frog were found on slopes and at the bottom of the valley. During the May 2017 site visit, Queckett's River Frogs were heard calling from the Groot-Dwars River. River frog tadpoles and adult frogs were also recorded in small, perennial, mountain streams that were feeding into the River.

Only one CI could potentially occur in the area, namely the VU Natal Cascade/ Ghost Frog. The Ghost Frog species are extremely vulnerable to destruction or degradation of habitats and especially sedimentation (see table 7-15).

7.8.7 Butterflies

The Phase 2 Project Area contains an especially rich diversity of butterflies. Between NSS (2017) and Ecofin (2015), a total of 64 butterfly species were recorded during the survey periods. This is approximately two and a half times more than the number of species which has been recorded in quadrant 2530AA to date.

The CI species which could occur and which were sighted are included in Table 7-15. The NT Marsh Sylph (*Metisella meninx*) were seen in the wetland areas at BS4.

The specialist teams have also identified endemic and geographically restricted species, including the endemic:

- Long Tom Widow - found between Mbabane in Swaziland to Steelpoort, generally on steep, grassy south and east facing slopes at height between 1,200m and 2,000masl;

- Tite's Cooper - distribution is limited to high mountain peaks and ridges in Mpumalanga and KwaZulu Natal;
- Mashishing Opal - distribution from Vryheid in the south to Graskop in the north on high-lying rocky outcrops and hillsides; and
- Steelpoort Spotted-eyed Brown - restricted distribution in Limpopo and Mpumalanga, limited to grassland and savanna rocky hillsides.

7.8.8 Ordonata (Dragonflies and Damselflies)

76 dragon-and damselfly species could potentially occur within the BS study area of which 27 species were identified through sweep netting and observations by NSS (2017). This is a high diversity. Although four CI species could potentially occur only one, the Round-winged Bluet (*Proischnura rotundipennis*) were identified at Hoogland but is also expected to occur elsewhere in BS.

7.8.9 Scorpions and Baboon Spiders

6 scorpions and 4 baboon spider species were in the BS study area. Another four-scorpion species could potentially occur in the study area. The 6 scorpion species include *Opistophthalmus glabrifrons, Opistacanthus validus* and *Uroplectes triangulifer* regularly found under rocks in BS. Ecofin (2015) also recorded *Chelectonus intermedius* and *Pseudolychas pegleri* in BS.

Additional scorpion species, which have marginal distribution ranges, include the medically important *Parabuthus mossambicensis* and *Parabuthus transvaalicus*, the widespread bark scorpion *Uroplectes vittatus,* and the Pugnacious Burrowing Scorpion *Opistophthalmus pugnax*. None of the species are listed as threatened or protected. One endemic species, the *Hadogenes polytrichobothrius* was only observed in sheet rock areas.

The 4-identified baboon spider species that have been identified in the area in: the Starbust Horned Baboon Spider (*Ceratogyrus bechuanicus*), the Transvaal Banded Baboon Spider (*Harpactira gigas*), the Malelane Golden-brown Baboon Spider (*Pterinochilus breyeri*), and the Transvaal Golden Baboon Spider (*Pterinochilus nigrofulvus).* None of these species are of CI.

7.8.10 Pycna sylvia

The *Pycna sylvia* is a cicada species which were thought to have been extinct, but were rediscovered in 2004 in the Groot Dwars River Valley. Data on the cicada is deficient but research indicates that there is a strong association of the cicada with the tree *Vitex obovate. Wilmsii*. The tree is endemic to the south-eastern Limpopo, northern Mpumalanga, Gauteng and Swaziland.

Malherbe et.al (2004), sighted in the NSS report, indicated that the adult life stage is between 6 and 8 weeks during the period of mid-November to the end of December. The life cycle of the larva is not known but it can be anything from 1 to 7 years. During the field survey in January 2017, the *Pycna sylvia* were found around the ARC between BS4 and BS1/2, southerly and south-western slopes of the main access road.

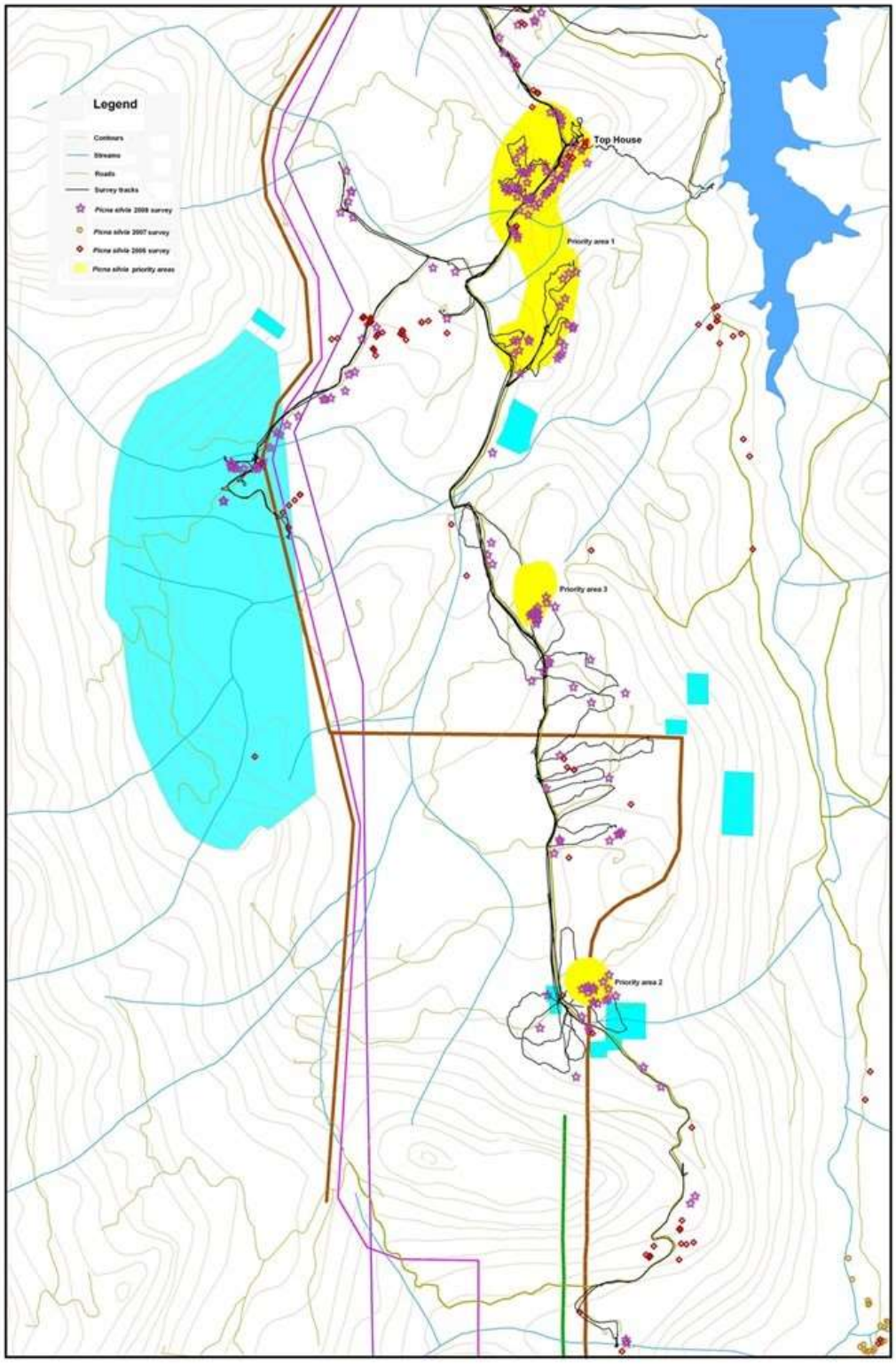
The NSS report indicates that the density of the Vitex was calculated as 326m^2 or 18m in the valley. These numbers may assist in determining off-set for the *Pycna sylvia* and its associated Vitex host. The known locations where the *Pycna sylvia* occurs are included in Figure 7-16.

Figure 7-15 Booysendal South Conservation Important Species (NSS, 2017)

Threatened and/or Protected Fauna Taxa**		
Scientific Name	**Common Name**	**Conservation Status**
Mammals		
Aonyx capensis	African / Cape Clawless Otter	NT
Atelerix frontalis (frontalis)	Southern African Hedgehog	NT
Crocidura mariquensis	Swamp Musk Shrew	NT
Dasymys robertsii	Roberts' Marsh / Water Rat	VU
Hyaena brunnea	Brown Hyena	NT
Hydrictis maculicollis	Spotted-necked Otter	VU
Leptailurus serval	Serval	NT
Miniopterus natalensis	Natal Long-fingered Bat	NT
Myosorex cafer	Dark-footed Mouse / Forest Shrew	VU
Orycteropus afer	Aardvark	PS
Panthera pardus	Leopard	VU
Pelea capreolus	Vaal / Grey Rhebok	NT
Poecilogale albinucha	African Striped Weasel	NT
Redunca fulvorufula	Mountain Reedbuck	EN
Rhinolophus clivosus	Geoffroy's Horseshoe Bat	NT
Rhinolophus cohenae	Cohen's Horseshoe Bat	VU
Birds		
Anthropoides paradiseus	Blue Crane	NT
Alcedo semitorquata	Half-collared Kingfisher	NT
Anthus brachyurus	Short-tailed Pipit	VU
Aquila verreauxii	Verreaux's Eagle	VU
Balearica regulorum	Grey Crowned Crane	EN
Bugeranus carunculatus	Wattled Crane	CR
Buphagus erythrorhynchus	Red-billed Oxpecker	NT
Circus maurus	Black Harrier	EN
Circus ranivorus	African Marsh Harrier	EN
Eupodotis senegalensis	White-bellied Korhaan	VU
Falco biarmicus	Lanner Falcon	VU
Geronticus calvus	Southern Bald Ibis	VU
Gyps coprotheres	Cape Vulture	EN
Nettapus auritus	African Pygmy Goose	VU

Threatened and/or Protected Fauna Taxa**		
Scientific Name	**Common Name**	**Conservation Status**
Polemaetus bellicosus	Martial Eagle	EN
Sagittarius serpentarius	Secretarybird	VU
Stephanoaetus coronatus	Crowned Eagle	VU
Tyto capensis	African Grass Owl	VU
Reptiles		
Acontias breviceps	Short-headed Legless Skink	VU
Chamaesaura aenea	Coppery Grass Lizard	NT
Homoroselaps dorsalis	Striped Harlequin Snake	NT
Platysaurus orientalis fitzsimonsi	FitzSimons' Flat Lizard	NT
Platysaurus orientalis	Sekhukhune Flat Lizard	NT
Python natalensis	Southern African Python	PS
Tetradactylus breyeri	Breyer's Long-tailed Seps	VU
Frogs		
Hadromophryne natalensis	Natal Ghost Frog	VU
Butterflies		
Aloeides rossouwi	Rossouw's Copper	EN
Dingana fraternal	Stoffberg Widow	CR
Lepidochrysops rossouwi	Rossouw's Blue	VU
Metisella meninx	Marsh Sylph	NT
Platylesches dolomitica	Hilltop Hopper	VU
Dragonflies and damselflies		
Aeshna ellioti	Elliot's Hawker	VU
Proischnura rotundipennis	Round-winged Bluet	VU
Pseudagrion celeste	Catshead Sprite	VU
Pseudagrion newtoni	Harlequin Sprite	VU
Scorpions		
Hadogenes polytrichobothrius	Flat Rock Scorpion	VU
Purple rows - Species found in the study region during surveys		

Figure 7-16 *Pycna sylvia* know Distribution (RD Stephens, 2015)



Ecological sensitivities of the Phase 2 Project Area include that the Sekhukhune Mountainlands, which is listed as an EN ecosystem under the TOPS List The biome is also listed as a Priority Zone for conservation initiatives by SANBI.

The Project is located approximately 4km north of the De Berg Conservancy (Davel Nature Reserve) and approximately 10km north from the Veloren Valei Nature Reserve. Increased pressure and impacts in the project area may also lead to increased pressures on the conservation areas. There are several threatened and protected and protected species declared in terms of Section 56(1) of NEMBA.

In terms of the Mpumalanga Biodiversity Sector Plan, CBAs were identified.

7.9 Aquatic Ecology

The Groot Dwars River system is classified as a FREPA. FREPA systems are important in maintaining threatened or near-threatened fish species. The Mpumalanga Biodiversity Conservation Plan (2013) indicates that the aquatic ecosystems within the sub-quaternary are considered as irreplaceable and the Everest Tributary as highly significant. The Ecological Sensitivity ("**ES**") of the system was also assessed as being very high. Various specialist studies have been undertaken over time of the Booysendal Operation, of which the most recent that of Clean Stream (2017).

7.9.1 Ecological Water Quality

Recent findings (Clean Stream, 2017) from the water quality assessment, evaluated against background water quality results, indicated that there is a gradual increase in salinity downstream in the Groot Dwars River. Turbidity was also visibly higher with a measured suspended solid spike from 11 to 210mg/l between August and December 2016 at BS1/2. Aluminium levels also at times exceeded the guideline limits for aquatic ecosystems in the BS4 tributary. Salinity in the Waterfall tributary, where road construction is taking place, the tributary at BS1/2 where portal and terrace development is taking place and in the wetland tributary at BS4 were elevated.

7.9.2 Habitat Integrity

7.9.2.1 Wider Area

The DWS (2014) desktop assessment considers the affected sub-quaternary reach ("**SQR**") in which the Booysendal Operation is located to be a Category C (Moderately Modified). However, the Present Ecological State ("**PES**") ranges from a PES A/B (Pristine to Largely Natural) in the upper reaches, upstream of mining activities, to a Category C (Moderately Modified), upstream of Der Brochen Dam but downstream of the East Stream from BS4, to a Category C-D (Moderately Modified to Largely Modified), downstream of Der Brochen Dam and various mining activities to the north.

The Ecological Importance ("**EI**") of the sub-quaternary catchment reach is rated as high (DWS, 2014). This is attributed to a variety of factors including:

- Very high invertebrate taxa rarity;
- Moderate fish species rarity;
- Very high habitat diversity; and
- Very high degree of natural riparian/ wetland vegetation.

The ES of the SQR was rated as very high. This was attributed to a variety of factors including the very high levels of sensitivity of the expected fish and aquatic macroinvertebrate communities to flow modifications and impacts on water quality.

7.9.2.2 Project Area

The 2017 Clean Stream study undertaken for the Booysendal South Expansion Project: Phase 1 found that the PES of the upper reaches of the Groot Dwars River was pristine to largely natural (Category A/B). The riparian habitat was also Largely Natural (Category B). The habitat integrity of the upper reach therefore has experienced limited impacts.

The integrity of the habitat in the middle reach of the Groot Dwars River (BS1/2) has been modified by the Section 24G EA activities and notably by the construction and erection of the bridge and associated impacts on the wetland areas, resulting in a decrease of the habitat integrity and riparian habitat to Category C.

The habitat integrity downstream where the Waterfall and East tributary runs into the Groot Dwars River has also deteriorated because of the Section 24G activities to a Category C (moderately modified). The habitat integrity of the East tributary has also deteriorated from Category B to Category C. The impact of the habitat integrity of the other streams surveyed were of lesser significance.

7.9.3 Aquatic Macro-invertebrates

The macroinvertebrate assemblage in the upper reaches of the Groot Dwars River, as well as the East Stream tributary, include several taxa that are highly sensitive to changes in water quality, flow and habitat (e.g. Psephenidae, Helodidae, Athericidae, Perlidae, Elmidae and Helodidae) (Clean Stream, 2016). In general, the upper reach of the Groot Dwars River, upstream of the East Stream tributary, was considered to be more natural (Category B-C, Largely Natural to Moderately Modified), in terms of aquatic macroinvertebrates, than the lower reach, downstream of Der Brochen Dam and mining activities in the north, where the PES was, in general, classified as Category D (Largely Modified).

The baseline of Groot Dwars River indicates that Average Score Per Taxon (ASPT) is 6.0 - 6.6 and the SASS score 114 to 149. The upper reaches of the Groot Dwars River, has been classified as pristine (ASPT 6.4 and SASS 180). A total of 28 taxa was recorded, many of which are sensitive to water quality change.

The East Stream tributary, which flows into the Groot Dwars River upstream of Der Brochen Dam, was sampled on the plateau upstream of the haul road to BS4. Here, there was a relatively high prevalence of sensitive taxa (such as stoneflies and more than two species of baetid mayfly), in response to good water quality. However, habitats have been compromised by a failed dam, upstream of the study area, resulting in a lower than expected diversity. Further downstream, downstream of BS4 activities as well as the TKO dam, the PES declined to a Category D-E (Largely to Seriously Modified), with a very low diversity of taxa recorded and an absence of sensitive taxa. It seems, therefore, that activities associated with BS4 tailings complex and associated infrastructure, have contributed to a decline in water quality within the East Stream tributary. Based on past water quality monitoring data (summarised in TBC 2016), the main contaminants are nutrients. The ASPT and SASS scores in the streams have deteriorated from upstream to downstream since 2016. The downstream site indicated an absence of sensitive species (Heptageniidae and Athericidae) which were found prior to 2016.

The Macro Invertebrate Response Index ("**MIRAI**"), which provides an indication of habitat modification and species diversity, confirms the good water quality and habitat suitability within the upstream reach, upstream of the road crossing of the Groot Dwars River. There was a gradual decline in the MIRAI score (see Table 7-12) in a downstream direction with the most downstream reach classified as Category C (Moderately Modified). Habitat and water quality were considered the most important drivers of macro-invertebrate assemblage patterns within these reaches.

Table 7-12 Macro-invertebrate Response Assessment Index

	Groot Dwars River			
	Upstream reach	**Middle reach**	**Downstream reach**	**Everest Tributary**
FLOW MODIFICATION	79.4	80.9	64.0	67.3
HABITAT	73.5	66.4	58.7	86.1
WATER QUALITY	80.2	80.2	63.7	71.4
INVERTEBRATE Ecological Category Score	78.7	77.8	63.9	73.8
INVERTEBRATE ECOLOGICAL CATEGORY	**B/C**	**C**	**C**	**C**

7.9.4 Fish

A significant amount of historical studies has been around Phase 2 Project Area since 2001. The results of the studies indicate that there are at least eleven indigenous species present in the various reaches on the study area (refer to Table 7-13) and one alien species (*Cyprinus carpio*).

Table 7-13 Fish Species in the Booysendal Operational Area (Clean Stream, 2017)

Period	2001/02	2007	2008	2011/12	2012/13	2016
Source	(RauEcon)	Nepid	CSBS	SAS	SAS	TBC
Zone	GD3	Groot Dwars (BS4)	Groot Dwars downstream of study area.	E1 (RC1, TKO Dam)	GD1(B0, B1)	Upper reaches of Groot Dwars
Amphilius uranoscopus	X	X				X
Enteromius anoplus		?				
Enteromius neefi	X	X	X		X	X
Enteromius cf. motebensis						X
Enteromius trimaculatus	X		X			
Labeobarbus marequensis	X	X	X		X	
Chiloglanis pretoriae	X	X	X		X	
Clarias gariepinus	X		X	X		
Labeo cylindricus	X		X			

Labeo molybdinus			X			
Oreochromis mossambicus	X		X			
Tilapia sparrmanii	X		X	X	X	X
*Cyprinus carpio**				X		
Total number of indigenous species	9	5	9	2	4	4
Total number of alien species				1		

Four species which are intolerant to change including: *E. cf. motebensis, E. neefi, L. cylindricus and L. molybdinus.*

The *Labeobarbus marequensis, Labeo* species and *Clarias gariepinus* are migratory species that require free movement to complete their life cycle.

The Groot Dwars River upstream of BS1/2 constitutes critical habitat for the small minnow species *Barbus motebensis* (Marico barb). This species is currently listed as VU on the IUCN Red List of Threatened Species. The international standard - IFC Performance Standard 6 - recognises areas associated with key evolutionary processes as critical habitat. Based on this definition, the upper reaches of the Groot Dwars River may therefore comprise critical habitat for a genetically distinct population of *B. motebensis*.

Oreochromis mossambicus (Mozambique tilapia), a fish species that is listed as NT on the IUCN Red List was recorded abundantly in the Groot Dwars River within the vicinity of BN. This species is likely to qualify for a threatened category within the near future (IUCN, 2016). The most serious threat facing *O. mossambicus* is hybridization with the rapidly spreading introduced species *Oreochromis niloticus* (Nile tilapia) (IUCN, 2016).

Two fish species that are highly sensitive to changes in flow, habitat (cobbled substrates) and water quality have been recorded within the study area (TBC 2016). The fish species, *Amphilius uranoscopus* and *Chiloglanis pretoriae*, are most at risk from construction and mining activities. As dust and eroded sediment are deposited within the Groot Dwars River, cobbled substrates will be altered and water quality will decline.

Very little fish data is available for the Eastern Stream tributary. It is expected that species moderately intolerant to changes in flow, habitats and water quality are likely to be present in the upper reaches of this stream (i.e. upstream of the TKO Dam). However, the alien invasive fish species, Cyprinus carpio (the common carp), has been recorded in the TKO Dam, downstream of BS4 (TBC, 2016). This species causes habitat destruction by means of its feeding behaviour in the bottom sediments, thereby also increasing turbidity levels.

7.10 Wetlands

Wetland Consulting Services (2017) has identified 5 types of wetland are present on the Phase 2 Project Area:

- Channeled valley bottom wetlands;
- Un-channeled valley bottom wetlands;
- Riparian wetlands;
- Seep wetlands; and
- Sheetrock seep wetlands.

These wetlands can be described as an interconnected system of perennial and non-perennial drainage systems, perched sheetrock wetlands and valley bottom wetlands which are all connected to the larger Groot Dwars River. Most of the wetland areas and riparian systems are unmodified and in a natural condition providing habitat for a variety of protected and FDL floral species such as *Eulophia ovalis*, *Catha transvaalensis* and *Merwilla plumbea*. The Project wetland habitat unit is of high conservation importance, especially when the highly sensitive nature of the Groot Dwars River system and the high number of endemic species is taken into consideration.

7.10.1 Wetland Present Ecological Status

The wetland catchments in the study area are largely intact, also maintaining the flow inputs to the wetlands. Some of the smaller systems have been more heavily impacted where existing mining/construction activities has impacted on flow into wetlands.

Flow distribution and retention within some of the wetlands has also been impacted by linear infrastructure crossings, typically road crossings, which lead to flow concentration and accelerated erosion. Other impacts observed include alien vegetation, impoundments, increase in sedimentation and deterioration of water quality.

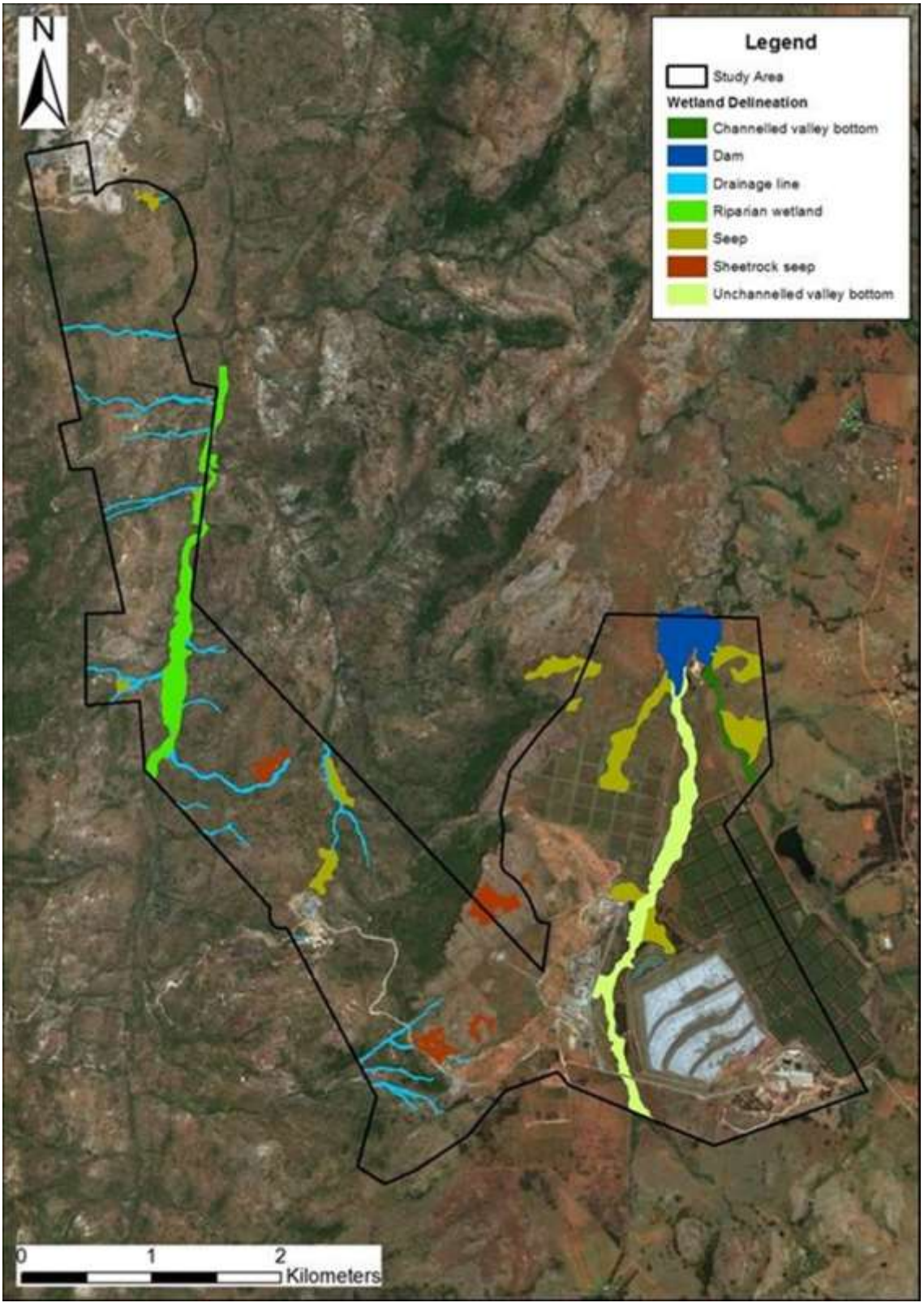
Notwithstanding the impacts, most of the wetlands, are largely natural to moderately modified with a PES category between B and C (refer to Table 7-14).

Table 7-14 Present Ecological Status of the Wetlands in the Booysendal Project Area (Wetland Consulting Services, 2017)

Wetland Type	Importance & Sensitivity			TOTAL
	High	**Moderate**	**Low/Marginal**	
Channelled valley bottom	4.69			4.69
Unchanneled valley bottom	32.31			32.31
Riparian wetland	24.36			24.36
Seep		34.28	3.69	37.97
Sheetrock seep		10.84		10.84
Drainage line		20.90		20.90
TOTAL	61.36	66.02	3.69	131.07
Percentage	46.82%	50.37%	2.81%	100.00%

The location of the various wetlands is included in Figure 7-17.

Figure 7-17 Location and Classification of Wetlands in the Booysendal Operation (Wetland Consulting Services, 2017)



7.11 Soil, Land Use and Land Capability

7.11.1 Soil Types

Various soil studies have been carried out over the larger Booysendal Operation since 2002. There are eighteen soil forms in the Booysendal South Expansion Project Area. Due to the topography within the area, the soil forms are highly variable. In the flatter areas, soil forms are dominated by clay-loams with a weak to moderate structure. These soils are suitable for agricultural production. The hill slopes contain young soils characterised by shallow, rocky lithic soils. The soils in the area is generally susceptible to erosion when disturbed. The soil types and characteristics of the soils are included in Table 7-15 and the sensitivities in Figure 7-18.

Table 7-15 Characteristics of Booysendal South Soil Forms

Soil Form	Characteristics
Arcadia	The Arcadia soils are mainly associated with the BCM portals, which is high in clay content with shrinking-swelling properties, typical of vertic soils with a depth of approximately 80cm. Land capability: high grazing potential.
Bainsvlei	The Bainsvlei soils consist of an orthic A horizon up to a depth of 35cm and a red apedal B horizon up to depths of 120cm. The oxides in the soil provide a macro-aggregating effect which reduces the soil erosion potential. The soil thus, is highly suitable for rehabilitation purposes. Bainsvlei soils are located next to the East tributary and areas directly alongside it. Land capability: arable land.
Bonheim	The Bonheim soil form is limited to an upper slope of the road going down to the BS4 valley. The soil form consists of a 15cm melanic A horizon and a B-horizon with a higher clay content. The soil structure is strong and less susceptible to erosion. Land capability: grazing land capability
Clovelly	The soils consist of a sandy-loam orthic A-horizon and a well-drained apedal B-horizon and are 100cm deep. The soils are highly susceptible to erosion. Land capability: Suitable for arable crop production and for use as topsoil.
Griffin	The soils are well-developed soils with an orthic A-horizon of 20-45cm depth and an apedal yellow-brown to red B-horizon. The soils have a loamy texture, well drained, usually acidic, low phosphate status and moderate organic matter. This soil form is less prone to erosion. Land capability: arable land capability but will required fertilizer.
Hutton	The soils have a range of red colours and a well-developed orthic A-and B-Horizon of between 130cm - 150cm. The soil form is less sensitive and susceptible to erosion because of the relative high clay content of between 10% and 25%. Land capability: This soil form has high arable land capability.
Hydromorphic Soils	The soils are indicative of temporary and permanent periods of water saturation. The soils have a blue-greyish colour and consist of a vertic, melanic or orthic A-horizon followed by a G-horizon. The soils are highly sensitive to development. Land capability: Wetland (no-go areas).
Inhoek	The Inhoek soil form is associated with areas along the Groot Dwars River, Inhoek are younger soils with 35cm-45cm depth overlying unconsolidated sediments in which soil formation has not progressed sufficiently to form diagnostic horizons. The soil form is sensitive to erosion mainly because of the topography and young nature of the soil. Land capability: Grazing
Lithic Soils	Lithic soils (Glenrosa and Mispah) are associated with the steeper valley areas and consists of rock and weathered rocky sections. This soil form is easily visible as rocky areas with very little soil formation. Very little topsoil is associated with this soil form; thus, the soil form is susceptible to erosion. Land capability: Wilderness.
Katspruit/Kroonstad	The riparian zone of the Groot Dwars River Valley is associated with dark grey, saturated Katspruit and Kroonstad soils. These soil forms are enriched with a clay layer of 15cm. These

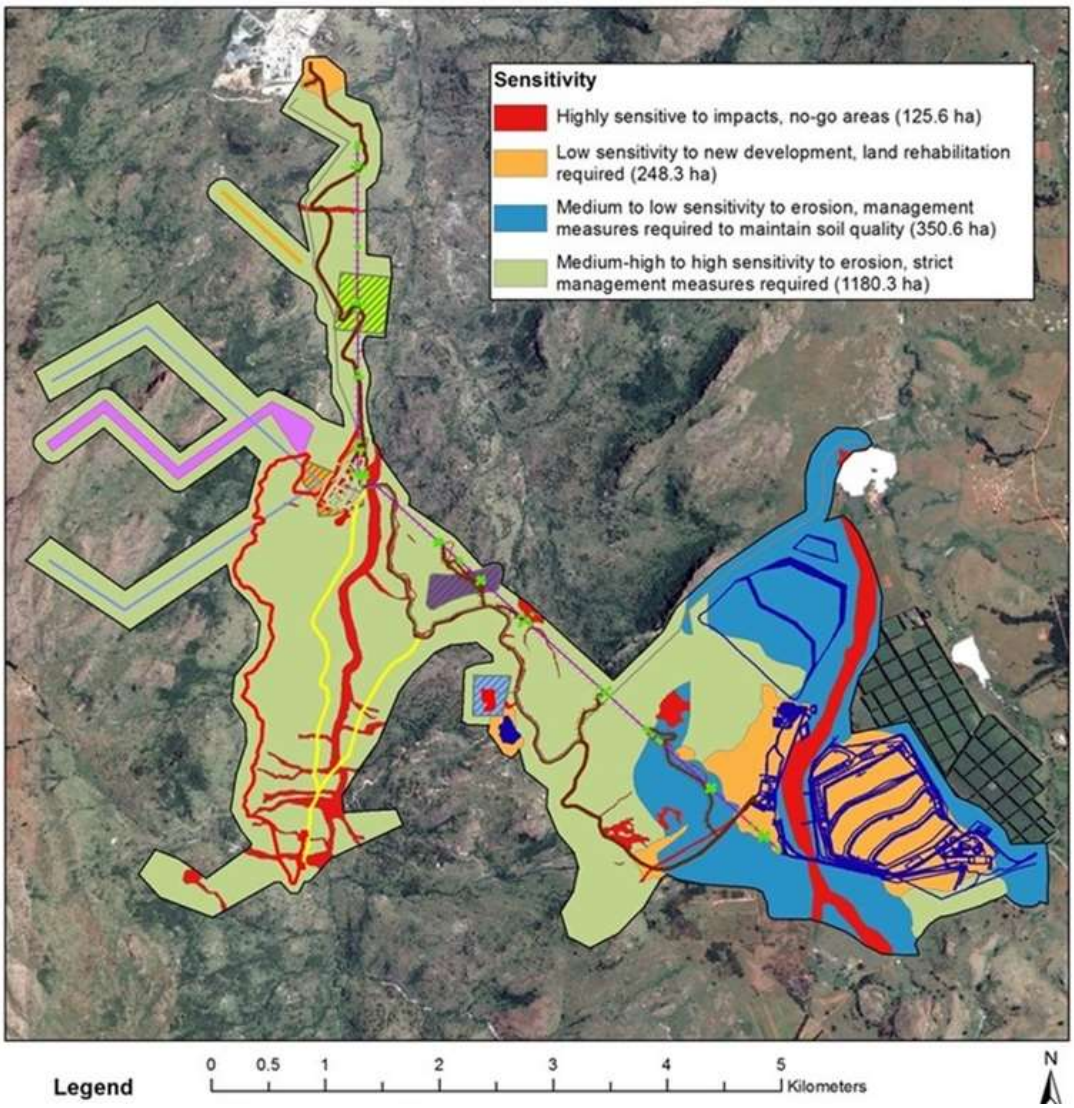
Soil Form	Characteristics
	soil forms are highly sensitive. Land capability: Wetland.
Mayo	The Mayo soil forms contains strong structured Melanic A horizon of between 15cm to 25cm deep, on top of a hard bedrock B-horizon. Land capability: Grazing or wildlife conservation.
Oakleaf	The Oakleaf soil form contains well developed (80cm) orthic A-horizon. The high sandy-loam contents of the soils make it susceptible to wind and water erosion. Land capability: High agricultural production and grazing capability.
Shortlands	The Shortlands soil forms contain well developed A-horizon and are susceptible to erosion. Land capability: Grazing.
Sterkspruit	The Sterkspruit soil form contains well-developed orthic A-horizon overlaying a B-horizon with relatively high clay content. Clay dispersion in the A-horizon makes the soil highly susceptible to erosion. Land capability:Grazing land capability.
Swartland	The Swartland soil has a 20cm orthic A-horizon. The B-horizons consist of blocky, structured pedocutanic B-horizon. The shallow soil depth and composition make the soil form significantly susceptible to erosion. The Swartland soil form is associated with the second section of the powerline and road from BN, a section of the ARC, sections on of the main access road on the eastern slope of BS4. Land capability: Grazing land capability.
Tukulu	The Tukulu soil consists of a well-drained orthic A-horizon of approximately 35cm. The soil has a pedocutanic B-horizon portray, although it portrays signs of wetness, making it a deep, fertile soil. Land capability: Arable land.
Valsrivier	The Valsrivier soils are a duplex soil with a well-developed A-and B-horizon. The soil has a depth of between 50 to 70cm. The B-horizon is clay enriched containing characteristics of wetness. Therefore, the soil from is susceptible to erosion, therefore, topsoil stockpiling should take these erosion sensitivities into consideration. Land capability: Grazing land capability.
Witbank	The Witbank soil form is associated with areas previously impacted by mining related activities, including roads, drill pads etc. and has been disturbed with associated erosion eminent in most areas. Land use: Due to the disturbed nature, this soil form is classified as wilderness.

7.11.2 Land Use

The Booysendal South Expansion Project: Phase 2 falls within mining rights areas, therefore the main land uses are mining related, including exploration. Other land uses include:

- The southern section of the Farm Buttonshope 51JT which is being managed as a conservation trust area;
- Grazing taking place in the northern section of BS4;
- Kiwi orchards are in the northern and north-eastern section of BS4 (the orchards are neglected and not currently being managed); and
- The collection of the narcotic CAT by local communities throughout the Phase 2 Project Area.

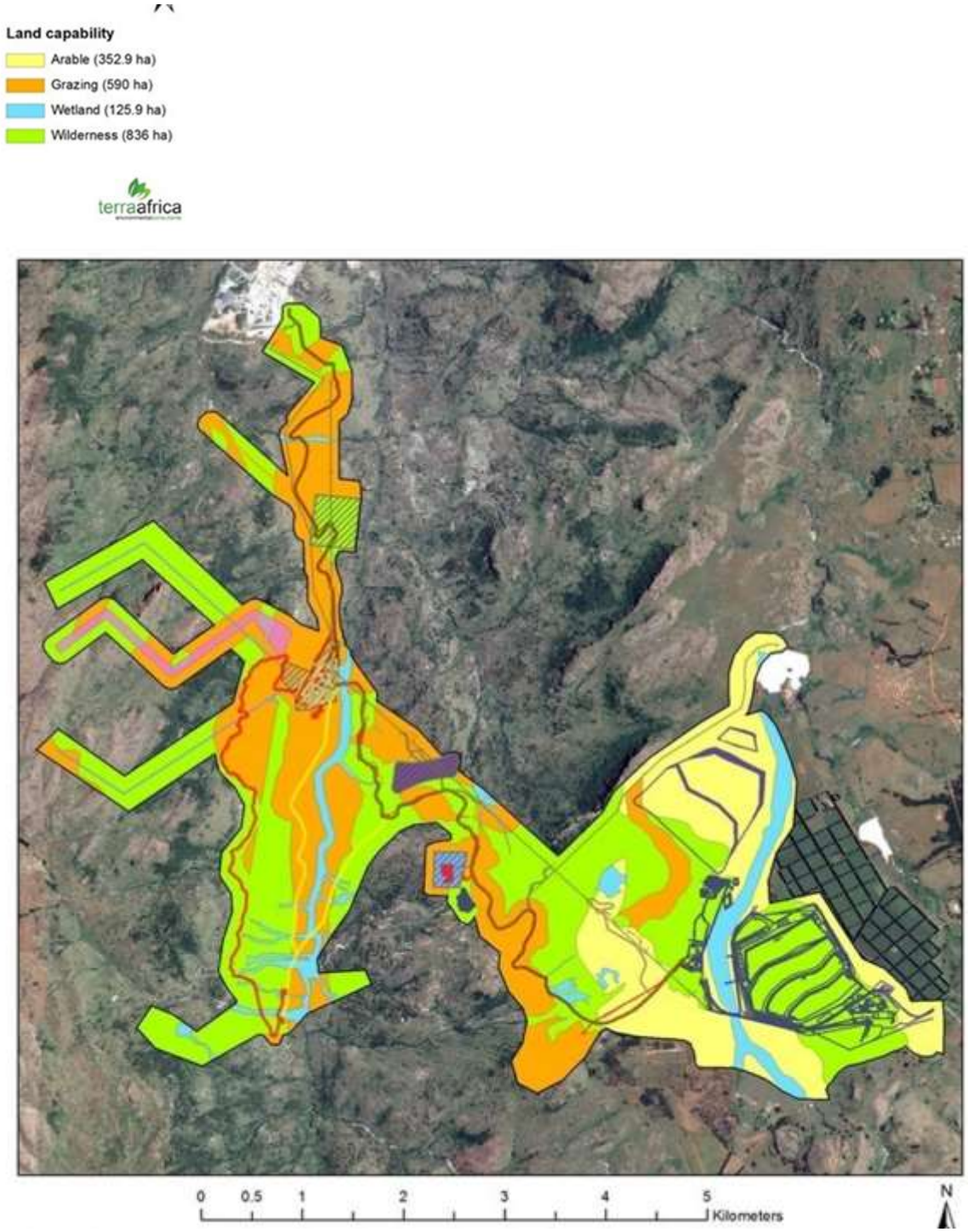
Figure 7-18 Soil Sensitivities (TerraAfrica, 2017)



7.11.3 Land Capability

Four main land capability categories are associated with the Booysendal South Expansion Project, namely: arable land capability; grazing land capability; wetlands; and wilderness capability. Figure 7-20 provides an indication of the distribution of the land capabilities across the Booysendal South Expansion Phase 2 Project Area.

Figure 7-19 Booysendal South Land Capabilities (Source: TerraAfrica, 2017)

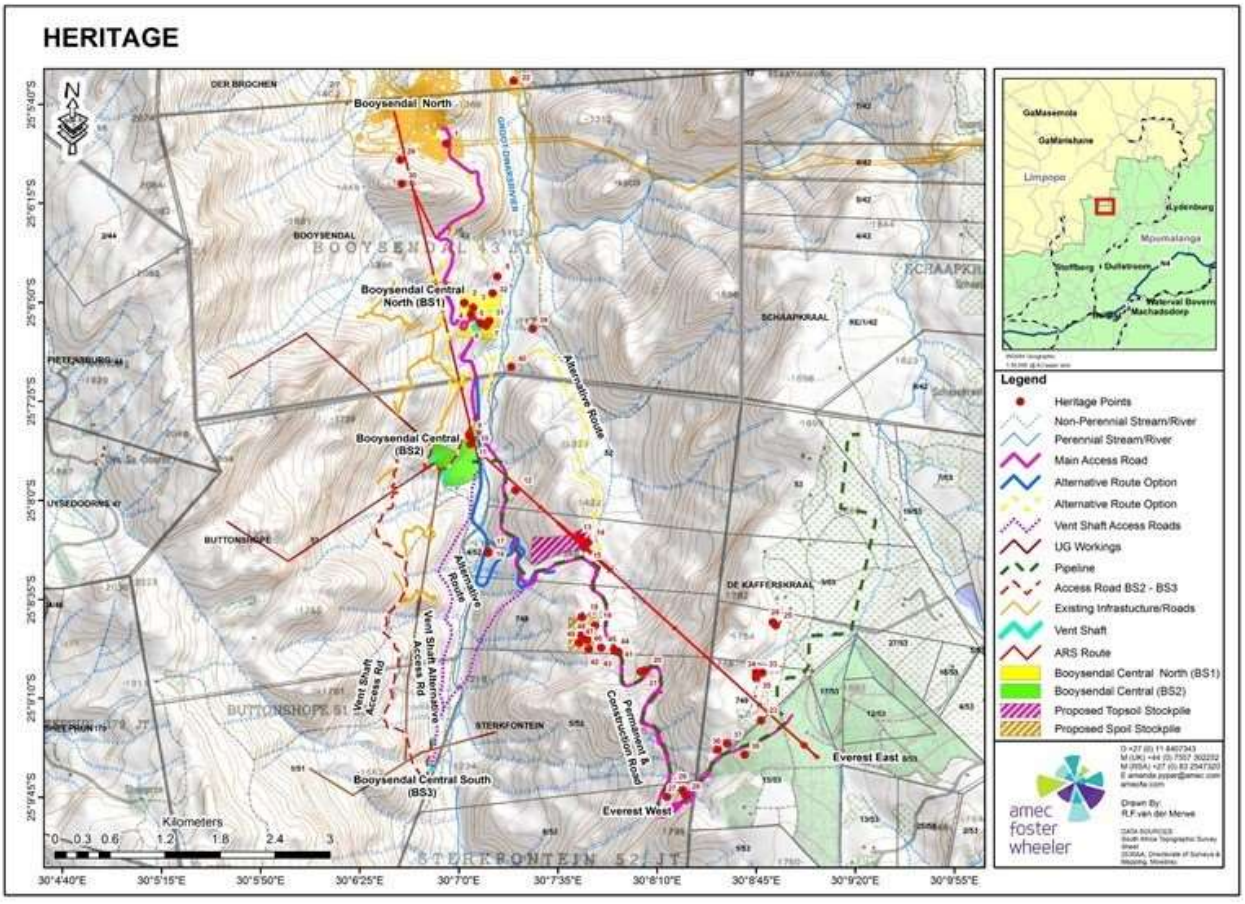


7.12 Cultural Heritage

In anticipation of numerous other mining activities in the greater study area, archaeologists have completed more than 11 heritage surveys (Huffman & Schoeman 2002; van Schalkwyk 2005; Roodt 2003a, 2003b, 2003c, 2005, 2008a, 2008b; Van der Walt & Fourie 2006; Van der Walt & Cilliers 2009; Van der Walt 2009) for various EIAs and EMPs. These studies provide a good understanding of the archaeology of the area and use of the wider landscape. Since 2002, heritage surveys have recorded more than 240 sites in the greater study area, ranging from the Middle Stone Age to the recent households of farm labourers.

The distribution of the sites on the landscape (Figure 7 20) show different land use patterns. Many agriculturally-orientated societies (making Eiland, Leolo and Marateng pottery) built their villages in the valleys near cultivatable alluvium. Others (probably Ndebele) built terraced-settlements on basal slopes of the valley edge, while farm labourers usually lived in the valleys as well. During the 19th Century, farmers lived around the edge of high meadows as a measure of protection. A few Middle Iron Age Eiland sites were also sited in this plateau environment. Grave sites can be expected anywhere on the landscape. The location of known cultural heritage sites are indicated in Figure 7-20.

Figure 7-20 Cultural Heritage Sites within the Booysendal Operation



7.13 Traffic

The main roads applicable to the Booysendal South Expansion Project is the:

- D874 which runs from the BS4 security gate to the intersection with the D577. This road is mainly used by farmers in the area, BS4 mine personnel and the communities which live to the east of BS4; and
- The "Village" road (D874) which ties into the D874 close to the BS4 entrance. This road is used by the village communities to the east of BS4.

A traffic count was done by Hamatino Consulting Engineers in 2017 to establish current traffic volumes on these roads. The results are included in Table 7-16. Traffic flows are currently very low.

Table 7-16 Traffic Volumes on the Roads around BS4 (Source: Hamatino Consulting Engineers, 2017)

Intersection	2017 Count	Peak hour	Peak hour Factor
ADT TRAFFIC			
R 577 / D874	389 Vehicles through intersection (sum of all directions)		
D 874 / Village Access	133 Vehicles through intersection (sum of all directions)		
AM PEAK HOUR TRAFFIC			
R 577 / D874	39	06:00 – 07:00am	0.61
D 874 / Village Access	17	06:15 – 07:15am	0.61
PM PEAK HOUR TRAFFIC			
R 577 / D874	46	15:30 – 16:30pm	0.68
D 874 / Village Access	21	16:00 – 17:00pm	0.75

7.14 Visual

In rural areas especially, development has the potential to intrude visually through the structures and through lights at night on the baseline visual components. The existing visual baseline conditions of the Phase 2 Project Area is mainly rural in nature. Some intrusion from high structures at BS4 is visible to surrounding communities, while night glare at night could result in some intrusion to communities directly surrounding the site. Potential changes to the visual characteristics of area will be investigated during the EIA phase.

7.15 Socio-economic Context

7.15.1 Socio-economic Context

BS4 and some of the linear infrastructure running from BS1/2 to BN is in the TCLM and specifically within Ward 5 of the TCLM. The TCLM is the second smallest municipality in the district of Ehlanzeni District Municipality of Mpumalanga province. The 2016/17 IDP for the Ehlanzeni District Municipality indicates that total population of is 1,688,615 of which 91,06% are Black South Africans, and the remainder 8,94% comprise Whites, Colored, Indians and Other racial groups. The IDP further states that in 2011 the unemployment rate for people between the ages of 15 and 65 was 32,32%, and majority of the population in Ehlanzeni are dependent on social grants.

The TCLM has a population of 98,387 with a total of 34,521,75 households. Poor and inadequate basic services have also contributed to the scattered nature of settlements in the rural areas of the TCLM, which makes infrastructure development challenging and costly.

The BCM1 and BCM2, including the Emergency Escape Portal and linear infrastructure on this side falls in Ward 31 of the GTLM of the Sekhukhune District Municipality. According to the 2016/17 (IDP, the

Sekhukhune District Municipality has a population of 1,076,840 inhabitants, of which 99% are Africans, and the remainder 1% comprise Whites, Indians and Coloureds. The IDP further sates that the three main contributors to Gross Geographic Product ("**GGP**") in the Sekhukhune economy are community services (3.62%), mining (2.38%) and trade (2.66%).

7.15.2 Demographics

According to StatsSA 2011, the area comprises 58% farmland and 42% urban areas. The population of the area is relatively young with 70% of the population in TCLM and 62% in Ward 5 being between 15 and 64 years. This indicates an availability of labour but also a need for more job creation and provision of social facilities.

Sepedi is the most generally spoken language in the area. The predominance of this language indicates that foreigners are not prevalent. Black Africans constitute 82% of the population. As far as gender is concerned, there is an almost even representation of males and females with 49% female and 51% male in TCLM.

7.15.3 Employment and Income Levels

The economy of the TCLM is mainly characterised by a dependency on agriculture (33%) followed by manufacturing (22%), community services (16%) and trade and catering (11%), which contribute to 19% of the district municipality GGP. The main economic activities in the TCLM is forestry, mining (32%) and tourism.

The economy in the GTLM remains predominantly rural. According to the GTLM IDP (2016/17), the area is economically the most marginalised region in the Limpopo Province. Although the IDP (2016/17) indicates that the main economic drivers in GTLM are agriculture, services and construction, it also stated that the area is solely dependent on government handouts and remittances from migrant labour.

Per the TCLM IDP (2016 – 2017), the unemployment rate in 1996 was 18,64% whereas in 2001 it was at its highest at 25,12%, which dropped to 20,49% in the year 2011. People with disabilities, women and youth are vulnerable to unemployment in TCLM. In 2011, 28,04% of women and 26,56% of youth were unemployed. The unemployment rate in the GTLM is higher than in TCLM. In 2011 the unemployment rate was 41%, and according to the GTM IDP (2016/17) the unemployment rate is projected to increase to 47% by 2020.

7.15.4 Income

According to TCLM IDP (2016/17) about 7,500 households have an annual income of between R19,000.00 and R38,000.00, while about 10,000 households have an average annual income of between R1.00 and R4 800.00. At least 32,000 households have an annual average income of between R76,400.00 and R153,000.00, and a minority group of about 77 households have an annual income of above R1 million.

In GTLM, a large proportion of the population, 48.25%, do not earn an income, while 2.65% of the population earn between R1 and R400 per month, followed by 2.58% who earn between R401 and R800 per month, and 12.89% earn between R801 and R1600 per month.

7.15.5 Education

Per the Census 2011, only 21% of the population in TCLM achieved a matric qualification, most the population (28%) have some form of secondary schooling, while 20% have some primary schooling and only 5% have completed primary school, illustrating a significant need for schools and the associated facilities in the municipality.

In the GTLM, an estimate 20% of the population have no schooling, and only 16% of the population achieved a Grade 12 pass in 2011.

7.15.6 Healthcare

Currently Sabie, Mashishing and Matibidi each have three public hospitals and three public clinics, and although mobile clinics operate in farm and rural areas, these clinics do not adequately meet community healthcare needs and are often an unreliable service. Due to the high levels of poverty in some of the areas of the local municipality, people cannot afford to pay for transport to public healthcare facilities, and are in serious need of mobile clinics. The main causes for deaths in the TCLM is tuberculosis, followed by influenza, intestinal infections, accidents and injury, heart disease and diabetes.

7.15.7 Services

In rural communities, most households do not have regular adequate water supply, and most households rely on water sourced from nearby rivers and springs (Key informant interview, 2017). In communities with drilled boreholes, no maintenance plans are in place, thus, many borehole equipment are broken, non-functional and in need of repair. In 2011 a total of 1072 households in TCLM did not have access to basic water facilities (TCLM IDP, 2016/17), and 21% of households used unventilated pit latrines. The two water treatment plants in Mashishing are in dire need of refurbishment.

Without bulk water supply, the municipality is also unable to provide communities with bulk sanitation, where approximately 1,619 households in farm areas are without access to basic sanitation. As an interim solution, the municipality is rolling out Ventilated Improved Toilets ("**VIPTs**") until the problem of bulk supply of water is addressed and resolved, which will ultimately solve the sewerage network and reticulation backlogs. (TCLM IDP, 2016/17).

A process of developing water and sanitation master plans to deal with problem is underway. A Water Service Development Plan ("**WSDP**") is in place, which depicts the current status quo and requirements for bulk water and sanitation service delivery. (TCLM IDP, 2016/17). In the local municipality, it is estimated that 84% of the population does not have access to refuse removal services.

In GTLM most the population use unventilated pit latrines, and almost 5.5 % of the households use VIPT. Most villages in GTLM do not have access to refuse removal and, dumping and burning of waste is the more common way of disposing waste.

7.15.8 Housing

Data from the 2011 census (Statistics SA, 2011) describe 68,45% of households in the TCLM municipality as formal housing types, 20,36% as informal housing and 3,95% as traditional housing types. Per the TCLM IDP, 58,82% of housing types in Ward 5 are formal housing types, 22,77% are informal housing, and 12,66% as traditional housing types.

The GTLM IDP (2016/17) describes 83,91% of the housing types in the Greater Tubatse Municipality as formal housing types, 7,31% as informal housing types, and 7,83% as traditional housing types, and the total number of people on the redevelopment programme (RDP) housing waiting list stands at 2,749.

7.15.9 Electricity

TCLM provides electricity to the urban areas, businesses and industrial sites, while electricity in the rural areas is provided by Eskom. Although there has been a steady growth in electricity supply since 1996, approximately 4,314 rural households in TCLM do not have access to electricity, which amounts to about 16% of all the households in TCLM. (TCLM IDP, 2016/17).

According to the GTLM IDP (2016/17), a total number of 144 villages are electrified, and 56 villages are still without electricity supply.

7.15.10 Transport

In general, the main roads between Lydenburg, Sabie, Graskop, and Pilgrim‘s Rest are in relatively good condition. The TCLM IDP (2016 – 2017) acknowledges that the roads within the towns and villages (including the paved and unpaved roads) are not being maintained. Buses and minibus taxis are presently the two major modes of transport.

In GTLM, buses and taxis are the main mode of public transport, and although the GTLM IDP (2016/17) recorded 405 taxi vehicles, 18 public buses, and a number of private bus companies operating in the area.The IDP also states that there is lack of public transport facilities and that an overwhelming majority of the taxi facilities are informal.

8. Project Area of Influence

In terms of the IFC Performance Standards, 2012, (IFC-PS1) the Project AoI is defined as:

“*The area likely to be affected by:*

- *the project and the client’s activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the project;*
- *impacts from unplanned but predictable developments caused by the project that may occur later or at a different location;*
- *indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities’ livelihoods are dependent;*
- *associated facilities, which are facilities that are not funded as part of the project and that would not have been constructed or expanded if the project did not exist and without which the project would not be viable; and*
- *cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted*.”

As an example of the AoI for this Project:

- The impact on soil will be mainly associated with the various construction and operating footprint areas, and as such, the AoI of potential impacts associated with soil will be mainly limited to the Project footprint areas; and
- The AoI of potential impacts on surface water reaches beyond the site as run-off from the site could reach the surrounding drainage lines, the Der Brochen Dam and potentially the Steelpoort River.

In terms of the social AoI there is a differentiation between:

- Direct AoI, which refers to the area of the actual Project footprint, the surrounding area where the direct impacts of the Project are experienced from 100m up to 10 km from the study area, and along the traffic routes, in towns and villages directly impacted by the Project; and
- Indirect AoI which will be much wider and refers to areas outside the 10-km zone of the direct impact.

Table 8-1 provides the different AoIs for the environmental components of the study for the Booysendal North MR and the Booysendal South MR.

Figure 8-1 Project Are of Influence of Different Environmental Components

Environmental Component	Area of Influence (AoI)
Terrestrial Flora and Fauna	*Direct* (e.g. loss of flora and fauna with clearing of vegetation): The Phase 2 Project footprint and 100m buffer around the Phase 2 Project footprint.
	Indirect (e.g. habitat degradation and faunal disturbance from dust, light and noise): The Phase 2 Project footprint and all adjoining areas contained within the highest surrounding topographic contours.
Aquatic Flora and Fauna	*Direct:* The Phase 2 Project footprint and 100m buffer around the footprint, as well as from the upper reaches of the Groot Dwars River, north to Der Brochen Dam and associated tributaries in the Phase 2 Project Area.
	Indirect: Groot Dwars River downstream of Der Brochen Dam up to the confluence with the Steelpoort River.
Pycna Sylvia	*Direct and Indirect*: From the upper reaches of the Groot Dwars River valley to BN.
Water Quality	*Direct:* The project footprint and 100m buffer around the footprint, as well as from the upper reaches of the Groot Dwars River, north to Der Brochen Dam and associated tributaries in the Phase 2 Project Area.
	Indirect: Groot Dwars River downstream of Der Brochen Dam up to the confluence with the Steelpoort River.
Wetlands	*Direct*: The Phase 2 Project footprint and 500m buffer around the Phase 2 Project footprint, as well as from the upper reaches of the Groot Dwars River south of BS1/2 and north to directly downstream of the Phase 2 Project Area.
	Indirect: Groot Dwars River downstream of the Phase 2 Project Area to the BS4 fence line.
Hydrology	*Direct:* The site delineated catchment areas i.e. the Groot Dwars River upstream of De Brochen Dam (Tier 3); and affected surface water resources (Tier 4).
	Indirect: Water Management Area (Tier 1); and DWS Quaternary Catchment Area (B41G) (Tier 2).
Hydrogeology	*Direct:* The areas affected by potential dewatering and dewatering cone. Areas which may by the formation of a pollution plume.
	Indirect: Should decant become applicable the indirect AoI will be the same as that of the Hydrology
Soil, Land Use and Land Capability	*Direct:* Project footprint and an approximately 100m buffer around the footprint.
	Indirect: Groot Dwars River valley and 500 m around BS4.
Air Quality and Greenhouse Gas Emission	*Direct*: 1 km from unpaved roads; 2 km from crusher; and 4 km from tailings dam and any cleared area.
	Indirect: 5 to 10 km down wind of emission (particulate or other)
Noise	*Direct*: Residential properties within a radius of 8 km from centre of each Phase 2 Project Area.
Traffic	*Direct*: Road users which could be directly affected by an increase in traffic. This

Environmental Component	Area of Influence (AoI)
	includes people making use of the Village access road and the D874
	Indirect: Road users of the D577 Roossenekal-Lydenburg Road and the D577 Steelpoort-Lydenburg Road
Visual	*Direct*: Views from next to the project development to a 10km radius around the project.
	Indirect: The same as direct
Social	*Direct*: Booysendal (most farms owned by Booysendal); the settlement to the north of BS4, the Phetla community; and people residing within the municipal wards and communities near the mining operation - Ward 5 of the TCLM and Ward 31 of Greater Tubatse LM
	Indirect: The regional target population encompassing the Ehlanzeni and Sekhukhune District Municipalities.
Cultural Heritage	*Direct:* Project footprint and an approximately 100m buffer around the footprint.
	Indirect: Groot Dwars River valley and 500m around BS4.

9. Public Participation

As part of the process of application for the required Environmental Consents, public participation or stakeholder engagement must be conducted. The various pieces of applicable legislation specifically require that public participation be conducted to provide (I&APs the opportunity to participate in the process by providing their comments and concerns with the proposed applications for the required authorisations and licences. An integrated public participation process will be proposed, combining the public participation requirements of the different applications under NEMA, NEMWA and the NWA to ensure efficiency in terms of time and costs. The proposed process will be discussed with the CAs prior to application.

A Stakeholder Engagement Plan ("**SEP**") has been compiled (Appendix B) to steer and guide the required PPP which should be undertaken. The document will remain in draft and regular updates will be made as the public participation process unfolds. The final SEP will be submitted with the final reports for the various required authorisations and licences to the authorities.

9.1 Objectives of Public Participation

The most important objective of public participation is to provide sufficient and accessible information to I&APs in an objective manner to assist them to:

- Raise issues of concern and suggestions for enhanced benefits and commenting on reasonable alternatives;
- Verify that their issues have been recorded (CRR) and considered in investigations; and
- Contribute relevant local information and traditional knowledge to the process.

9.2 Written Consent

The farm portions to be used for the Expansion Project are owned/or leased by Booysendal for this purpose (see Table 1-2 and Table 1-3), in accordance with regulation 39 (1) of Chapter 6 of the 2014 Regulations.

9.3 Interested and Affected Parties

For this project, I&APs will typically include the following:

- The owners or persons in control of the land where the proposed activities are to be undertaken –the Bokoni CPA, as Booysendal owns the other properties in the Project Area;
- The occupiers of the property where the activities are to be undertaken – not applicable as the Bokoni CPA does not occupy any properties in the Project Area that they own. These properties are leased by the Bokoni CPA to Booysendal;
- The owners and occupiers of land adjacent to the site – this includes all adjacent landowners and occupiers in the areas - specifically central and south;
- Provincial (Mpumalanga and Limpopo) and local government (Ehlanzeni District Municipality (Mpumalanga), TCLM (Mpumalanga), Greater Sekhukhune District Municipality (Limpopo) and GTLM (Limpopo);
- Organs of state, other than the authorising authorities, such as the DAFF, DWS, etc., having jurisdiction in respect of any aspect of the proposed activities;
- Relevant residents' associations, agricultural unions, Tribal Authorities, Community Property Associations ("**CPAs**"), ratepayers' organisations, community based organisations, water user associations, and any catchment management authority and Non-Governmental Organisation ("**NGOs**");
- Media (local and regional – e.g. Steelburger / Lydenburg News);
- Environmental and water bodies, forums, groups and associations; and
- Private sector (business, industries) in the vicinity.

The existing register of I&APs will be updated throughout the process.

9.4 Integrated Public Participation Process for the Booysendal South Expansion Project: Phase 2

The PPP is linked to the progress made with the technical work of the EIA and IWULA, which will dictate the timeline of the study, including the allowable timeframes set by legislation. It is estimated that the PPP will be conducted over a period of six months.

Figure 9-1 provides a flow between the technical work of the EIA and IWULA and the public participation activities. This figure also shows the deliverables that will be prepared as part of the output from the public participation process. A detailed list of activities for the integrated public consultation process for the Booysendal South Expansion Project: Phase 2 is described in Table 9-1.

Figure 9-1 Integrated Public Participation Process for Booysendal Phase 2 Expansion

	Legislative requirements according to 2014 EIA Regulation, Chapter 6, Regulations 39 - 44	**Application of the requirements for the project**
1.	**Written Notification (Regulations 39(1) and 41(2)(b))**	Written notification and consent (registered letters and / or hand deliveries) to potentially affected landowners, occupiers and/or persons in control of the land (all alternatives included) prior to the submission of the Applications and Notification to CAs. A Background Information Document (BID), accompanying letter and comment sheet will be compiled and distributed to I&APs on 16 February 2018.
1a.	Written notice must be given to: • occupiers, owner or person in control of the land; • owners, persons in control and occupiers of land adjacent to the site; • municipal ward councillor in which the site is situated; • rate payers organisation in which the site is situated; • municipality with jurisdiction in the area; and • state organs with jurisdiction in respect of the activity.	Categories of stakeholder and I&APs will be included in the stakeholder database.
2.	**Media Advertisement (Regulation 41(2)(c)&(d))**	An advertisement will be published in the regional Steelburger newspaper which is distributed to the relevant areas in the Project Area in Mpumalanga and Limpopo on 16 February 2018.
2a.	An advertisement must be placed in one local newspaper or any official Government Gazette. Should a Project extend or have an impact beyond the boundaries of the metropolitan municipality an advertisement must be placed in at least one provincial or national newspaper.	Advertisements will be published to announce the Project, the availability of the Consultation Scoping Report and when further documents are available for public comment.
3.	**Site Notice (Regulation 41(2)(a) & 41(4))**	Notices will be placed on 16 February 2018
3a.	A site notice of the size 60cm by 42cm must be displayed at the Project Area and alternative sites in a lettering and format which may be determined by the CA. A site map showing where the site notices were displayed and dated photographs showing the notice displayed on site and a copy of the text displayed on the notice must be included in the report(s).	Sufficient site notices will be placed on route to and around the Booysendal Mine complex. Emphasis will be put on placement of notices more to the central and southern areas within the Project Area.
4.	**Registration of I&APs (Regulation 42)**	The existing stakeholder database or contact list will be updated throughout the application process.
4a.	A register must be maintained containing all names, contact details and address of all persons who have submitted written comments or attended meetings.	A register of I&APs will be kept for the duration of the Project and submitted to the CA/
4b.	All persons who have requested for their names to be placed in the register.	
4c.	All organs of state that have jurisdiction in respect of the activity relating to application.	

5.	**Comments by I&APs (Regulations 43 & 3(7))**	A CRR (various versions) will be developed and included in all reports and distributed to I&APs.
5a.	A registered I&AP is entitled to comment, in writing, on all written submissions, including draft reports submitted to the competent authority and to raise any issues which the I&AP believes may be of significance	The CRR will list all comments and issues received and a response from the team together with Northern Platinum personnel. The report will be distributed to all who have commented.
5b.	Comments must be submitted within the timeframes that have been approved or set by the CA. The CA and practitioner may agree to extend the comment period in exceptional circumstances.	
6.	**Commenting on reports**	Reports (consultation / draft and final versions) will be available for public and authority review for 30 days and reports under the NWA for a 60-day comment period
6a.	All draft versions of reports must be submitted to the CA prior to awarding registered I&APs an opportunity to comment.	All the requirements will be communicated to stakeholders (including authorities) in the notifications to them.
6b.	Registered I&APS must be given the opportunity to comment in writing on all submissions (draft and final versions of reports) to the CA.	
6c.	I&AP comments on draft reports must be submitted to the EAP.	
6d.	Registered I&APs must submit comments on final reports directly to the competent authority and provide a copy to the EAP or applicant.	
6e.	All comments received from I&APs must be acknowledged and must indicate how the comments received will be responded to. E.g. “a response will be contained in the CRR	
7.	**Notification of Environmental Authorisation Regulation 4**	Notification letters will be sent to I&APs.
	I&APs must be notified in writing of the outcome decision of the CA.	A letter will be compiled and distributed to I&APs.

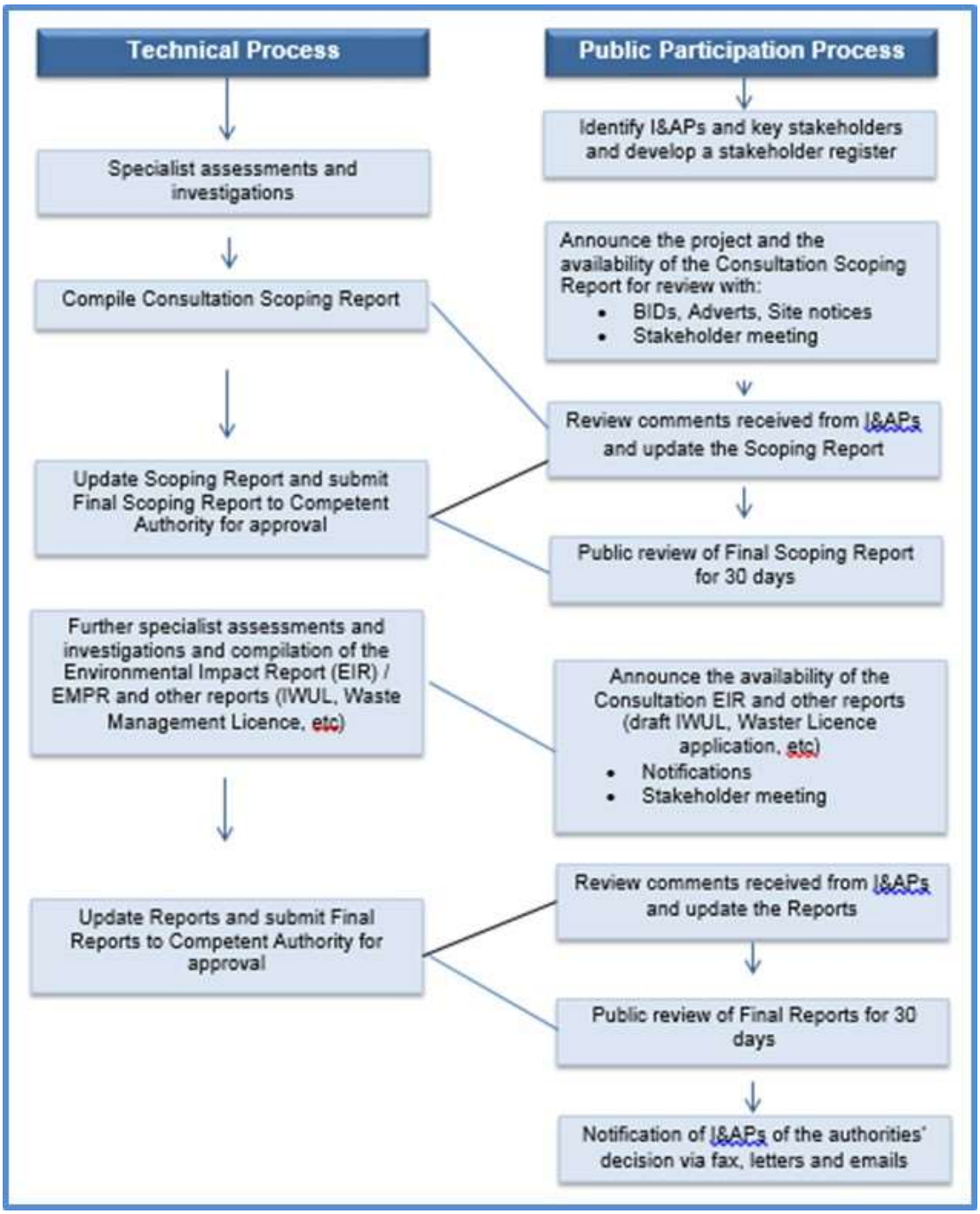
9.5 Deliverables from the Public Participation Process

The public participation process, which will be followed, will have the following main deliverables:

- Letters / emails or telephonic communication to I&APs (e.g. announcement of the projects and notification that consultation and reports are available for review;
- Background Information Document ("**BID**") in English, Afrikaans and Sepedi;
- Site notice boards in English, Afrikaans and Sepedi;
- Advertisements in the Steelburger (approximately two rounds, depending on some variables) in English;
- Stakeholder database;
- Comments and Response Report (versions 1 to 3);
- Proof of delivery of all reports to public places and authorities;
- Minutes from the stakeholder meetings (x 2) and associated documents such as attendance registers, presentations and agendas; and

- Notifications of authority decisions to I&APs.

Figure 9-2 Flow between Environmental Processes and Public Participation Process



9.6 Integrated Participation Process Thus Far

9.6.1 Introduction of the Project

The Project, the integrated application process and the availability of the Consultation Scoping Report was announced to the I&APs by means of the following:

- Advertisements in the local Steelburger / Lydenburg newspaper (distributed in the Phase 2 Project Area and in both Limpopo and Mpumalanga provinces). An advertisement was published on Friday, 23 February 2018. Appendix B to this report records proof of the advertisement published.
- A BID was compiled, translated (in English, Afrikaans and Sepedi) and distributed as follows:
  - to all I&APs on the stakeholder database via email notifications on 16 February 2018;
  - per hand to those who were visited while the site notices were placed on 15 February 2018; and
  - at meetings held during the review of the Consultation Scoping Report;
- Site notices were placed on 15 February 2018 all around the Booysendal Mine on main roads and at public places. Appendix D to this report provides a description of where 20 site notices were placed as well as a photo of each site notice placement;
- Telephonic notification to key I&APs and landowners; and
- Placement of a notices and the BIDs on the Amec website (www.amecfw.com/booysendal).

9.6.2 Consultation Meetings

Stakeholder meetings were held just before the review period of the Consultation Scoping Report. A record of the deliberations at the meetings will be included as part of the CRR – Version 1 which will be made available with the Final Scoping Report.

Meetings were held as follows:

Date	Time	Meeting
22 February 2018	10:00	Meeting with Thaba Chweu Municipality, provincial and national authorities
22 February 2018	14:00	Meeting with adjacent commercial farmers and mines
23 February 2018	10:00	Meeting with the Main Community Forum

The purpose of the meetings was to announce the integrated application process, to present to stakeholders a summary of the Consultation Scoping Reports, and to obtain their views and comments on the information available as was presented to them during the meetings. All attendees were reminded of the process being followed and that there will be another opportunity for them to comment on the Final Scoping Reports as well as on the reports to be compiled as part of the EIA phase (e.g. EIR for the WML Application and EA and EMP Amendment Application, and IWUL Report).

The presentations delivered at the meetings as well as the attendance registers of each meeting will be included in the Final Scoping Report.

9.6.3 Comments and Response Report

All comments which will be received during the integrated application process will be captured in a CRR. The CRR will be updated on a continuous basis and will be presented to the authorities and other I&APs together with the consultation and final reports as a full record of issues raised, including responses on

how the issues were considered during the integrated application process. The following versions of the CRR will be available:

- CRR Version 1: Submitted with the Final Scoping Report. This version of the report will capture comments and issues raised from the beginning of the announcement until 30 March 2018. Comments received after this date will be captured in version 2 of the CRR;
- CRR Version 2: Will be submitted with the Consultation EIR/EMPr; and
- CRR Version 3: Will be submitted with the Final EIR/EMPr.

9.6.4 Pre-consultation Meetings

Pre-consultation meetings and communication with were held with authorities were held as follow:

9.6.4.1 Department of Mineral Resources Limpopo Regional Office

Booysendal North MRThe Booysendal South Expansion Project was discussed with the DME Limpopo Officials on 33 April 2017, 3 August 2017 and 7 August 2017. It was indicated that the DMR Limpopo is only the CA for the Booysendal North MR.

9.6.4.2 Department of Mineral Resources Mpumalanga Regional Office

A letter was submitted to the DMR to request guidance on the way forward. This was followed with a telephonic conversation. The outcome of the communication was that the Scoping Report and Application form for the Booysendal South MR could be submitted simultaneously.

9.6.4.3 Department of Water and Sanitation

A pre-consultation meeting was held with the DWS on 26 March 2017. DWS advised that one integrated IWULA covering all the Booysendal South Expansion Project: Phase 1 and Phase 2 as well as historic water uses associated with BS4 should be submitted.

9.7 Next Steps in the Public Consultation Process

The process that will be followed is outlined in Table 9-1.

9.7.1 Announcement of Draft Scoping Report

The announcement of the integrated application process also introduced the availability of the Consultation Scoping Report for public review and comment. The Consultation Scoping Report will be available for public comment for a period of 30 days from 28 February to 30 March 2018. The Report will be available as follows:

Printed Copies	
Lydenburg Public Library, 41 Viljoen Street, Lydenburg (Tel: 013 235 3700)	
Maartenshoop Police Station, Naauwpoort Farm (Tel: 013 235 4041)	
Electronic Copies	
Website download	www.amecfw.com/booysendal
CD copy	On request to the public participation office
Hard copies and / or CDs	To all commenting authorities

The availability of the Report was announced via the publishing of advertisements, in the BIDs and on-site notices (refer to Appendix B). E-mails were sent to all I&APs registered on the stakeholder database, providing the direct link to an electronic version of the Consultation Scoping Report and its appendices. At

all stakeholder meetings to be held the availability of the reports and how stakeholders may access copies of the reports will be communicated.

9.7.2 Going Forward

All registered I&APs will be notified of the progress of the Project, this include notification of the availability of the EIR/EMPr (30 days) and IWULA (60 days) for comment and of any future public meetings that may be held.

10. Potential Impacts

This section highlights potential impacts which may result from the Booysendal South Expansion Project Phase 2 on both the Booysendal North MR and the Booysendal South MR. These potential impacts will be further investigated during the specialist investigations and the impact assessment phase.

10.1 Aquatic Ecosystems

Potential impacts on aquatic ecosystems include the following:

- Modification of riparian zones and riverbanks (modification of nutrient input);
- Increased sedimentation;
- Habitat modification (physical habitat structure) and degradation of the Groot Dwars River system;
- Impacts on water quality;
- Loss of aquatic biodiversity; and
- Impacts on threatened aquatic species, especially the *Barbus motebensis*.

10.2 Wetlands

Potential impacts on wetland habitats include:

- Loss of wetland habitats;
- Loss of wetland functionality;
- Loss of ecosystem goods and services;
- Loss of threatened wetland species (vegetation);
- Establishment and encroachment of alien invasive vegetation within wetlands; and
- Increased resource abstraction (e.g. medicinal plants, firewood).

10.3 Riparian Vegetation

Potential impacts on riparian vegetation communities include the following:

- Direct loss of riparian zones;

- Loss of species diversity;
- Loss of threatened/ rare or endemic plant species;
- Establishment and encroachment of alien invasive vegetation within riparian zones;
- Increased resource abstraction (e.g. medicinal plants, firewood); and
- Loss of buffering capacity.

10.4 Terrestrial Ecology

10.4.1 Flora

- Habitat fragmentation;
- Loss of CBA vegetation units;
- Permanent destruction of unique floral communities;
- Loss of CI species;
- Loss of medicinal plants and plants used by communities; and
- Increase in A&IS.

10.4.2 Fauna

- Habitat fragmentation and creation of migration barriers;
- Loss of CI species;
- Disturbance of fauna due to noise, light and dust, specifically CI species;
- Destruction of habitat on which CI species depend;
- Loss of scientific knowledge specifically of endemic, CI species;
- Increase in road traffic kills of fauna; and
- Influx of job seekers leading to uncontrolled increase in hunting.

10.5 Soil, Land Use and Land Capability

10.5.1 Potential impacts on soil

The proposed Booysendal Expansion Project: Phase 2 may impact on soil in the following ways:

- The most significant impact is the topsoil that will be stripped and stockpiled in areas where surface infrastructure will be constructed. This will cause major disturbance to the functionality and productivity of the soil and may also result in a loss of topsoil;
- Soil erosion caused by wind and water movement over the soil surface of the topsoil stockpiles and areas cleared of vegetation;
- Chemical soil pollution may occur because of oil and fuel spills as well as from ore spilled on the surface from trucks or conveyor belt;
- Dust emitted into the atmosphere will lead to the pollution of the soil; and

- Soil compaction will be a potential impact, especially in areas where construction vehicles will move around and underneath stockpiles.

10.5.2 Potential impacts on land use

The main impact on land use will be the change of land use from grazing for livestock and game to that of mining and supporting infrastructure. The cumulative impact on land use is that large portions of land that have previously been used for agriculture in the region, are converted into mines which result in loss of agricultural land use on a regional scale.

10.5.3 Potential impacts on land capability

The land capability of the areas where the proposed mining infrastructure will be constructed will change from wilderness land capability to mining. Should the area not be rehabilitated again to pre-mining land capability after mining operations have ceased, the land capability may be reduced to wilderness.

10.6 Hydrology

10.6.1 Surface Hydrology

- Changes in the flow regime of watercourses, especially smaller streams;
- Increase in erosion sedimentation and silt loads;
- Negative change in the water-and salt balance of the BS4 streams and the Groot Dwars River due to an increase in contaminants; and
- Reduced flows to the natural resources due to abstraction and stormwater controls.

10.6.2 Surface Water Quality

- Decanting or spillages from the proposed expansions leading to a decrease in water quality;
- Secondary impacts on the sensitive FREPA system; and
- Increase in nitrate and chromium levels in the surface water.

10.7 Hydrogeology

- Dewatering leading to the formation of a dewatering cone, reduced groundwater levels and reduced availability of water;
- Reduction in the baseflow in the Groot Dwars River system;
- Formation of a contamination plume due to infiltration of contaminants into the groundwater; and
- Daylighting of contaminated groundwater into surface water resources.

10.8 Noise and Vibration

- Increase in noise levels leading to a nuisance to communities;
- Noise impacts on fauna which could cause disruption in breeding pattern, migration patterns; and
- Air-over-blast and vibration impacts on communities leading to cracks in structures.

10.9 Air Quality

Emissions to air from a mine such as this have the potential to be significant if appropriate mitigation and management measures are not undertaken. Under normal, responsible operation, a number of areas of potential emissions are readily identified:

- Dust and associated emissions during building, operational and decommissioning phases specifically linked to those activities;
- Dust emissions during operation, particularly associated with loading and offloading of material, dumping of overburden and waste rock, and the transport of material via either truck or conveyor;
- Fugitive dust emissions associated with the wind entrainment of large areas of exposed earth and dumped material that will be created during the project with specific reference to tailings dumps;
- Fugitive emissions associated with the storage of hydrocarbons on site; and
- Vehicle emissions associated with the building, operation and decommissioning phases.

10.10 Visual

The proposed development may give rise to environmental effects on landscape and visual amenity receptors within the Zone of Visual Influence ("**ZVI**"). These impacts will be given consideration as part of the design process to ensure that significant effects are avoided or mitigated. The following landscape and visual effects are anticipated to occur during the construction and operation of the proposed development:

- Potential visual impact on users of roads near proposed infrastructure;
- Potential visual impact on residents of settlements and/or homesteads near the proposed infrastructure;
- Potential visual impact on sensitive visual receptors (tourists) within the region;
- Potential lighting impacts; and
- Potential impacts on general landscape character of the area.

These issues will be considered in the context of the landscape character and possible cumulative influence of other possible infrastructure projects that exist or are planned in the vicinity. Possible mitigation measures also need to be identified.

10.11 Heritage

Based on land use patterns and site distribution in the general area it is possible to predict areas that could be of potential heritage significance and the following sites could be impacted on.

10.11.1 Archaeological sites

Based on other work conducted in the area archaeological sites are expected in the study area. All sites could be mitigated either in the form of conservation of the sites with in the development or by a Phase 2 study where the sites will be recorded and sampled before the client can apply for a destruction permit for these sites prior to development.

10.11.2 Historical finds and Cultural landscape

It is not anticipated that the built environment will be severely impacted upon as no structures occur within the study area older than 60 years (based on Google Earth). This assumption will however have to be verified in the field. There are however old water furrows and a dam and the age of these structures will have to be determined.

10.11.3 Burials and cemeteries

Formal and informal cemeteries as well as pre-colonial graves occur widely across Southern Africa. It is generally recommended that these sites are preserved with in a development. These sites can how ever be relocated if conservation is not possible, but this option must be seen as a last resort and is not advisable. The presence of any grave sites must be confirmed during the field survey and the public consultation process.

10.12 Traffic

- Increase in traffic leading to traffic incidents and accidents;
- Increase in traffic leading to otherwise safe intersections; and
- Congestion at intersections and longer travel times.

10.13 Socio-economic

A summary of current and potential future socio-economic impacts is included in Table 10-1.

Table 10-1 Potential Socio-economic Impacts

Issue	Type of Impact	Impact indicator
Construction Phase		
Economic	Positive	▪ Job Creation during construction ▪ Skills transfer and development ▪ Multiplier effects on the local economy
Social	Negative	▪ Physical and economic displacement ▪ Disruption of movement patterns ▪ Increased pressure on local infrastructure and services ▪ Social unrest due to conflicts between work seekers ▪ Increase in informal settlements ▪ Increase in social problems (teenage pregnancies, school drop-outs) ▪ Increase in alcohol and substance abuse ▪ Population influx ▪ Visual/acoustic and air quality impact
Health and Safety		▪ Increase in Communicable diseases
Operational Phase		
Economic	Positive	▪ Job Creation

Issue	Type of Impact	Impact indicator
		▪ Skills development and transfer ▪ Regional economic development ▪ Contribution to the fiscals ▪ Establishment and development of small, medium micro enterprises ▪ Contribute to social infrastructure development through corporate social responsibility and LED (SLP commitments)
Social, Culture and Heritage	Positive	▪ Promote cultural diversity ▪ Promote homeownership and property improvements ▪ Improved lifestyles (emergence of a social class of homeowners and motor vehicle drivers)
	Negative	▪ Population influx ▪ Change in the demographics ▪ Marginalisation of local languages ▪ Erosion of local cultural values and morals ▪ Loss of medicinal plants ▪ Increase in informal settlements ▪ Increase in social problems (teenage pregnancies, school drop-outs) ▪ Crime ▪ Increased pressure on local infrastructure and services ▪ Social unrest due to conflicts between work seekers ▪ Tension over procurement
Health and safety	Negative	▪ Increase in communicable diseases ▪ Visual/acoustic and air quality impacts ▪ Traffic and potential accidents
Decommissioning and Closure		
Economic	Positive	▪ Job creation ▪ Donation of mine infrastructure to Local Municipality
	Negative	▪ Loss of income ▪ Increase in unemployment ▪ Loss of funding and support for local infrastructure and social services ▪ Loss of revenue for Local Municipality ▪ Collapse of local mine suppliers
Social	Negative	▪ Impact on workforce ▪ Increase in alcohol and substance abuse ▪ Social dislocation due to out-migration ▪ Drop in housing demand and associated decline in property prices

Issue	Type of Impact	Impact indicator
		▪ Job losses ▪ Decline in lifestyles ▪ Bank repossessions ▪ Impacts on the visual environment

11. Plan of Study for EIA

The purpose of the scoping phase is to identify potential impacts which can potentially be associated with various activities and phases of the project and so assist in developing the Plan of Study for the EIA.

The EIA that is scoped by the Scoping Report will: provide an analysis of potential impacts associated with the Project based on the baseline conditions, public opinion, scientific findings and national and international requirements; provide an assessment of alternatives; and propose management and monitoring measures to control potential impacts. Results from the EIA study will be fed back into the developing Project design to assist reduce potential for negative impact and enhance positive impacts.

The Plan of Study for the EIA is for both the Booysendal North MR and the Booysendal South MR and outlines the objectives, scope, contents and format of the EIA, the EMPr and the Closure Plan.

11.1 EIA Objectives

In terms of the legislation the objectives of the impact assessment are to:

- Determine the policy and legislative context of the Project;
- Describe the need and desirability of the proposed activities;
- Identify the location of the development footprint within the preferred site;
- Determine the impact of preferred alternatives (nature, significance, consequence, extent, duration and probability), the degree to which these impacts can be reversed, avoided and resultant loss;
- Identify suitable measures to avoid, manage or mitigate identified impacts; and
- Identify residual risks that need to be managed and monitored.

The ultimate objective is that the relevant environmental standards are incorporated into project design and included in the EIA for implementation by the Project team throughout the life of the Project.

11.2 Project Description

The current Project description will be updated in the EIA as the Project concept is further refined. As noted, the EIA will also inform the developing Project design in an iterative manner to ensure that optimization fully takes fully environmental and social factors into account.

11.3 Environmental Baseline and Social Status Quo

The proposed development will be assessed against the current status quo and the potential change that will be imposed on baseline conditions because of the Project. All the baseline receptors identified during the scoping phase that may potentially be impacted will be included in the baseline reporting.

Characterization and analysis of baseline conditions will be based on an assessment of existing relevant specialist investigations with an update of these studies, where appropriate. The baseline studies will make provision for the wider BS area to ensure that potential cumulative impacts will also be captured accurately

11.3.1 Specialist Studies

As part of the EIA process, it is important to understand the current biophysical and social environments as well as the inter-linkage between these environments. Only once the baseline is understood can the potential direct, secondary and cumulative impacts be fully defined. The specialist studies will draw on previous studies and the impact assessments will draw on the previous audit findings done for the Project. For this purpose and in line with the findings of the scoping phase, the specialist investigations outlined in Table 11-1 will be undertaken to gain a quantitative and qualitative understanding of the impacts that the Project may have.

Figure 11-1 Specialist Studies Terms of Reference

Specialist Study and Specialist	Scope of Work

Natural Scientific Services (NSS)	**NSS will undertake follow-up survey of their 2017 surveys on the proposed Booysendal North MR and Booysendal South MR development footprint areas**
	
	Desktop Review:
	The desktop review will be updated with amongst others:
	• The sourcing of the latest available provincial biodiversity spatial data from the Mpumalanga Province (Sector Plan Data etc.);
	• The review of the latest national biodiversity spatial data;
	  o Regional Vegetation types;
	  o Ecoregions and Land types;
	  o National Threatened Ecosystems;
	  o National Terrestrial Priority Areas; and
	  o National Freshwater Ecosystem Priority Areas (NFEPA's).
	• The listing of current global, national and provincial legislation and policies as relevant to the Project;
	• Communications with the Mpumalanga authorities and SANBI;
	• Existing databases and atlases;
	  o The listing of probable faunal species including the latest global, national and provincial conservation status of each main faunal group (mammals, avifauna, reptiles, frogs and selected terrestrial macro-invertebrates) - SANBI website, ADUVM records SABAP1 and SABAP2 data, SARCA, CWAC, CAR, etc.;
	  o Recent Red Data Floral Listings [Produced by the Threatened Species Programme (TSP) in collaboration with SANBI (PRECIS and SIBIS databases)]; and
	• Aerial imagery.
	
	Field Investigations:
	The field investigations will be focussed on updating the baseline information in the proposed development areas in BS and will include a follow-up terrestrial survey:
	
	Flora Assessment:
	• An assessment of the major habitat types presents in the areas and identification of vegetation communities using approved sampling methods;
	• Vegetation sampling plots, following internationally approved methods, will be set up within the various habitat types identified. The sites and sizes for the sampling plots will be based on the type of vegetation as well as terrain indicators;

Specialist Study and Specialist	Scope of Work

- A description of vegetation communities/habitats within the each of the sampling plots (including structure, dominant plant composition and condition);
- Identification of CI species;
- Alien floral species will be noted, however, the mapping of all individuals/clumps (depending on extent) is excluded;

Faunal Assessment
Identification of faunal species using the following techniques:
Live Trapping:

- Small Mammal Traps: Live rodent trapping sites will be set up in the representative habitat units, the sites will be sampled for 3 days. Each live rodent trapping transect will span approximately 150m and consist of a series of 10 baited metal Sherman traps.
- Array Traps: Array traps will be placed in representative habitat types targeting herpetofauna and terrestrial macro-invertebrates: Each consisting of three arms of plastic drift fencing with six pitfall traps (5 litre buckets sunken to ground level) and a series of covered plastic, mesh funnel traps.
- Mat traps: NSS will place a series of five square mats at four locations on site to supplement herpetofauna observations.
- Butterfly Traps: At each of the array trapping sites a butterfly bait station will be set to supplement observations made during active searching and sweep netting.

General Fauna Searches:

- Active Searching: Sampling will be conducted at various points within each representative habitat type identified investigation. At each site, a brief habitat description will be conducted followed by active searches aimed at establishing the presence of mammals, birds, reptiles and selected terrestrial macro-invertebrate groups through direct observation (captures and sightings) or evidence of their presence (in the form of faeces, pellets, spoor, nests, burrows, feathers). Except for birds and perhaps small mammals, measures of abundance are erroneous when conducted over such brief periods of time. As such a rapid assessment approach is adopted here aimed at maximising species detection particularly for CI species and other noteworthy fauna.
- Incidental observations: Observations made during point searches will be supplemented by records made incidentally while traversing the site on foot and/or by vehicle.
- Target Species Searches: These are specific searches with the aim of establishing the presence of any potentially occurring CI species such as globally and / or nationally Red Data listed, Protected Species or Endemic species. Fieldwork is planned to optimise detection of CI species by searching specific habitats and timing fieldtrips to coincide with peak activity / flight periods. Any species found on site will be recorded and details provided to the relevant conservation and institutional authorities.
- Dip-netting: To sample tadpoles.
- Sweep-netting: To sample butterflies.
- Microscopy: For the identification of odonata species (by examination of posterior appendages) and tadpoles (by labial tooth row formula).

Specialist Study and Specialist	Scope of Work
	Wildlife Surveillance: • Motion Cameras: Motion cameras will be placed within the study area, locations will be dependent on security and suitable habitats. • Burrow Scopes: A cable mounted camera with LED lighting, displayed on a portable field laptop will be used to survey holes in trees and burrows for the presence of a variety of fauna e.g. baboon spiders, snakes, lizards and small mammals. *Night Observations*: Access permitting, surveys at night are invaluable in providing a more representative species inventory. NSS makes use of various techniques to optimise the sampling efficacy of crepuscular and nocturnal species. • Bats: Sampled using both mist nets and an EM3 ultrasonic time expansion bat detector (calls analysed using Analook and BatSound Pro in terms of the peak frequency, duration and band width). • Amphibians: Searches are aided by acoustic surveys (calls analysed using Avisoft in terms of call structure, peak frequency and duration) while other nocturnal species are detected by spotlighting. Deliverables: • A list of common or dominant floral and faunal species within the vegetation communities will be compiled; • Potential occurrence of CI species such as Red Data listed, Endemic or Medicinally important will be highlighted for both fauna and flora. Any species found on site will be recorded and details provided to the relevant Conservation Authorities. • Any additional information will be recorded for any other features that may have ecological significance – GPS points will be documented. • Impact assessment related to proposed activities as well as cumulative impacts. • Develop a management and monitoring plan.
Wetland Assessment Wetland Consulting Services	**Scope: The wetland assessment will be focussed on updating the previous baseline studies and assessment with the addition of the new footprint areas and will be carried out in the following phases:** ***Phase 1: Desktop Review*** • Review and collation of new information and published data (e.g. NFEPA and its update) for inclusion in the updated report; • Review of proposed development activities, specifically in terms of spatial location; • Undertake a gap analysis of existing wetland and aquatic ecosystem information; and • Development of a plan of study for the EIA based on the gap analysis outcomes. ***Phase 2: Wetland Mapping and Site Investigations*** • Desktop mapping of wetlands and riparian areas not covered by existing wetland delineation data; • Site visits to identify and delineate all wetlands on site using the DWAF 2008 wetland and riparian delineation guidelines; • Undertake wetland functional assessments of the wetlands potentially to be affected by the proposed activities; • Determine the PES assessment of the wetlands and riparian areas affected by the proposed activities using the WET-Health Level 1 and

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VEGRAI Level 3 assessment methodologies;

- Determine the ecological importance and sensitivity ("**EIS**") assessment of the wetlands affected by the proposed activities using the widely accepted Rountree et al. (2013) methodology;
- Compilation of maps and shapefiles to accompany the wetland specialist report; and
- Compilation of a wetland baseline report.

Methodology:

- *Riparian and Wetland Delineation and Assessment*
    - The focus of the wetland delineation field work will be on areas affected by proposed developments and activities. Wetland mapping and assessment of areas falling within the mining rights area but not likely to be impacted by proposed activities, will either be based on existing information (where available) or desktop mapping with limited ground-truthing. The study will be undertaken in accordance with the applicable national (DWAF, 2005) and provincial guidelines.
    - A desktop delineation of suspected wetland and riparian areas will be undertaken by identifying rivers and wetness signatures on the digital base maps. All identified areas suspected to be wetlands or riparian areas will then be further investigated in the field. Wetlands and riparian areas are identified and delineated according to the delineation procedure as set out by the "A Practical Field Procedure for the Identification and Delineation of Wetlands and Riparian Areas" document, as described by DWAF (2005) and Kotze and Marneweck (1999). Using his procedure, wetlands and riparian areas are identified and delineated using the Terrain Unit Indicator, the Soil Form Indicator, the Soil Wetness Indicator and the Vegetation Indicator. Specific use will be made of hydromorphic features in the soils (e.g. mottling and or gleying) as well as the presence of wetland indicator species (e.g. obligate and facultative wetland plant species) to identify wetlands.
    - For the purposes of delineating the actual wetland boundaries use is made of indirect indicators of prolonged saturation, namely wetland plants (hydrophytes) and wetland soils hydromorphic soils), with emphasis on hydromorphic soils. It is important to note that under normal conditions hydromorphic soils must display signs of wetness (mottling and gleying) within 50cm of the soil surface for an area to be classified as a wetland (A practical field procedure for identification and delineation of wetlands and riparian areas, DWAF).
    - The delineated wetlands and riparian areas will then be classified using a hydro-geomorphic classification system based on the system proposed by the National Wetland Classification System recently published by SANBI (2009). This system classifies wetlands based on their hydrological and geomorphological characteristics, i.e. their landform setting and the way that water moves into, through and out of the wetland system.
- *Present Ecological State (PES) & Ecological Importance and Sensitivity:*
    - A PES and EIS assessment will be conducted for every hydro-geomorphic wetland unit identified and delineated within the

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	study area to establish a baseline of the current state of the wetlands. o For this study the Level 1 WET-Health (Macfarlane et al, 2009) and Wetland-IHI methodologies will be utilized for determination of the PES (as applicable) of wetlands. WET-Health considers the main drivers of wetland structure and function, namely, vegetation, hydrology, water quality and geomorphology. The PES of all affected riparian zones will be assessed using the Riparian Vegetation Response Assessment Index (VEGRAI) level 3 (Kleynhans et al., 2007). o The scoring system as described Rountree et al. (2013) will be applied for the determination of the EIS. Access to other specialist studies specifically those dealing with vegetation, fauna, and avifauna will be required to be able to assess the ecological importance and sensitivity of the wetlands. Biodiversity aspects (species diversity and the presence of rare or sensitive species) are taken into consideration in the EIS assessment. ***Functional Assessment*** o A functional assessment of representative wetlands on site and groupings of similar wetlands will be undertaken using the level 2 assessment as described in "Wet-Eco Services" (Kotze et al., 2005). This method provides a scoring system for establishing wetland ecosystem services. It enables one to make relative comparisons of systems based on a logical framework that measures the likelihood that a wetland can perform certain functions.
Aquatic Ecology Study Clean Stream Biological Services (Pty) Ltd	***Aquatic Ecosystem Assessment*** o Desktop Assessment - reference will be made to all literature for the affected watercourses which became available after the 2017 study. This will include the National Freshwater Ecosystem Priority Areas (NFEPA) Atlas (Nel et al. 2011) and the desktop assessment completed by DWS (2013) to determine if there are any additional information on the PES, EI and ES of rivers in South Africa. Existing data from biomonitoring surveys conducted by SAS (2006 – 2013) and Clean Stream Biological Services (2014-2016) will be included and updated. o Aquatic habitats - the habitat integrity will be determined using the Index of Habitat Integrity ("**IHI**") (Kleynhans 1997) for potentially newly affected streams as part of the Phase 2 expansion. The Index of Habitat Integrity will be applied, as described in the documents “Resource Directed Measures for the Protection of Water Resources” (DWAF 1999). Both instream and riparian habitats will be assessed in terms of physical disturbance (e.g. flow modification, alien vegetation, channel modification, etc.) that may affect the suitability and availability of habitats to aquatic biota. Riparian and wetland habitats will be assessed in the wetland specialist assessment. o Water Quality - on site water quality measurements (pH, electrical conductivity, dissolved oxygen, oxygen saturation and temperature) will be assessed to assist in the interpretation of biological results. Additional laboratory analyses will be conducted to measure major anions, cations and metals, turbidity, total dissolved solids ("**TDS**"), total suspended solids ("**TSS**") and alkalinity. Reference will be made to existing toxicity testing data for pollution control dams and return water

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dams. This will, however, merely be discussed in terms of the risk posed to receiving watercourses and will not form part of the baseline aquatic ecosystem assessment.

- Aquatic macroinvertebrates - aquatic macroinvertebrates will be sampled upstream and downstream of the study area using the SASS5 methodology as outlined in Dickens and Graham (2002). The SASS index is based on the presence or absence of families that are sensitive to changes in water quality. Hence, the absence of sensitive taxa indicates water quality impairment. Macroinvertebrates reflect overall changes in ecosystem health, including loss of diversity and abundance. An assessment of the suitability and availability of habitats for aquatic invertebrates will be based on the Integrated Habitat Assessment System ("**IHAS**") index (McMillan 1998). To determine the PES of aquatic ecosystems according to aquatic macroinvertebrates, the Macroinvertebrate Invertebrate Response Assessment Index (MIRAI) will be used. This is a response, habitat and stressor indicator which classifies the PES of a site according to a comparison between expected and observed taxa, as obtained from the SASS5 results, to assess the response of the macroinvertebrate assemblage to flow, water quality and habitats. The interpretation guidelines given in Dallas (2007) will also be consulted, where relevant. PES Categories, as described in the document "Resource Directed Measures for the Protection of Water Resources" (DWAF, 1999) will be assigned.
- Fish - fish will be sampled using methods appropriate for the habitats available at each site. These may include seine netting, cast netting or electro-fishing. All fish species will be identified to species level and returned to their natural habitats. The determination and description of the PES of the aquatic ecosystems in the study area, in terms of fish, will be based on the methodology described for River Eco-Classification during Reserve Determinations (Kleynhans & Louw, 2008) using the Fish Response Assessment Index ("**FRAI**") (Kleynhans, 2008). The results will classify the present state of the fish assemblage into a specific descriptive category (A to F). The presence of alien, rare and/or endemic species will also be noted.

Aquatic Ecosystem Assessment

- A field survey to assess watercourses not covered by the Clean Stream 2017 study will be undertaken, including an assessment of fish, aquatic macroinvertebrates, habitat integrity and on-site water quality;
- Determine the PES of aquatic ecosystems, based on fish, aquatic macroinvertebrates and habitat integrity, using appropriate sampling methods and indices (i.e. FRAI, MIRAI and IHI);
- Assess water quality (in terms of the requirements of aquatic ecosystems only);
- Determine the ecological importance and sensitivity of the aquatic ecosystems concerned.
- Review of the proposed development and mining plans;
- Identification and assessment of expected impacts to wetlands, riparian areas and watercourses, using the prescribed methodology;
- Consideration of alternatives proposed for the Project, if any;
- Compilation of suitable mitigation and management measures to reduce Project impacts, including recommendations for

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	monitoring and rehabilitation. ○ Compilation of a detailed specialist Aquatic Ecosystem report, highlighting baseline findings, sensitivities, CI species, potential impacts, management and monitoring requirements.
Water Quality Aquatico Scientific (Pty) Ltd	• Review new data and identify gaps relative to new activities not included in the 2017 study. Update the characterization of the surface water and groundwater characteristics (qualities, aquifer type, yields, water level depths, flow directions, gradients, use etc. • Describe the baseline environment in terms of on-site water quality for the Booysendal South Expansion Prohect: Phase 2 expansion areas. • Conduct a trend analysis of the surface water and ground water quality results taking into consideration all water quality results over time for the mines. • Describe temporal and spatial trends relative to the commencement of construction activities. • Assess impacts to aquatic ecosystems and on the river regimes, as well as the groundwater base flow, quality and wetlands (surface-groundwater interaction) to the Groot Dwars River. • Describe measures to manage, mitigate and rehabilitate identified impacts. • Assess the adequacy of the surface water and ground water monitoring programmes and compile a biomonitoring and water quality plan and specialist report.
Hydrology Letsolo Water and Engineering Services cc	The focus of the hydrological study will be: • Update the 2017 Hydrological Assessment for the Booysendal South Expansion Project: Phase 1 and Phase 2. • To evaluate the physical hydrological conditions for the DWS Quaternary Catchment B41G and its larger surrounding areas (up and downstream catchments including the De Brochen Dam). This will be achieved by utilising GIS software to measure the effective area, hydraulic length and to calculate the slope along the length of the river. These physical characteristics will be used to calculate the peak flows for the 1:50 and 1:100 years storm event. • To evaluate the Physical Hydrological conditions for delineated site. Specific Catchment Areas utilising GIS software. • To evaluate Hydrological conditions for the specific Booysendal South Expansion Project: Phase 2 development and its associated processes and infrastructure. Rainfall and evaporation data will be used to calculate the hydrological yield for the wet and dry season. • The location of proposed infrastructure will be assessed in detail. GN704 provides regulations for the location of dirty water infrastructure. In instances where dirty water infrastructure is located within the 100m buffer or the 1:100-year flood area, mitigation measures will be investigated in detail and conceptual designs of corrective measures will be produced. • Identify and delineate all surface water catchments in the affected area. It might be necessary to delineate further smaller catchments within the already delineated catchments to obtain flood characteristics for the proposed site infrastructure. • To ensure that clean and dirty water is separated (collected, contained, and controlled) effectively. Dirty water catchment areas will

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be delineated. Storm water management measures will be recommended for the diversion of clean water away from the dirty water catchment areas.

- Flood calculations for the 1:50 and 1:100-year flood events using the Unit Hydrograph method to calculate peak flows for catchment areas exceeding 15km^2 and the Rational Method to calculate peak flows for catchment areas smaller than 15km^2.
- Determine the status of any surface water resources which are in the affected area or may be affected by the activities in terms of existing resource objectives, inclusive of water quality and in-stream flow.
- Identify sensitive downstream water resources. The De Brochen Dam is identified as the closest dam to the study area. The DWS will be consulted to acquire information regarding the nearby surface water users. This information will be used for the detailed risk rating assessment.
- Review and summarise other technical reports for studies conducted simultaneously with the Hydrological Impact Assessment.
    - Storm Water Management Plan;
    - Culvert Design Report; and
    - Floodline Delineation Report.
- Water Balance Calculations
    - Incorporates water sources and losses values based upon design volumes for the water abstracted, discharged, process water intake, outflow to and return water other facilities;
    - Incorporates accurate values determined from suitable measurement or modelling of rainfall, runoff, seepage and evaporation;
    - Compile a diagram that delineates the affected area into clean and dirty areas; and
    - Routing and directing clean storm water runoff to the nearest receiving watercourse.
- Risk assessment and Mitigation Measures
    - Identify potential risks for the construction, operational and decommissioning Phase;
    - Maximises the application of pollution prevention measures, based on assessment of the long-term impacts of applied closure management actions on the water resource in accordance with impact prediction procedures; and
    - Define monitoring programmes that should be implemented to collect data to allow for scheduled future updates and improvements in accuracy of the impact predictions.
- Reporting, including:
    - Description of overall hydrological character of the Booysendal South Expansion Project;
    - Updated water-and salt balance;
    - Updated catchment delineation and flood calculations; and
    - Updated stormwater management plan.

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Hydrogeology Future Flow Groundwater and Project Management Solutions cc	**Objectives:** • Update the 2017 Hydrogeological Assessment; • Characterise the baseline groundwater environment, including the aquifers present in the areas of the Booysendal South Expansion Project: Phase 2 activities (aquifers present, their depth and lateral distribution, as well as their transmissivity and storativity), the depth to groundwater level and groundwater flow patterns, the groundwater quality, the groundwater recharge, and the groundwater / surface water interaction; • Characterise the potential pollution sources in terms of probability, duration, extent, severity etc., as well as the chemical characteristics of the pollution sources (elements present, concentrations); • Quantify the potential impacts on the surrounding environment that might originate from the proposed mining activities; and • Evaluate and make recommendations on various management strategies. **Phase 1 - Groundwater baseline characterisation** • *Hydrocensus* - The previous hydrocensus of the area has been updated in 2017 and will used to describe the regional groundwater levels, flow directions and gradients. This data is critical for the identifying the surrounding groundwater users that could be impacted by the mining activities. The data will also be incorporated into the conceptual groundwater flow and contaminant transport models. Current groundwater uses (type and volumes) will also be recorded. • *Geophysical surveys* - reference will be made to previous geophysical studies that were performed in the area. • *Aquifer tests* - no new boreholes are planned; therefore, no aquifer testing is planned. Reference will be made to previous study results (aquifer testing on percussion boreholes, as well as packer testing on exploration boreholes). • *Groundwater chemical analysis analyses* - hydrocensus samples collected in 2017 is representative of the proposed expansion and will be used to determine the current groundwater quality outside the mining area. Reference will be made to results from the groundwater monitoring program to determine the groundwater quality on site. • *Geochemical assessment* - acid-mine-drainage testing has been done on rock material during previous investigations in 2016,including waste classification testing in accordance with the Waste Classification Regulations, Norms and Standards for Landfill Waste Assessment and Norms and Standards for Disposal of Waste to Landfill. Rock samples and tailings were analysed. The results from the characterisation will be used to: o Classify the waste according to Waste Classification Regulations. This will provide input into the waste licence requirements for the various surface facilities (waste rock, TSF, and ROM stockpiles); and o Determine the long-term quality of seepage from the TSF, surface stockpiles, and the mining areas. These concentrations will be used in the numerical flow and contaminant transport models as source or starting concentrations of potential pollutants such as sulphate or nitrate from the stockpiles and mining areas. **Phase 2 – Update of the groundwater impact assessment using flow and contaminant transport modelling** • A three-dimensional numerical groundwater flow and contaminant transport model will be constructed taking consideration of the BS,

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BS4 and the BN sides of the operation. The mathematical model will be based on the conceptual model and designed to represent the site-specific conditions. Data obtained from the field investigation such as current groundwater levels in the area, aquifer occurrence, transmissivity and storativity, and the results from the geochemical analysis will be incorporated into the model.

- The model will be calibrated based on the observed groundwater levels and aquifer parameters. The calibrated model will be used to simulate the groundwater flow and contamination migration through the study area and the associated impacts on the surrounding environment.
- Parameters that will be quantified include:
    - Mine inflow volumes into the various mining areas over the life of mine;
    - Impacts on the surrounding groundwater levels, flow patterns, and groundwater users due to mine dewatering and seepage from the various surface infrastructure;
    - Impacts on the Groot Dwars River due to mine dewatering and the associated reduced baseflow contribution;
    - Groundwater level recovery after mine closure;
    - Contaminant migration away from the mining areas and surface infrastructure, and the associated impacts on the surrounding groundwater quality; and
    - Impacts on the surface water bodies due to contaminant migration.
- An assessment will be made of the risks and potential impacts from:
    - Backfilling;
    - Underground mining and associated dewatering;
    - Potential decanting;
    - Contaminations from the operational and proposed areas; and
    - Aerial ropeway pillar construction and operation.

Phase 3 - Reporting

- The report will contain:
    - A discussion on the findings of the desk study, including the findings from existing specialist studies;
    - Detailed findings of the specialist studies, including:
        - A detailed discussion on the baseline groundwater conditions;
        - A detailed discussion on the impacts due to the proposed mining activities:
            - Impact assessment to address amended impacts;
            - Overall cumulative impacts taking into consideration current and past EIA/EMPr and operational impacts;
    - Locations of sensitive areas;
    - Recommendations on specific, measurable and auditable impact management practices; and

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	○ A re-assessment and update of the current monitoring program to ensure new impacts will be covered.
Soil, Land Use and Land Capability Terra-Africa Consult cc	**Objective:** Update the 2017 soil report with the proposed new development areas at BS. Focus on all aspects of the ability of the soil to serve as a possible medium for food production (crop and livestock farming) and/or its role in the current ecosystems present on site. To determine the current soil properties, agricultural potential as well as current land uses. **Method:** A detailed soil survey (150m x 150m) will be conducted in the proposed new development area. Observations will be made regarding soil texture, depth of soil, soil structure, organic matter content and slope of the area. The soil characteristics of each sample point will be noted and logged with a global positioning system. An estimated 10 soil samples (five topsoils and five subsoil) will be collected on site from selected modal profiles, stored in perforated soil sampling plastic bags and sent to the laboratory for analyses. The modal profiles are considered representative of the range of soil conditions across the study area. The capability and use of the land will be defined using the information obtained during the soil investigation. The results from the soil survey will be analysed in conjunction with the Chamber of Mines method. During the assessment of the land, the economic and ecological implications of the proposed developments at the Phase 2 Project Area will be described as well as the steps that need to be followed for rehabilitation. **Analysis:** The soils will be described using the S.A. Soil Classification Taxonomic System (Soil Classification Working Group, 1991) published as memoirs on the Agricultural Natural Resources of South Africa No.15. Soils will be grouped into classes with relatively similar soil properties and pedogenesis. A cold 10% hydrochloric acid solution will be used on site to test for the presence of carbonates in the soil. The soil samples collected on site will be send to NviroTek Laboratories (an ALASA accredited laboratory) at Hartbeespoortdam for analyses. The samples will be analysed for pH (KCl and H2O), phosphorus (Bray1), exchangeable cations (calcium, magnesium, potassium, sodium), organic carbon (Walkley-Black) and texture classes (relative fractions of sand, silt and clay). Land capability classes were determined using the guidelines outlined in Section 7 of the Chamber of Mines Handbook of Guidelines for Environmental Protection (Volume 3, 1981). The Chamber of Mines pre-mining land capability system will be utilised; given that this is the dominant capability classification system used for the mining industry. **Reporting**: Soil report with a classification of the soil types, land uses, land capabilities. Analysis of potential impacts. Management and monitoring requirements.
Airshed Planning Professionals (Pty) Ltd	**Objective:** Update the 2017 Air Quality and Greenhouse Gas Emissions Specialist Report to include the Booysendal South Expansion Phase 2 activities. **Baseline:** • Identification of existing air pollution sources; • Identification of air quality-sensitive receptors, including any nearby residential dwellings and proposed receptors (temporary or permanent workers accommodation site(s)) in the vicinity of the Project;

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	• Collection of local weather conditions either from local weather station sources or by modelled MM5 data;
	  ○ Preparation of three years of raw meteorological data. The required meteorological data includes hourly average wind speed, wind direction and temperature data;
	  ○ Simulation of wind field, mixing depth and atmospheric stability;
	• The legislative and regulatory context, including emission limits and ambient air quality standards; and
	• Assessment of baseline air pollutant measurements (from available information).
	
	Impact Assessment:
	• Quantification of additional emission sources associated with the Project. The rest of the emission sources, as quantified in the 2017 assessment, will be used in the updated assessment;
	• Formatting of meteorological data for input to the dispersion;
	• Obtain and process topographical data for input into the dispersion model (if required);
	• Dispersion simulations of ground level pollutants, due to routine emissions from the project, reflecting highest hourly, highest daily and annual average concentrations. The US EPA approved AERMOD model will be used.;
	• Analysis of dispersion modelling results;
	• Evaluation of potential for human health and environmental impacts;
	• Recommended mitigation measures and monitoring program for the site.
	• Level 1 Green House Gas quantification.

Noise dBAcoustics cc	**Method:** • Update of the 2017 Noise and Vibration assessment to include the Booysendal South Expansion Project: Phase 2 activities; • Update the prevailing ambient noise levels of these specific areas with new monitoring results. The survey will be done over one day during the day and night time periods as specified by the Noise Regulations and/or SANS 10103 of 2008; and • Measuring equipment will consist of an integrating sound level meter configuration that complies at least with the accuracy requirements specified for a class 1 instrument in SANS 656, SANS 658 and SANS 61672-1. Equipment used will be calibrated against the requirements of SANS 656, SANS 658, SANS 60942 and SANS 61672-1 (by an accredited laboratory), at intervals not exceeding one year for the sound calibrator, and two years for the rest of the equipment, that they comply with the requirements for accuracy. **Analysis:** • The environmental noise and vibration methodology will be based on information from previous studies which were done for the EIA and EMP phase for the expansions to the Booysendal Operation (Phase 1) and the possible impact that mine activities may have on the mating call of the *Pycna sylvia* during the summer periods;

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		• The NSAs near the study area will be identified by means of a Google imagery of the study area and previous noise reports; • A site visit will be carried out to identify the noise sources such as roads, existing mine activities, prevailing noise regime and to identify the area of influence within and abutting to the study area; • Noise survey will be done at the identified areas of influence and the receptors which may be affected by the proposed Project; • The noise and vibration assessment phase will include analysis of noise data obtained during the field survey and to identify the possible noise and vibration projections impact on the receiving environment by using the British Standard BS 5228-1: 2009 'Code of Practice for Noise and Vibration control on construction sites an open site; and • The noise and vibration modelling will be done with Noise Map software which is based on guidance given in British Standard BS 5228-1:2009 and corrections for atmospheric absorption and soft ground set out in ISO 9613. **Reporting**: • Noise impact assessment and management plan.
Traffic	Hamatino Consulting Engineers	• Update of the 2017 Traffic Impact Assessment report with the additional traffic volumes associated with the Booysendal South Expansion Project: Phase 2;. • Baseline traffic counts have neem undertaken during week day morning and afternoon peak hour traffic counts at the existing R 577 / BS4 intersection; • Base year (2016) capacity analysis; • Trip generation and distribution (existing and future); • Intersection capacity analysis for the base year (2016) with development completion; • Horizon year (2021) analysis including possible latent rights within the study area; • Possible intersection upgrading; • Public transportation; and • Traffic baseline report, impact assessment and management plan.
Visual	GISM (Pty) Ltd	**Objective:** Update the visual impact assessment ("**VIA**") no proposed new Booysendal South Expansion Project: Phase 2 infrastructure components. Chart the changes that arise in the composition of available views because of changes to the landscape, people's responses to the changes and to the overall effects on visual amenity. Assess both adverse (negative) or beneficial (positive) effects of visual, scenic, aesthetic and amenity values represented by the built and natural environment, which in totality can be described as the area's sense of place. Specific areas identified as critical views/sensitive receptors would include public and private viewpoints and transport routes.

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		Method:
		Using both objective analysis and subjective professional judgement, an assessment will be based on best practice, information and data analysis techniques. The following will be undertaken:
		• *An initial desktop analysis*: through which the Zone of Visual Influence ("**ZVI**") (the 'area within which a proposed development may have an influence or effect on visual amenity' (GLVIA, Glossary)) and project design data were analysed and manipulated using ArcGIS. This will allow an understanding of the landscape character, location of potential sensitive receptors, the scenic value and sense of place and an initial understanding of the absorption capacity of the landscape.
		• *Field/photographic survey*: The purpose of the field survey is to identify representative viewpoints; to gain a better understanding of the sense of place, the character of the landscape to accommodate and absorb change and to understand the receptors that may be affected by the Project. For some types of development, the visual effects of lighting may be an issue. In these cases, it may be important to carry out 'dark' night-time surveys of the existing conditions to assess the potential effects of lighting. The photography survey will be undertaken using a digital Canon camera and 50mm equivalent lens. Overlapping (50%) landscape format photographs will be taken which are joined together using computer software to create a single panoramic image for each viewpoint. The photographer will also note the GPS location of the viewpoint and takes bearings to visible landmarks whilst at the viewpoint. These will be used for photo simulations of the proposed infrastructure.
		• *Data analysis and modelling*: ArcGIS software will be used to determine the ZVI through terrain, topographical and land cover modelling of the various infrastructure components. Additional modelling will be done to determine the visual impact index therefore the magnitude and extent of the various infrastructure components and the potential combined visibility thereof on the various receptors. Finally, a representative view as experienced by sensitive receptors will be created by means of a photographic simulation. The before and after photographic simulation will show the proposed activity superimposed onto an existing landscape scene.
		
		Contents of Report:
		• *Physical characteristics* of Project components will be described and illustrated;
		• *Landscape Baseline* - the inherent scenic values of the landscape will be determined by describing the setting, visual character and the sense of place;
		• *Magnitude Assessment* - estimate the magnitude of the visual impact by assessing the following factors:
		  ○ Extent of the affected visual environment - ZVI and the viewing distance from these observation site;
		  ○ Visual absorption potential (i.e. ability of the landscape to accommodate the proposed roject from a visual perspective);
		• *Identification of Sensitive Visual Receptors*; and
		• *Impact Assessment, Mitigation and Management Requirements*.

Social	Social	• Update the 2017 social impact assessment report to incorporate the Booysendal South Expansion Project: Phase 2 expansion

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	Enterprise Solutions	activities and additional labour figures, potential impacts and required management measures. • A detailed programme for the socio-economic survey including dates and times for undertaking focus group meetings and key informant interviews were held as part of the 2017 study. • Undertake a socio-economic survey to gather information on demographics, education, employment, skills, income, livelihoods, health, services, social infrastructure, community organisations, land tenure, traditional authorities, local businesses etc. • Analyse data and prepare Socio-economic Baseline Report. • Undertake social impact assessment and develop a social management plan.
Cultural Heritage	Heritage Contracts and Archaeological Consulting cc (HCAC)	The Project development triggers the NHRA in the following areas and therefore a Phase 1 heritage assessment will be undertaken for the proposed Booysendal South Expansion Project: Phase 2 Expansion activities. **Objectives**: • Obtain a good understanding of the overall archaeological and cultural heritage conditions of the area through a desktop study; • Locate, identify, record, photograph and describe sites of archaeological, cultural or historical importance within the development footprint; • Should any sites be identified to identify potential impacts and to suggest management measures to manage the potential impacts; and • Ensure that local heritage requirements (Antiquities Act, 1964 and Antiquities Act, 1979) are met as well as international best practice including IFC Performance Standard 8: Cultural Heritage. **Survey area**: A field survey of the proposed development footprint will be conducted. The study area will be surveyed by means of vehicle and extensive surveys on foot. The survey will be aimed at covering the proposed infrastructure, but also focus on specific areas on the landscape that would be more likely to contain archaeological and/or other heritage remains like drainage lines, rocky outcrops as well as slight elevations in the natural topography. These areas will be searched more intensively, but many other areas will be walked to confirm expectations in those areas. Track logs of the areas covered will be taken. Surveys will be non-intrusive and consist of surface observations only. **Baseline Report**: • Update the existing baseline report (2017); • Undertake a field survey (using internationally accepted field survey methods) to ground-truth any surface remains and artefacts of archaeological, historical or cultural significance (including graves) that were found on the proposed footprint areas and to record their geographical location; • Analyse any material found to establish the significance of sites/ material, and development of a register of sites and relevant material; • Maps and coordinates indicating the location of culturally or archaeologically important sites as well as any other relevant information; • Identify sites/ material requiring excavation or preservation; • Liaison with the social specialists to ensure alignment in data collection and reporting;

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		• If sites of importance are found, advise on the process to preserve or remove them as required; • In addition to reporting on the results from surveys as detailed above: • Describe the baseline cultural heritage components in the area and the significance (international, national and local) of cultural heritage in the project area; and • Identify sensitive or critical cultural heritage resources which require protection or management.
Public Consultation	Anelle Lötter Communications	**Impact Assessment Phase:** • The Consultation Scoping Report ("**CEIR**"), the EIR and EMPr (EMPr) will be made available for public comment for a period of 30 days as follows: o Announced by means of advertisements placed in the regional newspaper (Steelburger / Lydenburg News); o E-mails will be sent to all I&APs registered on the stakeholder database; o Reports will be made available at local public places; o The report will be available on the Amec Foster Wheeler website; and o A stakeholder meeting will be held to present the contents of the reports. Should the representation at the meeting not be sufficient additional focus group meetings will be held. • Once comments have been received they will be captured in CRR Version 2. Comments will be considered and the reports will be finalised and made available on the Amec Foster Wheeler website for review by I&APs (CRR Version 3 to be included in the final documents). • The availability of the final reports and how the I&APs may comment on these will be communicated to I&APs via an email. The final reports will be submitted to the relevant competent authorities for their consideration and granting of the authorisation and licencing (if successful). **Authorisation Phase:** • Information received from the CAs with regards to their decisions, (e.g., the EA,WML, etc.) • Communicate the CA's decisions and the detail thereof to I&APs through e-mail and posted letters. An advertisement will be placed in the same newspaper/s as were used throughout the process. • The public may appeal the EAs, EMP Amendment, WUL and the WML. In the case that no appeals are received, construction of activities may commence after the appeal period. In the case that appeals are received, construction may only commence after the appeals have been resolved. • The legislative and required public participation activities will end once the appeal period has lapsed.
Waste	Jones & Wagener	• The objective will be to assess the waste rock and platinum tailings material for stockpiling and disposal purposes in terms of the

Specialist Study and Specialist	Scope of Work
Engineering and Environmental Consultants	Waste Classification Regulations to establish the default liner requirements for stockpile and disposal (slimes dams) sites. The waste rock will also be assessed for usage in the construction of a road. • A composite sample of tailings and waste rock material be collected and assessed. • The composite samples (2 samples) will be analysed by Waterlab, a SANAS accredited laboratory using: o Distilled water leach followed by the analysis of the leach solution for the listed metals and anions as per the DEA's "National Norms and Standards for the Assessment of Waste for Landfill Disposal", as well as additional constituents listed in Table 2-1; o Aqua regia digestion followed by the analyses of the solution for the listed metals and anions as per the DEA's "National Norms and Standards for the Assessment of the Landfill Disposal" as well as additional constituents listed in Table 2-1. The analysis includes Total Fluoride and Total CrVI; o XRD analysis to determine the mineralogical composition; o Paste pH's; o Acid Base Accounting of the two wastes; and o Sulphur speciation. • Constituents to be analysed for: o *Metal Ions* Arsenic, As / Chromium (VI), Cr(VI) / Lead, Pb Boron, B / Copper, Cu / Antimony, Sb Barium, Ba / Mercury, Hg Manganese, Mn / Selenium, Se Cadmium, Cd / Molybdenum, Mo / Vanadium, V Cobalt, Co / Nickel, Ni / Zinc, Zn Chromium Total, Cr Total o *Inorganic Anions* TDS / Sulphate / Fluoride, F Chloride / NO3 as N, Nitrate-N o *Additional Constituents:* Paste pH / Lithium, Li / Sodium, Na Aluminium, Al / Magnesium, Mg / Strontium, Sr Beryllium, Be / Phosphorus, P / Titanium, Ti Calcium, Ca / Potassium, K / Silicon Iron, Fe / Silver, Ag • The results will be interpreted and the two wastes, tailings and waste rock, will be assessed in line with the Norms and Standards for Landfill Waste Assessment. The assessment report will make recommendations on the barrier system required for the storage and

Specialist Study and Specialist	Scope of Work
	disposal of the tailings and waste rock material. In addition, the report will also contain as assessment of the usability of the waste rock for road building purposes.

11.4 Impact Identification and Assessment

All possible impacts related to the project activities and the activities associated therewith, in the AoI will be included in the assessment.

Consideration will be given to direct, indirect or cumulative impacts related to all activities and associated activities, including direct third-party activities.

- Direct impacts are caused by the action and occur at the same time and place;
- Indirect impacts are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable; and
- Cumulative impact results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions.

11.5 Impact Significant Rating

It is important to get an understanding of the significance of potential impacts to determine the feasibility of a project. It is proposed that the impact assessment be undertaken in a table format for each impact. Each potential impact associated with the Project will be described separately and specifically in each specialist area in table form. The table will make provision for the following sub-headings:

- Impact identification - Activities that could cause the impact;
- Impact description and potential consequence;
- The phases of the LoM in which the impacts could potentially occur;
- The type of impact: direct, secondary or cumulative; and
- Significance of the impact within the wider environment and taking consideration of the vulnerability of the specific receptors taking consideration of likelihood, extent, magnitude and duration.

Impacts will be rated as either negative or positive.

After ensuring that all impacts have been identified, the significance rating for these impacts will be detailed in the table for each impact separately. As a quantitative assessment methodology alone can be very subjective, Amec Foster Wheeler has opted for a combined qualitative and quantitative evaluation system. The rating scales are included in the next sub-sections.

The significance of an impact is a combination of the consequence of the impact occurring, and the probability that the impact will occur. The criteria used to determine impact consequence are included in the first column (see Table 11-2 as example). Detail is included in the rest of the columns (for this explanation an example of an impact assessment for site preparation and clearance has been included in Table 11-2). A breakdown of the scoring system and definitions defining each score are included in the Section Impact Rating Definitions.

Figure 11-2 Example of Impact Description and Significance Rating

Impact Component	**Impact 1**	**Significance prior to Mitigation**	**Significance with Mitigation**
Activity	Site preparation and clearance		
Risk/ Impact	Vegetation clearance for mine infrastructure can directly impact large mammal species present by removing potential important habitat from their home range. Some species may be able to shift their range slightly; however other territorial species will be affected more intensively by these activities.		
Project Phase (during which impact will be applicable) CO = construction, OP = operational, CL = Closure and post-closure Nature of Impact	CO, OP Negative		
Type of Impact	Direct: clearance will directly lead to impact		
	Define Significance Categories	Significance Prior to Mitigation	Significance with Mitigation
Likelihood/ probability	Likely	3	3
Duration	Long-term In the eventually that reforestation programs are implemented at the closure of the mine; large mammal's populations could recover and extend their home range to reforested areas.	4	3
Extent	Localised Habitat loss will be localised to infrastructure locations.	1	1
Receptor Sensitivity	Moderate	3	2
Magnitude	Moderate The magnitude will depend on the location of infrastructure components. As not many threatened species are present within the area, and given that the habitat is already degraded, most infrastructure locations would have minor impacts on wildlife populations.	3	2
Impact Significance	Moderate significance as a few internationally and/or nationally threatened species occurring in the area that may be impacted by vegetation clearance.	Moderate 11 4	Minor 9 2
Mitigating and Monitoring Requirements			
Required Management Measures	Reforestation of surrounding abandoned crops can help to alleviate further pressure from habitat loss. A reforestation program can be proposed, to take place after mine closure.		
Required Monitoring (if any)	Long-term monitoring of threatened species spatial distribution and relative abundance should be implemented to assess effectiveness of mitigation measures.		
Responsibility for implementation	Environmental Officer and Mine Manager		
Impact Finding			
Impact Finding	Impact can be managed through reforestation programs.		

11.6 Impact Significant Rating Definitions

The significance of each impact is a product of the likelihood of occurrence, the extent over which it could occur, the potential duration, the sensitivity of the area where it occurs and the magnitude of an impact. For this Project, it is proposed that the following rating qualitative and quantitative system be used for the various components that forms part of the overall significance:

11.6.1 Likelihood

1 = Unlikely	2 = Possible	3 = Likely	4 = Definite Likelihood
Low to no probability of occurrence with the implementation of management measures	Possible that impact may occur from time to time	Distinct / realistic possibility that impacts will occur if not managed and monitored	Impacts will occur even with the implementation of management measures

11.6.2 Duration

1 = Temporary	2 = Short Term	3 = Long Term	4 = Permanent
Possible to within a short period of time mitigate / immediate or quick progress with management implementation <3 yr.	Impacts reversible within a short period of time +/- 3 to 5 yrs.	Impacts will only cease after the operational life +/- 50 yrs.	Long term, beyond mine closure or irreplaceable

11.6.3 Magnitude

Negative magnitude:

-1 = Low	-2 = Minor	-3 = Moderate	-4 = High
Deterioration of baseline conditions or functions are negligible Nuisance Will not cause any material change to the value or function of the receptor/s of Emissions will comply with legal limits Emissions contained within footprint within limits	Moderate deterioration, partial loss of habitat / biodiversity/ social functions or resources, Emissions at times exceed legal limits Emissions reach outside project footprint	Reversible although substantial illness, injury, loss of habitat, loss of resources Notable deterioration of functions Impact on biodiversity Causes a change in the value or function of receptor but does not fundamentally affect its overall viability Emissions regularly exceed legal limits	Mainly irreversible Causes a significant change in the environment affecting the viability, value and function of the receptors Substantial impact and loss of biodiversity Death/ loss of receptors Loss of livelihood Emissions do not comply with regulations Impact on listed

		Emissions will affect the wider region Livelihood of sensitive receptors are impacted	species

Positive Magnitude:

+1 = Low	+2 = Minor	+3 = Moderate	+4 = High
Slight enhancement of baseline conditions or functions Potential pollution sources are removed Slight positive change to the value or function of the receptor/s Project controls assists in Emissions will comply with legal limits Emissions contained within footprint within limits	Minor enhancement, of habitat / biodiversity/ social functions or resources, Better control of emissions Project assists in management and control of emissions	Substantial improvement in human health, habitat and ecosystem services Notable improvement of functions Moderate improvement of biodiversity Causes a change in the value or function of receptor and improves Overall viability Emissions regularly improves Livelihood of sensitive receptors are improved	Significant positive change in the environment viability, value and function Substantial impact and improvement of biodiversity Better protection of receptors Development of livelihood Emissions improve to comply with regulations Protection of listed species

11.6.4 Sensitivity

1 = Low	2 = Moderate Low	3 = Moderate	4 = High
Areas already subjected to significant degradation Non-designated or locally designated sites/habitats Non-sensitive receptor with regards to the impact type (e.g. noise receptors) No vulnerable communities	Partially degraded area Sensitive receptors present Small number of vulnerable communities present	Regionally designated sites / habitats Regionally rare or endangered species Moderately sensitive receptor about the impact type Some vulnerable communities present	Nationally or internationally designated sites/habitats Species protected under national or international laws / conventions High sensitivity about the impact type High number of vulnerable communities present High dependency

11.6.5 Calculation of Significance

The significance of the impact is calculated as follows:

Significance = (Likelihood + duration + extent + sensitivity) x magnitude

The significance of the impact is then identified on the Impact Assessment Table (Table 11-3). The significance of the impact is identified before and after mitigation.

Figure 11-3 Impact Significance Table

		Likelihood + duration + extent + sensitivity			
		Low (+ / -) ≤4	Minor (+/ -) 5 – 8	Moderate (+ / -) 9 – 12	High (+ / -) 13 – 16
Magnitude	Low (1)	Not significant	Not significant	Minor	Moderate
	Minor (2)	Not significant	Minor	Minor	Moderate
	Moderate (3)	Minor	Moderate	Moderate	High
	High (4)	Moderate	High	High	High

11.6.6 Cultural Heritage Impact Assessment

The cultural and heritage impact assessment has specific criteria against which the impacts are assessed, as required by SAHRA's (2006) system. This section describes the evaluation criteria used for determining the significance of archaeological and heritage sites. The following interrelated criteria were used to establish site significance:

- The unique nature of a site;
- The integrity of the archaeological/cultural heritage deposit;
- The wider historic, archaeological and geographic context of the site;
- The location of the site in relation to other similar sites or features;
- The depth of the archaeological deposit (when it can be determined or is known);
- The preservation condition of the site; and
- Potential to answer present research questions.

These criteria will be used to place identified sites within SAHRA's (2006) system of grading of places and objects which form part of the national estate (Table 11 4). This system is approved by ASAPA for the SADC region.

11.7 Mitigating Measures

Mitigation refers to a sequence of considerations and actions designed to help avoid, minimise, manage or offset/compensate adverse environmental or social impacts (mentioned here in the order in which management must be implemented according to the hierarchy best practice). The impacts are rated before and after mitigation with the mitigating, management and monitoring measures being site and activity specific, that it is measurable with specific roles assigned and include key performance indicators ("**KPIs**").

During a workshop with the key specialists all identified impacts and proposed mitigation measures will be reviewed. In the event there are impacts that cannot be mitigated, other management options will be considered, such as potential offsets. Residual impacts will be identified with measures to manage these.

Mitigating measures will, as far as possible, include specific actions, will be measurable, indicate an implementation schedule, responsibilities for implementation, and monitoring requirements. Where the need for monitoring is identified the parameters that need to be monitored as well as the limits (national and international) will be described.

11.8 Impact Management and Monitoring

Monitoring and management measures which are time specific, measurable and which are auditable will be develop for identified impacts. For each management measure a responsible person will be assigned.

Monitoring is an activity undertaken to provide specific information on the characteristics and functions of environmental and social variables in space and time. Monitoring is required to ensure that:

- Impacts do not exceed the legal standards;
- The implementation of mitigation measures is checked in the manner described in the Environmental and Social Management System (ESMS); and
- Early warning of potential environmental damages is provided.

The monitoring programmes will indicate:

- Locations where monitoring must take place;
- Frequency of monitoring;
- Parameters to be monitored; and
- Standards (national and international).

Where applicable the monitoring programme should be accompanied by a map.

11.9 Reporting

An EIR/EMPr, and Closure and Rehabilitation Plan will be prepared in which the outcome of the baseline studies, the impact assessments, management plans and monitoring programmes are captured. The formats of the reports are detailed under Section 4.6 and will follow the requirements under NEMA.

11.9.1 Environmental Impact Assessment Reporting

During the EIA the potential significance of project impacts will be predicted. This is achieved by predicting the change in the social and environmental baseline conditions because of the project. The method for predicting change varies between disciplines and may include qualitative modelling, semi-qualitative methods or professional judgment.

An important aspect that will be incorporated into the impact assessment phase is to ensure that the linkages between disciplines are taken into consideration to provide an integrated assessment that represents a holistic view of the project impacts. This integration is critical to the EIA (and the IWULA). In addition, NEMA and NEMWA also requires that cumulative impacts associated with the wider project as well as neighbouring developments also be considered to gain a better understanding of impacts to the wider AoI. This will be incorporated in the EIA process.

The impact assessment phase will consider all phases of the Project, including construction, operation and decommissioning and will evaluate the alternatives (including the no-go" alternative) and preferred project design. The methodology used by Amec Foster Wheeler follows standard procedures; definition of issues and impacts, followed by determining the significance of the impacts inclusive of the proposed mitigation measures included in the project design. Issues can be defined as an element of the {roject and associated activities that can interact with the environment and host communities. It is emphasised that these interactions identify a potential for impact that will not necessarily be realised. This methodology is described in the Plan of Study for the EIA in Section 11 of this Scoping Report.

The objectives of the impact assessment are to:

- Determine the policy and legislative context of the Project;
- Describe the need and desirability of the proposed activity;
- Identify the location of the development footprint within the preferred site;
- Determine the impact of preferred alternatives (nature, significance, consequence, extent, duration and probability), the degree to which these impacts can be reversed, avoided and resultant loss;
- Identify suitable measures to avoid, manage or mitigate identified impacts; and
- Identify residual risks that need to be managed and monitored.

The content of the EIA report will follow the requirements stipulated in Annexure 3 of the 2014 EIA Regulations as amended and will include amongst others the following:

- A non-technical executive summary detailing the findings of the impact assessment process;
- The details and qualifications of the EAP and specialist team;
- The location, including a plan of the Project and properties, including title deed details;
- An environmental legal framework applicable to the Project;
- A detailed Project description;
- A description of the need and desirability of the Project;
- The details of the environmental authorisation process which was followed;
- A description of the impact assessment methodology, the outcome of the impact assessment, including defining the significance of the potential impacts (whether positive or negative) and an indication if impacts are direct, secondary or cumulative in nature;
- An analysis of process, technology and location alternatives which were considered and the details of the impact assessment related to each alternative;
- A description of the management, mitigating and monitoring requirements applicable to residual impacts; and
- Recommendations in terms of the viability of the Project from an environmental, social and cultural-heritage point of view including an impact statement.

11.9.2 Environmental Management Programme Amendment

The management and mitigation measures will be determined to reduce the significance of negative impacts and maximise the significance of positive impacts. There is a hierarchical approach to mitigation and management measures with “avoid at source” being the favoured method and compensation the least desirable option.

Management and mitigation measures will be defined in social and EMPrs. The EMPs will consist of the set of management and monitoring measures to be taken to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. The EMPs will detail the specific actions that are required to implement the agreed controls and mitigation measures as set out in the EIA.

If here is the potential for significant cumulative impacts across the Project footprint and within the wider area of influence, management measures for these impacts will also be recommended. Other developments in the area will also be considered in cumulative impacts wherever possible and management measures proposed.

The content of the EMPrs will follow Appendix 4 of the 2014 EIA Regulations and will include amongst others:

- A description of the aspects which will require implementation of mitigating and management measures;
- A description of the impact management objectives specifically applicable to the various identified aspects for the different phases of the Project;
- A description of the required management measures and the expected outcome once implemented;
- Recommendations on the expansion of the current Booysendal (BN and BS4) monitoring programmes; and
- Details of the environmental awareness programme which is proposed as part of the EMP Amendment.

11.9.3 Closure and Rehabilitation Plan

The existing "Closure Rehabilitation Plan and Financial Provision" for closure for both Booysendal North MR and the Booysendal South MR will be updated with the activities and facilities planned for the proposed BS expansion, as covered in the EMP Amendment. The Annual Rehabilitation Plan ("**ARP**") (defined according to Appendix 4 of the Financial Provision Regulations) and financial provision will be developed from information currently available and information collected during the EMP Amendment process – both environmental and social. Engineering layout plans and dimensions, as well as calculations for closure, will be provided. Consultation with stakeholders will cover the full life of mine, with closure an important consideration.

The objectives of this activity will be to:

- Ensure that the Booysendal ARP is aligned with the Financial Provision Regulations related to the requirements for the development of a closure and rehabilitation plan and the financial provision for closure (see Section 3.3.6);
- Update the financial, social and environmental liability and risks associated with closure;
- Review and where necessary update any rehabilitation objectives and closure concepts;
- Review and where necessary update the strategy to progressively implement rehabilitation to reduce operational and long-term environmental costs and liabilities; and
- Review and where necessary update the closure costs for Booysendal Mine.

The content of the ARP will follow Appendix 3 of the Financial Provision Regulations. The ARP will define the planned concurrent rehabilitation and remediation activities for the forthcoming 12 months and how these relate to the project closure vision, as detailed in the final rehabilitation, decommissioning and mine closure plan. The plan will contain, amongst others:

- Closure vision, objectives and criteria to be achieved through the implementation of the pan (these should be measurable and auditable);

- Environmental and social context of the operation, stakeholder issues and comments and the mine plan and scheduled;
- Findings of an environmental risk assessment;
- Design principles;
- Proposed final post-mining land use;
- Closure actions and schedule;
- Relinquishment criteria;
- Closure cost estimation procedure and financial provision; and
- Monitoring and auditing requirements.

The ARP will form a component of the EMP and will include the sum of the financial provision.

12. Conclusion

This Report contains the findings of the scoping phase for the Booysendal South Expansion Project: Phase 2. The purpose of the Report is to gain input from the relevant authorities and I&APs to ensure that the current conditions are understood and correctly captured and that the ToR for the EIA phase is scoped correctly. The ToR was specifically drafted to ensure that the activities undertaken during this phase will lead to a better understanding of the potential impacts of the proposed Project against the prevailing environmental and social conditions

The screening and scoping process, which is based on a comprehensive review of the section 24G EA specialist investigations and EIA,indicates that the Project is in a sensitive physical and social environment. These sensitivities will be further investigated as they relate to the specific AoI and activities of the Project. Specific areas of concern relate to:

- The Project ‘s location within the SCPE;
- The presence of a large number of CI terrestrial fauna and flora species;
- The CBA and the potential cumulative impacts on the habitats;
- The sensitive nature of the Groot Dwars River FREPA catchment and the associated CI species occurring in the catchment and the potential cumulative impacts on the system;
- The high number of wetlands associated with the Phase 2 Project Area;
- The changes in the hydrological regime of the Groot Dwars River catchment, including potential changes in the flow characteristics due to either a reduction in baseflow and run-off or changes resulting from decanting and seepage where the water contains contaminants;
- Reliance of communities on groundwater resources and the potential reduction in the levels of groundwater because of dewatering or the seepage of pollutants into the groundwater resources;
- The location of sensitive receptors and the potential impacts of noise and dust this could have;
- The potential negative impacts associated with an influx of people into the area looking for jobs; and
- The potential increase in habitat fragmentation, creation and migration barriers.

The ToR for the EIA phase outlines the process which will be followed to investigate and assess potential impacts. These reports will be made available for public comment. All registered I&APs will be kept informed on the process.

13. Declaration of Independence

I, Amanda Pyper, declare that –

General declaration:

- I act as the independent environmental practitioner in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the Applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of NEMA, the 2014 Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with NEMA, the 2014 EIA Regulations and all other applicable legislation
- I will take into account, to the extent possible, the matters listed in regulation 8 of the 2014 EIA Regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process; and
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- all the particulars furnished by me in this form are true and correct;
- will perform all other obligations as expected from an environmental assessment practitioner in terms of the 2014 EIA Regulations; and
- I realise that a false declaration is an offence in terms of regulation 71 of the 2014 EIA Regulations and is punishable in terms of section 24F of NEMA.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the 2014 EIA Regulations;

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_____

_____

_____

Signature of the environmental assessment practitioner:

Amec Foster Wheeler (part of Wood plc)

_____

Name of company:

24 February 2018

_____

Date:

14. Bibliography

Airshed, March 2017: Air Quality Impact Assessment for Booysendal Mine.

Aquatico Scientific (Pty) Ltd, March 2017: Specialist Water Quality Baseline Status Quo and Scoping Report Northam Platinum Limited, South Africa

Booysendal, Nov 2013: Code of Practice: Non-mandatory code of practice for waste management of Booysendal Mine, BD-COP-17 Version 2.

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SNA Civil and Structural Engineers, May 2016: Booysendal Central Permanent Access Road: Valley Boxcut to Booysendal North Mine.

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Wetland Consulting Services, June 2017: Wetland Environmental Management Plan (EMP), Booysendal Mine EIA/EMP Amendment and S 24 G Application (Ref: 1225a-2017).

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Annexure A:

Environmental Assessment Practitioner CV

Amanda Rocher

Principal Environmental Consultant

Current projects

- Northam Platinum Booysendal EMP Amendment
- Amara Mining Yaoure Gold Mine ESIA
- Maaden Gold Base Metals Co ESIA Strategic Advice and External Review

Core skills

Environmental and Social Impact Assessments and Permitting
Project Management
Environmental Compliance Auditing
Integrated Waste and Water Management

Professional summary

Amanda is a Principal Environmental Scientist with 26 years' experience, of which the past 10 years have been as an environmental and social scientist. Her experience spans the whole project life cycle and includes strategic advisory roles; due diligence assessments; prefeasibility, feasibility and bankable feasibility input, environmental compliance audits; external IFC reviews; managing large international ESIAs and ESMP, often in remote locations and involving large multidisciplinary specialist teams; and developing closure and rehabilitation plans. This experience gives her a detailed understanding of overall project requirements through all stages of development. She is frequently involved in projects at the scoping and prefeasibility stages, her guidance on project design and optimization in the early stages of project development resulting in increased benefits to project cost and schedule in the later stages of study and permitting.

Her experience includes roles in the extractive, linear infrastructure, water sector and industrial developments for both greenfields and brownfields projects. He role furthermore involves business development and strategic advisory services

She worked on projects in Liberia, Côte d'Ivoire, Republic of Congo (Brazzaville), South Africa, Mozambique, Guyana, Taiwan, Singapore, Malawi, Kyrgyzstan and the Kingdom of Saudi Arabia. She holds a Master's Degree in Environment and Society, completed at the University of Oulu (Finland) and the University of Pretoria, and an Honours Degree in Environmental Impact Assessment and Environmental Management.

She holds a Master's Degree in Environment and Society completed at the University of Oulu (Finland) and the University of Pretoria and an Honours Degree in Environmental Impact Assessment and Environmental Management. She is a qualified QEF for Chevron and holds an ISO 14001Advanced EMS Lead Auditor qualification.

Education

BA(Ed) – University of Pretoria (1989)
BA. Hons. (Environmental Geography) – University of Pretoria (1989)
MA: Environment and Society – University of Pretoria and University of Oulu (Finland) (2008)

Memberships/affiliations

Member of IAIA
Environmental Law Association of South Africa

Languages

English

Employment history

Amec Foster Wheeler Earth & Environmental, UK: Principal Environmental Scientist, 2013 to present
Green Edge Environmental Consulting: Owner, 2012 to 2013
Environmental Resources Management (ERM): Principal Environmental Consultant – Integrated Assessment Practice, 2012 to 2012
GCS (Pty) Ltd: Project Manager, 2007 to 2011
Ecosat Environmental Services Group: Environmental Consultant, 2007 to 2007
John Vorster High School Nigel: Senior Geography Educator, 1990 to 2006

Representative Mining Projects

Ma'aden Gold & Base Metals Co, Kingdom of Saudi Arabia
Responsible for the technical support to Saudi consultants and review of the ESIA and ESMP. Review of the Scoping Report, the field study plan and the ESIA and ESMP against the International Finance Corporation Performance Standards on Environmental and Social Sustainability, 2012.Develop a conceptual closure and rehabilitation plan and closure costing for the operation.

Hamdah Gold Environmental Design Basis for Saudi Gold Refinery Co., Kingdom of Saudi Arabia
Responsible for developing an environmental design basis for the Hamdah Project as part of the EPC contract based on the environmental legislation of the Kingdom of Saudi Arabia. Role: liaison with engineering team, overall quality control and project delivery.

Western Cluster Limited, Liberia
Project Manager for the ESIAs of a mining complex development, road upgrade to Monrovia, redevelopment of the railway line to Monrovia, upgrade of port facilities in Monrovia. Overall team, schedule and budget management. Direct client contact point. Technical oversight and review of environmental authorisation documentation. Development of specialist's scopes. Development of report structures to ensure uniformity. Strategic recommendaitons into engineering design requirements.

Northam Platinum Ltd, South Africa
ESIA and ESMP Amendment and associated permitting for the expansion of the Booysendal Mining Operation. Significant mining expansions, linear infrastructure development, including roads, pipelines, 132kVA powerline and an aerial rope conveyor system. Project manager for multi-disciplinary team. Client, authorities and engineering team liaison.

Amara Mining, Côte d'Ivoire
Responsible for the delivery of and ESIA and ESMP for the Yaoure Gold Mine and powerline in compliance with IFC and Côte d'Ivoire environmental legislative requirements. Overall Project Management, appointment and management of multidisciplinary in-country and international team. Development of specialist scopes, Authorities liaison. Input into Engineering risk workshops. Client contact.

Cola Gold, Republic of Congo (Brazzaville)
Responsible for delivering a Strategic Pre-scoping study for exploration activities in the Dimonica Unesco World Heritage Site to identify potential project risks and fatal flaws.

Environmental Resources Management Southern Africa (Pty) Ltd, South Africa
External review of the ESIA and ESMP Amendment for Consolidation De Beers Consolidated Mines Venetia Mine done by ERM.

Jonah Capital, Liberia
ESIA and ESMP for the Buchanan Iron Ore Tailings Project, Assistant Project Manager, ESIA and ESMP compilation assistance, specialist team and client liaison, general project management.

Zubix Investments Limited, Guyana
Project Manager for the Strategic Pre-scoping Study in support of exploration working with a multi-disciplinary team.

Northam Platinum Limited, South Africa
Responsible for delivery of the ESIA, Waste Management and Integrated Water Use License Authorisations for the greenfields Booysendal Division mining and infrastructure development. Project Management, technical and quality control of all reports, liaison with the project team including the engineers and the client, specialist workshops, various authorities meetings, follow-up with authorities, managing the public consultation process and adding value to the project through sound environmental advice.

Northam Platinum Limited, South Africa
ESIA and ESMP Consolidation and Amendment for the Zondereinde Platinum Division, Project Management (proposal writing, budget, project schedule and specialist management), authorities liaison, specialist appointments and workshops, stakeholder engagement process and compilations of reports.

Pan African Resources, South Africa
Site Selection Process for a new Tailings Storage Facility for the Phoenix Platinum operations. Project Management, stakeholder workshops, appointing and overseeing the specialist team (GIS and Engineering team), site selection reporting.

Blastrite Tormin Mineral Sands, South Africa
Project Management and ESIA Amendment for the Tormin operations in Lutzville.

Northam Platinum Limited, South Africa
Project Management applicable to the environmental authorisations for the Booysendal Contractors Camp. Stakeholder, public and authorities consultation, client liaison, appointment and overseeing the project team, report compilation and review.

African Rainbow Minerals, South Africa
Undertaking the TSF Site Selection Process for Two Rivers Platinum Mine. Project Management, overall specialist appointment, Site Selection Report compilation, budget and time management and client and engineering team liaison.

African Exploration Mining Finance Corporation, South Africa
Compilation of Prospecting Right Applications for four operations in Cullinan. Project Management, mentoring and guiding junior staff in the compilation of the EMPs, document review, liaison with the client and authorities, site meeting with authorities.

Assmang Chrome, South Africa
ESIA and Mining Right Authorisation Process for a new TSF for the Dwarsrivier Chrome Operations. Project Management, appointment of specialists, managing budget and timeframes, conducting specialist workshops, authorities and client liaison, engineering liaison, mentoring junior staff in EIA and EMP compilation. Compiling the IWULA and IWWMP and document review

Anglo Platinum, South Africa
ESIA, ESMP and Integrated Water Use License compilation of the greenfields Der Brochen Project. Project Management, liaising with the client, engineers and specialist team, engineering workshops, environmental design input, compilation of the ESIA and ESMP.

Council for GeoScience Projects, South Africa
Mining permit and Prospecting Right applications for various projects across South Africa.
Project management of various mining permit and prospecting right applications. Mentoring junior staff, document review, liaise with the client, authorities, applicant and I&APs, undertaking public consultation process.

Representative Oil and Gas Projects

SASOL Mozambique (2016)
Project Manager for the development of the Environmental Design Basis Report for the PSA LPG Expansion Project.

Chevron South Africa (Pty) Ltd, South Africa
Project manager and update of the internal Chevron ESHIA Regulatory Tool, which compares the local environmental regulatory process requirements for EIA with the internal Chevron ESHIA process requirements.

Representative Linear Infrastructure Projects

Access road and Lebalelo Pipeline Extension: Northam Platinum Limited, South Africa
ESIA and environmental permitting for the 7Ml/day Lebalelo Water Provision Pipeline Extension and Access Road for the greenfields Booysendal Operation. Project Management, technical and quality assurance and project delivery.

Assmang Limited Northern Cape, South Africa
ESIA for the realignment of the R385 Road. Project Management, stakeholder engagement and QA.

Mpumalanga Dept of Roads South Africa
ESIA and environmental permitting for the P8-1 Lydenburg Road Upgrade. Project Management, stakeholder engagement and report compilation.

Representative Water Management and Water Infrastructure Projects

Anglo Platinum Limited, South Africa
ESIA for the 13.5Mm^3 Richmond Dam, water transfer pipeline, access road and powerline relocation according to the World Commission on Dams Guidelines. Compilation of the ESIA and ESMP. Managing a large multi-disciplinary team. Client, engineering and team meetings and client liaison.

Northam Platinum Limited, South Africa
Dam Safety Permit Application – for a new 25Mm^3 TMF. Project Management, strategic assistance, application compilation, liaison with authorities.

Mbombela Municipality, South Africa
Water Use Permitting for the 2010 Mbombela World Cup Stadium and associated infrastructure. Project Management and compilation of the integrated water use license application.

Madibeng Local Municipality, South Africa

Water use permitting and Water and Waste Management Plans for 4 Waste Water Treatment Works. Project Management, document review and quality control and overseeing and mentoring the project team in the compilation of the reports.

Dr Ruth S Mompati District Municipality, South Africa
Responsible for delivery of the ESIA and environmental permitting for a new Waste Water Treatment Works at.

Representative Water and Waste Management Projects

Northam Platinum Limited, South Africa
Salvage Yard Integrated Waste Management License Application for the Zondereinde Platinum Division. Project Management (proposal writing, budget, project schedule and client and authority's liaison, overall project management), environmental document compilation, authority's liaison and waste classification.

Northam Platinum Limited, South Africa
Integrated Water and Waste Management Plan for Zondereinde Division. Project Management (proposal writing, budget, and project schedule and specialist management), authority's liaison, specialist appointments and workshops, stakeholder engagement process and compilations of the IWWMP.

Exxaro Resources, South Africa
Exxaro Glen Douglas Integrated Water and Waste Management Plan. Waste classification, water migration in terms of the regulatory requirements and international best practice and report compilation

Representative Due Diligence, Audit and Remediation Projects

Project Manchester, Singapore and Taiwan
Amec Foster Wheeler was appointed by a confidential client to undertake a Phase 1 ESA Assessment in terms of United States Standard Practice for Environmental Site Assessment: Phase 1 Environmental Site Assessment Process (E1527-13) for two of the Heraeus Group High Performance Product Industrial sites as part of a potential purchase agreement.

Coca-Cola Canners Southern Africa (Pty) Ltd
Environmental Due Diligence Assessment for the Nuffield Extension 4 industrial site. Project management, preparation of the Phase 1 ESIA Report in terms of United States Standard Practice for Environmental Site Assessment: Phase 1 Environmental Site Assessment Process (E1527-13)authorities, community and client liaison.

Itochu Corporation, South Africa
Environmental Due Diligence assessment for the Kudumane Manganese Mine against the IFC Performance Standards, 2012, the ESMPs and the conditions of authorisations,

Centerra Gold, Kyrgyzstan
Risk Assessment for Kumtor Gold Project on behalf of KyrgyzAltyn JCS. Assistant Project Manager, assistance with proposal and report compilation, general project management activities.

Trans-African Concessions, Mozambique and South Africa
Alien vegetation survey on the N4-highway from Pretoria to Maputo. Project Management including proposal writing, budget, project schedule and project delivery, client liaison, survey and report review.

Assmang Limited, South Africa
Risk Assessment and Rehabilitation Plan for Glosam, Japiesrust and Marthashoop mining right area. Project management, compilation of risk assessment, rehabilitation plan and closure ESMP. Undertaking stakeholder engagement, authorities and client liaison.

ArcelorMittal Vanderbijlpark Works, South Africa
Remediation Process for the Dunswart Industrial Waste Site (2008). Assistant project manager for phase 1 and 2 remediation activities and co-report compilation.

Northam Platinum Limited, South Africa
External Environmental Compliance Audit on the Integrated Water Use License for the Zondereinde Platinum Division against the conditions of authorisation and in line with ISO 14001 requirements. Project initiation (proposal writing, client liaison and authority's liaison), project management (liaison with surface and groundwater specialist, budget, project schedule and delivery), site audit and audit report compilation.

Northam Platinum Limited, South Africa
Development of a construction phase policy document and undertaking monthly external environmental compliance audits against all authorisation conditions in line with ISO 14001 for the development of the greenfields Booysendal Mine Construction Phase. Project Management, checklist compilation, environmental compliance audits, report compilation, contractors and engineering team feedback meetings, and key client manager.

Trans-African Concession, South Africa
N4-7B bi-annual environmental compliance audits in terms of the EMPs, ISO 14001 and conditions of authorisation. Project Management, checklist compilation, six monthly environmental compliance audits, report compilation, feedback meetings, and client liaison.

ArcelorMittal Vereeniging Works, South Africa
Annual environmental compliance audits in terms of the conditions of authorisation and ISO 14001. Lead auditor and quality assurance.

Xstrata Coal, South Africa
iMpunzi Coal Project Annual External Environmental Compliance Audit. Lead Auditor and Document Review.

Imerys Minerals, South Africa
External Environmental Compliance Audit for three of the Imerys' South African Operations. Co-auditor to the internal USA based auditor.

Assmang Iron Ore, South Africa
Conducting the External Water Use License Compliance Audit for the Khumani Iron Minein the Northern Cape. Project Management, compliance audit, report compilation and client liaison.

Assmang Iron Ore, South Africa
Conducting the External Water Use License Compliance Audit for Beeshoek Iron Ore in the Northern Cape. Project Management, compliance audit, report compilation and client liaison.

Kangra Coal, South Africa
Conducting the annual external integrated water use license audits for two operations of Kangra Coal, namely Springbok Siding and Tumelo Coal Mine. Co-auditor and report review.

Anglo Platinum, South Africa
Quarterly External Environmental Compliance Audits of the Richmond Road expansion. Project Management, client and contractor liaison, conduct environmental compliance audits, checklist and report compilation, contractor feedback meetings, liaise with authorities i.t.o graves found during excavations.

Mpumalanga Dept of Roads, South Africa
Monthly External Environmental Compliance Audits for various Mpumalanga road constructions and upgrades. Liaison with construction team, authorities and client. Monthly environmental compliance audits in terms of the various authorisations and compilation of audit reports.

Krisp Properties Development, South Africa
Monthly External Environmental Compliance Audits for the Clearwater Housing Estate development close to OR Tambo International Airport. Project Management, liaison with construction team and client and monthly compliance reports.

Annexure B:

Stakeholder Engagement Report

Booysendal South Expansion Project: Phase 2

Integrated public participation process for applications for Environmental Authorisations, the amendment of an Environmental Management Programme, a Waste Management License and Integrated Water Use Licence for the proposed Booysendal South Expansion Project: Phase 2 in terms of the National Environmental Management Act, No 107 of 1998, National Environmental Management: Waste Act No 59 of 2008 and National Water Act, No 36 of 1998

Stakeholder Engagement Report

Booysendal Platinum (Pty) Ltd, South Africa

Issued to: Northam Platinum Limited

Submitted by: Anelle Lötter

Date: 11 February 2018

REPORT ISSUE FORM

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Reviewer		Signature & Date	
Project Manager Approval	**Amanda Pyper**	23 February 2018	

CONTENTS

APPENDICES

List of Abbreviations and Acronyms

Abbreviation	Description
BID	Background Information Document
CA	Competent Authority
CRR	Comments and Responses Report
DMR	Department of Mineral Resources
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMP	Environmental Management Programmes
GNR	General Notice Regulation
I&APs	Interested and Affected Parties
IWUL	Integrated Water Use Licence
MPRDA	Mineral and Petroleum Resources Development Act, No 28 of 2002
NEMA	National Environmental Management Act, No 107 of 1998
NEM:BA	National Environmental Management: Biodiversity Act, No 10 of 2004
NEM:WA	National Environmental Management: Waste Act, No 59 of 2008
NHRA	National Heritage Resources Act, No 25 of 1999
NWA	National Water Act, No 36 of 1998
SAHRA	South African Heritage Resources Agency
S&EIR	Scoping and Environmental Impact Assessment
SER	Stakeholder Engagement Report
WML	Waste Management Licence

1.0 INTRODUCTION AND OBJECTIVE OF THE PROJECT

1.1 Background

Amec Foster Wheeler (Pty) Ltd ("**Amec**") (incorporated into the Wood Group) was appointed by Northam Platinum (Pty) Ltd (Northam Platinum) to apply for the required environmental authorisations, permits and licences (collectively "**Environmental Consents**") for the proposed expansion of the Booysendal Mine under the Booysendal South Expansion Project: Phase 2 (the "**Project**").

The Project presently requires the following Environmental Consents:

- Approval of a substantive amendment to the Environmental Management Programme approved as part of the environmental authorisation granted in terms of section 24 of the National Environmental Management Act, No 107 of 1998 ("**NEMA**") on 5 January 2018 in terms of NEMA and the 2014 Environmental Impact Assessment Regulations ("**2014 EIA Regulations**"), published under Government Notice R982 in Government Gazette 38282 of 4 December 2014 (as amended under Government Notice 326 in Government Gazette 40772 of 7 April 2017) ("**EMP Amendment Application**");

- Two environmental authorisations ("**EAs**") in terms of the NEMA and the 2014 EIA Regulations ("**EA Applications**");

- Integrated Water Use License ("**IWUL**") in terms of the National Water Act, No 36 of 1998 ("**NWA**") for the entire Booysendal South Expansion Project;

- A Waste Management Licence ("**WML**") under the National Environmental Management: Waste Act, No 59 of 2008 ("**Waste Act**") and the List of Waste Management Activities that have, or are likely to have, a Detrimental Effect on the Environment (2013); and

- Additional permits such as biodiversity permits may be required,

  (referred to collectively as the "**Phase 2 Project Applications**").

A specific objective of the Project is to conduct an integrated public participation process for all of the Phase 2 Project Applications that are being applied for.

A Scoping and Environmental Impact Assessment ("**S&EIR**") process is followed for application for a WML ("**WMLA**"), two EA Applications and EMP Amendment Application (the "**Phase 2 NEMA and Waste Act Applications**").

The Booysendal Mine operates in terms of two mining rights, namely the Booysendal North Mining Right (DMR Reference number MP 30/5/1/2/2/334 MR) and the Booysendal South Mining Right (DMR Reference number MP 30/5/1/2/2/127 MR) (collectively the "**Mining Rights**"). The proposed expansions will occur within the areas that fall under these Mining Rights. The northern section of the Booysendal North Mining Right falls in the Limpopo

Province, while the southern section of the Booysendal North Mining Right and the entire Booysendal South Mining Right falls in the Mpumalanga Province.

As the Phase 2 Project is situated in both the Limpopo and Mpumalanga Provinces, two separate integrated applications may however need to be submitted to the DMR for the Phase 2 NEMA and Waste Act Applications as follows:

- *DMR Limpopo Regional Office* - one EA Application and the EMP Amendment Application for the activities on properties held under the Booysendal North Mining Right; and

- *DMR Mpumalanga Regional Office* - the WMLA and one EA Application for the activities on properties held under the Booysendal South Mining Right.

The Phase 2 NEMA and Waste Act Applications and IWUL application ("**IWULA**") will be submitted simultaneously and an integrated public participation process will be conducted for these applications. The public consultation process will be undertaken in terms of NEMA and Chapter 6 of the 2014 EIA Regulations.

The IWULA will be submitted to the Lydenburg Office of the Department of Water Affairs.

2.0 PURPOSE OF THIS REPORT

This Report provides details regarding the public participation process conducted for the Phase 2 Project Applications, namely the Phase 2 NEMA and Waste Act Applications and IWULA .

3.0 OBJECTIVE OF PUBLIC PARTICIPATION

The most important objective of public participation is to provide sufficient and accessible information to potential Interested and Affected Parties ("**I&APs**") in an objective manner and to provide a platform for constructive participation in the application process, thereby assisting I&APs to:

- gain an understanding of the Project, the various components and the potential impacts (positive and negative);

- raise issues of concern and suggestions for enhanced benefits;

- comment on reasonable alternatives;

- verify that their issues have been recorded in the Comments and Responses Report ("**CRR**") and considered in investigations; and

- contribute relevant local information and traditional knowledge to the process.

4.0 PUBLIC CONSULTATION PROCESS

This section provides a short summary of the various activities of the public consultation process to be undertaken in support of the application process. Some of the activities, associated with the Scoping Phase have already commenced.

4.1 Stakeholder database

A stakeholder database or list of I&APs was compiled and will be updated as the process unfolds, and as more I&APs register. The database was compiled: a) using lists of contact details of previous applications in the area; b) using information provided by the Booysendal Mine from their community liaison officers; and c) including responses from I&APs.

The current I&APs database is attached as Appendix "**A**" to this Report. The I&APs database is the means through which information will be conveyed to stakeholders as part of the announcement of the applications and the availability of the consultation and final reports as these become available for public review.

For this Project, I&APs typically include the following:

- owners or persons in control of the land where the proposed Project activities are to be undertaken ("**Project Area**") (including Booysendal Platinum (Pty) Ltd, the Bakoni Baphetla Communal Property Association, Jan Valentine Blake, Cecilia Jacomina Riekert and Maria Elizabeth van Vuuren);
- occupiers of the property where the activities are to be undertaken ï in this case the occupiers of the property as mentioned above;
- owners and occupiers of land adjacent to the Project Area ï this includes all adjacent landowners and occupiers in the areas;
- Provincial (Mpumalanga and Limpopo) and local government (Ehlanzeni District Municipality (Mpumalanga), Thaba Chweu Local Municipality (Mpumalanga), Greater Sekhukhune District Municipality (Limpopo) and Greater Thubatse Local Municipality (Limpopo));
- Organs of state, other than the authorising authorities, such as the Department of Environmental Affairs ("**DEA**"), Department of Agriculture, Forestry and Fisheries ("**DAFF**"), Mpumalanga Tourism and Park Agency ("**MTPA**"), Department of Water and Sanitation ("**DWS**"), Land Claims Commissioner, etc having jurisdiction in respect of any aspect of the proposed activities;
- Relevant residentsô associations, agricultural unions, Tribal authorities, Community Property Associations ("**CPAs**"), rates payers organisations, community based organisations, water user associations, and any catchment management authority and Non-Governmental Organisation ("**NGOs**");

- Media (local and regional ï e.g. Steelburger / Lydenburg News);
- Environmental and water bodies, forums, groups and associations; and
- Private sector (businesses, industries) in the vicinity.

4.2 Announcement of the integrated application process

The integrated application process and the availability of the Consultation Scoping Report was announced to I&APs by means of the following:

- Advertisements in the local Steelburger / Lydenburg newspaper (distributed in the Project Area and in both Limpopo and Mpumalanga Provinces). As per Appendix "**B**" to this Report, an advertisement was published on Friday, 23 February 2018.
- A Background Information Document ("**BID**") was compiled, translated and distributed as follows:

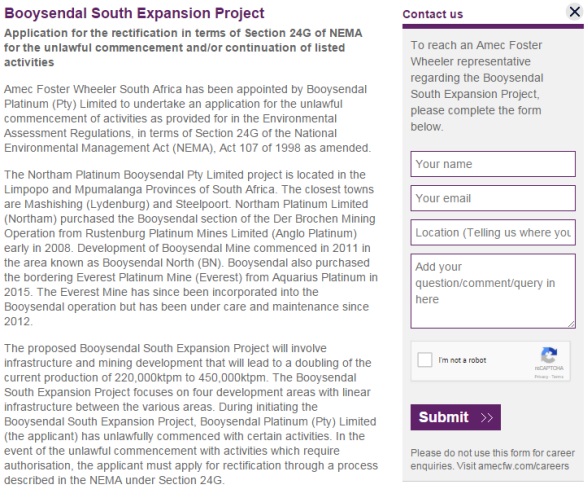
  a) to all I&APs on the stakeholder database via email notifications on 16 February 2018;

  b) per hand to those who were visited while the site notices were placed on 15 February 2018;

  d) at meetings held during the review of the Consultation Scoping Report ï refer to Section 4.4 for a complete list of all meetings held.

  The BIDs were available in Sepedi, English and Afrikaans. Appendix "**C**" to this Report includes the three BID translations.

- Site notices were placed on 15 February 2018 all around the Booysendal Mine on main roads and at public places. Appendix "**D**" to this Report provides a description of the locations where the 20 site notices were placed as well as a photo of each site notice placement.
- Telephonic notification to key I&APs and landowners.
- Placement of all notices and the BIDs on the Amec website (www.amecfw.com/booysendal).



Booysendal South Expansion Project

Application for the rectification in terms of Section 24G of NEMA for the unlawful commencement and/or continuation of listed activities

Amec Foster Wheeler South Africa has been appointed by Booysendal Platinum (Pty) Limited to undertake an application for the unlawful commencement of activities as provided for in the Environmental Assessment Regulations, in terms of Section 24G of the National Environmental Management Act (NEMA), Act 107 of 1998 as amended.

The Northam Platinum Booysendal Pty Limited project is located in the Limpopo and Mpumalanga Provinces of South Africa. The closest towns are Mashishing (Lydenburg) and Steelpoort. Northam Platinum Limited (Northam) purchased the Booysendal section of the Der Brochen Mining Operation from Rustenburg Platinum Mines Limited (Anglo Platinum) early in 2008. Development of Booysendal Mine commenced in 2011 in the area known as Booysendal North (BN). Booysendal also purchased the bordering Everest Platinum Mine (Everest) from Aquarius Platinum in 2015. The Everest Mine has since been incorporated into the Booysendal operation but has been under care and maintenance since 2012.

The proposed Booysendal South Expansion Project will involve infrastructure and mining development that will lead to a doubling of the current production of 220,000ktpm to 450,000ktpm. The Booysendal South Expansion Project focuses on four development areas with linear infrastructure between the various areas. During initiating the Booysendal South Expansion Project, Booysendal Platinum (Pty) Limited (the applicant) has unlawfully commenced with certain activities. In the event of the unlawful commencement with activities which require authorisation, the applicant must apply for rectification through a process described in the NEMA under Section 24G.

The Amec Foster Wheeler website is used to make documents electronically available to stakeholders. The website address was published in the advertisement, BIDs, site notices and all other communication.

- A Registration and Comment Sheet was distributed with every BID, inviting stakeholders to register as I&APs and to provide their comments on the proposed application (See Appendix "**C**").

4.3 Comments and Responses Report

All comments which will be received during the integrated application process will be captured in a CRR. The CRR will be updated on a continuous basis and will be presented to the authorities and other I&APs together with the consultation and final reports as a full record of issues raised, including responses on how the issues were considered during the integrated application process. The following versions of the CRR will be available:

- *CRR Version 1:* Submitted with the Final Scoping Report. This version of the report will capture comments and issues raised from the beginning of the announcement until 30 March 2018. Comments received after this date will be captured in version 2 of the CRR;

- *CRR Version 2:* Will be submitted with the Consultation Environmental Impact Report/Environmental Management Programme ("**EIR/EMPr**") (Appendix "**E**"); and

- *CRR Version 3:* Will be submitted with the Final EIAr/EMPr (Appendix "**E**").

4.4 Review of the Consultation Scoping Reports

The announcement of the integrated application process also introduced the availability of the Consultation Scoping Report for public review and comments. Specific further activities proposed in terms of the public participation process during the review of the Consultation Scoping Report are described in this section.

The Consultation Scoping Report will be available for public comment for a period of 30 days from 28 February to 30 March 2018. The Report will be available as follows:

Printed Copies	
Lydenburg Public Library, 41 Viljoen Street, Lydenburg (Tel: 013 235 3700)	
Maartenshoop Police Station, Naauwpoort Farm (Tel: 013 235 4041)	
Electronic Copies	
Website download	www.amecfw.com/booysendal
CD copy	On request to the public participation office
Hard copies and / or CDs	To all commenting authorities

The availability of the Report was announced via the publishing of advertisements (See Section 4.2 and Appendix "**B**"), in the BID (Appendix "**C**") and on-site notices (Appendix "**D**"). E-mails were sent to all I&APs registered on the stakeholder database, providing the direct link to an electronic version of the Consultation Scoping Report and its appendices. At all stakeholder meetings to be held, the availability of the Report and how stakeholders may access copies of the Report will be communicated.

4.4.1 Stakeholder meetings

Stakeholder meetings were held just before the review period of the Consultation Scoping Report. A record of the deliberations at the meetings will be included as part of the CRR ï Version 1 (Appendix "**E**") which will be made available with the Final Scoping Report.

Meetings were held as follows:

Date	Time	Meeting
22 February 2018	10:00	Meeting with Thaba Chweu Municipality, provincial and national authorities
22 February 2018	14:00	Meeting with adjacent commercial farmers and mines
23 February 2018	10:00	Meeting with the Main Community Forum

The purpose of the meetings was to announce the integrated application process, to present to stakeholders a summary of the Consultation Scoping Report, and to obtain their views and comments on the information available as was presented to them during the meetings. All attendees were reminded of the process being followed and that there will be another opportunity for them to comment on the Final Scoping Report as well as on the reports to be compiled as part of the Environmental Impact Assessment ("**EIA**") phase.

The presentations delivered at the meetings as well as the attendance registers of each meeting will be included in the Final Scoping Report as Appendix "**F**".

5.0 REVIEW OF THE FINAL SCOPING REPORTS

The Final Scoping Report will be submitted to the Competent Authorities in April / May 2018 and the Report will be made available to I&APs for their final comments from the day of submission to the authorities for a 30-day period. Stakeholders will be requested to provide their comments on the final reports directly to the DMR Limpopo and Mpumalanga

Regional Offices respectively. Stakeholders will be requested to copy their comments to Amanda Pyper, the appointed Environmental Assessment Practitioner, and the public participation office.

The availability of the Final Scoping Report and where copies of the Final Report can be obtained will be announced to registered I&APs via email.

6.0 PUBLIC PARTICIPATION DURING THE EIA PHASE

Once the Scoping phase has been finalised and the Scoping Report is approved by both the Limpopo and Mpumalanga Regional Offices of the DMR, the EIA phase of the S&EIR process will begin. The main objectives of public participation during this phase will be a) to verify that stakeholder issues have been considered by the EIA Specialist Studies and in the reports, which will be compiled and b) to provide stakeholders the opportunity to comment on the findings of the EIR/EMPr Report for the Phase 2 NEMA and IWULA Report, including the measures that have been proposed to enhance positive impacts and reduce or avoid negative ones.

The public participation activities during the EIA phase of the integrated application process will include:

- Email notifications to stakeholders to inform them of the opportunity to review the Consultation EIR/EMPr and draft IWULA Report;
- The Consultation EIR/EMPr and Draft IWULA Report will be made available for review for a period of between 30 and 60 days (the NWA requires a review period of 60 days for the IWULA Report). The same public places will be used to make the reports available as per the Scoping Phase (see section 4.4);
- Advertisements to notify stakeholders of the availability of the Consultation and Draft reports will be published in the Steelburger / Lydenburg Newspaper;
- Stakeholder meetings will be held with stakeholders during the review period of the consultation and draft reports to provide them with the contents of the report for their comments and views;
- The final versions of the EIR/EMPr and IWULA Report will also be made available to stakeholders once submitted to the different competent authorities; and
- The CRR will be kept updated with stakeholder comments and issues and responses will be included with the updated versions which will be made available as stated in section 4.3.

The Stakeholder Engagement Report will be updated with a record of the public participation activities as it will unfold during the EIA phase.

7.0 PUBLIC PARTICIPATION DURING THE AUTHORISATION PHASE

Once the Competent Authorities have provided information with regards to their decisions in terms of the integrated application process, their decisions and the detail thereof will be communicated to I&APs according to the conditions stipulated. I&APs will be made aware of their rights to appeal the decisions and the proposed process to follow in such regard.

The legislative and required public participation activities will end once the appeal periods have lapsed.

APPENDIX A

STAKEHOLDER DATABASE

Booysendal Expansion Project: Phase 2

Name Initials	Surname	Institution
Authorities		
Limpopo		
Mtileni	Rexson	Department of Water and Sanitation
Nengovhela	Rufus	Department of Water and Sanitation
Mabada	Donald	Department of Water and Sanitation
Maylene	Broderick	LEDET
John	Motimele	LEDET
Wallies	Matlala	Department of Roads and Public Transport Limpopo
Bukeka	Hlathi	Dept. Rural Development & Land Reform
Dipuo	Letsatsi-Duba	Limpopo Department of Agriculture
J.T.	Maredi	Limpopo Department of Agriculture
Khathu	Tshikolomo	Limpopo Department of Agriculture
Alidzulwi	Mudau	Limpopo Ofiice of the Premier
Ledile	Mashilwane	Limpopo Office of the Premier
Tebatso	Mabitsela	Limpopo Office of the Premier
Aaron	Kharivhe	DMR
Kolani	Thivhulawi	DMR
Tele	Maphoto	Deprt of Rural Development and Land
K	Lithole	SAHRA: Limpopo - LIHRA
Mpumalanga		
Robyn	Luyt	MDARDLEA: Mpumalanga Department of
Xolani	Nkosi	MDARDLEA: Mpumalanga Department of
Nocawe	Mthombothi	MDARDLEA: Mpumalanga Department of
Johan	Eksteen	MTPA
Mervyn	Lotter	MTPA-Biodiversity Planning
Francois	Roux	MTPA
Frans	Krige	MTPA
Hannes	Botha	MTPA
Andre	Hoffman	MTPA - Aquatic Scientist
B	Morris	MTPA
Doreen	Sithole	DAFF
Aubrey	Tshivhandekano	DMR: Regional Manager
Samuel	Mathavhela	DMR: Mpumalanga
Russel	Pillay	Mpumalanga Department Public Works, Roads and Transport
Portia	Munyai	DWS
Standford	Macevele	DWS
Sam	Nkosi	Dept of Rural Development and Land
B	Moduka	SAHRA: Mpumalanga
National		
T	Nyathi	SANBI
Lucas	Mahlangu	DEA - Waste
Nyiko	Nkosi	DEA

Thoko	Buthelezi	DAFF
Nokukhanya	Khumalo	SAHRA
Pieter	Ackerman	DWS

Greater Sekhukhune DM		
Mapule	Makoko	Municipal Manager
Mogobo David	Magabe	Executive Mayor
Greater Tubatse LM		
JNT	Mohlala	Municipal Manager
Ralipane Samuel	Mamekoa	Executive Mayor
		Ward Councillor - Ward 13
Ehlanzeni DM		
S	Siboza	Municipal Manager
Themba	Gogwane	Manager: Technical Services
Thapelo	Shabangu	Manager: Environmental Management
Nontobeko	Mahlalela	Manager: LED, Tourism, Rural
Thaba Chweu LM		
Lesley	Mokwena	Municipal Manager
Bafana Michael	Ncongwane	Executive Mayor
Jane	Malepe	Ward Councillor - Ward 5
Nicholas	Janse van Rensburg	Thaba Chweu Municipality: DA Councillor
Albine	Mahlangu	
Tebogo	Mathebula	Emerging contractor
Mxolisi Sibanyoni		LED Manager
Lepelle Northern		
NGOs / Environment		
Mark	Botha	
BK	Reilly	Buttonshope Trust
Paul	Bartels	WESSA (Northern Regions - Limpopo/Mpumalanga
Willem	Hazewindus	WESSA North Chairperson
Melissa	Fourie	Centre of Environmental Rights (CER)
Dr Hanneline	Smit-Robinson	Birdlife-SA
Dr. Koos	Pretorius	Chairman - Escarpment Environment Protection Group / SEF
Yolan	Friedmann	Endangered Wildlife Trust (EWT)
Dominique	Doyle	Earthlife Africa
Victor	Mavhidula	South African Human Rights Commission
Carol	Ngwenyama	South African Human Rights Commission
Mariette	Liefferink	Federation for Sustainable Development
Matlhodi	Mphaka	Sanbi: Ecological Infrastructure South African National Biodiversity Institute (Sanbi)

		Limpopo Tourism and Parks Agency
Dan	Mahlangu	MPTA: Verlorenvalei Senior Manager: Protected Areas Management
Robin	Peterson	SANParks
Markus	Basson	De Berg Conservancy
Agriculture		
		Agri-SA (Limpopo)
		Agri-SA (Mpumalanga)
		Agri-SA (National)
Motsepe	Matlala	National African FarmersôUnion (NAFU)
Bennie	van Zyl	Transvaalse Landbou Unie
		Mpumalanga Landbou
David	Jacobs	Steenkamps Berge Farmers' Union and De
Ludewyk	De Jager	Lydenburg Agricultural Union
Drikus	Botha	TAU-SA
Steven	Vermaak	TAU-SA
Andre	Venter	LWGV and AfriLimpopo
Media		
Pat	Engelbrecht	Steelburger / Lydenburg News
		Mash FM (Radio)
		SKFM (98.7 FM)
		Tubatse Radio
		Daily Sun
		Platinum Gazette
		Highlands Panorama
Public Places		
M	Ras	Lydenburg Public Library
Captain	Matlala	Lydenburg SAPS
Booysendal Mine (Norplats)		
Paul	Dunne	CEO
Maggie	Von Ronge	Booysendal - Environmental Officer
Hennie	Wood	
Pius	Monyela	
William	Masha	
Landowners and surrounding landowners		
Piet / Elize	Rabie	Kraaibosch 55 JT
Jan	Blake	Skuinsplaas 56 JT
Francois	Roux	
Ezekiel	Malatjie	De Kafferskraal 53 JT
George	Malatjie	Kraaibosch 55 JT
	Breytenbach	
Dawie	Jacobs	Oshoek
PJ	Price	Kliprivier 73 JT Remainder of Portion 15
MC	Smuts	Kliprivier 73 JT Portion 18 and Sheeprun
MJJ (Johannes)	Boshoff	Draaikraal 48 JT Portion 26 and 28

MM (Benja)	Grobler	Draaikraal 48 JT Portion 16, 27
Japie	Grobler	Kliprivier 73 JT
	Stageng CPA	Draaikraal 48 JT Remaining Extent,
MJJ (Johannes)	Boshoff	Draaikraal 48 JT Portion 26
	Kliprivier CPA	Draaikraal 48 JT Portion 4
	Stageng CPA	Uysedoorns 47 JT
	Windfall 38 Prop	Pietersberg 44 JT
	Windfall 38 Prop	Hebron 5 JT Portion 1 and RE
JJ	Joubert	Hermansdal 5 JT
	Stageng CPA	Johannesberg 45 JT RE, Portion 1
	Daisy Street Inv No	Sheeprun 179 JT
	Buttonshope	Sheeprun Portion 1
	Bakoni Baphetla	Sterkfontein 52 JT / 749 JT, Portion 4
	Bakoni Baphetla	Hoogland 38 JT
	SA Kiwifruit Ind Pty	De Kafferskraal 53 JT, Portion 3
	TKO Property Pty	De Kafferskraal 53 JT, Portion 4 and 19
	Bakoni Baphetla	De Kafferskraal 53 JT, Portion 8, 15, 17
	Natal Kiwi Orchards	Sheeprun Portion 27
Ria	Groenewald	De Kafferskraal Portion 13
Annatjie	van Vuuren	De Kafferskraal Portion 13
Chris	Van Vuuren	De Kafferskraal Portion 11
	Groenewald	
	Van der Merwe	
Celia and Johan	Riekert	De Kafferskraal Portion 2 and 11
Jan	Blake	Skuinsplaas 56 JT and De Kafferskraal
Pitman	Blake	Skuinsplaas 56 JT
Jo	Hayden-Smith	Kliprivier 73 JT Portions 31,32,14,
Linky	Smith	Klipriviet 73 JT Portions 3 and 36
C.F.	Davel	Draaikraal
Louise	Geldenhuys	Kliprivier 73JT
Theuns J	Moolman	Plaas Uysedoorns
Paul	Nicholson	Sheeprun Boerdery Pty Ltd
		Steenkampsberg Trout Lodge
		Peach Tree Lodge
		Buffelskloof Lodge
Audrey	le Grange	ECSAL / WJ Steenkamp Trust
Andre	Delport	Blueberry Farm
Pieter	Schoeman	Dwarsrivier Chrome Mine
		Rietfontein Guest Farm
Jakes	Jacobs	Two Rivers Platinum
Andrew	Fussel	Oshoek 69 JT
Danie	Nel	De Kafferskraal 53 JT
J	Coetser	
L		
Gawie / Susan		
Jannes	Van Rooyen	
Dirk	Grobler	
A	Roeloffze	
FR	Sephton	
Alma	Grobler	
Marisa	Grobler	
Wendy		

	Van den Heever	
Bernard		
Gert	Viljoen	
Ankia / Hano	van der Merwe	
M	Prinsloo	
E	Hiemstra	
Business, mining, industries		
Kamogelo	Mashego	Silverchain Projects (Pty) Ltd
Frank	Pieterse	Anglo American Platinum
Interested Parties		
Greg	Beyers	
Gabriel	Mathamsela	Protea Farms
Colbert	Makgoka	Environmental Scientist Burgersfort
Communities		
Bokoni Ba Phetla CPA		
Philip	Phetla	CPA Chairperson (BBPCPA)
Hezekiel	Maredi	
Simon Thekithane	Phetla	
David	Phetla	
Magapu	Phetla	Executive BBPCPA
William	Phetla	Royal Council
Lazarus	Phetla	Royal Council
Kiwi Farm		
Joseph	Malatji	Kiwi Farm
Allie	Ratau	Kiwi Farm
Peggy	Ngutshane	Kiwi Primary School
Protea Farms (Choma Community)		
Gabriel	Letakeeni	
Dikeledi	Mankge	Skaapkraal 42 JT
Whitey	Masilela	
Mosotho	Kagiso	Skaapkraal
Mankge	Funande	Vygenhoek
Jimmy	Mahlela	
Abel	Mohlala	
Shaga Community		
Jonas	Mohlala	Mashishi Community Forum
Pompie	Letwaba	

Japhta	Makidla	
Rose	Mogane	Bakoni ba Mashishi community Forum
SCA		
Elias	Mokwane	SCA
Philips	Mankgane	SCA
Pakaneng Choma Community (Choma		
Rebecca	Lekgwathi	Choma Community Representative
Philip	Choma	Traditional Leader
Tshepo	Masha	Pakaneng
Jeanette	Matlala	Pakaneng
Mahlangu	Phindile	Pakaneng
Winny	Mogoru	Pakaneng
Tshepo	Choma	Platinum Chrome Community Forum
Sam	Choma	Community Leader
Draaikraal CPA		
William	Ledimo	
Brenda	Makuwa	Setageng Trust
Sphiwe	Mahlangu	Setageng Community Forum
Stageng Community Forum (Makua		
Hendrick	Makuwa	
Sphiwe	Mahlangu	Draaikraal - Stageng Community Forum
Lefate Salome	Tshigo	Stageng Community Forum
Makua Community		
Thabo	Mathupi	
Additional community Members		
Isaac	Machipa	
Isaac	Machipa	
Joseph	Machipa	Maphuthadi aba
M.I.	Machipa	Moletsi
Joseph	Machupa	Moletsi
Johannes	Madihlaba	
Moncheng	Magane	GaMawela CPA Committee
James	Mahlangu	Draaikraal, Velemane Village
Johannes Japie	Mahlangu	Draaikraal & Sheeprun
James	Mahlangu	Draaikraal - Magibutse Village
Annah	Mahlangu	Masibutsane Village
Phinah	Mahlangu	Mgababa Village
M.P.	Maimela	Buffelshoek
J.S.	Maimela	Buffelshoek
Jane	Makojane	
P.T.	Makua	
N.E.	Makua	
Sefate Samuel	Makua	
G.M.	Makua	
SS	Makua	
Lucky	Mala i	

Lerato	Malat i	
Itumeleng	Malatsi	Mare
Flip	Mamonyane	
Dinan Mashego	Mamonyane	
Reverend	Mamonyane	Booysendal 43JT
Lucky	Mamosadi	
Thabita	Mangane	Mare
Tiny	Mankge	Dithabeng Community
Mankhedi	Mankge	Ga Mawela Community
Mashego	Mankge	
M	Mankge	
E.M.	Mankge	
T	Mankge	
Lazarus	Mankge	
Sarah	Mankge	
N.J.	Mankge	Mare
Emmanuel	Mankge	
Eli ah	Mankge	
S.J.	Mankge	
Lydia R	Mankge	Mare
Lazarus	Mankge	GaMawela Community
Mathilda	Mankge	GaMawela CPA Committee
Sonnyboy	Mankge	Moletsi Community
	Mankge Family	Hebron 5JT (c/o Tiny Mankge)
	Mankge Family	Kliprivier 73JT (c/o Tiny Mankge)
ZT	Maphanga	
I.D.	Maredi	Ga-Mawela
M.S.	Mariri	
Mike	Marshall	Anglo Platinum
N.W.	Masha	Kusile
LA	Masha	Nthekgeng Mining Supplies
M.F.	Masha	
Andries	Masha	Community Forum
Johannes	Mashegoane	Kliprivier 73JT
Emily	Mashilo	
N.E.	Mashilo	Ditabeng
Johannes	Masilela	
Mr.	Matoko	Steelpoort Park
Fanie	Matshipa	GaPhasha
M.P.	Matshipa	Maphuthadishaba
Mamsy	Mdhluli	Community Forum
L.M.	Mkhonto	
Samuel Tlou	Mmadi	Ga-Rantho Village, Ngwaabe, 1058
S.T.	Mmadi	
R.N.	Mmadi	Moletsi Dwars River
Hellen	Mmusgi	Community Forum
T.J.	Moganeshi	Ngwaabe Tubatse Community Forum
Johannes	Mogashwa	Richmond
L.M.	Mogoaneng	
	Mogola	Sheeprun 50JT
P	Mokgoadi	Ngwaabe Tubatse Community Forum
JW	Mokgomogane	Uysedoorns 44JT

M.J.	Mokobaki	
TD	Mokwana	
David	Mokwana	Kalkfontein
T.M.S.	Molapo	Ngwaabe Tubatse Community Forum
Elly	Morend	
P	Mosehla	Ga-Masha
N	Mosotho	
Johan	Mosotho	Molepane Village
Karabo	Motene	
Abusa Isaak	Motobi	Sheeprun
Joseph	Motomanye	
Thomas	Mpholwane	
S.E.	Mthimunye	Sheeprun
Erick Sanna	Mthimunye	Sheeprun 50JT, Nicholson's farm
Johanes	Mthimunye	Mhlogeni Schaapraal
Johannes	Mthimunye	Mhlangeni
Brian	Nicholson	
KP	Pasha	Roka Pasha Bhokwane Tribal Authority
F.	Phetla	
M.V.	Phetla	
Mohlagoledi Virginia	Phetla	
Annan	Rankwe	Maphuthadi aba
Bongani Newman.	Sithole	Uysedoorns I Draaikraal 45JT
Mzakhe	Sithole	
Alfred	Swaedi	
Patricia	Tala	
Rachel Refilwe	Tau	
Jerry	Thokoane	
E.T.	Tshehla	Ngwaabe Tubatse Community Forum

Additional Information

BDSEF ATTENDANCE REGISTER

NO	NAME AND	INSTITUTION
1	TSHEPO CHOMA	P.C.C.F
2	SEDIA MALOMA	KAALFONTEIN
3	ANDRIES	KALKFONTEIN
4	JERRY MAROGA	MEORLELEISIE
5	WILLY THIPE	STEELPOORT PARK CPA RENDTE
6	LILLIAN MAGOIEGO	MASEREN
7	KEDIBONE KOMANE	IKGG
8	MMADI LISBETH	KAALFONTEIN
9	SIPHO MNISI	STEELPOORT PARK
10	REBECCAH MANKGE	BOOYSENDAL CPF
11	JAQUELINE	ROOSSENEKAL
12	MAIMELA PHETOGO	MASHA MANTE
13	MARYA PIUS	BOOYSENDAL MUL
14	S P TAU	KUTULLO
15	M J MAGOLEGO	MASEVEN BAILOKUA TRIBAL AUTHORITY
16	J M MOKETE	ICDF
17	P A MABILU	MOOIMEISIES

18	M P PHALA	MALEKANA
19	N F MALEGANE	CMIA-MAGOLEGO
20	M S MAEKEN	BOOYSENSDAL
21	G K MUNZI	GRA-MALEKANE
22	JANNIE MAMOSADI	KITTVILLE FORUM
23	ADAM MOHLAHLO	NPCF
24	MEILENE RATAN	GEMASHA NKOTWANE
25	M E MANKGE	BOOYSENDAL
26	JAMES TOUS	BUFFELSHOEK
27	LUCAS MAKOLANE	MAKOLANE FAMILY
28	TIMOTHY RATAU	RATAU FAMILY
29	JOHANNES MONATE	MONATE FAMILY
30	TIMOTHY MASHILO	MASHILO FAMILY
31	CONSTANCE	MAKGORO FAMILY
32	ISAAC MAKUA	MAKUA FAMILY
33	JAMESON MOHLALA	MOHLALA FAMILY
34	ELLA LESHABA	MAMONYANE FAMILY
35	EMMANUEL	MANKGE FAMILY
36	MONICA PHETLA	MOKGOMOGANE FAMILY
37	LUCAS MAGOPA	MAGOPA FAMILY
38	MARIA TSHEHLA	THWALA FAMILY
39	PAULINAH	LELENGWA FAMILY
40	REBECCA MANKGE	MANKGE FAMILY
41	FLORA MOHLALO	MOGLALO FAMILY
42	PHILIMON	MAKOLANE FAMILY

LOCAL CHIEFS FORUM (BOOYSENDAL MAGOSHI QUARELY FORUM)

43	KGOSHI PHASHA	GA-PHASHA
44	KGOSHI MAMPURU	GA-MAMPURU
45	KGOSHI MALEKANE	GA-MALEKANE
46	KGOSHI MASHA	GA-MASHA-PHATANE
47	KGOSHI RANTHO	GA-RANTHO
48	KGOSHIGADI	GA-MASHA-NKOTWANE
49	KGOSHIGADI-	GA-MAEPA
50	KGOSHI MAKUA	GA-MAKUA
51	KGOSHI MAPHOPHA	GA-MAPHOPHA
52	KGOSHI MAGOLEGO	MASEVEN
53	KGOSHI RATAU	GA-RATAU
54	KGOSHI MASHA	MASHA GOSEBO-KALKFONTEIN
55	KGOSHI MASHA	GA-NTAKE

SHAGA PRIMARY SCHOOL MEETING

56	MANOKO SELELO	AMEX FOSTER WHEELER
57	DAVE MAGOLEGO	BOOYSENSDAL
58	ROSE MAGANE	SHAGA COMMUNITY
59	LEUIS	MAKALA
60	JONAS MOHLELA	SHAGA COMMUNITY
61	SARAH MOHLALA	SHAGA COMMUNITY
62	M B MAGAKAE	

63	LEAH MOGOLO	SHAGA COMMUNITY
64	ANNAH RAILE	SHAGA COMMUNITY
65	THABITHA MANKGE	ROOIKRANS
66	NANA MAKOLA	SHAGA COMMUNITY
67	SABINA MAGANE	SHAGA COMMUNITY
68	KHOMOTSO	SHAGA COMMUNITY
69	DORCENS	SHAGA COMMUNITY
70	JOHANNAH	SHAGA COMMUNITY
71	ELIZABETH	SHAGA COMMUNITY
72	SOPHY PHETLA	SHAGA COMMUNITY
73	SARINAH ROTHAU	SHAGA COMMUNITY
74	DORCAS FENYANE	SHAGA COMMUNITY
75	KATLEGO MASHILO	SHAGA COMMUNITY
76	TEBOGO MONATE	SHAGA COMMUNITY
77	THABITHA	SHAGA COMMUNITY
78	CHILOANE LERATO	SHAGA COMMUNITY
79	JAPHTA MAKOLA	SHAGA COMMUNITY
80	PETROS MAILA	SHAGA COMMUNITY
81	M D MAGANE	SHAGA COMMUNITY
82	PETRUS MALATSI	SHAGA COMMUNITY
83	LUCKY MAROTHI	SHAGA COMMUNITY
84	LUCAS KOOL	SHAGA COMMUNITY
85	JOSEPH THABANG	SHAGA COMMUNITY
86	PAULES MASEKO	SHAGA COMMUNITY
87	MOSES	SHAGA COMMUNITY
88	SBUSISO MOYO	SHAGA COMMUNITY
89	THABO FENYANE	SHAGA COMMUNITY
90	PHOLOSO	SHAGA COMMUNITY
91	TITUS MANKGE	SHAGA COMMUNITY

08/12/2016 MEETING

92	PIUS MOWYEIA	BOOYSENDAL
93	MAGGIE VAN ROZE	BOOYSENDAL
94	WILLIAM MASHA	BOOYSENDAL
95	ALBINE MAHLANGU	THABA CHEU LOCAL MUNICIPALITY
96	HENDRICK	SETAGENG COMMUNITY
97	THUKITANE PHETLA	BBP CPA
98	MANGWEDI	BBP CPA
99	PHILLIP PHETLA	CHAIRPERSON BBPCPA
100	THABO MOTHUPI	MAKUWA & STAGEN COMMUNITY
101	PHILLIP CHOMA	PAKANENG ???
102	GABRIEL LETAKGENI	PROTEA COMMUNITY FARM
103	DIKELEDI MANKGE	PROTEA COMMUNITY FARM
104	SPWIPE MAHLANGU	SETAGENG COMMUNITY FORUM
105	TEBOGO	EMERGING CONTRACTOR
106	MADIRA MOHLALA	EMERGING CONTRACTOR
107	ELIAS MOKWANA?	SCA
108	PHILLIPS	SCA
109	THABO MOTHUPI	SCA
110	JONAS MOWALA	BAKONI BA MASHISHI COMMUNITY
111	WHITEY MASILELA	PROTEA COMMUNITY FARM

112	JAPHTA MAKOLA	BAKONI BA MASHISHI COMMUNITY
113	ROSE MOGANE	BAKONI BA MASHISHI COMMUNITY
114	POMPIE LETWABA	MASHISHING
115	BRENDA MAKUWA	SETAGENG TRUST COMMUNITY FORUM
116	FRANS	BAKONI BA MAKUWA ROYAL COUNCIL
117	KENNETH MOTHUPI	SETANGEN COMMUNITY FORUM
118	JIMMY MOHLALA	
119	HKABELO MOHLALA	
120	KAGISO MOSOTHO	SKAAPKRAAL
121	FUNANDE MANKGE	VYGENHOEK
122	JEANET MATLALA	CHOMA COMMUNITY
123	PHINDILE	CHOMA COMMUNITY
124	WINNY MOGORU	CHOMA COMMUNITY
125	JOSEPH MALATJI	WARD COMMITTEE
126	ALIE RATAU	KIW FARM
127	TSHEPO MASHA	CHOMA COMMUNITY
128	JANE MALEPE	THABA CHEU LOCAL MUNICIPALITY
129	MOGAPU PHETLA	EXECUTIVE BBPCPA
130	WILLIAM PHETLA	ROYAL COUNCIL
131	LAZARUS PHETLA	ROYAL COUNCIL
132	STEPHEN PHETLA	ROYAL COUNCIL
133	MICHAEL PHETLA	ROYAL COUNCIL
134	SIMON PHETLA	ROYAL COUNCIL

APPENDIX B

ADVERTISEMENTS

(Proof of placement of the advertisement will be included with the Final Scoping Report)

BOOYSENDAL SOUTH EXPANSION PROJECT 2

INTEGRATED PUBLIC PARTICIPATION PROCESS FOR ENVIRONMENTAL AUTHORISATIONS (EAs), AMENDMENTS OF ENVIRONMENTAL MANAGEMENT PROGRAMMES (EMPs), WASTE MANAGEMENT LICENSE (WML) AND INTEGRATED WATER USE LICENCE (IWUL) FOR BOOYSENDAL MINE'S PROPOSED EXPANSION IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (107 OF 1998), NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT (59 OF 2008) AND NATIONAL WATER ACT (36 OF 1998) NEAR MASHISHING, LIMPOPO AND MPUMALANGA PROVINCES

An integrated public participation process is being conducted as part of the applications for: (i) EAs and amendments of the existing EMPs ("EA and EMP Amendment Application"); (ii) a WML ("WML Application"); and (iii) an IWUL for the expansion of the Booysendal Mine ("Booysendal South Expansion Project 2").

A Scoping and Environmental Impact Assessment (S&EIR) process will be followed for the EA and EMP Amendment Application and WML Application.

Two EA and EMP Amendment Applications will be submitted for the Booysendal South Mining Right and Booysendal Mining Right of the Booysendal Operation under the Environmental Impact Assessment Regulations (2014) in terms of the National Environmental Management Act (107 of 1998) ("NEMA"), for the listed activities below:

Listing Notice	Listed Activities
Listing Notice 1, published under GNR 983 in Government Gazette 38282 of 4 December 2014, as amended by GN 327 in Government Gazette 40772 of 7 April 2017	Listed Activities 12, 14, 19, 27 & 30
Listing Notice 2, published under GNR 984 in Government Gazette 38282 of 4 December 2014, as amended by GN 325 in Government Gazette 40772 of 7 April 2017	Listed Activities 6, 7, 17 & 19
Listing Notice 3, published under GNR 985 in Government Gazette 38282 of 4 December 2014, as amended by GN 324 in Government Gazette 40772 of 7 April 2017	Listed Activities 4, 8, 12 & 14

A WML Application will be submitted under the National Environmental Management: Waste Act (59 of 2008) (NEM:WA) and the List of Waste Management Activities that have, or are likely to have, a Detrimental Effect on the Environment (2013):

Waste Management Activities	
Construction of a facility for a waste management activity listed in Category B	Category B, Activity 10
The establishment of a residue stockpile or residue deposit resulting from activities which require a mining right in terms of the Mineral and Petroleum Resources Development Act (28 of 2002)	Category B, Activity 11

An Integrated Water Use License Application ("IWULA") will be submitted under the National Water Act (36 of 1998) (NWA) and Regulations regarding the Procedural Requirements for Water Use License Applications and Appeals:

Section 21 Water Uses
Section 21 (a) - taking water from a water resource
Section 21 (b) - storing water
Section 21 (c) - impeding or diverting the flow of water in a watercourse
Section 21 (f) - discharging waste or water containing waste into a water resource through a pipe, canal, sewer or other conduit
Section 21 (g) - disposing of waste in a manner which may detrimentally impact on a water course
Section 21 (i) - altering the beds, banks, course or characteristics of a water resource
Section 21 (j) - removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity of for the safety of people

The EA and EMP Amendment Applications and WML Application will be submitted to the following Department of Mineral Resources Regional Offices for the following properties:

Limpopo Regional Office: the Farm Booysendal 43 JT and the Remaining Extent of the Farm Buttonshope 51 JT (which are part of the Booysendal Mining Right) and Mpumalanga Regional Office: the Remaining Extents of Portions 2, 4, 13 and 15 and Portions 4, 8, 12, 17, 25 and 27 of the Farm de Kafferskraal 53 JT; the Farm Sterkfontein 749 JT; the Remaining Extents of Portions 15 and 4 and Portion 5 of the Farm Sterkfontein 52 JT (which are part of the Booysendal South Mining Right).

The above properties are owned by Booysendal Platinum (Pty) Ltd, the Bakoni Baphetla Communal Property Association, Jan Valentine Blake, Cecilia Jacomina Riekert and Maria Elizabeth van Vuuren. The Department of Water and Sanitation will process the IWULA.

CONSULTATION SCOPING REPORTS AVAILABLE FOR PUBLIC COMMENT FROM 28 FEBRUARY TO 30 MARCH 2018

The Consultation Scoping Reports are available as follows:

Printed Copies		
Lydenburg Public Library, 41 Viljoen Street, Lydenburg (Tel: 013 235 3700)		
Maartenshoop Police Station, Naauwpoort Farm (Tel: 013 235 4041)		
Electronic Copies		
Website download	www.amecfw.com/booysendal	
CD copy	Please call Anelle Lötter	082 804 5890

For a copy of a Background Information Document or the Consultation Scoping Reports and to register as an Interested and Affected Party, please contact: Amec Foster Wheeler (Wood Group), Anelle Lötter, Tel: 082 804 5890, Email: anelle@jaws.co.za

Interested and Affected Parties are invited to participate by providing written comments and raising issues of concern.

APPENDIX C

BACKGROUND INFORMATION DOCUMENTS

Protšeke ya 2 ya Koketšo ya Borwa bja Booysendal

Tshepedišo ya botšeakarolo bja bohle ka kakaretšo malebana le tumelelo ya tikologo (EAs), diphošollo tša mananeo a taolo ya tikologo (EMPs), Laesentshe ya Taolo ya Tšhilafatšo (WML) le Laesentshe ya Tšhomišo ya Meetse ka Kakaretšo (IWUL) ya koketšo yeo e šišintšwego ya Moepo wa Booysendal go ya ka Molawana wa Taolo ya Tikologo ya Boditšhaba (107 of 1998), Taolo ya Tikologo ya Boditšhaba: Molawana wa Tšhilafatšo (59 of 2008) le Molawana wa Meetse a Boditšhaba (36 of 1998) kgauswi le Mashishing, Profenseng ya Limpopo le ya Mpumalanga

TOKOMANE YA TSHEDIMOŠO YA MATHOMONG

Dibokwane 2018

Morero wa Tokomane ya Tshedimošo ya Mathomong

Maikemišetšo a Tokomane ya Tshedimošo ya Mathomong (BID) ke go abela Mekgatlo yeo e Kgahlegilego le go amega (I&Aps) le batšeakarolo bao ba nago le tshedimošo mabapi le Pholathinamo ya Booysendal (Pty) Ltd's (Booysendal's) e ikemišetša go tšweletša protšeke ya Koketšo ya Moepo wa Booysendal ('Protšeke ya bobedi ya Koketšo ya Borwa bja Booysendal").

BID ye e beakanya tshedimošo ya bohlokwa malebana le laesentshe, phemiti le ditumelelo tša tikologo tšeo Booysendal e swanetšego ke go di hwetša pele e dumelelwa go thoma ka Protšeke ("Laesentshe ya Protšeke").

Amec Foster Wheeler (Pty) Ltd (e na le seabe go Wood Group) e kgethilwe bjalo ka Badiriši ba Kelo ya Tikologo ya go Ikema ("EAP") go dumelela tshepedišo ya kgopelo ya Laesentshe ya Protšeke.

Boingwadišo bja go ba Mokgatlo wo o Kgahlegilego le go Amega

Go netefatša gore o filwe monyetla wa go swayaswaya go ditokomane tšeo di tlago goba karolo ya tshepedišoya kgopelo, le go amogela tshedimošo yeo e mpshafaditšwego ka protšeke, ka kgopelo tlatša boingwadišo bja I&AP yeo e momeditšwego le foromo ya go swayaswaya gomme e bušetšwe:

Amec Foster Wheeler (Pty) Ltd (Wood Group)
Anelle Lötter
Mogala: 082 804 5890
Emeile: anelle@jaws.co.za
Weposaete: www.amecfw.com/booysendal

MONYETLA WA GAGO WA GO SEKASEKA PEGO YA SEKOUPU SA DIPOLEDIŠANO

Dipego tša Sekoupu sa Dipoledišano (CSRs) di tlo ba gona go ka sekasekwa go thoma ka la 28 Dibokwane go fihla ka la 30 Hlakola 2018 mafelong a setšhaba (lebelela letlakala la 8) goba weposaete ya – www.amecfw.com/booysendal

Ka kgopelo ingwadiše go ba Mokgatlo wa I&AP gore o amogele tshedimošo ye nngwe ya Protšeke.

Leina la Protšeke le dikgopelo:	Porojeke ya 2 ya Koketšo ya Borwa bja Booysendal: Kgopelo ya - • Diphetošo tša leina la lenaneo la Taolo ya Tikologo ("EMPs") ya ditokelo tša moepo le MP 30/5/1/2/2/334 MR (Tumelelo ya Moepo wa Leboa wa Booysendal) le MP 30/5/1/2/2/127 MR (Tumelelo ya Moepo wa Borwa wa Booysendal) go ya ka Molao wa Bosetšhaba wa Taolo ya Tikologo (National Environmental Management Act (107 of 1998) ("NEMA"), bjale ka ge o fetotšwe , le Molawana wa Kelo ya Thulano ya Tikologo, 2014 Environmental Impact Assessment Regulations ("2014 EIA Melawana") yeo e phalatlaladitšwego ka go Tsebišo ya Mmušo ya R982 ka fase ga Kuranta ya Mmušo 38282 ya letšatši la 4 Manthole 2014,bjale ka ge e fetotšwe ka fase ga Kuranta ya Mmušo ya 40772 ya letšatši la 07 Moranang 2017, ("Kgopelo ya Phetošo EMP "); le • EAs go ya ka NEMA le Melawana ya EIA ngwageng wa and the 2014 EIA Regulations ("Kgopelo ya EMP EA), (Kgoboko ya Kgopelo ya Phetošo le EMP Kgopelo ya EA e bitšwa Kgopelo ya Phetošo ya kgoboko "EA le EMP"); • Kgopelo ya Laesentshe ya Hlakanyo ya Tšhomišo ya Meetse("IWUL") ,("IWULA") go ya ka Molao wa Bosetšhaba wa Meetse(National Water Act (36 of 1998) ("NWA");

	• Kgopelo ya Laesentshe ya Taolo ya Tšhilafatšo Waste Management Licence ("WML") ("Kgopelo ya WML") ka fase ga Taolo ya Bosetšhaba ya Tikologo (National Environmental Management): Molao wa Tšhilafatšo (Waste Act) wa (59 of 2008) ("Waste Act") le Lenaneo la Mešongwana ya Taolo ya Tšhilafatšo (Waste Management Activities) tša go ba le ,go ba go swana le Khuetšo ya Bogale Tikologong (Detrimental Effect on the Environment) (2013); le • Ditumelelo tša Tlaleletšo (Additional permits) le tšona di ka hlokagala go swana le tumelelo ya diphedi tša go fapafapana tikologong.
Bengmabu:	Booysendal Platinum (Pty) Limited, Bakoni Baphetla Communal Property, Jan Valentine Blake, Cecilia Jacomina Riekert and Maria Elizabeth van Vuuren.
Ditsebi:	Kgoro ya Mothopo le Diminerale Department of Mineral Resources ("DMR") – Dikantoro tša Selete tša Polokwane and Mpumalanga Regional Offices. Kgoro ya Meetse le Tlhwekišo (Department of Water and Sanitation) ("DWS").
Bolaodi Selegae:	Limpopo: Masepala wa Selegae wa Greater Tubatse go Selete sa Greater Sekhukhune Mpumalanga: Masepela wa Selegae wa Thaba Chweu go Selete sa Ehlanzeni.

Lefelo la Ditiragalo:	• Dikgopelo tša Phetošo ya EA le EMP le Kgopelo ya WML di tla fihlišwa go dikantoro tša Selete sa Kgoro ya Methopo le Diminerale (Department of Mineral Resources Regional offices) ya dithoto tše di latelago
	  • Dikantoro tša Selete sa Limpopo: Polasa ya the Farm Booysendal 43 JT le Bogolo bja go Šala ba Polasa ya Buttonshope 51 JT (tšeo e lego karolo ya Moepo wa La go ja wa Leboa (Booysendal North Mining Right)); le
	  • Kantoro ya Selete sa Mpumalanga: Bogolo bja Ditseka tša go šala tša 2, 4, 13 le 15 gammogo le Ditseka tša 4, 8, 12, 17, 25 le 27 tša Polasa ya de Kafferskraal 53 JT; Polasa ya Sterkfontein 749 JT; Ditseka tša go Šala tša 15 le 4 le Setseka sa 5 sa Polasa Ya Sterkfontein 52 JT (Yeo e leng karolo ya Tumelelo ya Moepo wa Borwa bja Booysendal (South Mining Right).

Molekodi wa Tikologo (EAP):	Amec Foster Wheeler South Africa (Pty) Ltd (yeo e nago le seabe go Wood Group) – Ms Amanda Pyper

Matseno le Mathomong

Booysendal e rekile seripa sa borwa sa tshepedišo ya Moepo wa Der Brochen go tšwa Rustenburg Platinum Mines Ltd (Anglo Platinum) pejana ngwageng wa 2008. Kgodišo ya Moepo (Development of Booysendal Mine) e thomile ka ngwaga wa 2011 lefelong leo le tsebegago bjalo ka Leboa la Booysendal North ("BN"). Booysendal e ile ya reka gape Moepo wa mollwane wa Pholatinamo ya Everest go tšwa go Pholathinamo ya Aquarius Platinum Pty Ltd ngwageng wa 2015. Ditshepedišo tše tše pedi tšeo di akareditšwego di laolwa bjalo ka selo se tee. Booysendal e tshepedišong ya go oketša Moepo wa Booysendal ditišo tša go oketša tšweletšo ya pholatinamo ya bona ya bjale ya 220,000 go fihla go 450,000 kilo tonne ka kgwedi. Protšeke ya 2 ya Koketšo ya Borwa e na le kgodišo ya moepo le lenaneokgoparara mafelong a mabedi, eleng BN le Borwa bja Booysendal ("BS"), yeo e welang ka fase ga Tumelelo ya Moepo wa Leboa la Booysendal le Tumelelo yaPorojeke ya 2 ya Koketšo ya Moepo wa Leboa. Tše dingwe tša mešongwana ya Protšeke ya Koketšo ya Borwa bja Booysendal di dumeletšwe ka fase ga EA tumelelo malebana le Karolo ya 24G ya NEMA ka di 5 tša Pheregong ngwageng wa 2018 ("Karolong ya 24G EA"). Tšhomišo ya meetse ka fase ga IWULA Protšekeng ya Koketšo ya Borwa bja Booysendal ka bophara.

Dikgopelo tše di mpsha

This BID e tsebišitše gore tshepedišo yeo e akareditšwego yeo e hlahlilwego bjalo ka karolo ya dikgopelo: (i) EAs le diphetošo tša EMPs tšeo di lego gona; (ii) WML; le (iii) IWUL go Koketšo ya Booysendal.

Lenaneo la (Scoping and Environmental Impact Assessment) ("S&EIR") le tlo latelwa go Dikgopelo tša Phetošo tša EA le EMP le Dikgopelo tša WML– Dikgopelo tše di tlo fihlitšwa go DMR Dikantoro tša Selete sa Limpopo le DMR Selete sa Mpumalanga. IWULA yona e tla fihlišwa go DWS.

Tshepetšo ya Moepo wa Booysendal e na le tumelelo ya meepo ye mebedi – e lego Tumelelo ya Moepo wa Leboa Booysendal (North Mining Right) (ka profentsheng ya Limpopo le Mpumalanga) le Tumelelo Moepo wa Borwa wa Booysendal (South Mining Right) (ka profentsheng ya Mpumalanga) (kgobokantšho"Tumelelo ya Meepo"). Dikakanyo tša dikoketšo di wela lefelong la ka fase ga Ditumelelo tša Moepo.

Bjale ka ge Tumelelo ya Moepo e dumetšwe ke Dikantoro tša Selete tša go fapanafapana DMR, Dikgopelo tša Koketšo tša EA le EMP le Dikgopelo tša WML di swanetše go fihlišwa go Tumelelo ya Moepo – go DMR Kantoro ya Selete sa Limpopo go Tumelelo ya Moepo wa Leboa la Booysendal le to the Kantoro ya Selete sa DMR Mpumalanga go Tumelelo ya Moepo wa Borwa for the Booysendal. IWULA e tla fihlišwa go kantoro ya DWS go la Lydenburg.

Dikgopelo tša Koketšo EA le EMP Amendment Applications, Dikgopelo tša WML Application le IWULA di tla fihlišwa sammaletee le tshepedišo ya go akaretša botšeakarolo bja setšhaba bjo bo hlahlilwe go dikgopelo tše ka moka.

Protšeke ya 2 ya Koketšo ya Borwa bja Booysendal e ka hlathollwa ka mokgwa wo:

Leboa la Booysendal North (BN): tšwelopele ya Koketšo ya Moepo wa BN woo o lego gona go ya Borwa, go ya go Moepo wa Merensky Reef. Kgopelo ye ke ya maleba kudu go mešongwana ya tlaleletšo yeo e akaretšago:

- Tšwetšopele ya bokagodimo bja mananeokgoparara (Development of surface infrastructure) wa go amana le Merensky Adits tše pedi (BCM1 and BCM2) go Polasa ya Booysendal 43 JT, go akaretša dišomelo , dirwadi, taolo ya tšhilafatšo ya matamo, Dikantoro, ditanka tša go lota meetse, taolo ya ditšhila tša dipolante, taolo ya ditšhila, diphapoši tša boaparelo bj.bj. Adits di amogetšwe bjalo ka seripa sa Karolo ya (Section) 24G EA eupša ga go na tlhagišo yeo e dirilwego ka bokagodimo bja mananeokgoparara sebakeng se. Se sengwe gape ke gore lefelo la adit ye ngwe e šutile ga nnyane go tšwa boemong bjoo bo dumeletšego ke Karolo ya (Section) 24G EA. Ka lebaka la dikakanyo tša tlaleletšo ya bokagodimo bja mananeokgoparara, mafelo a dikgoba le ona ke a magolo ga nnyane go feta ao a dumeletšwego;
- Tšwetšopele ya monyako mogolo wa tšhabo ya tšhoganetšo Polaseng ya Booysendal 43 JT;
- Lenaneo la Kago le diphaephe tša meetse tša go lekana BS1/2 go tlala bogolo bjoo bo šetšego Polaseng ya Complex Remaining Extent Polaseng ya Buttonshope 51 JT go fihla Polaseng ya BN go Polasa ya Booysendal 43 JT;
- Kago ya morwadi wa thapo ya (ARC) eriele gare ga Bogolo bjoo bo šetšego bja Polasa (Remaining Extent) ya Polasa ya Buttonshope 51 JT le Polaseng ya BN go Polasa Booysendal 43 JT;
- Mešongwana ya go lekana dimetara tše 100m tša mokerokelatšhila le go lekana dimetara tša 500m mohlaka, go akaretša le adits, thawara tša ARC, methaladi ya diphaephe,dirwadi le phihlelelo ya tsela ka gare; le
- Kakaretšo ya mohlagase wa 11kVA go tšwa polaseng ya BN go Polasa ya Booysendal 43 JT go fihla go BS1/2 ya bogolo bja polasa ya Buttonshope 51JT yeo e šetšego go Dikgopelo tša EMP.

Booysendal South (BS): tše dingwe tša koketšo ya mananeokgoparara go karolo ya BS4 (ex-Everest) s di dumeletšwe bjalo ka karolo ya Seripa sa 24G EA. Dikgopelo tša Koketšo tša EA le EMP tša BS4 ke tša tumelo ya mešongwana ya tlaleletšo kudu ya:

- Tšweletšo ya pekefaele ya polante ya go akaretša le selari se mmalwa le diphaephe tša meetse le ditolo tše mmalwa kgauswi le diphaephe tša selari tšeo di šomago go thoma tshepedišong ya go tšwa ga Pekefaeleng ya Polante yeo e leng gona.

Kakanyo ya Koketšo e tlo akaretša tekolo ya dimela go Critical Biodiversity Area ("CBA"). Hlaolo ya mafelelo le tšweletšo ya sekgoba sa Protšeke ya 2 ya Koketšo ya Borwa bja The Booysendal e tla netefatšwa nakong ya tshepedišong ya kgopelo. Setseka se segolo sa kakanyo se ile sa šitišwa moragonyana ka lebaka la mešongwana ya kgale ya meepo yeo ye mengwe e nago le boitsošološo.

Tikologo ya Bothata

Booysendal sa le e šoma lefelong le go tloga ka ngwaga wa 2010 ebile e kwešiša tikologo yeo e lego go yona, batho ba gona le bothata bja tikologo moo e šomago gona, go akaretša –

- Tirišo ya Moepo wa Booysendal woo o beng Sekhukhune Centre of Endemism;
- Moedi wa the Groot Dwars River valley woo e lego bodulo bja diphedi tša Red Data List *Pycna sylvia*;
- Mafelong a bohwa bja setšo, go swana le didirišwa tša bohwa, di tswalanywa le dithaba le mafelo a meedi yeo e lego moo protšeke e lego gona;
- Boleng bja meetse Catchment ya Groot Dwars River bo kgauswi le legae le leswa IUCN Red-listed *Enteromius motebensis;*
- Lefelo la mohlaka le diragala ka gare ga Protšeke ya 2 ya Koketšo ya Borwa bja Booysendal;
- Lešata le seetša di bonwa bjalo ka dikgogano tšeo di hlolago pherehlo go magae a kgauswi;
- Letamo la Der Brochen le kgauswi kudu le saeteng;
- Tšweletšo ya moepo moo lefelong le e na le kgonego ya go oketša ditlamorago tše dimpe go diphedi ; le
- Go na le mathata a tšhireletšo.

*Pycna Sylvia ke mohuta wa diphedi t*ša cicada endemic go fihla Afrika Borwa. Mehlala ya diphedi tše di kgobokantšwe ka ngwaga wa 1906 tša napa tša se sa hwetšwa gape lehlakoreng go fihla ngwageng wa 2001 "mola diphedi tše di hweditš*we kakanyong ya protšeke ye nnyane go Groot Dwars River valley, Mpumalanga." - Wikipedia*

Boteng bja Mmušo wa Selegae

Gore e tšwelepele ka Protšeke ya 2 ya Koketšo ya Borwa bja Booysendal e hloka Dilaesentshe tše di latelago tša Protšeke:

- Leina la kgopelo ya Tumelelo ya Moepo wa EMPs for the Mining Rights ka melao ya NEMA,bjale ka ge e okedišwe, le melawana ya EIA ngwageng wa 2014;
- EAs ka fase ga melao ya in terms of NEMA le melawana ya ngwageng wa 2014 EIA Regulations;
- IWUL ka fase ga melao ya NWA;
- WML ka fase ga Molao wa Ditlakala le Lenaneo la Mešongwana ya Taolo ya Tšhilafatšo yeo e nago, goba go nyaka go ba le Ditlamorago tše dišoro Tikologong (2013); le
- Ditumelelo tša Tlaleletšo le tumelelo ya go ba kgauswi le diphedi e ka hlokega.

Tshedimošo ka Dikgopelo yeo e tla go bontšhwa gammogo le thekgo ya tshepedišo ya ba tšea karolo ba setšhaba:

Dikgopelo tša Phetošo tša EMP: Dipheto tša go latelana tša NEMA le Dimenerale le Molao wa Tšweletšo ya Didirišwa tša Phetroleamo wa 28 ngwageng wa 2002 (Petroleum Resources Development Act No 28 of 2002) ("MPRDA"), kgopelo ya go fetoša EMPs yeo e dumeletšwego e fihlišitšwe ka morago ga la 8 Manthole ngwageng wa December 2014 e hloka tumelelano go tšwa go DMR ebile e swanetše go ya Melawana ya EIA ya ngwaga wa 2014. Ditsebi ke Kantoro ya Selete sa Limpopo sa Moepo wa Tumelelo wa Leboa la Booysendal gammogo le Kantoro ya Selete sa Mpumalanga ssa Moepo wa Tumelelo wa Borwa bja Booysendal.

Dikgopelo tša **EA:** Tšwetšopele yeo e akantšwego e tlo diragatša mešongwana yeo e ngwadilego (Environmental Impact Assessment) Taetšong ya Tsebišyeo e phatlaladitšwego ka fase ga Ditsebišo tša Mmušo tša Nomoro ya 983 – 985 ka gare ga Kuranta ya Mmušo ya nmoro ya 38282 ka di 4 tša Manthole ngwageng wa 2014. Sese tlo netefatšwa pele ga fihlišo ya Kgopelo, bjale ka ditaetšo tšeo di laeditšwego ga bjale.

Dikgopelo tša Diphetošo tše pedi tša EA le EMP di tlo fihlišwa tša Moepo wa Tumelelo wa Borwa bja Booysendal le Moepo wa Tumelelo wa Leboa la Booysendal tshepedišong ka fase ga Melawana ya ngwaga wa 2014 mabapi le NEMA, go mešongwana yeo e ngwadilwego ka fase :

Mešongwana ya NEMA yeo e Ngwadišitšwego	
Dinomoro tša Mešongwana:	**Tsebišo ya Mmušo ya Nomoro ya, R983 Tsebišo ya Taetšo ya 1 go ya le ka moo e kaonafaditšwego ka gare ga GNR327 ya la 7 Moranang 2017. Dintlha tša mešongwana tša go hloka Tekolo ya Theo**
12	Tšwetšopele ya – (i) matamo goba matangwana , mo go nago le matamo le matangwana, gammogo le mananeokgoparara le lefelo la bokagodimo bja meetse, go feta dimetara tše 100; goba (ii) mananeokgoparara goba meago ya go ba le sekgoba sa go lekana dimetara tše 100 goba go feta; moo ditšwetšopele di diragalago- (a) meedi; (b) ditšhitišo tša ka pele ga tšwetšopele; goba (c)ge e le gore ga go na ditšhitišo, dimetareng tše 32 meeding, go thoma morumong wa moedi. *Me*šongwana ya maleba – • Mathudi a setseka sa Booysendal Central Merensky ("BCM") BCM2 le mananeokgoparara a tswalanego; • Dithawa 3, 6, le 7 tša ARC; le • Tsela ya meetse bogareng bja BS1/2 le BN le tshepedišo ya meetse le selari bogareng bja BS4 tshepedišo le tsela ya kelelatšhila ya dipolante.
14	Tšwetšopele le tshepetšo ye e tswalago le dikgonagatši goba mananeokgoparara, a bobolokelo, goba bobolokelo le taolo ya dithoto ge polokelo yeo e direga ka gare ga dibjana tša bogolo bjoo bo tšeo di hlakantšwego ka ya dimetara tša cubic goba go feta eupša go se be go feta dimetara tše 500 tša cubic. *Me*šongwana ya maleba–

Mešongwana ya NEMA yeo e Ngwadišitšwego	
	• Bobolokelo bja bja go ka lekana dimethara tše 150 cubic ya dithoto tša go ba kotsi go swana le emalešene, desele,oli,oli ya ditšhila le dioli tša haetroliki go BCM1 le BCM2.
19	Peeletšo ya ditlabakelo tša go feta dimethara tše 100 tša cubic ka go fatišiša, go epa, go tloša go ba go šutiša mabu a *inter alia* , santa, makwete goba maswika a dimethara tša go feta10 tša cubic go tloga go moedi. *Me*šongwana ya Maleba – • Peeletšo ya tšweletšo ya BCM1 le BCM2 Adits; le • Kepo le peeletšo ya Thawa ya ARC ya 3 (Polaseng ya Booysendal 43 JT), 6 le 7 (o oRemainder ya Polasa ya Buttonshope 51 JT).
27	Tumelelo ya lefelo magareng ga heketara ye 1 go ya go tše 20 tša dimela tša tlhago. *Mešongwana ya Maleba* – • Tumelelo go phothale ya botšo bja tšhoganetše le didirišwa tša mananeopharaphara go BCM1 le BCM2, gammogo le mose wa dipolante,dirwadi,dintlwana tša go boloka mabele (silos) Polaseng ya Booysendal 43 JT; • Tumelelo ya diphaephe tša meetse magareng ga go thoma BN go fihla go BS1/2 Dipolaseng tša Booysendal 43 JT go ya Remaining Extent ya Polasa ya Buttonshope 51 JT; le • Tumelelo dipolante le matangwana a tšhoganetšo Polaseng ya Sterkfontein 749 JT, Setseka sa Bogolo bja go Šala sa 15 le Setseka sa 8 le 17 Polaseng ya De Kafferskraal 53 JT
30	Mošongwana goba tshepedišo ye nngwe le ye nngwe e hlaotšwe go ya ka karolo ya 53(1) ya National Environmental Management: Biodiversity Act (Act No. 10 of 2004) ("NEMBA"). *Mešongwana ya Maleba* – • Mešongwana ka moka ya go tswalana le moepo e tla tše karolo Sekhukhune Centre of Endemism yeo e arotšwego bjale ka tikologo ya go ba kotsing.
Dinomoro tša Mešongwana:	**Tsebišo ya Mmušo ya Nomoro ya. R984 Tsebišo ya Taetšo ya 2 go ya le ka moo e Kaonafaditšwego ka gare ga GNR 325 ya di 7 kgweding ya Moranang ngwageng wa 2017. Dintlha t**ša mešongwana tša go hloka **Scoping /Rephoto ya EIA**
6	Tšwetšopele ya dikgonagatši goba mananeokgoparara a tshepedišo or mošongwana tšeo di nyakago tumelelo goba laesentshe goba tumelelo yeo e kaonefaditšwego go ya ga molao wa setšhaba goba wa profentshe kgašong ya leloko,tšhilafatšo goba dioli tša difemeng, tlogelong ya: mešongwana yeo e hlaotšwego go Melawana ya EIA go Tsebišo ya Taetšo 1 ya 2014 , mešongwana yeo e akaretšwego go lenaneo la mešongwana ya Taolo ya Tšhilafatšo e phatlalantšhitšwego go ya ka Karolo ya 19 ya Molao wa Tšhilafatšo moo taba ya Molao wa Tšhilafatšo o amegago; goba tšwetšopele ya dikgonagatši goba mananeokgoparara go phedišo ya dioli tša difeme, meetse ao a tšhilafetšego, go kelelatšhila moo dikgonagatši di nago le tekano ya go šoma ya bogolo bja dimetara tše 2000 tša cubic goba ka fasana,bjale ka ge swere ka go Tsebišo ya Taetšo 1 ya 2014.*Mešongwana ya Maleba* – • Taolo ya Tšhilafatšo ya Matamo ("PCDs") le baipei ka BCM1 le BCM2 Polaseng ya Booysendal 43 JT; • Taolo ya Tšhilafalo ya dipolante ka BCM1 le BCM2 le taolo ya dioli tša difemeng gore di tle di tlošwe tikolong ka tekano ya dimetara tše 100m^3 /letšatši Polaseng sa Booysendal 43 JT; le • Matangwana a tšhoganetšo le diphaephe tša selari (karolo ya 21(g) tšomišo ya meetse) ka BS (magareng ga tšweletšo ya dipolante le go šoma ka safe ga mabu) Polaseng ya Sterkfontein 749 JT, le Setseka sa Bogolo bja go Šala bja 15 le Setseka sa 8 le 17 Polaseng ya De Kafferskraal 53 JT
7	Tšwetšopele le tshepetšo ya go tswalana le dikgonagatši goba mananeopharaphara go kgoboko ya tlišo ya diphahlo tša go ba kotsi – (i)diela tša ka ntle ga difeme ,di šomiša diphaephe tša go feta dimethara tše 1000 ka botelele le tšhomo ya tekanyo ya go feta dimetara tše 50 cubic ka letšatši.*Mešongwana ya Maleba* – • Dioli tša BCM1 le BCM2 ka kelo ya dimetara tše 100m^3 ka letšatši Polaseng ya Booysendal 43 JT); le • Thomelo ya theiling go tša tshepetšo ya dipolante go BS4go ya mešomong ya ka fase ga mabu ya go feta kilometara ye 1 ka botelele ka kelo ya dimethara tše 250m^3 ka letšatši Polaseng ya Sterkfontein 749 JT le Setseka sa Bogolo bja go Šala sa 15 le Setseka sa 8 le 17 Polaseng ya De Kafferskraal 53 JT.
17	Mošongwana wo mongwe le wo mongwe ga mmogo le taolo ya mošongwana woo o hlokago tumelelo ya moepo bjalo ka ge e tšweleditšwe go karolo ya 22 ya MPRDA ga mmogo le mananeokgoparara, meago le ditšhitišo go swana le didirišwa tša dimenerale, gape le mešongwana yeo tekolo e šetše e dirilwe go ya ka karolo ya 106 ya MPRDA. *Mešongwana ya Maleba* – • Phothale ya botšo ya tšhoganetšo ka BS 1/2
19	Tlošo le tahlo ya dimenerale go ya ka karolo 20 ya MPRDA, ga mmogo le – (b) tšweletšo ya dimenerale ye bohlokwa go swana le go waena, tlošo, hlopho, khonsethereithing, tšhilo, kgetho goba tlhatso. *Mešongwana ya Maleba* – • Mose wa dipolante magareng ga BCM1 le BCM2 tšeo di nago le kelo ya 50t Polaseng ya Booysendal 43 JT.
Dinomoro tša Mešongwana:	**Tsebišo ya Mmušo ya Nomoro ya. R984 Tsebišo ya Taetšo ya 3 go ya le ka moo e Kaonafaditšwego ka gare ga GNR 325 ka la 7 Moranang 2017. Dintlha tša Mešongwana tša go hloka Tekolo ya Theo**
4	Tšwetšopele ya tsela ya bophara bja go feta dimetara tše 4 le tšeo di beilwego tša go lekana dimetara tše 13,5 f) Mpumalanga Ka ntle ga metsesetoropo: (ee) Critical Biodiversity Areas ("CBAs") bjale ka ke e tsebilwe ka maano a diphedi tša go fapafapana ka mokgwa woo o tšerwego ke ditsebi goba ka maano a payoretšenare. *Mešongwana ya Maleba* – • BS e hwetšwa ka go lefelo la critical biodiversity ka mabaka a Terrestrial Assessment (2014) ya Mpumalanga Tourism and Parks Agency ("MTPA Terrestrial Assessment") le Sekhukhune Mountainlands di laeditšwe bjale ka tikologo ya go hlokega go ya molao wa Regulation GN 1002 ka la 9 Manthole 2011 di phatlaladišitšwe ka ga karolo ya 52 ya NEMBA ("GN 1002"); • Tumelelo ya sammaruri le ya nakwana e tlo ba bophara bja go lekana dimetara tše 4m go ya go ARC. Tumelelo ya tseba go ya BCM1 le BCM2 e tlo ba dimetara tše 6 Polaseng ya Booysendal 43 JT le Buttonshope 51 JT; le • Tumelelo ya tsela go ya lefelong leo go tšweletšwago la go tlaleletša bophara bja go lekana dimetara tše 4 Polaseng ya Sterkfontein 749 JT.
8	Tšwetšopele le tshepetšo ya go amana le tshepetšo ya diphahlo goba didirišwa tšeo di se sa šomago le dikheipole tšeo go sepelwago go tšona go ya mahlakoreng ka moka e) Limpopo le f) Mpumalanga i. Mafelo ka moka ka ntle ga metsesetoropo. *Mešongwana ya Maleba* – • ARC go tšwa BS1/2 go ya BN Polaseng ya Booysendal 43 JT le Buttonshope 51 JT.

	Mešongwana ya NEMA yeo e Ngwadišitšwego
12	Tumelelo ya mafelo a go ba le dimetara tše 300 goba go feta ka dimela tša tlhago ntle le ge tumelelo yeo ya dimela tša tlhago e nyakwa lebakeng la menthenentshe go ya ka fase ga maano a taolo ya meinthenentshe. e) Limpopo le f) Mpumalanga ii. maano payoretšenare yeo e tšweletšeng ka gare ga CBAs. *Mešongwana ya Maleba* – • BS e ka gare ga CBA go ya ka MTPA Terrestrial Assessment le Sekhukhune Mountain lands tšeo di laeditšwego bjalo ka tikologo yeo e lego costing go ya ka GN 1002; • Phothale ya botšo bja tšhoganetšo go BS, ntlwana ya go boloka didirišwa (silos), mananeokgoparara ka go BCM1 le BCM2 (ga mmogo le dirwadi le tumelelo ya ditsela) tša go feta dimetara tše 300; • BS4 – tumelelo ya diphaephe le polante ya pekefili ya go feta dimetara tša khutlo nne tše 300.
14	Tšweletšopele ya- (i) Matamo goba matangwana , moo matamo le matangwana, go na le mananeokgoparara gape le bokagodimo bja meetse bja go feta dimetara tše 10; goba (ii) Mananeokgoparara goba meago ya go ba le sekgoba sa dimetara tše 10 goba go feta; di direga kae tšwetšopele tša mohuta wo - (a) meeding; (b) ka pele ga tšhitišo ya tšwetšopele; goba (c) go ba ge e le gore tšhitišo ga e gona, dimetareng tše 32 tša moedi tšeo di lekantšhitšwego go thoma morumomng wa moedi e). Limpopo le f). Mpumalanga i. ka ntle ga metse setoropo, ka go: (ff) CBA goba lefelong la ditirelo tikologong bjale ka ge e hlaotšwe go mokgwa wa peakanyo ya diphedi tša go fapafapana di tšerwego ke ditsebi goba maano a paoretšenare *Mešongwana ya Maleba*– Go ya ka tswalano ya Moepo wa Tumelelo wa Leboa la Booysendal – - Thawa ya ARC 3, 6 le 7go meedi ya go se fete dimetara tše 10 ka bogolo; - Dirwadi, ditsela gare ga BCM1 le BCM2 (go fa tumelelo go ARC), phihlelelo ya sa mmaruri goba ya lebakanyana ditseleng tša dimetara tše 4 ka bophara go fihlelela ARC go tlo feta mokerokelelatšhila go mafelo a mmalwa go feta dimetara tše 10; • Diphaephe tša meedi go feta gare ga BS1/2 le BN tshelo ya mokerokelelatšhila go Moepo wa Tumelelo wa Borwa bja Booysendalt; le • Tshepetšo BS4 ya mothaladi wa selari le meetse gare ga Pekefaeleng ya dipholante BS4 tša go feta meedi mafelong a mmalwa

Dikgopelo tša Phetošo ya EA le EMP tša Protšeke ya Bobedi ya Koketšo ya Borwa bja Booysendal e hlaloša kgato ya scoping le kgato ya environmental impact assessment ("EIA"). Ka nakoo ya taba ya nyakišišo nakong ya kgato ya EIA di hlaotšwe. Tshedimošo e kgobokantšhitšwe ka go Pego ya Sekoupu sa Poledišano yeo e tlo bago gona go ditshwaotshwao tša setšhaba. Dipego tša mafelelo tša Sekoupu di tlo romelwa go Kantoro ya Selete ya Mpumalanga DMR le Kantoro ya Selete ya Limpopo DMR go tumelelo gore e tšwelepele le kgato ya EIA.

Nakong ya kgaro ya EIA, kgonagalo ya ditlamorago e ya laetšwa, le dikelo tšaa taolo e ya akanywa go tloša ditlamorago tše mpe gomme go tšweletšwe ditlamorago tše di botse. Therišano ya šEIA / EMPs, ga mmogo le rephoto ya sethalwa sa WML le Rephoto ya IWULA di tlo ba gona go setšhaba gore se swaeswae le DMR le DWS tšeo di fihlišitšwego gore sepheto se tšewe.

EIA e tlo swara le dipoelo tša dinomoro tša ditekolo tša ditsebi, ga mmogo le dithuto go:

- Mehuta yeo e fapafapanego ya diphedi tša ka meetseng le dimela tša kgauswi le meedi
- Mohlaka
- Lefase la dimela le diphoofolo
- Mobu, tšhomišo le bokgoni bja naga
- Modikologo wa meetse
- Meetse a maswikeng
- Bohwa bja setšo
- Dipoelo morago ga go bona
- Lešata
- Moya wo o Hlwekilego le Tekolo ya Kgase ye Kotse *'Greenhouse Gas'*
- Tekolo ya Tlhohleletšo ya Pitlagano

Tshedimošo ye e hweditšwego ka ditekolo tša ditsebi e tlo šomišwa bjalo ka motheo go Dikgopelo tša Phetošo ya EA le EMP, Dikgopelo tša the WML le IWULA.

IWUL:

IWULA e tlo romelwa ka fase ga NWA le Melawana mabapi le Dinyakwa tša Tshepedišo ya Boipeletšo le Dikgopelo tša Laesentshe ya Tšhomišo ya Meetse:

Karolo ya tšhomišo ya Meetse	Mokgwa wa tšhomišo ya Meetse
Karolo ya (a) tšeo ya meetse go tšwa mothopong wa meetse	• Tswalana le go se nošetše go BCM1, BCM2, BS1/2 le BS4
Karolo ya 21 (b) poloko ya meetse	• Meetse a go šikarwa le ditanka tša go boloko ya meetse go tima mollo go BS1/2, BCM1 le BCM2 • Poloko yeo e matlafaditšwego le go šikarwa g BS

Karolo ya tšhomišo ya Meetse	Mokgwa wa tšhomišo ya Meetse	
Karolo ya 21 (c) tšhitišo ya kelelo ya meetse meeding	• Dithawa tša diARC tshela tšeo di bego go ntlha ya meedi (21 i) le e tee go mohlaka (21 c le i), moo meepo e tlo direlwago motheo wa dithawa • Matseno a magolo a tsela tshelong ya mokerokellatšhila, go akaretša letshelo ya Noka ya Groot Dwars . dikanale di tla hlongwa (21 c le i) • Tshelo ya mohlaka go matseno a magolo a tsela (21 c le i) • Phapano ya meela ye mebedi yeo e elago ya pothale ya go raragana go Remainder ya Polasa ya Buttonshope (21 c le i) • Ditsela tše mmalwa tša go tshela di tlo fiwa le culverts (21 c and i) go BN le BS • Tshepedišo ya diphaephe tša meetse go tshela mokerokelelatšhila go BN le BS (Karolo ya 21 c le i)	
Karolo ya 21 (i) matlafatšo ya mariba, mabopo goba pharologantšho ya methopo ya meetse		
Karolo ya 21 (f) tokollo ya ditšhila goba meetse ao a beng le ditšhila ka gare ga didirišwa tša meets ka phaephe, kanale, kelelatšhila, molomomg wa lewatle goba diphaepeng tše dingwe	• Tokollo ya meetse go tšwa go BCM1 le BCM2 taolo ya meetse a ditšhila tša dipolante tikologong	
Karolo ya Section 21 (g) tahlo ya meetse ka mokgwa woo o ka hlolago kotsi meeding	• 14,000m³ PCD BS1/2 • PCDs go BCM1 le BCM2 • Taolo ya ditšhila tša dipolante go BCM1 le BCM2 • Moepo wa PCD go BS • Tshepetšo ya meetse ka tankeng go BS1/2 • PCD BS • Peeletšo ya Dimenerale gore BS4 • Peeletšo ya ROM go BS1/2 • Matlafatšo ya Nyakišišo go BS • Pušeletšo ya dinyakišo tša ka go mošomo wa go ema go rile ka go BS	• RWD go BS • Dipholante tše 2 PCDs ka go BS • Letamo la Erickson ka le hlakoreng la leboa go BS • Matangwana ao a dutšeng ka lehlakoreng la leboa a go lekana (350 m³ ka botee) go BS • Letamo la sinki ka lehlakoreng la laboa la go lekana (286 m³) go BS • Taolo ya tšhila ya dipolante go BCM1 le BCM2 • Matangwana a tšhoganetšo ka go ema go rile go BS
Karolo ya 21 (j) go tloša, lokolla goba go lahla meetse ao a hweditšwego ka fase ga mabu ge go hlokagala tšwelopele ya go phethagala ya mošongwana wa tšhireletšo ya batho	• Tlošo ya meetse fase go tšwa mešomong ya ka fase ga mabu go BS1/2, BCM1, BCM2, and BS4	

WML:

Kgopelo ya WML e tla fihlišwa ka fase ga Molao wa Kelelotšhila le lenaneo la Mešongwana ya Taolo ya Kelelotšhila tšeo di nago le ditlamorago tše šoro Tikologong (2013):

Mešongwana ya Taolo ya Kelelotšhil	
Kago a lefelo la mešongwana ya kelelatšhila yeo e ngwadilwego go Legoro la B	Legoro B, Mošongwana wa 10
Hlagišo ya peeletšo ya didirišwa tšeo di tšwago go mešongwana yeo e nyakago tumelelo ya Moepo ka fase ga Molao wa Tšwetšopele ya Dididrišwa tša Phetroleamole Dimenerale tša (28 ya 2002) (Mineral and Petroleum Resources Development Act (28 of 2002))	Legoro B, Mošongwana wa 11

Kgokagano ya Baamegi:

Tshepedišo ya tšeo karolo ye ya setšhaba, bjalo ka bjalo karolo ya hlakanyo ya Dikgopelo Phetošo, kgopelo ya WML le tshepedišo IWULA ,e bontšhwa ka fase ga melawana ya Kgaolo bo Chapter 6 ya NEMA, yeo e fago mamegi hlaho kgokaganyo . Tshepedišo ya boikgokaganyo bja baamegi e efa baamegi monyetla wa go tsebišwa ka Porojeke ya Bobedi ya Koketšo ya Borwa bja Booysendal, go tsoša pelaelo ya mathata go kaonafatša le go akanya dikholego tša protšeke. Ka nako ya tshepedišo ya tlhakanyo ye botsebi ke moo sehlopha sa Protšeke se tlo elago hloko mathata a go tsebalega le dikakanyo.

O ka ba le seabe bjang?

Baamegi ba mengwa go kgokagana Amec Foster Wheeler (Pty) Ltd (Wood Group) go ingwadiša bjale ka I&AP go Dikgopelo Phetošo hlakanyo ya EA le EMP, Diphetogo tša WML le IWULA tshepedišo le go swayaswaya go ye nngwe le ye nngwe ya dipego tšeo di tlo tšweletšwago bjalo ka karolo. Ditshwaotshwao ya gago yeo e dirilwego ka nako ya tshepedišo di tlo gatišwa Pego ya Dikarabo le Ditshwaotshwao, tše o di tlo ba karolo ya dipego tšeo di tlo romelwago go ditumelelo. Kabelo yeo e dirilego ke baamegi go tšwa go Makala ka moka a setšhaba go tlo netefatša tsebišo ya sephetho seo se tšerwego. O mengwa go tšea karolo mahala le go romela tshwaotshwao goba tshedimošo tšeo o

bonago di ka ba le moholo go ngwalo. Go netefatša gore o ngwadišitše bjalo ka I&AP le gore o amogele tshedimošo ya protšeke yeo e mpshafaditšwego ka kgopele tlatše foromo yeo e momeditšwego ya boingwadišo le ditshwaotshwao.

Bogona bja Dipego tša tshekatsheko ya gago ya Sekoupu sa Dipoledišano

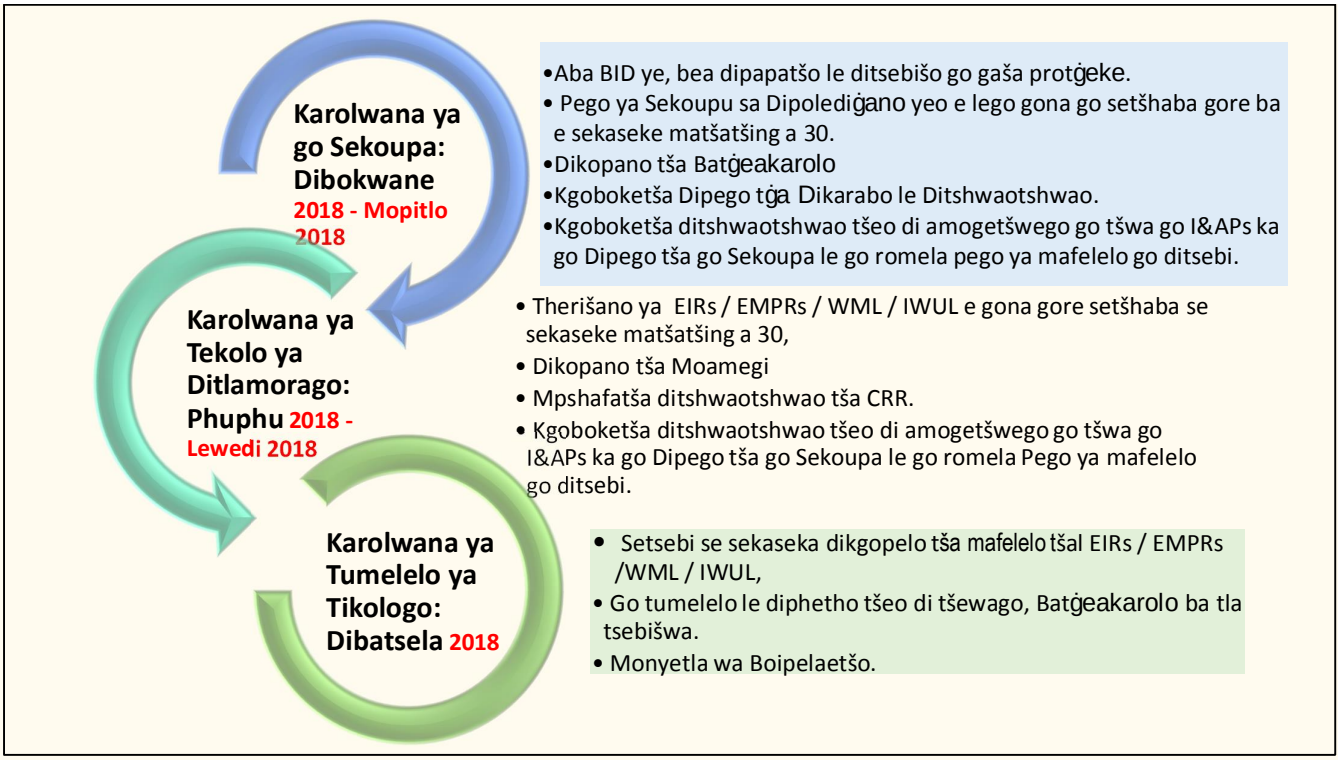
Therišano ya Rephoto ya Scoping yeo e beng gona go setšhaba gore ba e sekaseke matšatšing a 30, go tloga ka di 28 Dibokwane ngwageng wa 2018 go fihla ka di 30 tša Hlakola ngwageng wa 2018 mafelong a bo setšhaba ao a ngwadilwego ka mo fase.

Dikhophi tša go Gatišwa		
Lydenburg Public Library, 41 Viljoen Street, Lydenburg (Mogala: 013 235 3700)		
Maartenshoop Police Station, Naauwpoort Farm (Mogala: 013 235 4041)		
Dikhophi tša Elektroniki		
Weposaete wa go taolota	www.amecfw.com/booysendal	
Khopi ya CD	Leletġetġa Anelle Lötter	082 804 5890

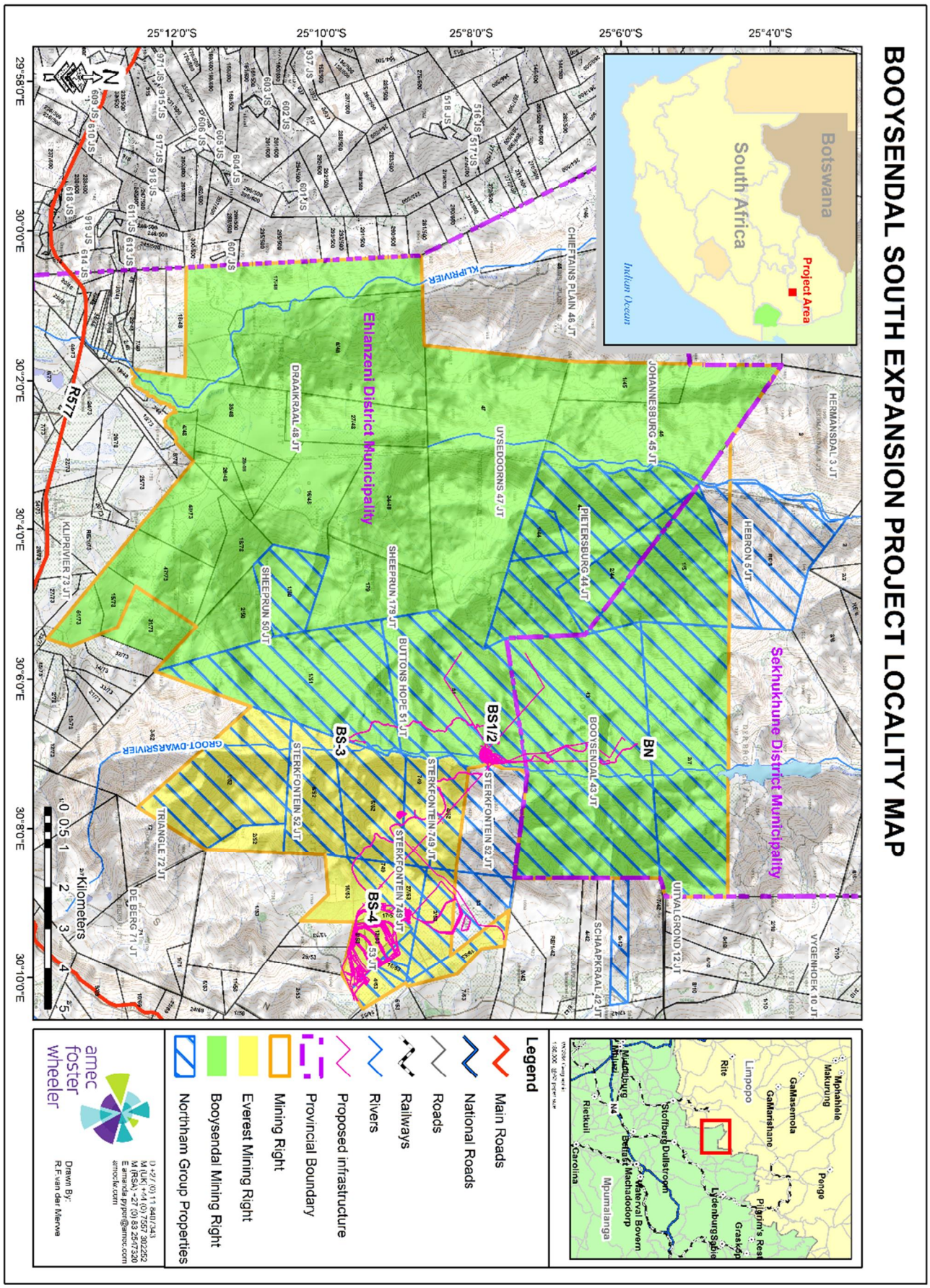
O hlohleletšwa go fa ditshwaotshwao go Pego ya Sekoupu sa Dipoledišano go ya le ka ye nngwe ya ditsela tšeo di latelago:

- Go ngwala lengwalo, go tliša sengwalwa;
- Go romela emeile, fekese goba o ikopanye le mošomedi wa botšeakarolo bja setšhaba ka mogala; goba
- Go tla dikopanong tša batšeakarolo tšeo di tlago go swarwa nakong ya kanegelo ya Pego ya Sekoupu sa Dipoledišano. Moreromogolo wa dikopano tša batšeakarolo e tla ba go ahlaahlaa diteng tša Pego ya Sekoupu sa Dipoledišano.

Tafolana ya ka tlase e laetša dikarolo le dikarolwana tša magato ao a swanetšwego go šalwa morago go karolwana ye nngwe le ye nngwe le moo batšeakarolo ba tlago go ba le seabe.



Seswantšho sa sa 1: Taekramo ya dikgato tša tshepedišo ya tlhakanyo yeo e tlo latelwago



Seswantšho sa 2: Karolo ya mošomo wa *Booysendal operation*

Protšeke ya 2 ya Koketšo ya Borwa bja Booysendal

Foromo ya ditshwaotshwao le boingwadišo

O kgopelwa go tlatša foromo ye gomme o e bušetše go Amec Foster Wheeler go netefatša gore o ingwadišitše bjalo ka Mokgatlo woo o Amegago goba o nago le Kgahlego. Matlakala a koketšo a ka mometšwa go foromo ya boingwadišo ge eba go a hlokega.

Tshedimošo ka ga mong		
Leina a Mathomo le Sefane:		
O kgopelwa go hlalosa gore o ngwadiša bjalo ka Setšhaba/Mokgahlo/Kgwebo gomme o fe leina:		
Aterese ya Bodulo:		
Mogala :	Sellathekeng :	
Emeile:		
Dikgahlego ka kakaretšo ka gare ga protšeke		
Na o na le ditshwaotshwao tšeo di itšego malebana le protšeke ya Koketšo yeo e šišintšwego?		
Ge e ba go na le motho yo mongwe yo o mo tsebago a ka rata go tsebišwa ka protšeke, o kgopelwa gore o fe dintlha tša gagwe tša boikopanyo:		
Leina la Mathomo le Sefane:		
Setġhaba / Mokgatlo / Maġemo:		
Aterese:		
	Mogala :	
	Fekese:	
	Sellathekeng:	
	Emeile:	
O kgopelwa go rekhota ditshwaotshwao tše di latelago tše ke nago le tšona godimo ga Dipego tša Sekoupu sa Dipoledišan		

O kgopelwa go tlatša foromo ye gomme o e romele go:
Anelle Lötter wa Amec Foster Wheeler (Pty) Ltd (Wood Group), Emeile: anelle@jaws.co.za

Booysendal South Expansion Project 2

Integrated public participation process for environmental authorisations (EAs), amendments of environmental management programmes (EMPs), Waste Management License (WML) and Integrated Water Use Licence (IWUL) for Booysendal Mine's proposed expansion in terms of the National Environmental Management Act (107 of 1998), National Environmental Management: Waste Act (59 of 2008) and National Water Act (36 of 1998) near Mashishing, Limpopo and Mpumalanga Provinces

BACKGROUND INFORMATION DOCUMENT

FEBRUARY 2018

Purpose of this Background Information Document

This Background Information Document ("BID") intends to provide Interested and Affected Parties ("I&Aps") and stakeholders with information regarding Booysendal Platinum (Pty) Ltd's ("Booysendal's") intention to develop the Booysendal Mine expansion project ("Booysendal South Expansion Project 2").

This BID also provides essential information about the licenses, permits, approvals and environmental authorisations ("EAs") which Booysendal will have to obtain before it will be allowed to commence with the Project ("Project Licenses").

Amec Foster Wheeler (Pty) Ltd (incorporated into the Wood Group) has been appointed as the independent Environmental Assessment Practitioner ("EAP") to undertake the application process for the Project Licenses.

Registration as an Interested and Affected Party

To ensure that you are given an opportunity to comment on the documents which will be part of the application process, and that you receive updated project information, please complete the attached I&AP registration and comment form and return it to:

Amec Foster Wheeler (Pty) Ltd (Wood Group)
Anelle Lötter
Tel: 082 804 5890
Email: Anelle@jaws.co.za
Website: www.amecfw.com/booysendal

YOUR OPPORTUNITY TO REVIEW THE CONSULTATION SCOPING REPORTS

The Consultation Scoping Reports (CSRs) will be available for your review from 28 February to 30 March 2018 at public places (see page 8) or on the website – www.amecfw.com/booysendal

Please register as an I&AP to receive further information on the Project.

Project name and applications:	Booysendal South Expansion Project 2: Application for - • substantive amendments of the Environmental Management Programmes ("EMPs") for mining rights MP 30/5/1/2/2/334 MR (Booysendal North Mining Right) and MP 30/5/1/2/2/127 MR (Booysendal South Mining Right) in terms of the National Environmental Management Act (107 of 1998) ("NEMA"), as amended, and the 2014 Environmental Impact Assessment Regulations ("2014 EIA Regulations") published in Government Notice R982 under Government Gazette 38282 of 4 December 2014, as amended under Government Gazette No 40772 of 07 April 2017, ("EMP Amendment Applications"); and • EAs in terms of NEMA and the 2014 EIA Regulations ("EA Application), (an EMP Amendment Application and EA Application are collectively referred to as "EA and EMP Amendment Application"); • Integrated Water Use License ("IWUL") Application ("IWULA") in terms of the National Water Act (36 of 1998) ("NWA"); • A Waste Management Licence ("WML") Application ("WML Application") under the National Environmental Management: Waste Act (59 of 2008) ("Waste Act") and the List of Waste

	Management Activities that have, or are likely to have, a Detrimental Effect on the Environment (2013); and • Additional permits such as biodiversity permits may be required.
Landowners:	Booysendal Platinum (Pty) Limited, Bakoni Baphetla Communal Property, Jan Valentine Blake, Cecilia Jacomina Riekert and Maria Elizabeth van Vuuren.
Competent authorities:	Department of Mineral Resources ("DMR") – Polokwane and Mpumalanga Regional Offices Department of Water and Sanitation ("DWS")
Local authorities:	Limpopo: Greater Tubatse Local Municipality in the Greater Sekhukhune District Mpumalanga: Thaba Chweu Local Municipality in the Ehlanzeni District
Location of activities:	The EA and EMP Amendment Applications and WML Application will be submitted to the following Department of Mineral Resources Regional offices for the following properties – • Limpopo Regional Office: the Farm Booysendal 43 JT and the Remaining Extent of the Farm Buttonshope 51 JT (which are part of the Booysendal North Mining Right); and • Mpumalanga Regional Office: the Remaining Extents of Portions 2, 4, 13 and 15 and Portions 4, 8, 12, 17, 25 and 27 of the Farm de Kafferskraal 53 JT; the Farm Sterkfontein 749 JT; the Remaining Extents of Portions 15 and 4 and Portion 5 of the Farm Sterkfontein 52 JT (which are part of the Booysendal South Mining Right).
Environmental Assessment Practitioner (EAP):	Amec Foster Wheeler South Africa (Pty) Ltd (incorporated into the Wood Group) – Ms Amanda Pyper

Background and introduction

Booysendal purchased the southern section of the Der Brochen Mining Operation from Rustenburg Platinum Mines Ltd (Anglo Platinum) early in 2008. Development of Booysendal Mine commenced in 2011 in the area known as Booysendal North ("BN"). It also purchased the bordering Everest from Aquarius Platinum Pty Ltd in 2015. The two operations are managed as one integrated operation. Booysendal is in the process of expanding its Booysendal Mine operations to increase their current platinum production of 220,000 to 450,000 kilo tonne per month. The Booysendal South Expansion Project 2 consists of mine and infrastructure development in the two areas, namely BN and Booysendal South ("BS"), which fall under the Booysendal North Mining Right and Booysendal South Mining Right. Some of the Booysendal South Expansion Project activities have been approved under an EA granted in terms of section 24G of NEMA on 5 January 2018 ("Section 24G EA"). The water uses applied for under the IWULA is for the entire Booysendal South Expansion Project.

New applications

This BID announces the integrated process which is being conducted as part of the applications for: (i) EAs and amendments of the existing EMPs; (ii) a WML; and (iii) an IWUL for the expansion of the Booysendal.

A Scoping and Environmental Impact Assessment ("S&EIR") process will be followed for the EA and EMP Amendment Applications and WML Application – these applications will be submitted to the DMR Limpopo Regional Office and the DMR Mpumalanga Regional. An IWULA will be submitted to the DWS.

The Booysendal Mine operation consists of the two mining rights – the Booysendal North Mining Right (in Limpopo and Mpumalanga province) and the Booysendal South Mining Right (in Mpumalanga province) (collectively the "Mining Rights"). The proposed expansions fall within the areas held under these Mining Rights.

As the two Mining Rights were granted by different DMR Regional Offices, an EA and EMP Amendment Application and WML Application has to be submitted for each Mining Right – to the DMR Limpopo Regional Office for the Booysendal North Mining Right and to the DMR Mpumalanga Regional Office for the Booysendal South Mining Right. The IWULA will be submitted to the Lydenburg office of the DWS.

The EA and EMP Amendment Applications, WML Application and IWULA will be submitted simultaneously and an integrated public participation process is conducted for all these applications.

The Booysendal South Expansion Project 2 can be described as follows:

Booysendal North (BN): further expansion of the existing BN Mine to the south, to mine the Merensky Reef. This application is specifically applicable to the following additional activities and includes:

- Development of surface infrastructure associated with the two Merensky Adits (BCM1 and BCM2) on the Farm Booysendal 43 JT, including workshops, conveyors, pollution control dams, offices, water storage tanks, sewage treatment plants, change rooms etc. The adits were approved as part of the Section 24G EA but no provision was made for surface infrastructure at that point. In addition, the location of the one adit has also moved slightly from

the position approved by the Section 24G EA. Due to the proposed addition of surface infrastructure, the footprint areas are also slightly bigger than the approved footprints;
- Development of an emergency escape portal on the Farm Booysendal 43 JT;
- Construction of a process and potable water pipeline between the BS1/2 complex on the Remaining Extent of the Farm Buttonshope 51 JT to BN on the Farm Booysendal 43 JT;
- The construction of an aerial rope conveyor (ARC) between the Remaining Extent of the Farm Buttonshope 51 JT and BN on the Farm Booysendal 43 JT;
- Construction activities within 100m of drainage lines and within 500m of wetlands, including the adits, towers of the ARC, pipelines, overland conveyors and access roads; and
- Including the 11kVA powerline from BN on the Farm Booysendal 43 JT to BS1/2 on the Remaining Extent of the Farm Buttonshope 51JT in the EMP Amendment.

Booysendal South (BS): some of the expansion infrastructure at the BS4 (ex-Everest) section have been authorised as part of a Section 24G EA. The EA and EMP Amendment Application for BS4 is specifically for authorisation of the following additional activities:

- Development of a Backfill Plant including several slurry and water pipelines and some paddocks along the slurry pipeline which will run from the existing Process Plant to the Backfill Plant.

The proposed expansion will involve vegetation clearance within a Critical Biodiversity Area ("CBA"). The final specifications and development footprint of the Booysendal South Expansion Project 2 will be confirmed during the application process. Large portions of the proposed development area have been previously disturbed due to historic mining activities of which some has self-rehabilitated.

Environmental sensitivities

Booysendal has been operating in the area since 2010 and understands the environment in which it is operating, its people and the environmental sensitivities surrounding its Operations, including that –

- the Booysendal Mine operation is located in the Sekhukhune Centre of Endemism;
- the Groot Dwars River valley serves as a habitat for the Red Data List species *Pycna sylvia*;
- several cultural-heritage sites, including living heritage resources, are associated with the mountain and valley areas in which the larger project is located;
- the Groot Dwars River Catchment's water quality is near pristine and serves as habitat to the IUCN Red-listed *Enteromius motebensis;*
- wetland areas occur within the Booysendal South Expansion Project 2 area;
- light and noise are perceived as issues which may cause disturbance to local inhabitants;
- the Der Brochen Dam is in close proximity to the site;
- mining development within the area poses the potential to lead to cumulative impacts on biodiversity; and
- there are security challenges.

Pycna sylvia is a species of cicada endemic to South Africa. Specimens of this species were collected in 1906 and then not found again in the field until 2001 "*when small, localised populations were discovered during a faunal survey for a proposed project in the Groot Dwars River valley, Mpumalanga." - Wikipedia*

Legislative context

For Booysendal to continue with the Booysendal South Expansion Project 2, it requires the following Project Licenses:

- Substantive amendment of the EMPs for the Mining Rights in terms of the NEMA, as amended, and the 2014 EIA Regulations;
- EAs in terms of NEMA and the 2014 EIA Regulations;
- IWUL in terms of the NWA;
- WML under the Waste Act and the List of Waste Management Activities that have, or are likely to have, a Detrimental Effect on the Environment (2013); and
- Additional permits such as biodiversity permits may be required.

Below follows information about the applications which will be conducted concurrently, supported by a public participation process:

EMP Amendment Applications: Subsequent to amendments to NEMA and the Mineral and Petroleum Resources Development Act No 28 of 2002 ("MPRDA"), applications to amend approved EMPs submitted after 8 December 2014 require consent from the DMR and must be done in accordance with the 2014 EIA Regulations. The competent authorities are the DMR Limpopo Regional Office for the Booysendal North Mining Right and the DMR Mpumalanga Regional Office for the Booysendal South Mining Right.

EA Applications: The proposed developments will likely trigger the activities below which are listed the Environmental Impact Assessment Listing Notices published under Government Notices 983 – 985 in Government Gazette 38282 of 4 December 2014, as amended. This will be confirmed prior to submission of the Application, as the final specifications are currently being determined.

Two EA and EMP Amendment Applications will be submitted for the Booysendal South Mining Right and the Booysendal North Mining Right of the Booysendal Operation under the 2014 EIA Regulations in terms of NEMA, for the listed activities below:

NEMA Listed Activities	
Activity No(s):	**Government Notice No. R983 Listing Notice 1, as Amended in GNR327 of 7 April 2017** **Details of Activity(ies) requiring Basic Assessment**
12	The development of – (i) dams or weirs, where the dam or weir, including the infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs- (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse. *Applicable activities* – • Portions of the Booysendal Central Merensky ("BCM") BCM2 terrace and associated infrastructure; • ARC Towers 3, 6 and 7; and • Water supply line crossings between BS1/2 and BN and process water and slurry lines between BS4 process and backfill plants crossing drainage lines.
14	The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres. *Applicable activity* – • At BCM1 and BCM2 the storage of an estimated 150 cubic meters of dangerous goods including - emulsion, diesel, oil, dirty oil and hydraulic oils.
19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of *inter alia* soil, sand, pebbles or rock of more than 10 cubic metres from a watercourse. *Applicable activities* – • Infilling for the establishment of the BCM1 and BCM2 Adits; and • Excavation and infilling for ARC Towers 3 (on the Farm Booysendal 43 JT), 6 and 7 (on the Remainder of the Farm Buttonshope 51 JT).

NEMA Listed Activities	
27	The clearance of an area of between 1 and 20 hectares of indigenous vegetation. *Applicable activity* – • Clearance for the emergency escape portal and infrastructure components around BCM1 and BCM2, including crusher plant, conveyors, silos on the Farm Booysendal 43 JT; • Clearance for the water pipelines between from BN to BS1/2 on the Farms Booysendal 43 JT to the Remaining Extent of the Farm Buttonshope 51 JT; and • Clearance for the backfill plant, backfill emergency ponds the Farm Sterkfontein 749 JT, the Remaining Extent of Portion 15 and Portions 8 and 17 of the Farm De Kafferskraal 53 JT
30	Any process or activity identified in terms of section 53(1) of the National Environmental Management: Biodiversity Act (Act No. 10 of 2004) ("NEMBA"). *Applicable activity* – • All the associated mining activities will take place in the Sekhukhune Centre of Endemism which is classified as a threatened ecosystem.
Activity No(s):	**Government Notice No. R984 Listing Notice 2 as Amended by GNR 325 of 7 April 2017** **Details of Activity(ies) requiring a Scoping / EIA Report**
6	The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding: activities which are identified in Listing Notice 1 of 2014 EIA Regulations; activities which are included in the list of waste management activities published in terms of section 19 of the Waste Act in which case the Waste Act applies; or the development of facilities or infrastructure for the treatment of effluent, wastewater or sewage where such facilities have a daily throughput capacity of 2, 000 cubic metres or less, as contained in 2014 Listing Notice. *Applicable activity* – • Pollution control dams ("PCDs") and settlers at BCM1 and BCM2 on the Farm Booysendal 43 JT; • Sewage treatment plants at BCM1 and BCM2 with treated effluent to be discharged into the environment at a throughput rate of 100m^3 /day on the Farm Booysendal 43 JT; and • Emergency backfill ponds and slurry pipelines (section 21(g) water use) at BS (between the process plant, backfill plant and underground workings to be backfilled) on the Farm Sterkfontein 749 JT, and the Remaining Extent of Portion 15 and Portions 8 and 17 of the Farm De Kafferskraal 53 JT
7	The development and related operation of facilities or infrastructure for the bulk transportation of dangerous goods – (i) in liquid form, outside an industrial complex, using pipelines, exceeding 1000 metres in length, with a throughput capacity of more than 50 cubic metres per day. *Applicable activity* – • Effluent at BCM1 and BCM2 at a rate of 100m^3 per day on the Farm Booysendal 43 JT); and • Transfer of tailings from the process plant at BS4 to the backfill plant and underground workings exceeding 1km in length with at a rate of 250m^3 per day on the Farm Sterkfontein 749 JT and the Remaining Extent of Portion 15 and Portions 8 and 17 of the Farm De Kafferskraal 53 JT.
17	Any activity including the operation of that activity which requires a mining right as contemplated in section 22 of the MPRDA including associated infrastructure, structures and earthworks directly related to the extraction of a mineral resource, including activities for which an exemption has been issued in terms of section 106 of MPRDA. *Applicable activity* – • Emergency escape portal at BS 1/2
19	The removal and disposal of minerals in terms of section 20 of the MPRDA, including – (b) the primary processing of mineral resources including winning, extraction, classifying, concentrating, crushing, screening or washing. *Applicable activity* – • Crusher plant between BCM1 and BCM2 which has a capacity 50t on the Farm Booysendal 43 JT.
Activity No(s):	**Government Notice No. R985 Listing Notice 3 as Amended by GNR 324 of 7 April 2017** **Details of Activity(ies) requiring Basic Assessment Report**
4	The development of a road wider than 4 metres with a reserve less than 13,5 metres f) Mpumalanga Outside urban areas: (ee) Critical Biodiversity Areas ("CBAs") as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans. *Applicable Activity* – • BS is located in a critical biodiversity area in terms of the Terrestrial Assessment (2014) of the Mpumalanga Tourism and Parks Agency ("MTPA Terrestrial Assessment") and the Sekhukhune Mountainlands are listed as an endangered ecosystem in terms of Regulation GN 1002 of 9 December 2011 promulgated in terms of section 52 of NEMBA ("GN 1002"); • Permanent and temporary access roads will be 4m wide to the ARC. The access roads to BCM1 and BCM2 will be 6m wide on the Farms Booysendal 43 JT and Buttonshope 51 JT; and • Permanent access roads to the backfill plant 4m wide on the Farm Sterkfontein 749 JT.
8	The development and related operation of above ground cableways and funiculars

NEMA Listed Activities	
	e) Limpopo and f) Mpumalanga i. All areas outside urban areas. *Applicable activity* – • ARC from BS1/2 to BN on the Farms Booysendal 43 JT and Buttonshope 51 JT.
12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. e) Limpopo and f) Mpumalanga ii. Within CBAs identified in bioregional plans. *Applicable activity* – • BS is located in a CBA in terms of the MTPA Terrestrial Assessment and the Sekhukhune Mountain lands are listed as an endangered ecosystem in terms of GN 1002; • BS emergency escape portal, silos and surface infrastructure at BCM1 and BCM2 (including conveyors and access roads) exceed 300 square meters; • BS4 - clearance for the pipelines and backfill plant exceeds 300 square meters.
14	The development of- (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or (ii) infrastructure or structures with a physical footprint of 10 square metres or more; Where such development occurs - (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse e). Limpopo and f. Mpumalanga i. Outside urban areas, in: (ff) CBA or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; *Applicable activity* – • In relation to the Booysendal North Mining Right – - ARC Tower 3, 6 and 7 within watercourses exceeding 10 square meters each in size; - Conveyors, roads between BCM1 and BCM2 (to provide access to the ARC), permanent and temporary access roads of 4 metres wide to access the ARC will traverse drainage lines in various areas exceeding 10 square meters; • Pipeline line watercourse crossings between BS1/2 and BN crossing drainage lines in relation to the Booysendal South Mining Right; and • BS4 process water and slurry lines between BS4 backfill plants crosses watercourses in various areas

The EA and EMP Amendment Applications for the Booysendal South Expansion Project 2 entails a scoping phase and an environmental impact assessment ("EIA") phase. During scoping, issues for investigation during the EIA phase are identified. This information is compiled into a Consultation Scoping Report which will be made available for public comment. The final Scoping Reports will be submitted to the DMR Mpumalanga Regional Office and DMR Limpopo Regional Office for approval in order to continue with the EIA phase.

During the EIA phase, potential impacts are determined, and management measures are proposed to mitigate negative impacts and enhance positive impacts. The consultation EIA / EMPs, together with the draft WML Report and IWULA Report will be made available for public comment and submitted to the DMR and the DWS for decision making.

The EIA will also contain the results of a number of specialist assessments, including studies on:

- Aquatic biodiversity and riparian vegetation
- Wetlands
- Terrestrial flora and fauna
- Soil, land use and land capability
- Hydrology
- Hydrogeology
- Cultural heritage
- Visual impact
- Noise
- Air Quality and Greenhouse Gas Assessment
- Traffic Impact Assessment

The information obtained through the specialist assessments will be used as a basis for the EA and EMP Amendment Application, the WML Application and IWULA.

IWUL:

An IWULA will be submitted under the NWA and Regulations regarding the Procedural Requirements for Water Use License Applications and Appeals:

Section 21 Water Use	Description of the Water Uses	
Section 21 (a) taking water from a water resource	• Associated with dewatering at BCM1, BCM2, BS1/2 and BS4	
Section 21 (b) storing water	• Potable water and fire water storage tanks at the BS1/2, BCM1 and BCM2 • Potable and make-up water storage at BS	
Section 21 (c) impeding or diverting the flow of water in a watercourse Section 21 (i) altering the beds, banks, course or characteristics of a water resource	• Six of the ARC towers are located on the edge of watercourses (21 i) and one in a wetland (21 c and i), where excavations will be made for the base on the towers • Drainage line crossings for the main access road, including the Groot Dwars River crossing. Culverts will be installed (21 c and i) • Main access road wetland crossings (21 c and i) • Diversion of two streams upstream of the portal complex at the Remainder of the Farm Buttonshope (21 c and i) • Several internal access road crossings which will be provided with culverts (21 c and i) at BN and BS • Water and process water pipelines crossing drainage lines on the BN and BS (Section 21 c and i)	
Section 21 (f) discharging of waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit	• Discharging of water from the BCM1 and BCM2 sewage water treatment plants into the environment	
Section 21 (g) disposing of waste in a manner which may detrimentally impact on a water course	• 14,000m^3 PCD BS1/2 • PCDs at the BCM1 and BCM2 • Sewage Treatment Plants for BCM1 and BCM2 • Mine PCD at BS • Process water tank at the BS1/2 • PCD BS • Ore stockpile at BS4 • ROM stockpile at the BS1/2 • Reworking of Tailings at BS • Backfilling of tailings into the underground workings at BS	• RWD at BS • 2 Plant PCDs at BS • Erickson dam at the north decline (343 m^3) at BS • Four settling ponds at the north decline (350 m^3 each) at BS • Sink dam at the north decline (286 m^3) at BS • BCM1 and BCM2 sewage treatment plants • Three emergency backfill ponds along the backfill line at BS
Section 21 (j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity of for the safety of people	• Removing of groundwater from the underground workings at BS1/2, BCM1, BCM2, and BS4	

WML:

A WML Application will be submitted under the Waste Act and the List of Waste Management Activities that have, or are likely to have, a Detrimental Effect on the Environment (2013):

Waste Management Activities	
Construction of a facility for a waste management activity listed in Category B	Category B, Activity 10
The establishment of a residue stockpile or residue deposit resulting from activities which require a mining right in terms of the Mineral and Petroleum Resources Development Act (28 of 2002)	Category B, Activity 11

Stakeholder engagement:

The public participation process, which will form part of the integrated EA and EMP Amendment Applications, WML Application and IWULA process, is conducted in terms of Chapter 6 of NEMA, which provides clear guidelines for stakeholder engagement. The stakeholder engagement process offers stakeholders the opportunity to be informed about the Booysendal South Expansion Project 2, to raise issues of concern, and to make suggestions for enhanced project benefits. The Project team will consider relevant issues and suggestions during the integrated environmental authorisation process.

How can you become involved?

Stakeholders are invited to contact Amec Foster Wheeler (Pty) Ltd (Wood Group) to register as an I&AP for the integrated EA and EMP Amendment Applications, WML Application and IWULA process and to comment on any of the

reports that will be produced as part thereof. Your comments made during the process will be recorded in a Comments and Responses Report, which will form part of the reports that will be submitted to the authorities. The contributions made by stakeholders from all sectors of society will ensure informed decision-making. You are invited to participate freely and to submit any comments or information you feel may be useful to the process in writing. To ensure that you are registered as an I&AP and that you receive updated project information please complete the attached registration and comment form.

Availability of the Consultation Scoping Reports for your review

The Consultation Scoping reports are available for public review for a period of 30 days, from 28 February 2018 to 30 March 2018 at the public places listed below.

Printed Copies		
Lydenburg Public Library, 41 Viljoen Street, Lydenburg (Tel: 013 235 3700)		
Maartenshoop Police Station, Naauwpoort Farm (Tel: 013 235 4041)		
Electronic Copies		
Website download	www.amecfw.com/booysendal	
CD copy	Please call Anelle Lötter	082 804 5890

You are encouraged to comment on the Consultation Scoping Report in any of the following ways:

- Writing a letter, producing written submissions;
- Sending an email, fax or contact the public participation practitioner by telephone; or
- Attending stakeholder meetings which will be held during the review of the Consultation Scoping Report. The purpose of the stakeholder meetings will be to discuss the contents of the Consultation Scoping Report.

The diagram below indicates the phases and an outline of the steps to be followed in each phase and where stakeholders can contribute.

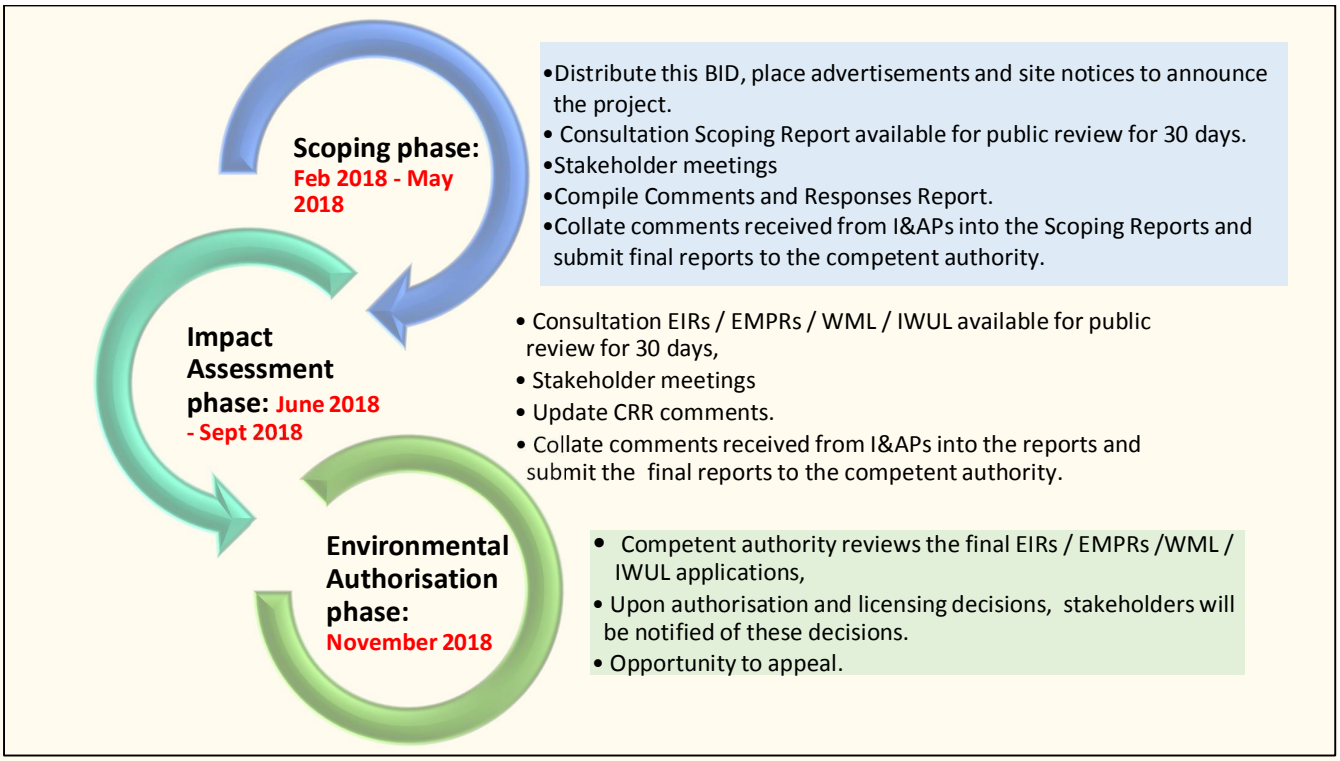


Figure 1: Diagram showing the milestones of the integrated process which will be followed

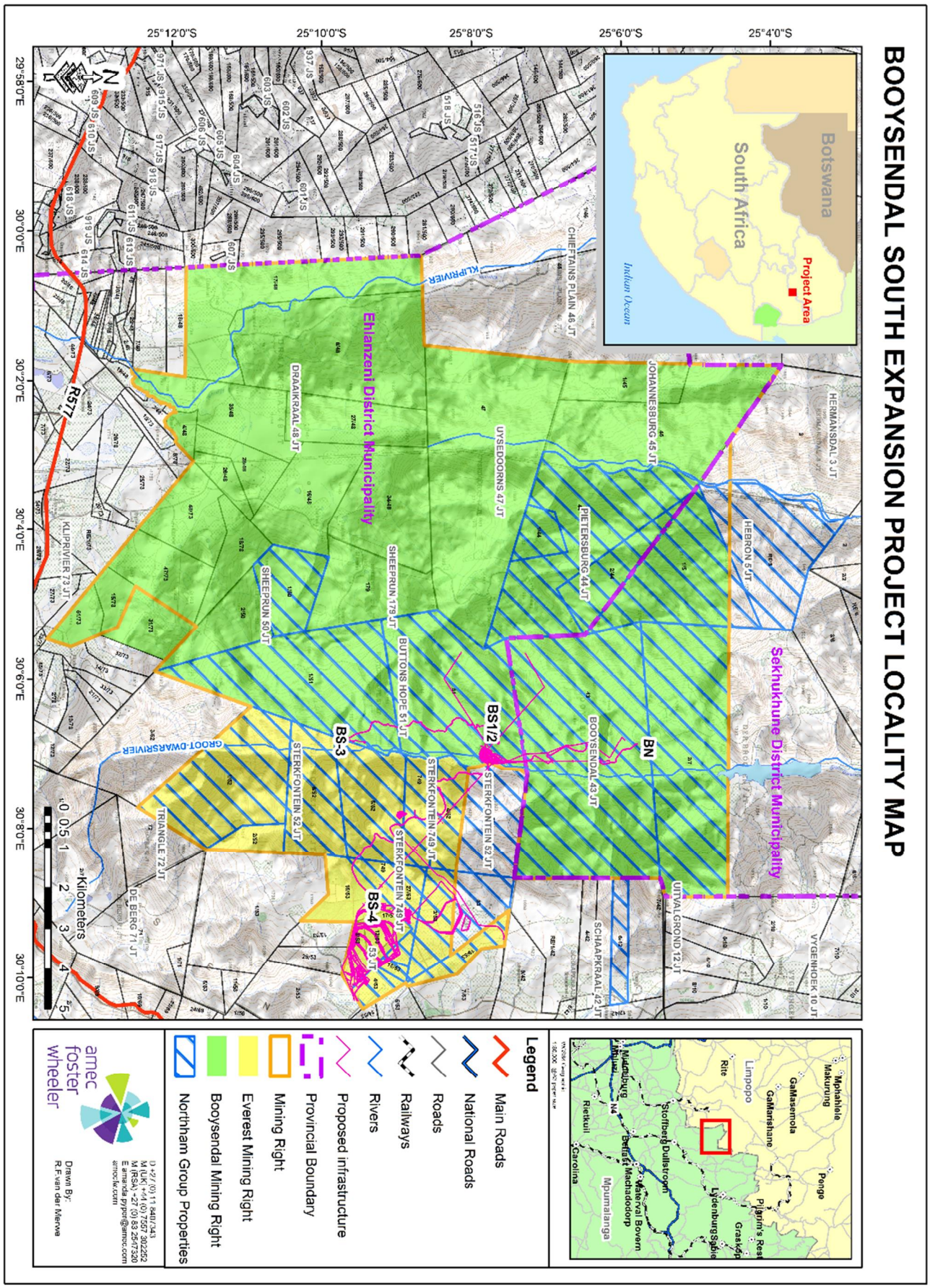


Figure 2: The division of the Booysendal operation

Booysendal South Expansion Project 2

REGISTRATION AND COMMENT FORM

Please complete this form and return it to Amec Foster Wheeler (Wood Group) to ensure that you are registered as an Interested and Affected Party. Additional pages may be attached to the registration form should this be required.

Personal information			
First Name and Surname:			
Please indicate whether you are registering as a Community / Organisation / Farm or Business and provide the name:			
Physical address:			
Telephone:	Cell:		
Email:			
General interest in the project			
Do you have any specific comments regarding the proposed expansion project?			
If you know of anyone who should be informed about the project please provide their contact details:			
First Name and Surname:			
Community / Organisation / Farm:			
Address:			
	Telephone:		
	Fax:		
	Cell:		
	Email:		
Please record the following comments I have on the Consultation Scoping Reports:			

Kindly complete this form and return to:

Anelle Lötter for Amec Foster Wheeler (Pty) Ltd (Wood Group), Email: anelle@jaws.co.za

Booysendal-Suid-uitbreidingsprojek 2

Geïntegreerde proses van openbare deelname vir omgewingsmagtigings (OM's), wysigings van omgewingsbestuursprogramme (OBP's), Afvalbestuurslisensie (ABL) en Geïntegreerde Watergebruiklisensie (GWGL) vir die Booysendalmyn se voorgestelde uitbreiding ingevolge die Wet op Nasionale Omgewingsbestuur (No 107 van 1998), die National Environmental Management: Waste Act (No 59 van 2008), en die Nasionale Waterwet (No 36 van 1998), naby Mashishing, provinsies Limpopo en Mpumalanga

AGTERGRONDINLIGTINGSDOKUMENT

FEBRUARIE 2018

Doel van hierdie Agtergrondinligtingsdokument

Hierdie Agtergrondinligtingsdokument ("AID") is bedoel om belanghebbende en geaffekteerde partye ("B&GP's") en belanghebbendes te voorsien van inligting oor Booysendal Platinum (Pty) Ltd ("Booysendal") se voorneme om die Booysendalmyn-uitbreidingsprojek ("Booysendal-Suid-uitbreidingsprojek 2") te ontwikkel.

Hierdie AID bevat ook belangrike inligting oor die lisensies, permitte, goedkeurings en omgewingsmagtigings ("OM's") wat Booysendal sal moet bekom voordat hy toegelaat sal word om met die projek te begin ("Projeklisensies").

Amec Foster Wheeler (Pty) Ltd (opgeneem in die Wood Groep) is as die onafhanklike Omgewingsimpakbepalingspraktisyn ("OIP") aangestel om die aansoekproses vir die Projeklisensies te hanteer.

Registrasie as 'n Belanghebbende en Geaffekteerde Party

Om seker te maak dat u 'n geleentheid kry om kommentaar te lewer op die dokumente wat deel van die aansoekproses sal uitmaak en dat u vars projekinligting ontvang, moet u asb die aangehegte B&GP-registrasie- en kommentaarvorm invul en aan ons terugstuur.

Amec Foster Wheeler (Edms) Bpk (Wood Groep)
Anelle Lötter
Tel: 082 804 5890
E-pos: Anelle@jaws.co.za
Webblad: www.amecfw.com/booysendal

U GELEENTHEID OM DIE KONSULTASIE-OMVANGSVERSLAE TE BESTUDEER

Die Konsultasie-omvangsverslae (KOV's) sal van 28 Februarie tot 30 Maart 2018 tot u beskikking wees op openbare plekke (kyk bl 8) of op die webwerf – www.amecfw.com/booysendal

Registreer asb as 'n B&GP om verdere inligting oor die Projek te ontvang.

Projeknaam en aansoeke:	Booysendal-Suid-uitbreidingsprojek 2: Aansoek vir – • Substantiewe wysiging van die Omgewingsbestuursprogramme ("OBP's") vir mynregte MP 30/5/1/2/2/334 MR (Booysendal-mynreg) en MP 30/5/1/2/2/127 MR (Booysendal-Suid-mynreg) ingevolge die Wet op Nasionale Omgewingsbestuur, No 107 van 1998 ("NEMA"), soos gewysig, en die 2014 Omgewingsimpakbepalingsregulasies ("2014 OIB-regulasies") afgekondig in Goewermentskennisgewing R.982 in Staatskoerant 38282 van 4 Desember 2014, soos gewysig in Staatskoerant 40772 van 07 April 2017, ("OBP-wysigingsaansoeke"); en • OM's ingevolge NEMA en die 2014 OIB-regulasies ("OM-aansoek"); ('n OBP-wysigingsaansoek en OM-aansoek word gesamentlik "OM- en OBP-wysigingsaansoek" genoem); • Aansoek vir 'n Geïntegreerde Watergebruiklisensie ("GWGL") ingevolge die Nasionale Waterwet, No. 36 van 1998 ("NWW"). • 'n Afvalbestuurlisensie ("ABL")-aansoek ("ABL-aansoek") ingevolge die National Environmental

	Management: Waste Act (No 59 van 2008) ("Waste Act") en die Lys Afvalbestuursaktiwiteite wat 'n Nadelige Uitwerking op die Omgewing het of kan hê (2013); en • Bykomende permitte soos biodiversiteitspermitte wat dalk nodig sal wees.
Grondeienaars:	Booysendal Platinum (Pty) Limited, Bakoni Baphetla Communal Property, Jan Valentine Blake, Cecilia Jacomina Riekert en Maria Elizabeth van Vuuren
Bevoegde owerhede:	Departement van Minerale Hulpbronne ("DMH") – streekkantore in Polokwane en Mpumalanga Departement van Water en Sanitasie ("DWS")
Plaaslike owerhede:	Limpopo: Groter Tubatse Plaaslike Munisipaliteit in die Groter Sekoekoeni-distrik Mpumalanga: Thaba Chweu Plaaslike Munisipaliteit in die Ehlanzeni-distrik
Ligging van aktiwiteite:	Die OM- en OBP-wysigingsaansoeke en die WGL-aansoek sal aan die volgende streekkantore van die Departement van Minerale Hulpbronne voorgelê word vir die volgende eiendomme: • Limpopo-streekkantoor: Die plaas Booysendal 43 JT en die Resterende Gedeelte van die plaas Buttonshope 51 JT (wat deel van die Booysendal-Noord-mynreg is); en • Mpumalanga-streekkantoor: Die Resterende Gedeeltes van Gedeeltes 2, 4, 13 en 15 en Gedeeltes 4, 8, 12, 17, 25 en 27 van die plaas De Kafferskraal 53 JT; die plaas Sterkfontein 749 JT; die Resterende Gedeeltes van Gedeeltes 15 en 4 en Gedeelte 5 van die plaas Sterkfontein 52 JT (wat deel van die Booysendal-Suid-mynreg is).
Omgewingsbepalingspraktisyn (OBP):	Amec Foster Wheeler South Africa (Pty) Ltd (opgeneem in die Wood Groep) – Me Amanda Pyper

Agtergrond en inleiding

Booysendal het die suidelike seksie van die Der Brochen-mynbedrywigheid vroeg in 2008 by Rustenburg Platinum Mines Ltd (Anglo Platinum) gekoop. Die ontwikkeling van die Booysendalmyn het in 2011 begin in die gebied bekend as Booysendal-Noord ("BN"). In 2015 het hy ook die aangrensende Everest van Aquarius Platinum Pty Ltd gekoop. Die twee bedrywighede word as een geïntegreerde bedrywigheid bestuur. Booysendal is besig met die uitbreiding van sy Booysendal-mynbedrywighede om sy huidige platinumproduksie van 220 000 tot 450 000 kiloton per maand te verhoog. Die Booysendal-Suid-uitbreidingsprojek 2 bestaan uit myn- en infrastruktuurontwikkeling in die twee gebiede, naamlik BN en Booysendal-Suid ("BS"), wat onder die Booysendal-Noord-mynreg en die Booysendal-Suid-mynreg val. Party van die Booysendal-Suid-uitbreidingsprojek se aktiwiteite is goedgekeur kragtens 'n OM wat op 5 Januarie 2018 ingevolge artikel 24G van NEMA verleen is ("artikel 24G-OM"). Die watergebruike waarvoor ingevolge die GWGLA aansoek gedoen word, is vir die hele Booysendal-Suid-uitbreidingsprojek.

Nuwe aansoeke

Hierdie AID kondig die geïntegreerde proses aan wat gedoen word as deel van die aansoeke vir (i) OM's en wysigings van die bestaande OBP's; (ii) 'n ABL; en (iii) 'n GWGL vir die uitbreiding van die Booysendalprojek.

'n Omvangbepaling- en Omgewingsimpakbepaling ("O&OIB")-proses sal gevolg word vir die OM- en OBP-wysigingsaansoeke en die ABL-aansoek – hierdie aansoeke sal aan die DMH se Limpopo-streekkantoor en die DMH se Mpumalanga-streekkantoor voorgelê word. 'n GWGLA sal aan die DWS voorgelê word.

Die Booysendal-mynbedrywighede bestaan uit die twee mynregte – die Booysendal-Noord-mynreg (in die provinsies Limpopo en Mpumalanga) en die Booysendal-Suid-mynreg (in die provinsie Mpumalanga) (gesamentlik die "Mynregte"). Die voorgestelde uitbreidings val binne die gebiede wat kragtens hierdie Mynregte gehou word.

Aangesien die twee Mynregte deur verskillende streekkantore van die DMH verleen is, moet 'n OM-, OBP-wysiging- en ABL-aansoek vir elke Mynreg ingedien word – aan die DMH se Streekkantoor in Limpopo vir die Booysendal-Noord-mynreg en aan die DMH se streekkantoor in Mpumalanga vir die Booysendal-Suid-mynreg. Die GWGLA sal aan die Lydenburg-kantoor van die DWS voorgelê word.

Die OM- en OBP-wysigingsaansoeke, ABL- en GWGL-aansoeke sal gelyktydig ingedien word, en 'n geïntegreerde proses van openbare deelname word vir hierdie aansoeke gevolg.
Die Booysendal-Suid-uitbreidingsprojek 2 kan soos volg beskryf word:

Booysendal-Noord (BN): Verdere uitbreiding van die bestaande BN-myn suidwaarts om die Merenskyrif te ontgin. Hierdie aansoek het spesifiek op die volgende bykomende aktiwiteite betrekking en sluit in:

- Ontwikkeling van oppervlakstruktuur in verband met die twee Merensky-ingangstonnels (BSM1 en BSM2) op die plaas Booysendal 43 JT, insluitende werkwinkels, vervoerbande, besoedelingsbeheerdamme, kantore, wateropgaartenks, rioolbehandelingsaanlegte, kleedkamers, ens. Die ingangstonnels is as deel van die artikel 24G-

OM goedgekeur, maar daar is destyds nie vir oppervlakinfrastruktuur voorsiening gemaak nie. Verder is die ligging van die een ingangstonnel effens verskuif van die ligging wat in die artikel 24G-OM goedgekeur is. As gevolg van die voorgestelde byvoeging van oppervlakinfrastruktuur is die voetspooroppervlaktes ook effens groter as die goedgekeurde voetspore.

- Ontwikkeling van ’n noodontsnapportaal op die plaas Booysendal 43 JT;
- Konstruksie van ’n pypleiding vir proseswater en drinkwater tussen die BS1/2-kompleks op die Resterende Gedeelte (RG) van die plaas Buttonshope 51 JT na BN op die plaas Booysendal 43JT;
- Konstruksie van ’n lugkabelvervoerband (LKV) tussen die Resterende Gedeelte van die plaas Buttonshope 51 en BN op die plaas Booysendal 43 JT;
- Konstruksieaktiwiteite binne 100 m van dreineerlyne en binne 500 m van vleilande, insluitende die ingangstonnels, torings van die LKV, pypleidings, bogrondse vervoerbande en toegangspaaie; en
- Insluitende die 11 kVA-kraglyn van BN op die plaas Booysendal 43 JT na BS1/2 op die Resterende Gedeelte van die plaas Buttonshope 51JT in die OBP-wysiging.

Booysendal-Suid (BS): Sommige van die uitbreidingsinfrastruktuur by die BS4 (voorheen Everest)-seksie is as deel van ’n artikel 24G-OM gemagtig. Die OM- en OBP-wysigingsaansoek vir BS4 is spesifiek vir magtiging van die volgende bykomende aktiwiteite:

- Ontwikkeling van ’n terugvulaanleg, insluitende verskeie flodder- en waterpypleidings en ’n paar kampe langs die flodderlyne wat van die bestaande Prosesseeraanleg na die Terugvulaanleg sal loop.

Die voorgestelde uitbreiding sal die verwydering van plantegroei binne ’n Kritieke Biodiversiteitgebied (“KBG”) behels. Die finale spesifikasies en ontwikkelingsvoetspoor van die Booysendal-Suid-uitbreidingsprojek 2 sal gedurende die aansoekproses bevestig word. Groot gedeeltes van die voorgestelde ontwikkelingsgebied is voorheen versteur as gevolg van historiese mynbedrywighede, en party daarvan het self gerehabiliteer.

Omgewingsensitiwiteite

Booysendal is sedert 2010 in die gebied bedrywig en verstaan die omgewing waarin hy werksaam is, sy mense en die omgewingsensitiwiteite rakende sy bedrywighede, insluitende die volgende:

- Die Booysendal-mynbedrywighede is in die Sekoekoeni-sentrum van Endemisme geleë;
- die Groot Dwarsriviervallei is ’n habitat vir die Rooi Data-spesie *Pycna sylvia*;
- verskeie kultuurerfenisterreine, insluitende lewende erfenishulpbronne, word geassosieer met die berg en valleigebiede waarin die groter projek geleë is;
- die Groot Dwarsrivieropvanggebiede se waterkwaliteit is byna ongerep en is habitat vir die *Enteromius motebensis,* wat op die IUCN se Rooi Lys is;
- vleilandgebiede kom voor in die Booysendal-Suid-uitbreidingsprojek 2-gebied;
- lig en geraas word beskou as kwessies wat vir plaaslike inwoners steurend kan wees;
- die Der Brochendam is naby die terrein geleë;
- mynontwikkeling in die gebied het die potensiaal om tot kumulatiewe impakte op biodiversiteit te lei; en
- daar is sekuriteitsuitdagings.

Pycna sylvia is ‘n sonbesiespesie endemies in Suid-Afrika. Eksemplare van hierdie spesie is in 1906 versamel en dit is toe nie weer in die veld gekry nie tot in 2001 “*toe klein, gelokaliseerde populasies ontdek is tydens ‘n fauna-opname vir ’n voorgestelde projek in die Groot Dwarsriviervallei,*

Wetlike konteks

As Booysendal met die Booysendal-Suid-uitbreidingsprojek 2 wil voortgaan, moet hy die volgende Projeklisensies bekom:

- Substantiewe wysiging van die OBP's vir die Mynregte ingevolge die NEMA, soos gewysig, en die 2014 OIB-regulasies;
- OM's ingevolge NEMA en die 2014 OIB-regulasies;
- GWGL ingevolge die NWW;
- ABL ingevolge die Waste Act en die Lys Afvalbestuursaktiwiteite wat 'n Nadelige Uitwerking op die Omgewing het of kan hê (2013); en
- Bykomende permitte soos biodiversiteitspermitte wat dalk nodig sal wees.

Hieronder volg inligting oor die aansoeke wat gelyklopend gedoen sal word, gesteun deur 'n proses van openbare deelname:

OBP-wysigingsaansoeke: Voortspruitend uit wysigings aan NEMA en die Mineral and Petroleum Resources Development Act, No 28 van 2002 ("MPRDA"), moet aansoeke om goedgekeurde OBP's te wysig wat na 8 Desember 2014 ingedien is, deur die DMH goedgekeur word en moet dit ooreenkomstig die 2014 OIB-regulasies gedoen word. Die bevoegde owerhede is die DMH se Limpopo-streekkantoor vir die Booysendal-Noord-mynreg en die DMH se Mpumalanga-streekkantoor vir die Booysendal-Suid-mynreg.

OM-aansoeke: Die voorgestelde ontwikkelings sal waarskynlik lei tot die aktiwiteite hieronder wat gelys word in die Lyskennisgewings vir Omgewingsimpakbepaling wat gepubliseer is by Goewermentskennisgewings 983 tot 985 in Staatskoerant 38282 van 4 Desember 2014, soos gewysig. Dit sal bevestig word voordat die aansoek ingedien word, aangesien die finale spesifikasies nog bepaal word.

Twee OM- en OBP-wysigingsaansoeke sal vir die Booysendal-Suid-mynreg en die Booysendal-Noord-mynreg van die Booysendalbedrywighede ingedien word ingevolge die 2014 OIB-regulasies kragtens NEMA, vir die onderstaande gelyste aktiwiteite:

NEMA-gelyste aktiwiteite	
Aktiwiteit No(s):	**Goewermentskennisgewing No. R983, Lyskennisgewing 1, soos gewysig in GK R327 van 7 April 2017** **Besonderhede van Aktiwiteit(e) waarvoor Basiese Bepaling vereis word**
12	Die ontwikkeling van – Damme of stuwalle, waar die dam of stuwal, insluitende die infrastruktuur en wateroppervlakarea, meer as 100 vierkante meter is; of (ii) infrastruktuur of strukture met 'n fisiese voetspoor van 100 vierkante meter of meer; waar sodanige ontwikkeling plaasvind – (a) in 'n waterloop; (b) voor 'n ontwikkelingsterugsetting; of (c) as daar nie 'n ontwikkelingsterugsetting is nie, binne 32 meter van 'n waterloop, gemeet van die rand van 'n waterloop. *Toepaslike aktiwiteite –* • Gedeeltes van die Booysendal Sentrale Merensky ("BSM") BSM2-terras en verbandhoudende infrastruktuur; • LKV-torings 3, 6 en 7; en • Watertoevoerlynkruisings tussen BS1/2 en BN en proseswater- en flodderlyne tussen BS4-proses- en terugvulaanlegte kruis dreineerlyne.
14	Die ontwikkeling en verbandhoudende bedryf van fasiliteite of infrastruktuur vir die berging, of vir die berging en hantering, van gevaarlike goedere, waar sodanige berging plaasvind in houers met 'n gekombineerde kapasiteit van 80 kubieke meter of meer maar hoogstens 500 kubieke meter. *Toepaslike aktiwiteite –* • By BSM1 en BSM2 die berging van 'n geraamde 150 kubieke meter gevaarlike goedere, insluitende emulsie, diesel, olie, vuil olie en hidrouliese olie.
19	Die invul of storting van enige materiaal van meer as 10 kubieke meter in, of die bagger, uitgrawing, verwydering of verskuiwing van onder andere grond, sand, spoelklippe of rotse van meer as 10 kubieke meter uit 'n waterloop. *Toepaslike aktiwiteite –* • Invulling vir die vestiging van die BSM1- en BSM2-toegangstonnels; en • Uitgrawing en invulling van LKV-torings 3 (op die plaas Booysendal 43 JT), 6 en 7 (op die Restant van die plaas Buttonshope 51 JT).

NEMA-gelyste aktiwiteite	
27	Die verwydering van inheemse plantegroei op 'n gebied van tussen 1 en 20 hektaar. *Toepaslike aktiwiteite –* • Verwydering vir die noodontsnapportaal en infrastruktuurkomponente rondom BSM1 en BSM2, insluitende vergruiseraanleg, vervoerbande, silo's op die plaas Booysendal 43 JT; • Verwydering vir die waterpypleidings van BN na BS1/1 op die plaas Booysendal 43 JT na die Resterende Gedeelte van die plaas Buttonshope 51 JT; en • Verwydering vir die terugvulaanleg en terugvulnooddamme op die plaas Sterkfontein 749 JT, die Resterende Gedeelte van Gedeelte 15 en Gedeeltes 8 en 17 van die plaas De Kafferskraal 53 JT
30	Enige proses of aktiwiteit wat geïdentifiseer is ingevolge artikel 53(1) van die National Environmental Management: Biodiversity Act (No. 10 van 2004) ("NEMBA"). *Toepaslike aktiwiteite –* Al die verbandhoudende mynaktiwiteite sal plaasvind in die Sekoekoeni-sentrum van Endemisme, wat as 'n bedreigde ekosisteem geklassifiseer is.
Aktiwiteit No(s).	**Goewermentskennisgewing No. R984, Lyskennisgewing 2, soos gewysig in GK R325 van 7 April 2017** **Besonderhede van Aktiwiteit(e) waarvoor 'n Omvangbepalingsverslag/ OIB-verslag vereis word**
6	Die ontwikkeling van fasiliteite of infrastruktuur vir enige proses of aktiwiteit waarvoor 'n permit of lisensie of 'n gewysigde permit of lisensie vereis word ingevolge nasionale of provinsiale wetgewing rakende die opwekking of uitlating van emissies, besoedeling of uitvloeisel, uitgesonderd: Aktiwiteite wat geïdentifiseer word in Lyskennisgewing 1 van die 2014 OKB-regulasies; aktiwiteite wat ingesluit is in die lys afvalbestuuraktiwiteite gepubliseer ingevolge artikel 19 van die Waste Act, in welke geval die Waste Act van toepassing is; of die ontwikkeling van fasiliteite of infrastruktuur vir die behandeling van uitvloeisel, afvalwater of riool waar sodanige fasiliteite 'n daaglikse deursetkapasiteit van 2 000 kubieke meter of minder het, soos vervat in die 2014 Lyskennisgewing. *Toepaslike aktiwiteit –* • Besoedelingbeheerdamme ("BBD's") en besinkingsdamme by BSM1 en BSM2 op die plaas Booysendal 43 JT; • Rioolbehandelingsaanlegte by BSM1 en BSM2, met behandelde uitvloeisel wat in die omgewing uitgelaat moet word teen 'n deursettempo van 100 m^3 /dag op die plaas Booysendal 43 JT; en • Noodterugvuldamme en flodderpypleidings (artikel 21(g)-watergebruik) op BS (tussen die prosesaanleg, terugvulaanleg en ondergrondse werkplekke wat teruggevul moet word) op die plaas Sterkfontein 749 JT, en die Resterende Gedeelte van Gedeelte 15 en Gedeeltes 8 en 17 van die plaas De Kafferskraal 53 JT.
7	Die ontwikkeling en verbandhoudende bedryf van fasiliteite of infrastruktuur vir die grootmaatvervoer van gevaarlike goedere – In vloeistofvorm, buite 'n nywerheidskompleks, met gebruik van pypleidings van meer as 1 000 meter in lengte, met 'n deursetkapasiteit van meer as 50 kubieke meter per dag. *Toepaslike aktiwiteit e–* • Uitvloeisel by BSM1 en BSM2 teen 'n tempo van 100 m^3 per dag op die plaas Booysendal 43 JT; en • Oordrag van uitskot van die prosesaanleg op BS4 na die terugvulaanleg en ondergrondse werkplekke van langer as 1 km met 'n tempo van 250 m^3 per dag op die plaas Sterkfontein 749 JT en die Resterende Gedeelte van Gedeelte 15 en Gedeeltes 8 en 17 van die plaas De Kafferskraal 53 JT.
17	Enige aktiwiteit, insluitende die bedryf van aktiwiteite waarvoor 'n mynreg vereis word soos beoog in artikel 22 van die MPRDA, insluitende verbandhoudende infrastruktuur en grondwerke wat regstreeks verband hou met die ontginning van 'n minerale hulpbron, insluitende aktiwiteite waarvoor 'n vrystelling uitgereik is ingevolge artikel 106 van die MPRDA. *Toepaslike aktiwiteit –* • Noodontsnapportaal op BS1/2
19	Die verwydering en beskikking oor minerale ingevolge artikel 20 van die MPRDA, insluitende – (b) die primêre prosessering van minerale hulpbronne, insluitende ontginning, ekstraksie, klassifisering, konsentrering, vergruising, sifting of was. *Toepaslike aktiwiteit –* • Vergruisingsaanleg tussen BSM1 en BSM2 wat 'n kapasiteit van 50 t het op die plaas Booysendal 43 JT.
Aktiwiteit No(s).	**Goewermentskennisgewing No. R985, Lyskennisgewing 1, soos gewysig in GK R324 van 7 April 2017** **Besonderhede van aktiwiteit(e) waarvoor 'n Basiese Assesseringsverslag vereis word**
4	Die ontwikkeling van 'n pad breër as 4 meter met 'n reserwe van minder as 13,5 meter f) Mpumalanga Buite stedelike gebiede: (ee) Kritieke Biodiversiteitgebiede ("KBG's") soos geïdentifiseer in stelselmatige biodiversiteitplanne wat deur die bevoegde owerheid of in bioregionale planne aanvaar is. *Toepaslike aktiwiteit –* • BS is geleë in 'n kritieke biodiversiteitgebied volgens die Terrestriële Assessering (2014) van Mpumalanga se Agentskap vir Toerisme en Parke ("MTPA Terrestriële Assessering") en die Sekoekoeni-bergland is gelys as 'n bedreigde ekosisteem ingevolge Regulasie GK 1002 van 9 Desember 2011 uitgevaardig kragtens artikel 52 van NEMBA ("GK 1002"). • Permanente en tydelike toegangspaaie na die LKV sal 4 m breed wees. Die toegangspaaie na BSM1 en BSM2 sal 6 m breed wees op die plase Booysendal 43 JT en Buttonshope 51 JT; en • Permanente toegangspaaie na die terugvulaanleg 4 m breed op die plaas Sterkfontein 749 JT.

	NEMA-gelyste aktiwiteite
8	Die ontwikkeling en verbandhoudende bedryf van bogrondse kabelspore en tandratspore e) Limpopo en f) Mpumalanga i. Alle gebiede buite stedelike gebiede *Toepaslike aktiwiteit –* • LKV van BS1/2 na BN op die plase Booysendal 43 JT en Buttonshope 51 JT.
12	Die verwydering van inheemse plantegroei op 'n oppervlak van 300 vierkante meter of meer, behalwe waar sodanige verwydering van inheemse plantegroei nodig is vir instandhoudingsdoeleindes ooreenkomstig 'n instandhoudingsbestuursplan. e) Limpopo en f) Mpumalanga ii. Binne KBG's wat in bioregionale planne geïdentifiseer is. *Toepaslike aktiwiteit –* • BS is geleë in 'n KBG volgens die MTPA Terrestriële Assessering en die Sekoekoeni-bergland is gelys as 'n bedreigde ekosisteem ingevolge GK 1002. • BS noodontsnapportaal, silo's en oppervlakinfrastruktuur by BSM1 en BSM2 (insluitende vervoerbande en toegangspaaie) beslaan meer as 300 vierkante meter. • BS4 – plantegroeiverwydering vir die pypleidings en terugvulaanleg beslaan meer as 300 vierkante meter.
14	Die ontwikkeling van – (i) damme of stuwalle, waar die dam of stuwal, insluitende infrastruktuur en wateroppervlakarea, meer as 10 vierkante meter beslaan; of (ii) infrastruktuur of strukture met 'n fisiese voetspoor van 10 vierkante meter of meer. Waar sodanige ontwikkeling plaasvind – (a) in 'n waterloop; (b) voor 'n ontwikkelingsterugsetting; of (c) as daar nie 'n ontwikkelingsterugsetting is nie, binne 32 meter van 'n waterloop, gemeet van die kant van 'n waterloop. e). Limpopo en f) Mpumalanga i. Buite stedelike gebiede, in: (ee) KBG of ekosisteemdiensgebiede soos geïdentifiseer in stelselmatige biodiversiteitplanne wat deur die bevoegde owerheid of in bioregionale planne aanvaar is. *Toepaslike aktiwiteit –* • Met betrekking tot die Booysendal-Noord-mynreg – - LKV-torings 3, 6 en 7 binne waterlope groter as 10 vierkante meter elk; - Vervoerbande, paaie tussen BSM1 en BSM2 (om toegang tot die LKV te bied), permanente en tydelike toegangspaaie van 4 meter breed na die LKV sal oor dreineerlyne beweeg in verskeie gebiede groter as 10 vierkante meter. • Pypleidingwaterloopkruisings tussen BS1/2 en BN kruis dreineringslyne met betrekking tot die Booysendal-Suid-Mynreg; en • BS4-proseswater- en flodderlyne tussen BS4-terugvulaanlegte kruis waterlope op verskeie plekke.

Die OM- en OBP-wysigingsaansoeke vir die Booysendal-Suid-uitbreidingsprojek 2 behels 'n omvangbepalingsfase en 'n omgewingsimpakbepalingsfase ("OIB"). Tydens omvangbepaling word kwessies geïdentifiseer vir ondersoek tydens die OIB-fase. Hierdie inligting word byeengebring in 'n Konsultasie-omvangverslag, wat aan die publiek beskikbaar gestel sal word vir kommentaar. Die finale Omvangverslae sal aan die DMH se Mpumalanga-streekkantoor en die DMH se Limpopo-streekkantoor voorgelê word vir goedkeuring sodat die OIB-fase kan begin.

Tydens die OIB-fase word potensiële impakte bepaal en word bestuursmaatreëls voorgestel om negatiewe impakte te versag en positiewe impakte te vergroot. Die konsultasie-OIB/OBP's, tesame met die konsep-ABL-verslag en die GWGLA, sal aan die publiek beskikbaar gestel word vir kommentaar en sal aan die DMH en die DWS voorgelê word vir besluitneming.

Die OIB sal ook die resultate van 'n aantal spesialisassesserings bevat, insluitende studies oor:

- Akwatiese biodiversiteit en oewerplantegroei
- Vleilande
- Terrestriële flora en fauna
- Grond, grondgebruik en grondkapasiteit
- Hidrologie
- Hidrogeologie
- Kultuurerfenis
- Visuele impak
- Geraas
- Luggehalte en kweekhuisgasassessering
- Verkeersimpakassessering

Die inligting wat deur die spesialisassesserings verkry word, sal gebruik word as 'n basis vir die OM- en OBP-wysigingsaansoek, die ABL-aansoek en GWGLA.

GWGL:

'n GWGLA sal ingedien word ingevolge die NWW en regulasies oor die prosedurele vereistes vir watergebruiklisensie-aansoeke en appèlle:

Artikel 21-watergebruik	Beskrywing van die watergebruike	
Artikel 21(a): neem van water uit 'n waterhulpbron	• Geassosieer met ontwatering by BSM1, BSM2, BS1/2 en BS4	
Artikel 21(b): opgaar van water	• Drinkwater- en brandwateropgaartenks by die BS1/2, BSM1 en BSM2 • Opgaar van drinkwater en aanvulwater op BS	
Artikel 21(c): belemmering of wegkeer van die vloei van water in 'n waterloop Artikel 21 (i): verandering van die bedding, walle, loop of kenmerke van 'n waterloop.	• Ses van die LKV-torings is geleë aan die rand van waterlope (21(i)) en een in 'n vleiland (21(c) en (i)) waar uitgrawings gedoen sal word vir die basis van die torings. • Dreineerlynkruisings vir die hooftoegangspad, insluitende die Groot Dwarsrivierkruising. Duikers sal aangebring word (21(c) en (i)). • Hooftoegangspad-vleilandkruisings (21(c) en (i)). • Verlegging van twee strome stroomop van die portaalkompleks op die Restant van die plaas Buttonshope (21(c) en (i)). • Verskeie interne toegangspadkruisings wat van duikers voorsien sal word (21(c) en (i)) op BN en BS. • Water- en proseswaterpypleidings kruis dreineerlyne op BN en BS (21(c) en (i)).	
Artikel 21(f): storting van afval of waterbevattende afval in 'n waterhulpbron deur middel van 'n pyp kanaal, riool, see-uitloop of ander geleiding	• Storting van water uit die BSM1- en BSM2-rioolwaterbehandelingsaanlegte in die omgewing.	
Artikel 21(g): beskikking oor afval op 'n wyse wat nadelig op 'n waterhulpbron kan inwerk	• 14 000 m³ BBD BS1/2 • BBD's by die BSM1 en BSM2 • Rioolbehandelingsaanlegte vir BSM1 en BSM2 • Myn-BBD op BS • Proseswatertenk by BS1/2 • BBD BS • Ertsvoorraadstapel op BS4 • Ru-ertsvoorraadstapel op BS1/2 • Herbewerking van uitskot op BS • Terugvulling van uitskot in die ondergrondse werkplekke op BS	• RWD op BS • 2 aanleg-BBD's op BS • Ericksondam by die noordelike skuinstonnel (343 m³) op BS • Vier besinkdamme by die noordelike skuinstonnel (350 m³ elk) op BS • Besinkdam by die noordelike skuinstonnel (286 m³) op BS • Rioolbehandelingsaanlegte vir BSM1 en BSM2 • Drie noodterugvuldamme langs die terugvullyn op BS
Artikel 21(j): verwydering, storting of wegdoening van water wat ondergronds gevind is, indien dit nodig is vir die doeltreffende voortsetting van 'n bedrywigheid of vir die veiligheid van mense	• Verwydering van grondwater uit die ondergrondse werkplekke op BS1/2, BSM1, BSM2 en BS4	

ABL

'n ABL-aansoek sal ingedien word ingevolge die Waste Act en die Lys Afvalbestuursaktiwiteite wat 'n Nadelige Uitwerking op die Omgewing het of waarskynlik sal hê (2013):

Afvalbestuursaktiwiteite	
Konstruksie van 'n fasiliteit vir 'n afvalbestuursaktiwiteit in Kategorie B gelys	Kategorie B, Aktiwiteit 10
Die oprigting van 'n residuvoorraadstapel of residustorting voortspruitend uit aktiwiteite waarvoor 'n mynreg vereis word ingevolge die Mineral and Petroleum Resources Development Act (28 van 2002)	Kategorie B, Aktiwiteit 11

Betrokkenheid van belanghebbendes

Die proses van openbare deelname, wat deel sal uitmaak van die geïntegreerde OM- en OBP-wysigingsaansoeke, ABL-aansoek en GWGLA-proses, word gedoen ingevolge Hoofstuk 6 van NEMA, wat duidelike riglyne vir die betrokkenheid van belanghebbendes bevat. Die proses van betrokkenheid van belanghebbendes bied aan belanghebbendes 'n geleentheid om ingelig te word oor die Booysendal-Suid-uitbreidingsprojek 2, om kwellings te opper en om voorstelle vir groter projekvoordele te maak. Die Projekspan sal tersaaklike kwessies en voorstelle oorweeg tydens die proses van geïntegreerde omgewingsmagtiging.

Hoe kan u betrokke raak?

Belanghebbendes word genooi om met Amec Foster Wheeler (Pty) Ltd (Wood Groep) te skakel ten einde as 'n B&GP te registreer vir die geïntegreerde OM- en OBP-wysigingsaansoeke, ABL-aansoek en GWBLA-proses en om

kommentaar te lewer op enige van die verslae wat as deel daarvan opgestel gaan word. U kommentaar gedurende die proses sal in ’n Kommentaar- en Reaksieverslag opgeneem word, wat deel sal wees van die verslae wat aan die owerhede voorgelê sal word. Die bydraes van belanghebbendes uit alle sektore van die samelewing sal ingeligte besluitneming verseker. U word genooi om vryelik deel te neem en enige kommentaar of inligting wat na u mening nuttig kan wees vir die proses, skriftelik voor te lê. Om te verseker dat u as ’n B&GP geregistreer word en dat u die jongste projekinligting ontvang, vul asb die aangehegte registrasie- en kommentaarvorm in.

Beskikbaarheid van die Konsultasie-omvangverslae vir u kennisname

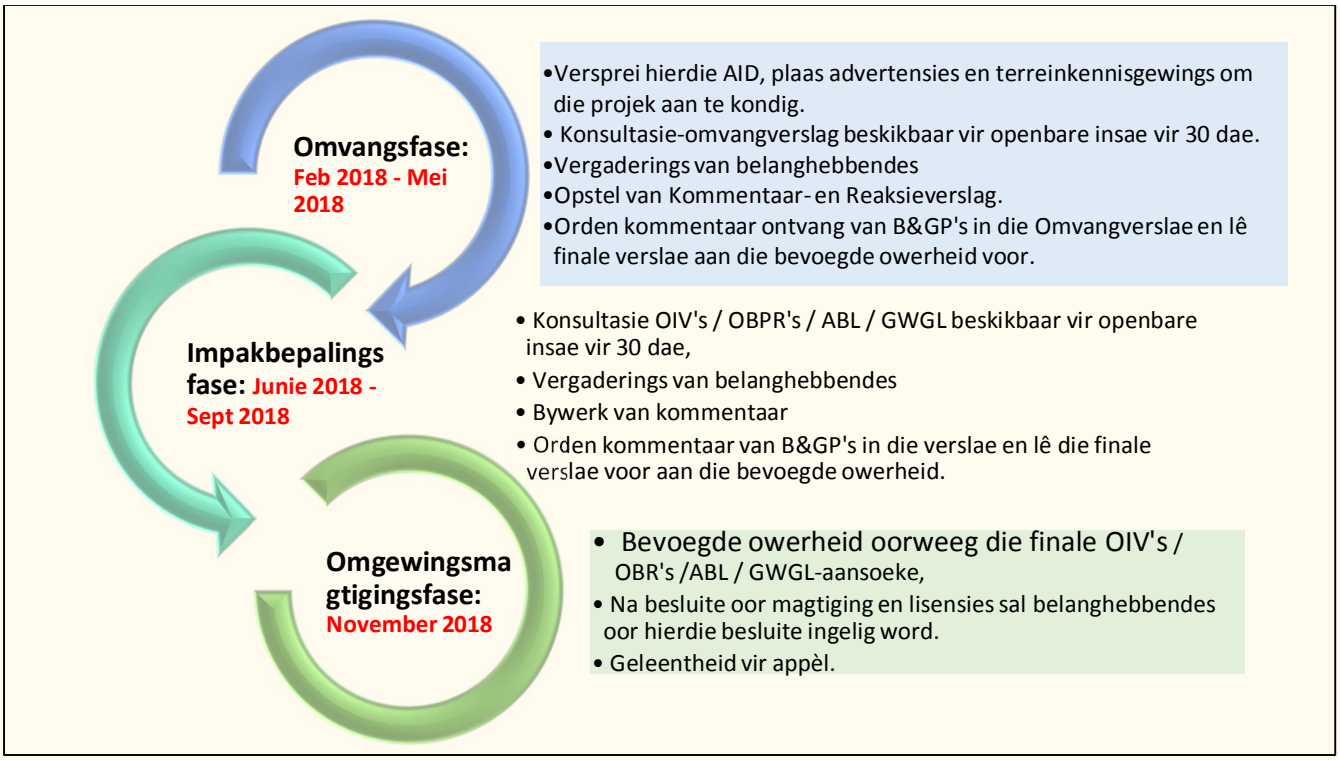
Die Konsultasie-omvangverslae is vir ’n tydperk van 30 dae, van 28 Februarie 2018 tot 30 Maart 2018, beskikbaar vir openbare insae op die openbare plekke wat hieronder genoem word.

Gedrukte eksemplare		
Lydenburg Openbare Biblioteek, Viljoenstraat 41, Lydenburg (Tel: 013 235 3700)		
Maartenshoop-polisiestasie, Plaas Naauwpoort (Tel: 013 235 4041)		
Elektroniese eksemplare		
Aflaai van webwerf	www.amecfw.com/booysendal	
CD-eksemplaar	Skakel asb met Anelle Lötter	082 804 5890

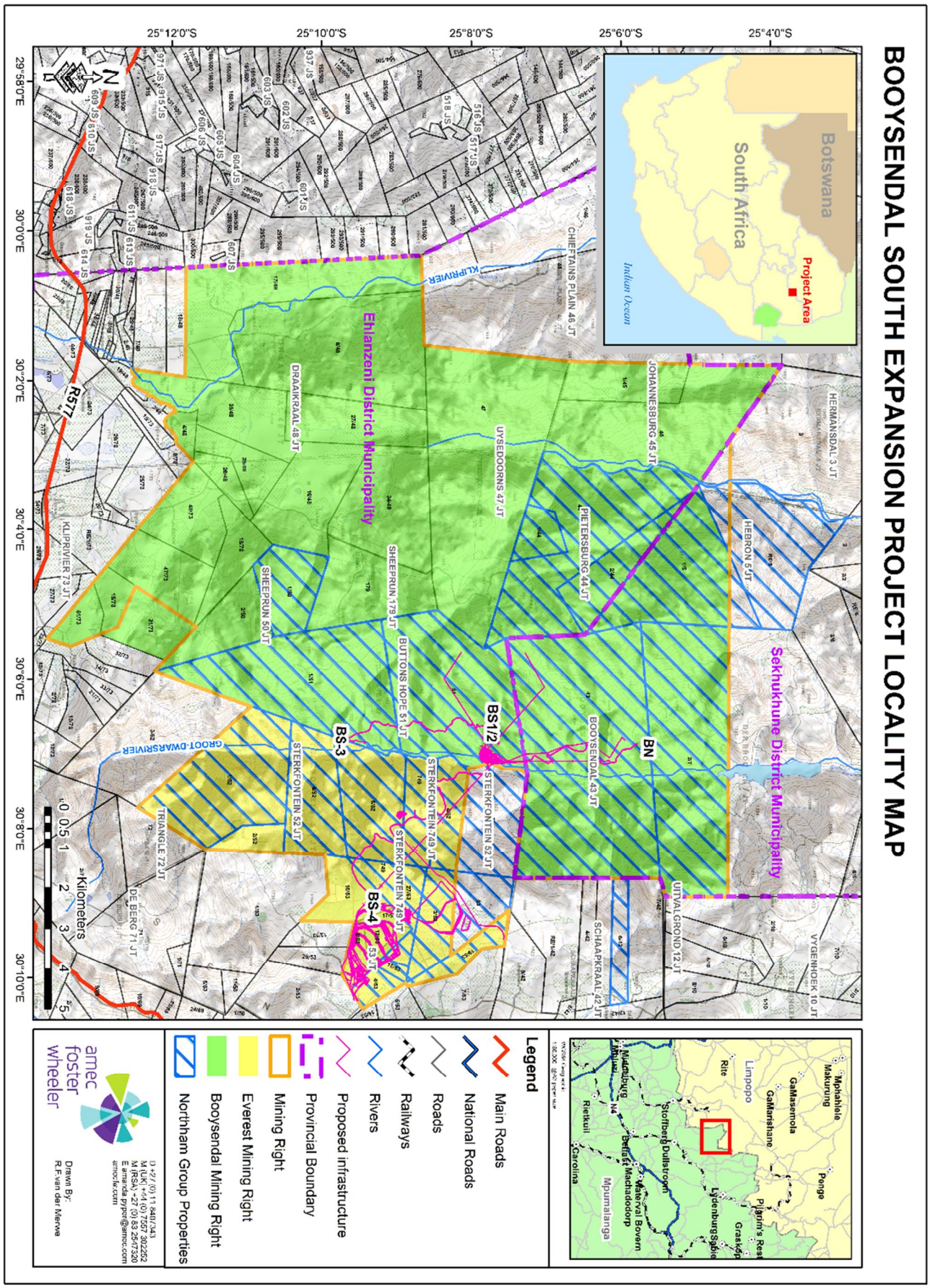
U word aangemoedig om op een van die volgende maniere kommentaar op die Konsultasie-omvangverslag te lewer:

- Skryf ’n brief, maak skriftelike voorleggings;
- Stuur ’n e-pos of faks, of skakel die praktisyn vir openbare deelname telefonies; of
- Woon vergaderings vir belanghebbendes by, wat gedurende die oorweging van die Konsultasie-omvangverslag gehou sal word. Die doel van die vergaderings vir belanghebbendes sal wees om die inhoud van die Konsultasie-omvangverslag te bespreek.

Die diagram hieronder toon die fases en skets die stappe wat in elke fase gedoen sal word en waar belanghebbendes kan bydra.



Figuur 1: Diagram toon die mylpale van die geïntegreerde proses wat gevolg sal word



Figuur 2: Die verdeling van die Booysendalbedrywighede

Booysendal-Suid-uitbreidingsprojek 2

REGISTRASIE- EN KOMMENTAARVORM

Vul asb hierdie vorm in en stuur dit aan Amec Foster Wheeler (Wood Groep) om te verseker dat u as 'n Belanghebbende en Geaffekteerde Party geregistreer word. Bykomende blaaie kan by die registrasievorm aangeheg word indien nodig.

Persoonlike inligting		
Voornaam en van:		
Dui asb aan of u as ôn Gemeenskap / Organisasie / Plaas of Besigheid registreer, en meld die naam:		
Fisiese adres:		
Telefoon:	Sel:	
E-pos:		
Algemene belang by die projek		
Het u enige spesifieke kommentaar op die voorgestelde uitbreidingsprojek?		
As u weet van iemand wat oor die projek ingelig moet word, verskaf asb hulle kontakbesonderhede:		
Voornaam en van:		
Gemeenskap / Organisasie / Plaas:		
Adres:		
	Telefoon:	
	Faks:	
	Sel:	
	E-pos:	
Teken asb die volgende kommentaar aan wat ek op die Konsultasie-omvangverslae lewer:		

Vul asb hierdie vorm in en stuur dit aan:

Anelle Lötter vir Amec Foster Wheeler (Pty) Ltd (Wood Groep), E-pos: anelle@jaws.co.za

APPENDIX D

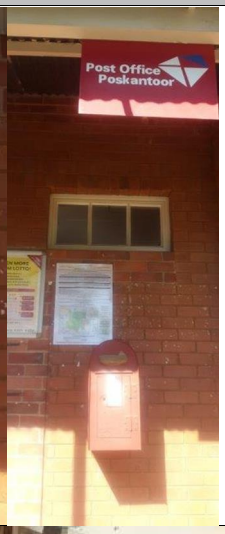
SITE NOTICES

Booysendal South Expansion Project 2

Integrated process for environmental authorisations (EAs), amendments of environmental management programmes (EMPs), Waste Management License (WML) and Integrated Water Use Licence (IWUL) for Booysendal Mine's proposed expansion in terms of the National Environmental Management Act (107 of 1998), National Environmental Management: Waste Act (59 of 2008) and National Water Act (36 of 1998)

Placement of site notices

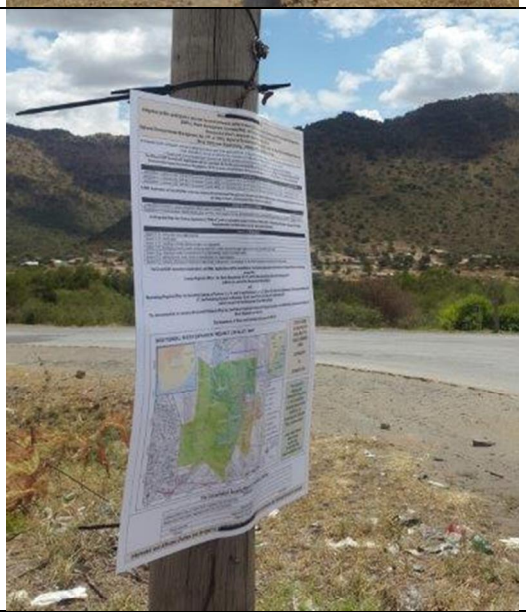
16 February 2018

	Description	Photo
1.	Dullstroom Post Office, cnr Gunning and Lesedi Ave 25° 25' 0.0" S 30° 6' 23.8" E	 
2.	Eendracht Shop at Draaikraal on the R577 25° 13' 14.4" S 30° 2' 7.8" E	
3.	T-junction on the R577 to Roossenekal and Mashishing 25° 14' 22.66" S 30° 8' 25.41" E	

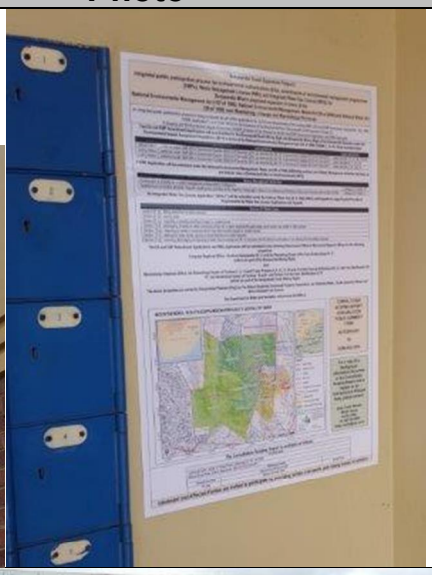
	Description	Photo
4.	Four-way crossing on the R577 25° 10' 39.05" S 30° 11' 49.39" E (four site notices were placed at the four-way crossing ï no 4, 5, 6 and 7)	
5.	Four-way crossing on the R577 25° 10' 39.05" S 30° 11' 49.39" E	
6.	Four-way crossing on the R577 25° 10' 39.05" S 30° 11' 49.39" E	

	Description	Photo
6.	Four-way crossing on the R577 25° 10' 39.05" S 30° 11' 49.39" E	
7.	On route to the Booysendal South mine entrance on the Boschfontein road 25° 9' 40.3" S 30° 10' 32.9" E	
8.	Four-way stop street on the R577 25° 7' 53.2" S 30° 14' 40.1" E	

	Description	Photo
9.	T-junction close to Houthuis Pub ï on route between Mashishing and Sekhukhune 25° 9' 40.3" S 30° 10' 32.9" E	
10.	At the Maartenshoop SAPS offices ï community services centre 24° 59' 27.1" S 30° 14' 3.2" E	
11.	Close to the entrance of Booysendal Mine 24° 56' 17.5" S 30° 7' 51.8" E	

	Description	Photo
12.	On the R577, on route to Kennedyôs Vale 24° 54' 74.45" S 30° 6' 38.36" E	
13.	On the R577 at the entrance to the Kalkfontein community, towards the R555 24° 53' 23.7" S 30° 4' 26.3" E	
14.	At the T-junction with the R555 and R577 on route to Steelpoort 24° 52' 18.6" S 30° 2' 41.4" E	

	Description	Photo
15.	Steelpoort Post Office 24° 43' 54.4" S 30° 12' 20.8" E	
16.	At the T-junction with the R37 from Steelpoort towards Polokwane or Mashishing 24° 48' 37.8" S 30° 20' 41.3" E (Two site notices were placed, no 16 and 17)	
17.	At the T-junction with the R37 from Steelpoort towards Polokwane or Mashishing 24° 48' 37.8" S 30° 20' 41.3" E	

	Description	Photo
18.	Lydenburg Post Office 25° 5' 41.0" S 30° 27' 10.7" E	 
20.	On the R540 ï turn-off from Mashishing to Dullstrooml 25°07'36.52"S 30°24'49.82"E	

APPENDIX E

COMMENTS AND RESPONSES REPORT

(To be included with the Final Scoping Report)

APPENDIX F

ATTENDANCE REGISTERS AND PRESENTATIONS DELIVERED AT STAKEHOLDER MEETINGS

(To be included with the Final Scoping Report)