

# Royal Bafokeng Resources Styldrift Mine Complex – Environmental Authorisation for the Proposed New Styldrift Tailings Storage Facility and Associated Infrastructure, North West Province

## Final Scoping Report

Report Prepared for

**Royal Bafokeng Platinum (Pty) Ltd**

Report Number 470328/Final Scoping Report



DMR Reference Number: NW30/5/1/2/3/2/1/(312) EM

NWREAD Reference Number: NWP/EIA/36/2014

Report Prepared by

 **srk** consulting

January 2015

# Royal Bafokeng Resources Styldrift Mine Complex – Environmental Authorisation for the Proposed New Styldrift Tailings Storage Facility and Associated Infrastructure, North West Province

## Final Scoping Report

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#### SRK Project Number 470328/Final Scoping Report

January 2015

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## Executive Summary

Bafokeng Rasimone Platinum Mine (BRPM) is situated 40 kilometres (km) north-west of Rustenburg in the North West Province. The BRPM Styldrift Merensky Phase 1 Mine (hereafter referred to as the Styldrift Mine Complex (SMC)) is situated on the farm Styldrift 90 JQ, located approximately 7 km from the existing BRPM Concentrator Plant and 6 km south of Sun City along the R 565.

The establishment of the SMC is an extension and expansion of the existing BRPM Joint Venture (JV) between Rustenburg Platinum Mines Limited (RPM) and Royal Bafokeng Resources (RBR). Royal Bafokeng Platinum Ltd (RBPlat) Management Services (Pty) Ltd, is the management services company for the BRPM JV.

The farm Styldrift 90 JQ has a common boundary with the farm Boschkoppie 104 JQ to the south and is adjacent to the farm Frischgewaagd 96 JQ to the west. The major natural feature on the northern boundary is the Pilanesberg complex. The farm Styldrift 90 JQ is situated on land held in trust by the State on behalf of the Royal Bafokeng Nation (RBN). The closest neighbouring communities and villages are Chaneng, Rasimone, Mafenya and Robega.

The SMC has an existing Environmental Management Programme (EMPR), issued in March 2008, for its Styldrift mining operation (Reference Number: NW30/5/1/2/3/2/1/(312) EM) under the Minerals and Petroleum Resources Development Act (Act No. 28 of 2002) (MPRDA) and an existing Water Use Licence (WUL), Licence Number: 26031507, issued under the National Water Act (Act No. 36 of 1998) (NWA). The approved MPRDA EMPR (2008) allowed for:

- A new shaft complex (known as SMC) on the farm Styldrift 90 JQ and it is anticipated that it will produce approximately 230 000 tons per month (tpm) from reefs underlying the farms Styldrift 90 JQ and Frischgewaagd 96 JQ;
- The ore mined from these reefs will be conveyed from the SMC to the existing BRPM Concentrator Plant;
- The existing BRPM Concentrator Plant will be modified to accommodate the additional ore produced at the SMC;

The extension of the existing BRPM Tailings Storage Facility (TSF) located on the farm Boschkoppie 104 JQ onto the farm Uitvalgrond 105 JQ (footprint size of approximately 330 ha) to accommodate additional tailings produced by the modified BRPM Concentrator Plant.

## Description of the Proposed Development

The surface lease agreements for the extension of the existing BRPM TSF onto the Farm Uitvalgrond 105 JQ have not been successful to date. This necessitated RBPlat to investigate alternative areas for the extension of the proposed TSF to accommodate the additional tailings produced by the modified BRPM Concentrator Plant.

It is therefore proposed that the existing BRPM TSF be extended within Portion 1 of the Farm Boschkoppie 104 JQ. The following infrastructure is proposed to be constructed and operated:

- Extension of the existing TSF covering an additional area of approximately 150 ha;
- Return Water Dams (RWDs) associated with the extended TSF covering an area of approximately 35 ha;
- Overland pipelines (approximately 3 km in length) for the transportation of tailings-containing water from the modified BRPM Concentrator Plant to the extended TSF;
- Overland pipelines for the transportation of return water between the extended TSF and the RWDs;
- Overland pipelines (approximately 3 km in length) for the transportation of return water between

the RWDs and the modified BRPM Concentrator Plant;

- Booster pump stations;
- Water management infrastructure and systems associated with this project;
- Service roads will be built along all pipelines and around the extended TSF in order for the mine to be able to service and maintain the proposed infrastructure;
- Relocation of a power line to accommodate the extended TSF (a separate Basic Assessment application has been submitted to National Department of Environmental Affairs (DEA) (DEA reference number 14/12/16/3/3/2/648);
- Development of a topsoil stockpile with a footprint area of approximately 12 ha;
- River crossings associated with pipelines.

## **Who is Conducting the Application for Environmental Authorisation?**

Dr Laetitia Coetser of SRK Consulting (SA) (Pty) Ltd (SRK) has been appointed as the independent Environmental Assessment Practitioner (EAP) by RBPlat to undertake the application for Environmental Authorisation (EA) in terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA) Environmental Impact Assessment (EIA) Regulations (GN R543 of 18 June 2010).

## **Who will evaluate the Final Scoping Report?**

The application for EA was lodged with the competent authority, the North West Department of Rural, Environmental and Agricultural Development (NWREAD), on 19 August 2014 and accepted on 27 August 2014. An Interested and Affected Parties (I&APs) Register was developed registered I&APs have been notified of the proposed development.

The Draft Scoping Report (DSR) including the Plan of Study (POS) for EIA, dated September 2014, was made available to the Registered I&APs and the Final Scoping Report (FSR) including the POS for EIA, dated January 2015 will now be made available to the Registered I&APs for a 21-day commenting period. The FSR are being submitted to the NWREAD for decision making purposes in terms of Regulation 30 of GN R 543 of 18 June 2010.

## **Motivation for the Proposed Project**

The Merensky reserves at the existing BRPM South and North shafts are now being depleted, with the South Shaft reducing Merensky production as from 2012 and North Shaft in 2018. The SMC will initially supplement and eventually replace production of these shafts.

The existing BRPM TSF does not have sufficient capacity to accommodate the additional tailings produced by the modified BRPM Concentrator Plant. In order for the SMC to achieve its objective of initially supplementing, and eventually replacing, the production at BRPM, a new (or expansion to the existing) TSF is required to accommodate the additional tailings.

Approval in terms of the MPRDA was granted for the SMC to modify the existing BRPM Concentrator and to extend the existing BRPM TSF onto Uitvalgrond 105 JQ (Styldrift EIA/EMPR, 2008). However, securing surface lease agreements for Uitvalgrond 105 JQ has proved problematic and therefore alternative locations for the TSF must be investigated.

The complete SMC project will contribute to the National and North West Provincial economy in terms of an increase in Gross Domestic Product (GDP) due to the R 11.3 billion capital expenditure. The TSF will be required to realize the GDP. The new TSF alone will contribute approximately R276 000 000 to the GDP of the North West Province.

The GDP of the Bojanala Platinum District (BPD) Municipality could increase by approximately 4.32 %, while that of the Province could benefit by approximately 1.35 %. Although the project will have a high positive impact on the economy for a minimum of 25 years, the dependence of the province on a single district (BPD) for at least 31 % of its economic activity necessitates greater diversification at a provincial level.

Approximately 155 employment opportunities be created in the development phase of the TSF which will be made up of the following:

- 35 Skilled;
- 120 Unskilled.

Approximately 25 employment opportunities be created during the operational phase of the TSF which will be made up of the following:

- 5 Skilled;
- 20 Unskilled.

## **Environmental Assessment Process**

### **Approach to the Environmental Impact Assessment (EIA)**

An EIA seeks to identify the environmental consequences of a proposed project from the beginning, and helps to ensure that the project, over its life cycle, will be environmentally acceptable, and integrated into the surrounding environment in a sustainable way.

Two parallel processes are followed during the Scoping Phase: an Environmental Technical process and a Stakeholder Engagement Process.

### **Stakeholder Engagement Activities Undertaken to Date**

Activities that have been undertaken for the stakeholder engagement process during the scoping phase are:

- Development of a stakeholder database:
  - The stakeholder database comprises of a vast variety of stakeholders identified from previous projects in the area and through the initial registering process of this project.
- Preparation of documentation for notification of stakeholders Background Information Document (BID), invitation letters, media advertisement and site notices and distribution thereof;
- Public notification;
- Initial public comment period and distribution of the BID;
- Public meeting; and
- Collation of comments received into a stakeholder engagement report (Appendix D).

The Draft Scoping Report (DSR) has been made available for a 40 day commenting period, whereby Stakeholders and Interested and Affected Parties (I&APs) will have the opportunity to submit their comments and concerns.

The DSR will be updated, taking these comments into account and the FSR made available for comment for an additional 21 days. Any further comments received at this stage will be addressed in the Impact Assessment Phase of this project.

## Anticipated Potential Impacts and Specialist studies to be conducted

Issues and impacts for the Scoping Phase were identified through focus group discussions with key stakeholder groups, during the public open days as part of the announcement and scoping phase of the project, the authorities and potential directly affected landowners as well as comments received in writing and telephonically from stakeholders, and the project team's understanding of the project and previous experience on projects of similar nature.

The anticipated environmental impacts in terms of the project component areas are presented in Table ES1 below. As the proposed project is an extension of the TSF which has already been assessed in detail, it is not expected that the proposed extension will have material environmental and social impacts that cannot readily be mitigated and managed in accordance with the development and operation of the existing TSF. However, in accordance with the Regulations, the potential cumulative impacts associated with the proposed project will be addressed during the Impact Assessment Phase. Measures to minimise the cumulative impacts will be identified and included in the NEMA Environmental Management Programme (EMPr) compiled during the Impact Assessment Phase for the proposed project.

**Table ES1: Summary of Anticipated Environmental and Social Impacts**

Element of Environment	Potential Impact Descriptions
Socio-Economic	The new infrastructure has a positive impact in the form of additional temporary and permanent employment opportunities. Negative social-economic impacts through job losses resulting from the closure of the SMC at the end of the life of mine. Potential health and safety impacts of surrounding community members as a result of increased traffic and waste generation. Potential visual impacts on surrounding sensitive receptors including neighbouring communities, tourist destinations.
Topography	The topography of the site will be altered as a result of the construction of the TSF and other infrastructure. Temporary modifications to topography as a result of pipelines. Permanent modifications to topography as a result of the TSF.
Groundwater	Potential modifications to groundwater flow. Potential groundwater contamination. Potential residual impacts after closure.
Surface water	Potential surface water contamination. Potential silt generation impact of surface water. Potential discharge of water to natural environment. Potential decrease of quantity of surface water runoff to surrounding minor catchments. Potential degradation of wetlands.
Air Quality	Potential for dust generation during the construction phase of the new equipment and infrastructure. Potential dust and fume emissions associated with vehicle movement with respect to site preparation and driving to and from site. Potential for dust to be generated from the TSF, and the gravel surfaced roads. These emissions may affect the local residents and the workers on the project and may have a wider influence on the regional air quality.
Element of Environment	Potential Impact Descriptions
Noise and Vibration	Potential for construction activity at the project site to result in some localised noise. Potential for ambient noise to be generated by the booster pump stations during operation.
Visual	Facilities would be expected to be located outside of direct line of sight, as far as practical, i.e. not on topographical highs if possible. However, recognizing that TSF's are elevated structures and the area is generally quite flat some visual impact will occur to some community members and some screening of the facilities may be required.
Soils/Land Use/Land Capability	Potential loss of soil resource. Potential loss of land capability. Potential for construction infrastructure to lead to a loss of resource and change in land capability

	<p>due to hydrocarbon and other contamination.</p> <p>Potential change in land use.</p> <p>Potential soil erosion from run-off passing over disturbed areas and soil stockpiles.</p> <p>Potential soil contamination due to spillage of oil, fuel and chemicals.</p> <p>Existing land capability will be disturbed.</p>
Biodiversity	<p>Potential disturbance of vegetation and fauna.</p> <p>Potential for roads and pipelines to contribute to fragmentation of local biodiversity, however the indigenous flora and fauna has already been disturbed by human and mining activities.</p> <p>Potential vibration, as a result of the proposed development, and will be assessed and the impact on the biodiversity in the area should be determined.</p>
Heritage	Potential disturbance of areas of heritage resources of significance during the construction phase.

The identified potential impacts will be assessed and confirmed through the undertaking of the various specialist investigations during the Impact Assessment phase of the study (refer to Section 11.12) and appropriate management measures will be assigned and included in the Impact Assessment Phase of the project:

- Air quality assessment;
- Biodiversity assessment:
  - Aquatic;
  - Faunal;
  - Floral;
  - Wetlands
- Heritage, Archaeological and Paleontological assessment;
- Noise impact assessment;
- Sensitive landscapes assessment;
- Soils; Land use and land capability;
- Vibration impact statement;
- Hydrology (surface water and groundwater);
- Closure/rehabilitation plan.

## Conclusion

This concludes the Final Scoping Report. The report has presented:

- The environmental process undertaken so far;
- A brief description of the proposed amendment project;
- A baseline description of the current environment;
- The issues and concerns raised by stakeholders during the scoping phase;
- The potential environmental and social impacts identified to date and the ability to be mitigated and managed, as this informs the scope of work for specialists studies;
- The alternatives being considered by the project team; and
- The recommended environmental process to be followed to develop the Impact Assessment Phase.

No fatal flaws have been identified during the Scoping Phase of this project. There are however several anticipated impacts that will require a more detailed investigation, assessment and potential for mitigation and management. As the proposed project is an extension of the TSF which has already been assessed in detail, it is not expected that the proposed extension will have material environmental and social impacts that cannot readily be mitigated and managed in accordance with the development and operation of the existing TSF. However, in accordance with the Regulations, the potential individual and cumulative impacts associated with the proposed extension of the TSF and associated infrastructure will be addressed during the Impact Assessment Phase. Measures to

minimise the individual and cumulative impacts will be identified and included in the NEMA EMPr compiled during the Impact Assessment Phase for the proposed project.

There are, however, anticipated impacts that will require more detailed investigation and assessment in terms of the environmental authorisation process.

It is currently expected that it is unlikely that during the Impact Assessment Phase further material impacts may be identified.

A comprehensive public involvement process has been implemented during scoping and it is assumed that all critical issues have been identified through this process.

The EIA process is however, iterative and therefore additional potential issues/impacts may be identified during the impact assessment phase that may require further investigation/consideration.

It is envisaged that the process followed during the detailed assessment phase will meet the requirements of the legislation to ensure that the regulatory authorities receive sufficient information to enable informed decision-making.



## YOUR COMMENT ON THE SCOPING REPORT

This Final Scoping Report (FSR) will be available for comment for a period of 21 days from **Monday 19 January 2015 Monday 09 February 2015**. Copies of the FSR, and the Comments and Response Report, are available at the following public places and upon request from the stakeholder engagement office:

PUBLIC PLACE	LOCALITY	TELEPHONE
Rustenburg Public Library	Rustenburg	(014) 590 3060/3295
Robega Village Community Office	Robega	(073) 757 1585
Chaneng Village Community Office	Chaneng	(083) 729 2989
Rasimone Community Office	Rasimone	(078) 398 6190
Mafenya Primary School	Mafenya	(079) 235 6646
SRK Website	Pretoria	(012) 361 9821

The following methods of public review of the FSR are available:

- Additional written submissions;
- Comment by email, fax or telephone.

### DUE DATE FOR COMMENT

**Monday 09 February 2015**

**Please submit comments to the Stakeholder Engagement Officers:**

Donne Chetty / Toinette van der Merwe  
 SRK Consulting  
 P.O. BOX 35290, Menlo Park, 0102  
 Phone: (012) 361 9821  
 Fax: (012) 361 9921  
 Email: [ppp@srk.co.za](mailto:ppp@srk.co.za)  
 Reference: Project 470328

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## List of Abbreviations

Term / Abbreviation	Description
BIC	Bushveld Igneous Complex
BID	Background Information Document
BPD	Bojanala Platinum District
BRPM	Bafokeng Rasimone Platinum Mine
CARA	Conservation of Agricultural Resources Act (Act No. 43 of 1983)
CRR	Comments and Response Report
dBA	Decibels
DEA	Department of Environmental Affairs
DEAT	National Department of Environmental Affairs and Tourism
DMR	Department of Mineral Resources
DPWR	North West Department of Public Works, Roads and Transport
DSR	Draft Scoping Report
DWAF	Department of Water Affairs
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIS	Ecological Importance and Sensitivity
EMPR	MPRDA Environmental Management Programme
EMPr	NEMA Environmental Management Programme
FSR	Final Scoping Report
GDP	Gross Domestic Product
GIS	Geographic Information System
GN	Government Notice
GPS	Geographic Positioning System
ha	hectares
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
JV	Joint Venture
km	kilometres
ktpm	Kilo tons per month
L/s	Litres per second
m	meters
m.a.m.s.l.	meters above mean sea level
m.b.g.l.	meters below ground level
m <sup>3</sup>	cubic meters
MPRDA	Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)
NEM:AQA	National Environmental Management: Air Quality Act (Act No. 39 of 2004)
NEM:BA	National Environmental Management: Biodiversity Act (Act No. 10 of 2004)
NEM:WA	National Environmental Management: Waste Act (Act No. 59 of 2008)
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NHRA	National Heritage Resources Act (Act No. 25 of 1999)

<b>Term / Abbreviation</b>	<b>Description</b>
NWA	National Water Act (Act No. 36 of 1998)
NWREAD	North West Department of Rural, Environmental and Agricultural Development
PES	Present Ecological State
POC	Probability of Occurrence
POS	Plan of Study
PPP	Public Participation Process
PRECIS	National Herbarium Pretoria Computerised Information System
QDS	Quarter Degree Square
RBN	Royal Bafokeng Nation
RBPlat	Royal Bafokeng Platinum Ltd
RBR	Royal Bafokeng Resources
RDL	Red Data Listed
RLM	Rustenburg Local Municipality
RLS	Rustenburg Layered Suite
RPM	Rustenburg Platinum Mines Limited
RWDs	Return Water Dams
SAHRA	South African National Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANS	South African National Standards
SDF	Spatial Development Framework
SER	Stakeholder Engagement Report
SMC	Styldrift Mine Complex
SMS	Short Message Service
SRK	SRK Consulting (Pty) Ltd
TOPS	Threatened of Protected Species
TOR	Terms of Reference
tpm	Tons per month
TSF	Tailings Storage Facility
UG2	Upper Group 2
VIA	Visual Impact Assessment
WUL	Water Use Licence

# 1 Introduction and Scope of Report

Bafokeng Rasimone Platinum Mine (BRPM) is situated 40 kilometres (km) north-west of Rustenburg in the North West Province.

The BRPM Styldrift Merensky Phase 1 Mine (hereafter referred to as the Styldrift Mine Complex (SMC)) is situated on the farm Styldrift 90 JQ, located approximately 7 km from the existing BRPM Concentrator Plant and 6 km south of Sun City along the R 565.

The establishment of the SMC is an extension and expansion of the existing BRPM Joint Venture (JV) between Rustenburg Platinum Mines Limited (RPM) and Royal Bafokeng Resources (RBR). Royal Bafokeng Platinum Ltd (RBPlat) Management Services Pty (Ltd) is the management services company for the BRPM JV.

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- The ore mined from these reefs will be conveyed from the SMC to the existing BRPM Concentrator Plant;
- The existing BRPM Concentrator Plant will be modified to accommodate the additional ore produced at the SMC;
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As the surface lease agreements for the extension of the existing BRPM TSF onto the Farm Uitvalgrond 105 JQ have not been successful to date, it has necessitated that RBPlat investigate alternative areas for the extension of the TSF to accommodate the future tailings produced by the modified BRPM Concentrator Plant.

It is therefore proposed that the existing BRPM TSF be extended within Portion 1 of the Farm Boschkoppie 104 JQ. The following infrastructure is proposed to be constructed and operated:

- Return Water Dams (RWDs) associated with the extended TSF covering an area of approximately 35 ha;
- Overland pipelines (approximately 3 km in length) for the transportation of tailings-containing water from the modified BRPM Concentrator Plant to the extended TSF;
- Overland pipelines for the transportation of return water between the extended TSF and the RWDs;



- Overland pipelines (approximately 3 km in length) for the transportation of return water between the RWDs and the modified BRPM Concentrator Plant;
- Booster pump stations;
- Water management infrastructure and systems associated with this project;
- Service roads will be built along all pipelines and around the extended TSF in order for the mine to be able to service and maintain the proposed infrastructure;
- Relocation of a power line to accommodate the extended TSF (a separate Basic Assessment application has been submitted to National Department of Environmental Affairs (DEA) (DEA reference number 14/12/16/3/3/2/648);
- Development of a topsoil stockpile with a footprint area of approximately 12 ha;
- River crossings associated with pipelines.

In order for the abovementioned activities to take place it would be required to obtain the following authorisations/licenses prior to the commencement of construction activities:

- An application for the amendment of the EMPR issued in terms of the MPRDA;
- An application for the amendment of the WUL granted in terms of the NWA;
- An application for Environmental Authorisation (EA) in terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA) Environmental Impact Assessment (EIA) Regulations promulgated in terms of Government Notice (GN) R 543 of 18 June 2010, to undertake the activities listed in terms of GN R 544, GN R545, GN R 546 of 18 June 2010.

The proposed development triggers activities listed in terms of GN R544 and GN R545 of 18 June 2010. Therefore, the application for EA entails undertaking a Scoping and Impact Assessment Phase, which is regulated by the EIA Regulations GN R543 of 18 June 2010 and promulgated under the NEMA<sup>1</sup>.

Dr Laetitia Coetser of SRK Consulting (SA) (Pty) Ltd (SRK) has been appointed as the independent Environmental Assessment Practitioner (EAP) by RBPlat to undertake the application processes.

The application for EA was lodged with the competent authority, the North West Department of Rural, Environmental and Agricultural Development (NWREAD), on 19 August 2014 and accepted on 27 August 2014. Register was developed using RBPlat's existing databases, responses to the advertisement for the proposed extension of the TSF and distribution of the BID, as well as from other projects conducted in the area. I&APs on the project database were notified of the proposed extension of the TSF. The Draft Scoping Report (DSR) including the Plan of Study (POS) for EIA, dated September 2014, was made available to the Registered I&APs for a 40-day commenting period from 10 September 2014 to 20 October 2014.

The Final Scoping Report (FSR) including the POS for EIA, dated November 2014 will now be made available to the Registered I&APs for a 21-day commenting period from 19 January 2015 to 09 February 2015. The FSR will be submitted to the NWREAD for decision making purposes in term of Regulation 30 of GN R 543 of 18 June 2010. In terms of the aforementioned decision making purposes by the NWREAD, the FSR can be accepted, requested to be amended or rejected.

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<sup>1</sup> This application process commenced prior to the implementation of the 2014 NEMA EIA Regulations. Please refer to Regulation 53 and Regulation 54 of GN R982 of 04 December 2014. It should also be noted that This application process commenced prior to the implementation of the Waste Management Licence requirements promulgated in terms of GN R921 of 29 November 2013. In terms of the Transitional Arrangements contained in Regulation 7(1) of R921 of 29 November 2013 a person who lawfully conducts a waste management activity listed in this schedule on the date of the coming into effect of this notice may continue with the waste management activity until such time that the Minister by notice in a Gazette calls upon such a person to apply for a waste management licence. Thus currently no Waste Management Licence application will be lodged.

Upon acceptance of the FSR the project will continue into the Impact Assessment Phase of the project where specialist studies will be undertaken and/or updated. The findings of the Impact Assessment Phase will be documented in the Draft Environmental Impact Assessment Report (EIAR) and compiled in accordance with Regulation 31 of GN R543 of 18 June 2010. The Draft EIAR will be made available to the Registered I&APs for a 40-day commenting period, before being finalised and released to the Registered I&APs for an additional 21-day commenting period. The Final EIAR will then be submitted to the NWREAD, as competent authority, for decision making purposes.

## 1.1 Purpose of the Final Scoping Report

This report is the FSR which includes a background description of the proposed project including an overview of the EIA process, together with the Stakeholder Engagement Process followed to date.

A baseline description of the current environmental status quo as well as the identification of potential environmental issues and impacts which have been identified are summarised in this report. This FSR serves to document the results of work undertaken during the first phase, the Scoping Phase, of this project. The FSR will be submitted to the lead regulatory authorities for approval. The environmental authorisation process will include the following:

- A Scoping Phase (this phase);
- Impact Assessment Phase;
- MPRDA Section 102 Application;
- Water Use Licence Application; and
- Stakeholder Engagement.

## 1.2 Report Structure

This Scoping Report has been prepared to meet the requirements of the MPRDA and NEMA, and includes information on the following:

- The approach adopted for the Scoping Phase of the study;
- Scoping Phase objectives;
- The proposed developments at the SMC;
- Listed activities that require authorisation;
- The baseline environment within which these developments are proposed;
- Anticipated environmental, social and cultural impacts;
- Alternatives that have been considered as part of the Scoping Phase of the study;
- The proposed scope for the Impact Assessment Phase;
- Conclusions of the Scoping Phase.

## 1.3 Study Objective

The objectives of the Scoping Phase are to:

- Contextually understand the overall project and project area;
- Identify stakeholders and future engagement approaches;
- Identify key issues and anticipated impacts that require investigation through the undertaking of specialist studies; and
- Set the Terms of Reference for the specialist studies for the next phase (undertaking of the EIA and development of the Environmental Management Programme (EMPr)).

Based on the need to meet the abovementioned objectives, an approach for the Scoping Phase has been developed which:

- Takes cognisance of the regulatory requirements in terms of NEMA, MPRDA, NWA and other acts where applicable;
- Allows for a flexible and appropriate public involvement programme;
- Meets the requirements of DMR, DWS and NWREAD;
- Makes use of existing information wherever possible (i.e. existing EMPRs, EIAs and specialist studies);
- Allows for public comment on the Scoping Report; and
- Involves key specialists early in the project (during the Scoping Phase) so as to facilitate the identification of fatal flaws and inform project alternative decisions.

## 2 Details of Applicant

The SMC was originally launched through a JV between RPM (a wholly-owned subsidiary of Anglo American Platinum Ltd) and RBR (a wholly owned subsidiary of RBPlat) with the parties having a 33:67 participation interest respectively.

RBPlat consists of two operations, namely BRPM and SMC. Mining operations are currently in operation at the SMC, but the need was identified for additional tailings disposal in order to effectively and sustainably conduct future mining activities.

### 2.1 Contact details of the Operation's Owner and of the Operation's Mine Manager/Responsible Person

The contact details of the Mine Owner and holder of existing mining authorisation/s, the Mine Manager (Responsible person) and the contact details of the applicant to liaise with regarding this application are depicted in Table 2-1.

**Table 2-1: Contact Details of the Operation's Owner and of the Operation's Mine Manager/Responsible Person**

<b>Contact details of the Owners of the Mine and holders of the existing Mining Authorisation:</b>	
RBPlat Management Services Pty (Ltd) PO Box 2283 Fourways 2055 Tel: 010 590 4515 Fax: 010 590 1075	
<b>Contact details of the Mine Manager/Responsible Person:</b>	
Mr Leka Monama (Mining Manager Styldrift) Post net Suite 347 Private Bag 82245 Rustenburg 0300 Tel: (014) 573 2252	
<b>For the purpose of the application process the following people may be contacted at SMC:</b>	
Mr Leka Monama Mining Manager Styldrift Tel: (014) 573 2252	Tshego Tyira Head: Corporate Sustainability Tel: (010) 590 4539

lmonama@angloplat.com	ttyira@bafokengplatinum.co.za

### 3 Details of the Environmental Assessment Practitioner

Dr Laetitia Coetser of SRK has been appointed as the independent EAP by RBPlat to undertake the application processes on behalf of the applicant. The study has been undertaken by SRK. SRK commenced its practises in 1974 as has since been involved in a large variety of environmental studies. SRK is a South African founded international organisation of professionals providing a comprehensive range of consulting services to natural resource industries and organisations. SRK's Johannesburg and Pretoria offices are staffed with over 300 professional consultants operating in a range of disciplines, mainly related to the environment, water, social and mining sectors. Back-up and peripheral expertise is available within these offices for all environmental projects. The project team consists of the following members in Table 3-1 and can be contacted at SRK.

**Table 3-1: Details of the EIA Project Team**

Details	Name			
	<b>Dr Andrew Wood</b>	<b>Dr Laetitia Coetser</b>	<b>Toinette vd Merwe / Andrew Caddick</b>	<b>Donne Du Toit</b>
Designation	Project Partner and Reviewer	Project Manager	Project coordinator, public participation and report preparation.	Stakeholder Engagement Officer
Address	PO Box 55291 Northlands 2116	PO Box 35290 Menlo Park 0081	PO Box 35290 Menlo Park 0081	PO Box 35290 Menlo Park 0081
Telephone	(011) 441 1237	(012) 361 9821	(012) 361 9821	(012) 361 9821
Fax	(011) 880 8086	(012) 361 9912	(012) 361 9912	(012) 361 9912
E Mail	<a href="mailto:awood@srk.co.za">awood@srk.co.za</a>	<a href="mailto:lcoetser@srk.co.za">lcoetser@srk.co.za</a>	<a href="mailto:tvandermerwe@srk.co.za">tvandermerwe@srk.co.za</a> <a href="mailto:acaddick@srk.co.za">acaddick@srk.co.za</a>	<a href="mailto:ddutoit@srk.co.za">ddutoit@srk.co.za</a>

The project partner and reviewer (Dr. Andrew Wood) is appropriately qualified and registered with the relevant professional bodies. Dr. Wood is a registered Chartered Biologist.

The project manager, Dr. Laetitia Coetser is a Principal environmental scientist and Associate Partner at SRK, with 16 years' experience in the environmental consultancy industry. Dr. Laetitia Coetser is appropriately qualified and registered with the relevant professional bodies. Dr. Coetser is registered as a Professional Natural Scientists (Pr.Sci.Nat. 403312/06) with the South African Council of Natural Scientific Professions.

Ms Toinette van der Merwe holds a BSc (Honours) in Environmental Science. She is a Senior environmental scientist at SRK with 11 years' experience in the environmental field. Her experience lies in the field of environmental management and has extensive regulatory, compliance and enforcement experience at Local, Provincial and National Government level. She has experience in compilation, amendment and assessing environmental compliance for a diverse set of EIAs and EMPR's in terms of the NEMA.

Mr Andrew Caddick holds a BSc (Honours) in Geography and Environmental Science. He is an environmental scientist at SRK with 5 years' experience in the environmental field. His experience lies in the management of EIA and EMPR processes, coordination and execution of Public

Participation Process (PPP), and management of multi-disciplinary project teams, mainly for mining related projects. He is also involved in conducting environmental audits and site assessments.

The team has extensive knowledge of environmental management extending from EIAs and basic assessments to environmental compliance auditing, environmental protection and pollution control and water and waste management. Curricula Vitae of the project team members listed above can be found in Appendix A. A copy of the project experience is summarised in Appendix B.

### **3.1 Independence of the Environmental Assessment Practitioners**

The EAP, Dr Laetitia Coetser hereby declares her independence of Exxaro and any affiliates of the Exxaro as per the requirements of Regulation 17(a) of GN R543 of 18 June 2010. She further declares that the SRK Consulting (SA) (Pty) Ltd project team has the expertise to conduct EIAs, including knowledge of the relevant Acts, Regulations and any guidelines that have relevance to the proposed activity as required by Regulation 17(b) of GN R543 of 18 June 2010.

Neither SRK nor any of the authors of this report, its specialist / sub consultants and / or associates have any material present or contingent interest in the outcome of this report, nor do they have any pecuniary or other interest that could be reasonably regarded as being capable of affecting their independence or that of SRK.

SRK, nor any sub- consultants and specialists, have any correlation or interest in the proposed project or future/present developments influenced by this project in any way. A signed declaration of Interest can be found in Appendix C.

## **4 Legal and Policy Framework**

The following Acts and Regulations are applicable during the construction of the proposed project and associated infrastructure. Environmental legislation applicable to the SMC operations includes, but is not limited to, the following:

- Constitution of the Republic of South Africa (Act No. 108 of 1996);
- National Environmental Management Act (Act No. 107 of 1998);
- National Environmental Management : Biodiversity Act (Act No. 10 of 2004);
- National Environmental Management Waste Act (Act No. 59 of 2008);
- National Heritage Resources Act (Act No. 25 of 1999);
- National Water Act (Act No. 36 of 1998);
- Mineral and Petroleum Resources Development Act (Act No. 28 of 2002);
- Mine Health and Safety Act (Act No. 29 of 1996);
- Conservation of Agricultural Resources Act (CARA) (Act No. 43 of 1983);
- Hazardous Substance Act (Act No. 15 of 1973);
- Promotion of Access to Information Act (Act No. 2 of 2000);
- Provincial and Municipal Bylaws;
- Guidelines;
- Styldrift Safety Health and Environmental Policy.

The legislation applicable to the proposed project is described in detail in Subsection 4.1 to 4.16.

## 4.1 Constitution of the Republic of South Africa (Act No. 108 of 1996)

In terms of Section 24 of the Constitution of the Republic of South Africa (Act No.108 of 1996), everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislation and other measures that prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development and use of natural resources while prompting justifiable economic and social development. The needs of the environment, as well as affected parties, should thus be integrated into overall project management in order to fulfil the requirements of Section 24 of the Constitution.

## 4.2 National Environmental Management Act (Act No. 107 of 1998)

The NEMA, as amended, contains a set of principles in Chapter 2 that govern environmental management. These principles must be adhered to and taken into consideration during the EA Application as well as all the life cycle phases of the proposed project.

The term 'environment' is defined in terms of NEMA as:

*“Environment“ means the surroundings within which humans exist and that are made up of –*

- (i) the land, water and atmosphere of the earth;*
- (ii) micro-organisms, plant and animal life;*
- (iii) any part or combination of (i) or (ii) and the interrelationship among and between them;*
- (iv) The physical, chemical, aesthetic and cultural, properties and conditions of the foregoing that influence human health and wellbeing.*

Section 24(1) of the NEMA states:

*“In order to give effect to the general objectives of integrated environmental management laid down in this Chapter [Chapter 5], the potential consequences for or impacts on the environment of listed activities or specified activities must be considered, investigated, assessed and reported on to the competent authority or the Minister of Minerals and Energy, as the case may be, except in respect of those activities that may commence without having to obtain an environmental authorisation in terms of this Act.”*

Based on the aforesaid, the proposed new Rietkuil Private Railway Siding and associated infrastructure constitute activities listed contained in GN R544 and GN R545 of 18 June 2010 which requires that EA, from the Competent Authority (MDARDLEA), in terms of GN R543 of 18 June 2010 must be obtained prior to the commencement of construction activities.

Further, Section 28 of the NEMA places a Duty of Care on all persons to prevent, limit or remediate any pollution or degradation of the environment. This duty of care should be adhered to at all times during construction, operation and decommissioning of the proposed project. Section 28 applies to all activities taking place, and not solely focused on the listed activities being applied for.

### 4.3 EIA Regulations (GN R543 of 18 June 2010)

The EIA Regulations (GN R543 of 18 June 2010) were promulgated in terms of Section 24 of the NEMA, to manage the process, methodologies and requirements for the undertaking of an application for an EA as stipulated in Section 24 of NEMA. GN R543 of 18 June 2010 stipulates that the applicant must appoint an independent EAP to manage the application process for EA where a development constitutes activity/ies listed in terms of GN R544, GN R545 and/or GN R546 of 18 June 2010.

GN R543 of 18 June 2010 defines two categories for undertaking an application for EA, namely the basic assessment process and the 'full' EIA process.

The basic assessment process is generally intended for smaller scale projects, or activities whose impacts are well understood and can be easily managed or where permission is granted to undertake the basic assessment process instead of the 'full' EIA process. The basic assessment process requirements are contained in Regulations 21 to 25 of GN R543 of 18 June 2010.

The full EIA process must be followed where the development constitutes activity/is listed in terms of GN R545 of 18 June 2010 or where permission is granted to undertake the full EIA process instead of the basic assessment process.

The construction of the proposed TSF and associated infrastructure constitute listed activities listed in GN R544 and GN R545 of 18 June 2010 and based on the regulatory requirements, requires that a 'full' EIA process be undertaken in order to meet the requirements of both processes as contained in GN R543 (22)(2)(c) of 18 June 2010.

The 2014 NEMA EIA application process and associated listed activities were implemented on 04 December 2014. Regulations 53 and 54 of GN R982 of 04 December 2014 contain the transitional arrangements for pending applications where authorisation has not been granted to date. In terms of this application it must be noted that the application process commenced prior to the implementation of the 2014 NEMA EIA Regulations and Regulations therefore applies.

### 4.3.1 Listed Activities

The listed activities triggered under GN R544 and GN R545 of 18 June 2010, are listed in Table 4-1 as well as the project activities that trigger the listed activities.

**Table 4-1: Listed 2010 NEMA Activities**

Number and date of relevant notice	Activity No(s) (in terms of the relevant notice)	Description of each listed activity as per the GN and the detailed project description	Description of the proposed activities in relation to the listed activities being applied for
GN R 544	9	The construction of facilities or infrastructure exceeding 1 000 meters (m) in length for the bulk transportation of storm water with a peak throughput of 120 litres per second (L/s).	The construction of overland pipelines for the transportation of tailings containing water via overland pipelines from the modified BRPM concentrator plant to the TSF, with a pipeline diameter of between 0.25 m and 0.30 m over a distance of approximately 3 km. The peak throughput of tailings from the modified BRPM Concentrator Plant to the TSF will be approximately 140 L/s. Transportation of return water back to the modified BRPM Concentrator Plant from the RWDs via overland pipelines over a distance of approximately 3 km. The peak throughput of water from the RWDs back to the modified BRPM Concentrator Plant will be approximately 140 litres per second.
	11	The construction of channels and bridges where such construction occurs within a watercourse or within 32 m of a watercourse, measured from the edge of a watercourse.	The construction of bridges for the pipeline river crossings of the Matlopyane stream as well as an unnamed tributary of the Matlopyane stream.  The construction of the TSF of approximately 150 ha within 32 m of the unnamed tributary of the Matlopyane stream.
	18	The infilling or depositing of any material of more than 5 cubic meters (m <sup>3</sup> ) into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 m <sup>3</sup> from a watercourse.	The dredging, excavation and moving of soil, sand and rock from the Matlopyane stream as well from the unnamed tributary of the Matlopyane stream exceeding 5 m <sup>3</sup> to accommodate the pipeline crossings.
	23	The transformation of vacant land to industrial use outside an urban area where the total area to be transformed is 5 ha or more but less than 20 ha.	The construction of the RWDs associated with the extension of the TSF covering an area of approximately 35 ha.
	28	The expansion of existing facilities for any purpose or activity where such expansion will result in the need for a permit or license in terms of national or provincial legislation governing the release emissions of pollution.	The extension of the TSF and RWDs will result in the need to amend the existing WUL.
	55	The expansion of a dam where (ii) The high water mark of the dam will be increased by 10 ha or more.	The extension of the TSF expansion will result in the increase in the high water mark of the dam by more than 10 ha.
	55B	The expansion of facilities for the treatment of effluent, wastewater or sewage on undeveloped land where the capacity will be increased by 15 000m <sup>3</sup> or more per day.	The extension of the TSF will result in an increased wastewater treatment on undeveloped land where the capacity will be increased by 15 000m <sup>3</sup> or more per day.



Number and date of relevant notice	Activity No(s) (in terms of the relevant notice)	Description of each listed activity as per the GN and the detailed project description	Description of the proposed activities in relation to the listed activities being applied for
GN R 545	10	The construction of facilities or infrastructure for the transfer of 50 000 m <sup>3</sup> or more water per day, from and to or between impoundments.	The transfer of water and tailings from the modified BRPM concentrator plant to the extension of the TSF, return water to the RWDs and from the RWDs back to the modified BRPM concentrator plant for reuse.
	15	Physical alteration of vacant land for industrial use where the total area to be transformed is 20 ha or more.	The physical alteration of vacant land associated with: The extension of the TSF of approximately 150 ha; RWD of approximately 35 ha; Topsoil stockpile area of approximately 20 ha; Other associated infrastructure i.e. pipelines and booster pump stations.
	19	The construction of a dam, where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5 m or higher or where the high water mark of the dam covers an area of 10 ha or more.	The extension and construction of the TSF with a dam wall height of approximately 30 m with a footprint of approximately 150 ha. The construction of the RWD with a footprint size of approximately 35 ha. Both dams will result in the high water mark exceeding 10 ha.

The listed activities triggered under GN R984 of 04 December 2014, are listed in Table 4-2. Note that this application commenced under the 2010 NEMA EIA Regulations and will be dispensed in terms of the 2010 NEMA EIA as if it was not repealed (Regulation 53(1) of N R 982 of 04 December 2010). Further, read with Regulation 53(3) of N R 982 of 04 December 2010 the listed activity/ies below will be applicable to this application and will be considered and assessed during the Impact Assessment Phase of this application.

**Table 4-2: Listed 2014 NEMA Activities**

Number and date of relevant notice	Activity No(s) (in terms of the relevant notice)	Description of each listed activity as per the GN and the detailed project description	Description of the proposed activities in relation to the listed activities being applied for
GN R 5984		Any activity including the operation of that activity associated with the primary processing of a mineral resource including winning, reduction, extraction, classifying, concentrating, crushing, screening and washing but excluding refining of gas, oil or petroleum products in which case activity 5 in this Notice applies.	The extension of the TSF of approximately 150 ha; RWD of approximately 35 ha; Topsoil stockpile area of approximately 20 ha; Other associated infrastructure i.e. pipelines and booster pump stations.

#### 4.4 National Environmental Management: Air Quality Act (Act No. 39 of 2004)

The National Environmental Management: Air Quality Act (Act No. 39 of 2004) (NEM:AQA) was implemented on 24 February 2005 and reforms the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto.

On 22 November 2013 the list of activities which result in atmospheric emissions which have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage was published under GN R893 in Governmental Gazette No 37054, in terms of Section 21(1)(b) of the NEM:AQA thereby repealing the previous list of activities which were promulgated on 31 March 2010. ***No listed activities in terms of GN R893 are anticipated for the proposed project.***

The Rustenburg Local Municipality (RLM), in which the proposed project takes place, has been incorporated into the Waterberg – Bojanala Priority Area (GN R104 of 2013 with reference to GN R459 of 2012). The inclusion of the RLM into the Priority Area is based on the possibility that the air quality within the Waterberg District Municipality in the Limpopo Province may exceed the national ambient air quality standards in the near future; and that a trans boundary situation exists between the Waterberg District Municipality and the Bojanala Platinum District (BPD) Municipality in the North West Province. This possible trans-boundary situation may cause a significant negative impact on air quality of both areas. This therefore requires specific national air quality management action.

#### 4.5 National Environmental Management: Biodiversity Act (Act No. 10 of 2004)

In line with the Convention on Biological Diversity, the National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEM: BA) aims to legally provide for biodiversity conservation, sustainable use and equitable access and benefit sharing. NEM: BA creates a basic legal framework for the formation of a national biodiversity strategy and action plan and the identification of biodiversity hotspots and bio-regions which will then be given legal recognition. It imposes obligations on landowners (state or private) governing alien invasive species as well as regulates the introduction of genetically modified organisms.

The NEM: BA ensures that provision is made by the site developer to remove any aliens which have been introduced to the site or are present on the site.

The NEM: BA also provides for listing of threatened or protected ecosystems, in one of four categories: critically endangered, endangered, vulnerable or protected. Threatened ecosystems are listed in order to reduce the rate of ecosystem and species extinction by preventing further degradation and loss of structure, function and composition of threatened ecosystems. The purpose of listing protected ecosystems is primarily to conserve sites of exceptionally high conservation value.

***No critically endangered ecosystems have been identified within the proposed project which is situated on Zeerust Thornveld. However, a biodiversity assessment will be conducted for the proposed project.***

## 4.6 National Environmental Management: Waste Act (Act No. 59 of 2008)

The NEM:WA was implemented on 1 July 2009 and Section 20 of the Environment Conservation Act (Act No. 73 of 1989), under which waste management was previously governed, was repealed.

The objectives of NEM:WA involve the protection of health, wellbeing and the environment by providing reasonable measures for the minimisation of natural resource consumption, avoiding and minimising the generation of waste, reducing, recycling and recovering waste, and treating and safely disposal of waste as a last resort.

In terms of the NEM:WA, all waste management activities must be licensed. According to Section 44 of the NEM:WA, the licensing procedure must be integrated with an EIA process in terms of the NEMA. GN R921 of 29 November 2013 contains the list of waste activities that requires EA.

## 4.7 National Heritage Resources Act (Act No. 25 of 1999)

The protection and management of South Africa's heritage resources are controlled by the National Heritage Resources Act (Act No. 25 of 1999) (NHRA). The enforcing authority for this act is the South African Heritage Resources Agency (SAHRA). In terms of the NHRA, historically important features such as graves, trees, archaeology and fossil beds are protected. Similarly, culturally significant symbols, spaces and landscapes are also afforded protection. In terms of Section 38 of the NHRA, SAHRA can call for a Heritage Impact Assessment (HIA) where certain categories of development are proposed. The Act also makes provision for the assessment of heritage impacts as part of an EIA process and indicates that if such an assessment is deemed adequate, a separate HIA is not required. Should a permit be required for the damage or removal of specific heritage resources, Exxaro will submit a separate application for these activities to the SAHRA for approval, should these resources be potentially damaged or removed. The activities identified in the NHRA requiring notification to SAHRA include:

Section 38 states:

*“(1) (a): The construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;*

*(c): Any development or other activity which will change the character of a site*

- i. exceeding 5 000 m<sup>2</sup> in extent ; or*
- ii. involving three or more existing erven or subdivisions thereof ; or*
- iii. involving three or more erven or divisions thereof which have been consolidated within the past 5 years; or*
- iv. the costs of which will exceed a sum in terms of regulations by SAHRA or a provincial heritage resource authority.”*

***The proposed project is located approximately 6 km from the Pilanesberg National Park, approximately 4 km from the Magaliesberg Protected Environment Park; therefore the location is in an area known for its cultural artefacts. The proposed project footprint area has already been fundamentally transformed by the establishment of farming, residential and mining activities over the area. A HIA will be conducted as part of this project. The terms of reference for the HIA can be found in Section 12.3.***

## 4.8 National Water Act (Act No. 36 of 1998)

The National Water Act (Act No. 36 of 1998) (NWA) is the primary regulatory legislation, controlling and managing the use of water resources as well as the pollution thereof. The NWA provides for fundamental reformation of legislation relating to water resource use. The preamble to the NWA recognises that the ultimate aim of water resource management is to achieve sustainable use of water for the benefit of all users and that the protection of the quality of water resources is necessary to ensure sustainability of the nation's water resources in the interests of all water users. The purpose of the NWA is stated in Section 2 and enforced by the DWS. Section 2 of the NWA relates to the following:

- *Promoting the efficient, sustainable and beneficial use of water in the public interest;*
- *Facilitating social and economic development;*
- *Protecting aquatic and associated ecosystems and their biological diversity;*
- *Reducing and preventing pollution and degradation of water resources;*
- *Meeting international obligations.*

The NWA presents strategies to facilitate sound management of water resources, provides for the protection of water resources, and regulates use of water by means of Catchment Management Agencies, Water User Associations, Advisory Committees and International Water Management. As the NWA is founded on the principle the government has overall responsibility for and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest, an industry (including mines) can only be entitled to use water if the use is permissible under the NWA.

The SMC has a valid WUL in terms of Chapter 4 of the NWA, Licence Number 26031507. However, this licence will need to be amended to include the new water uses relating to the extension of the TSF and its associated infrastructure.

Further, Regulation 704 of the NWA deals with the control and use of water for mining and related activities aimed at the protection of water resources. It specifically deals with clean and dirty water in a mining environment. An assessment of requirements for the extension of the TSF and associated infrastructure in terms of Regulation 704 will be conducted as part of the WUL amendment application. ***The anticipated water uses in terms of Section 21 of the NWA for the proposed project are included in Table 4-3.***

**Table 4-3: Water Uses to be Applied for**

NWA Section 21 and 37	Description of each listed activity as per the GN and the detailed project description
Section 21 (c) and (i)	<p>Impeding, diverting and altering the flow of water in a watercourse.</p> <p><b><i>The following potential Section 21(c) and (i) water uses are envisaged:</i></b></p> <ul style="list-style-type: none"> <li>• <b><i>Alteration of any drainage lines including storm water management infrastructure;</i></b></li> <li>• <b><i>Stream flow due to river crossings associated the construction of linear activities i.e. roads and pipelines.</i></b></li> <li>• <b><i>TSF pipelines;</i></b></li> <li>• <b><i>TSF;</i></b></li> <li>• <b><i>RWDs.</i></b></li> </ul> <p>The abovementioned activities will take place within 500 m of a wetland or watercourse will be licensed under Section 21.</p>

NWA Section 21 and 37	Description of each listed activity as per the GN and the detailed project description
21 (g)	Disposing of waste in a manner which may detrimentally impact on water Resource.  <i>The following Section 21(g) water uses are envisaged:</i> <ul style="list-style-type: none"> <li>• <i>Increase in volume of water used for dust suppression;</i></li> <li>• <i>TSFs;</i></li> <li>• <i>RWDs.</i></li> </ul>
37(1)(a)	Engaging in a controlled activity of irrigation of any land with waste or water containing waste generated through any industrial activity or by a water work.  <i>Water used for dust suppression.</i>

#### 4.9 Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)

The main objective of the MPRDA is to recognise the sovereignty of the State over all the mineral and petroleum resources in South Africa and to promote equitable access to the country's resources. The MPRDA allows for previously disadvantaged persons to enter the minerals and petroleum industry and benefit from the exploitation of the country's minerals. This is done through the focus on job creation in the mining industry for previously disadvantaged people. This Act ensures that holders of existing and new mining and production rights contribute towards the socio-economic development in the areas in which they operate, promoting economic growth, employment and advance the social and economic welfare of all South Africans.

SMC has a mining right and approved EMPR in terms of the MPRDA for the mining of the Merensky and Upper Group 2 (UG2) reefs. The proposed extension of the TSF and associated infrastructure were not included in the approved EMPR dated 2008.

***As part of this application process a separate application will be lodged with the Department of Mineral Resources (DMR) in terms of Section 102 of the MPRDA for the proposed construction activities. In addition an application to amend the existing MPRDA EMPR to meet the requirements contained in Sections 49 – 74 of the MPRDA.***

#### 4.10 Mine Health and Safety Act (Act No. 29 of 1996)

The Mine Health and Safety Act (Act No. 29 of 1996), aims to provide for protection of the health and safety of all employees and other personnel at the mines of South Africa. The main objectives of the act and subsequent amendments are:

- Protection of the health and safety of all persons at the mines;
- Require employers and employees to identify hazards and eliminate, control and minimise the risks relating to health and safety at the mines;
- Give effect to the public international law obligations of the Republic that concern health and safety at all mines;
- Provide for employee participation in matters of health and safety through health and safety representatives and the health and safety committees at the mines;
- Provide for effective monitoring of health and safety conditions at the mines;
- Provide for enforcement of health and safety measures at the mines;
- Provide for investigations and inquiries to improve health and safety at mines;
- To promote:
  - A culture of health and safety in the mining industry;

- Training in health and safety in the mining industry;
- Co-operation and consultation on health and safety between the State, employers, employees and their representatives.

***The proposed project will be located within the SMC mining lease area and RBPlat will therefore need to ensure that this Act and subsequent amendment regulations are adhered to on site by employees, contractors, sub-contractors and visiting personnel. This is especially pertinent during the construction phase of the proposed infrastructure.***

#### **4.11 Conservation of Agricultural Resources Act (Act No. 43 of 1983)**

The CARA, 1983 (Act No. 43 of 1983) (CARA) aims to provide for control over the utilisation of natural agricultural resources in order to promote the conservation of soil, water resources and vegetation and to combat weeds and invader plants. CARA makes provision for control measures to be applied in order to achieve the objectives of the Act, these measures relate to *inter alia*:

- Cultivation of virgin soil;
- Utilisation / protection of wetlands, marshes, water sponges, water courses / sources;
- The regulating of the flow pattern of run-off water;
- The utilisation and protection of vegetation;
- The grazing capacity of veld and the number and type of animals;
- The control of weeds and invader plants;
- The restoration or reclamation of eroded land or land which is disturbed or denuded.

***The surface of the proposed project is mainly utilized for mining activities. Areas are also utilised by the local communities for informal grazing of their livestock. RBPlat will pay cognisance to the requirements of CARA where applicable.***

#### **4.12 Hazardous Substance Act (Act No. 15 of 1973)**

The Hazardous Substances Act (Act No. 15 of 1973) provides for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances, and for the control of certain electronic products; to provide for the division of such substances or products into groups in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances and products; and to provide for matters connected therewith.

#### **4.13 Promotion of Access to Information Act (Act No. 2 of 2000)**

The Promotion of Access to Information Act (Act No. 2 of 2000) (PAIA) recognises that everyone has a right of access to any information held by the state and by another person when that information is required to exercise or protect any right. The purpose of the Act is to promote transparency and accountability in public and private bodies and to promote a society in which people have access to information that enables them to exercise and protect their right.

***The NEMA EIA Regulations contains regulations pertaining to public involvement. These Regulations will be adhered to during the PPP process. However, the PAIA will also be considered and adhered.***

## 4.14 Provincial and Municipal Bylaws.

The RLM and BPD Municipality as well as the North West Province has developed local bylaws and various policies relating to waste disposal, water, economic development, air quality etc. ***The SMC will ensure that such policies and bylaws, as far as possible, are adhered to during the extension and operation of TSF and associated infrastructure.***

## 4.15 Guidelines

In addition to the abovementioned Acts and their associated Regulations, the following guidelines and reports have been taken cognisance of during the application process:

- Bojanala Platinum Integrated Development Plan;
- Bojanala Spatial Development Framework (SDF);
- Rustenburg SDF;
- Rustenburg Environmental Management Framework;
- National Department of Environmental Affairs and Tourism (DEAT). 2002. Integrated Environmental Management, Information series 2: Scoping. (DEAT. 2002);
- DEAT. 2002. Integrated Environmental Management, Information series 3: Stakeholder Engagement. (DEAT. 2002);
- DEAT. 2002. Integrated Environmental Management, Information series 4: Specialist Studies. (DEAT. 2002);
- DEAT. 2002. Integrated Environmental Management, Information series 12: Environmental Management Programmes (EMPr). (DEAT. 2002);
- DEA. 2012. Companion to the EIA Regulations 2010, Integrated Environmental Management Guideline Series 5, DEA;
- DEA. 2012. Public Participation Process, Integrated Environmental Management Guideline Series 7, DEA;
- DEA. 2012. Draft guideline on need and desirability in terms of the EIA Regulations, 2010.

## 4.16 Styldrift Safety Health and Environmental Policy

SMC has its own Safety Health and Environmental Policy whereto they must comply with.

# 5 Scoping Study Methodology and Objectives

## 5.1 Scoping Study Objectives

The objectives of the Scoping Phase are to:

- Ensure that the process is transparent to all involved, including but not limited to, the applicant, authorities, I&APs and stakeholders;
- Contextually understand the overall project and project area;
- Provide details of the EAP who compiled the report and the relevant experience to carry out scoping procedures;
- Identify stakeholders and future engagements;
- Identify key issues and anticipated impacts that require investigation;
- Describe the proposed activities requiring authorization;
- Identify feasible alternatives that can be selected for further assessment;

- Identify and describe the environment that may be affected by the activities and the manner in which the physical, biological, socio-economic and cultural aspects of the environment may be affected as well as environmental issues and potential impacts, including cumulative impacts;
- Comply with all relevant environmental legislative requirements;
- Provide a POS;
- Provide information on the methodology that will be adopted in assessing the potential impacts during the Impact Assessment Phase including a POS for the EIA;
- Provide details on the stakeholder engagement process followed.

### **5.1.1 Integrated Authorisation Process**

The authorisation process and specialist studies for the EIA, EMPR amendment and WUL process are running in parallel, with a single Stakeholder Engagement Process as outlined in Figure 5-1.



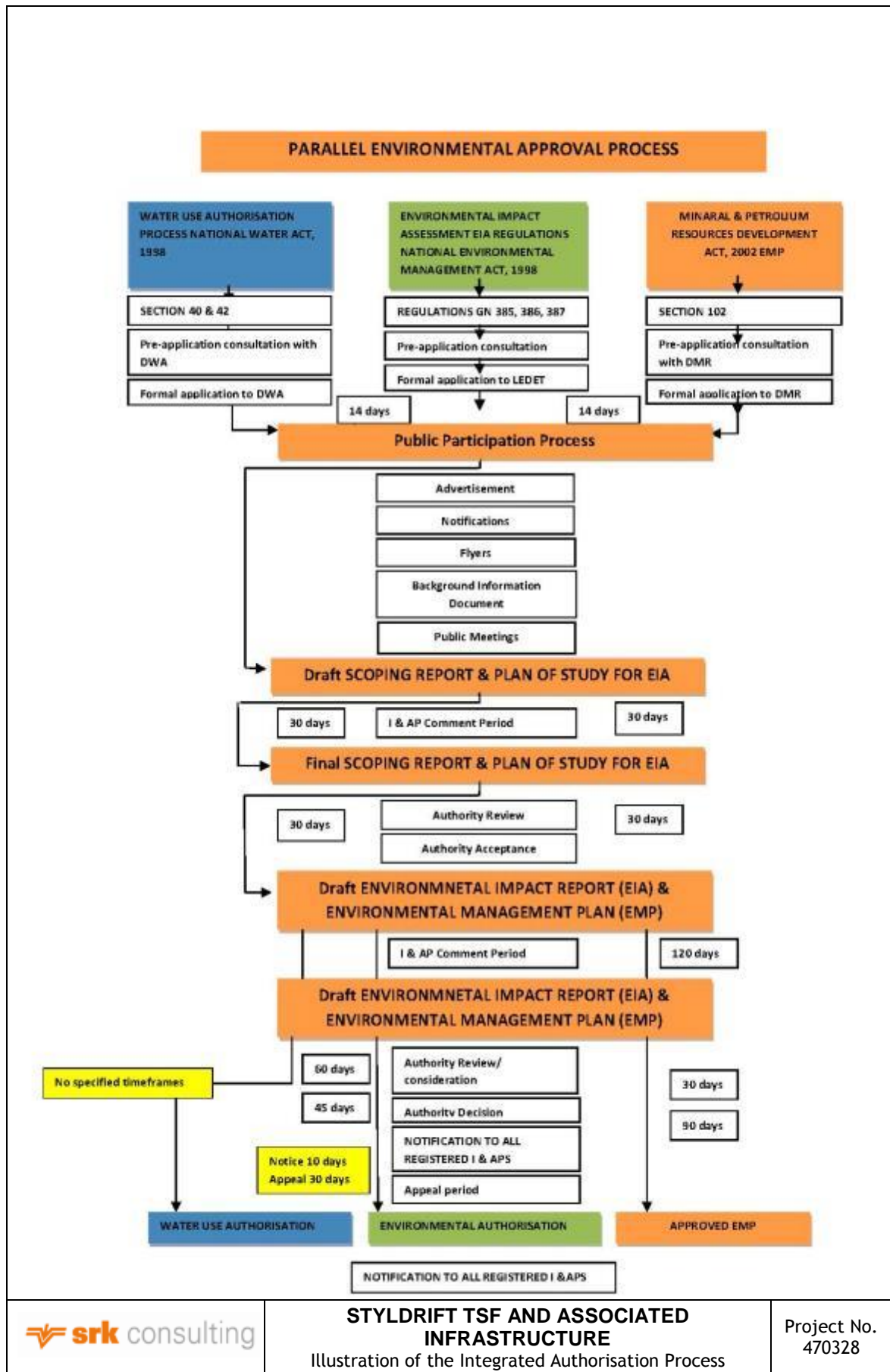


Figure 5-1: Illustration of the Integrated Authorisation Process

## 5.2 Scoping Study Methodology

- Notification of authorities, I&APs and stakeholders of the proposed development (14 February 2014);
- Headmen of the following villages were hand delivered a Background Information Document (BID):
  - Rasimone;
  - Robega;
  - Chaneng; and
  - Mafenya.
- Desktop review of available baseline information;
- Development of a stakeholder database;
- Recording of issues raised by stakeholders and compiling a stakeholder engagement report (Appendix D);
- Discussions with regulatory authorities to ascertain the effectiveness of the proposed project process during the scoping phase;
- Preparation and distribution of media notices (English adverts were placed in the Rustenburg Herald and Platinum Weekly on 14 February 2014);
- Media Notices in Setswana were placed in the Leseding News on 26 February 2014;
- Flyers in English and Setswana were distributed to the following Schools in and around the proposed development:
  - Rasimone Primary School (300 copies);
  - Charora High School (400 copies);
  - Bonwagogo Primary School (300 copies);
  - Chaneng Primary School (300 copies);
  - Mafenya Primary School (300 copies).
- Placement of BIDs at public places (Appendix D);
- Notification of I&APs via e mail, Short Message Services (SMS) and postage accompanied by a copy of the BID;
- Collation of comments received during the initial commenting and registration period into a stakeholder engagement report (Appendix D);
- Compilation of a DSR and submission for a 40 day public review period;
- All comments and concerns raised during this commenting period will be collated and addressed in the FSR and made available again for a 21 day commenting period;
- Any further comments received at this stage will be addressed in the Impact Assessment Phase of this project.

## 6 Details of the Affected Properties

The farms making up the surface area that may be affected by the proposed project are listed in Table 6-1.

**Table 6-1: Details of the Properties Affected by the Proposed Development**

Farm	Extent	Farm	Portion	Owner	Address	Proposed use
Boschkoppie	1929.2242 Hectares (Ha)	104 JQ	1	RBN	PO Box 1, Phokeng, North West Province	Extension of the existing TSF (preferred alternative) Topsoil Stockpile RWDs Pipelines from TSF to RWDs and from the RWDs to the Concentrator.
Uitvalgrond	291.2137 Ha	105 JQ	2	Mokgatle Trust	6 Jukskei road Norkem Park	Construction of a new TSF (alternative site)
Boshhoek	30.6996 Ha	103 JQ	70	RPM	P.O. Box 8208, Rustenburg	Pipelines running from the proposed extended TSF to BRPM Concentrator.
Boshhoek	86.3194 Ha	103 JQ	71	RPM		Pipelines running from the proposed extended TSF to BRPM Concentrator.
Boshhoek	63.3914 Ha	103 JQ	85	RPM		Pipelines running from the proposed extended TSF to BRPM Concentrator.
Boshhoek	52.4855 Ha	103 JQ	103	RPM		Pipelines running from the proposed extended TSF to BRPM Concentrator.

Portion 1 of the Farm Boschkopie 104 JQ is owned by the RBN. There is an existing surface lease agreement jointly between RBR, RPM (Lessees) and RBN (Lessor). The surface lease agreement is understood by SRK to give the Lessees preference over all other mining activities on the lease area and the Lessor shall accordingly make all such other activities subject to the Lessees activities, providing that the Lessees mining activities are at all times carried out in accordance with any applicable laws. The lease agreement is valid for the life of mining operations.

## 7 Project Description

SMC is surrounded by several other mining operations, communities and roads. The village of Chaneng is situated on the mine surface lease area, while Boshhoek, Mafenya, Rasimone and Robega are situated in the surrounding areas.

The mining activities currently at SMC comprise of an underground operation with a decline shaft, which has been established to exploit the Merensky Platinum Group Metals ore reserve and UG2. The following infrastructure is proposed to be constructed:

- Extension of the existing TSF covering an additional area of approximately 150 ha;
- Construction of return Water Dams (RWDs) associated with the extended TSF covering an area of approximately 35 ha;
- Construction of overland pipelines (approximately 3 km in length) for the transportation of tailings from the modified BRPM Concentrator Plant to the extended TSF;
- Construction of overland pipelines for the transportation of return water between the extended TSF and the RWDs;
- Construction of overland pipelines for the transportation of return water between the RWDs and the modified BRPM Concentrator Plant;
- Construction of booster pump stations associated with the transfer of tailings and return water;
- Construction of water management infrastructure and systems associated with this project;
- Service roads will be constructed along the pipe routes and around the TSF in order for the mine to be able to service and maintain the proposed infrastructure;
- Relocation of a power line to accommodate the extended TSF (a separate Basic Assessment application has been submitted to National Department of Environmental Affairs (DEA) (DEA reference number 14/12/16/3/3/2/648);
- Development of a topsoil stockpile with a footprint area of approximately 12 ha;
- River crossings associated with pipelines.

### 7.1 Tailings Storage Facility

Tailings are the materials left over after the process of separating the valuable fraction from the uneconomic fraction of an ore. Tailings are usually produced in a slurry form (a mixture of fine mineral particles and water). A TSF is constructed to contain the slurry and protect the surrounding environment from residues resulting from mining processes. A RWD is a dam used for the collection and subsequent reuse of water recovered from a TSF.

The area adjacent to the existing BRPM TSF site has always been earmarked to accommodate the further tonnage generated from the SMC. RBPlat has not currently been able to secure surface lease agreements with the land owners, and the availability of alternative TSF sites in line with the expansion strategy described above, has needed to be investigated.

The total tailings production from the existing BRPM operations and SMC will average 515 kilo ton per month (ktpm) (Knight-Piésold, 2010). The current BRPM TSF cannot accommodate 500 ktpm.

A extension to the TSF capacity is thus required to handle the SMC tailings arising from 2016. By 2026, additional tailings storage capacity will again be required when the existing BRPM TSF reaches its full capacity, corresponding to the depletion of the current BRPM site and the possibility

of Styldrift Phase 2 coming on line, for which application for authorisation of further expansions to TSF capacity will be made at the appropriate time.

The current pre-feasibility design concept, which may change to an extent during detailed design, for the design of the extension of the TSF is based on typical South African upstream spigotted tailings deposition methods with an outer starter wall constructed with material borrowed from within the TSF basin (DRA Mining, 2011).

The maximum rate of rise will be limited to 2.0 m / year with overall side slopes of 1V:5H resulting in improved slope stability (Royal Bafokeng Platinum, 2014). A toe filter drain will be incorporated at the upstream toe of the starter embankment. An intermediate filter drain will be constructed on a berm on the upstream face of the starter wall to enhance the drainage capability on the highest section of starter wall. These filter drains will discharge into a solution trench around the perimeter of the facility. An elevated drain within the tailings mass will assist in ensuring that the phreatic surface does not intercept the outer face of the TSF. Toe paddocks will collect any storm water runoff and erosion products from the outer slopes of the facility.

### **7.1.1 Lining**

Waste characterisation studies of the tailings which will report to the TSF, as well as for the leachate collection system effluent reporting to the return water dams (RWDs) are in the process of being conducted in terms of the Section 4(1) of the National Norms and Standards for Disposal of Waste to Landfill (promulgated in Government Gazette No. 36784, Notice R. 636 of 23 August 2013) supporting the National Environmental Management: Waste Act (NEM:WA) (Act 59 of 2008). Preliminary studies classified the tailings as a Type 3 waste for disposal purposes requiring a Class C liner, as required in terms of the National Norms and Standards for Disposal of Waste to Landfill (Government Gazette N. 36784, Notice R. 636, 23 August 2013).

### **7.1.2 Tailings Deposition Methodology**

Tailings generated from the concentration of ore mined at SMC will be processed at the modified BRPM Concentrator Plant and pumped to the proposed TSF. Tailings will be pumped onto the edge of the dam crest. The tailings will be deposited through a spigot pipeline with spigots located at intervals along the pipeline. The spigots will be opened as required and the coarser material in the tailings will settle closer to the outer edge while finer particles migrate with the water towards the centre. The water collects in a central pool and is then drained via the penstock system. As the tailings are deposited, the tailings will consolidate and dry out. Layer upon layer will then be built upon each other resulting in the rise in height of the TSF.

### **7.1.3 Water Management**

An under-drainage network and main decanting infrastructure will be constructed that will drain to a RWD. The under-drainage networks assist in lowering the phreatic surface (mound of water within the dam) by draining excess seepage water into a trench that will run along the perimeter of the dam footprint. A decanting structure will remove excess water from the top of the dam by means of a central penstock. In addition, water management infrastructure such as storm water cut-off trenches and berms around the footprint will be installed to prevent any clean water from the surrounding area from entering the tailings footprint. The solution trench and penstocks drain to the RWDS, from where water is pumped back to the BRPM concentrator. An illustration of the water management and tailings deposition can be found in Figure 7-1.

### **7.1.4 Construction and Site Preparation**

Construction and site preparation involves clearing of vegetation, grading of the site area to specific levels and topsoil removal that is stockpiled for rehabilitation. A starter wall will be constructed along the lower perimeter of the dam, to cater for the initial high rate of rise during deposition, while the rest of the dam perimeter will be contained with a low toe wall. The starter and toe walls are typically constructed from an approved, available, in-situ material, e.g. norite clay. When the tailings height rises above the starter wall crest, the upstream construction method is utilised where wall building is done with dry tailings on top of the existing deposited dry tailings that have gained sufficient strength to be built on.

### **7.1.5 Concurrent Grassing of the Side Slopes**

As the bottom steps of the tailings storage facilities are completed, the slopes will then be grassed by seeding and hand planting. This is done in the rainy season to ensure optimal growth opportunity.

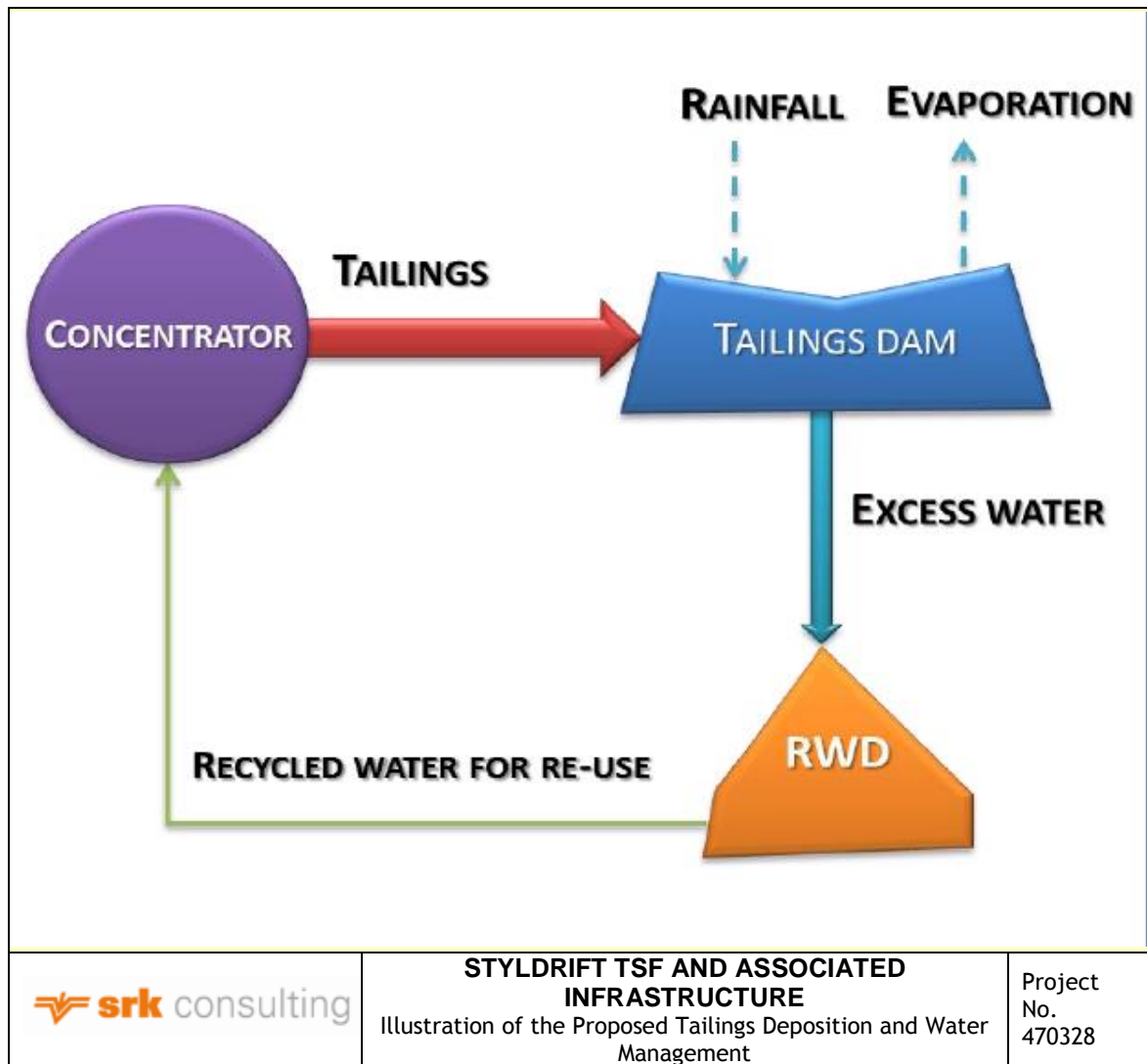
Grassing will be done on completed sections of the dam outer walls, starting from the bottom. This will prevent erosion on completed sections and minimise dust generation from these completed sections.

## **7.2 Return Water Dams**

Two RWDs will be constructed to store excess water from the extended TSF. The RWDs will cover an area of approximately 35 ha. Decanting will be via gravity penstocks. One penstock will be required on the western side of the facility to decant to the proposed new north RWD situated north of the existing TSF and one penstock will be required on the southern side of the facility to decant to the proposed new east RWD situated east of the existing TSF. The RWDs will be constructed in adherence to the DWS best practice guidelines requirements for the containment of contaminated water.

A booster pump station will be installed to transport the excess water from the extended TSF to the RWDs. The RWDs will be drained by pumping any residual water reticulated from the TSF to the modified BRPM Concentrator for re-use as process water.

The RWDs will incorporate spillways for flood events in excess of the 50 year recurrence storm interval. A storm water surcharge capacity of 205 000 m<sup>3</sup> will be provided to contain run-off from the TSF arising from the 50 year recurrence interval storm of 24 hours duration. Figure 7-1 illustrates the typical operating philosophy of the proposed TSF.



**Figure 7-1: Illustration of the Proposed Tailings Deposition and Water Management**

### 7.3 Pipelines

A number of pipelines will also be constructed in order to service the extended TSF. The proposed pipelines will comprise of the following:

- The construction of overland pipelines for the transportation of tailings slurry via overland pipelines from the modified BRPM Concentrator Plant to the TSF, with a pipeline diameter of 0.30 m over a distance of approximately 3 km. The peak throughput of tailings from the modified BRPM Concentrator Plant to the extended TSF will be approximately 140 L/s;
- Construction of pipelines from the extended TSF to the RWDs in order to transport process water to the RWDs for further re-use in the modified BRPM Concentrator Plant;
- Transportation of return water back to the modified BRPM Concentrator Plant from the RWDs via overland pipelines over a distance of approximately 3 km.

Although there is a preferred route option for each pipeline route, the exact position of the pipelines will be determined in the EIA process. However, the preferred route will optimally follow the existing BRPM pipelines as far as feasible. Any crossing of river streams, or working within the 1: 100 year flood line or 32 m from the banks of any stream will be minimised as far as possible, and where necessary Section 21 (c) and (i) applications will be submitted to the DWS.

## 7.4 Service Roads

New service roads will be constructed adjacent to the pipe routes and around the proposed TSF extension portions and RWD's in order for the mine to service and maintain the TSF and associated infrastructure.

## 7.5 River Crossings

River crossings will be necessary for the pipelines running to and from the TSF and RWD's. These will be confirmed in the design process which will be informed by the EIA.

## 7.6 Powerlines

An existing 88 kV Eskom powerlines is located within the proposed TSF footprint<sup>2</sup>. The powerlines will need to be relocated to the south of the proposed TSF footprint. A separate application has been lodged with the DEA who is the competent authority for all energy regulating activities.

## 7.7 Decommissioning Activities

In broad terms, decommissioning activities associated with the proposed project relate to the decommissioning of the TSF extension, the RWD's and associate pipelines. The topsoil stockpile will be utilized for rehabilitation purposes of the TSF and surface areas of decommissioned infrastructure.

Environmental impacts, pollution or degradation may be associated with the entire life cycle of a mine (i.e. identification, exploration phases through project planning, implementation, operations and post-operational closure, decommissioning and rehabilitation). Thus, the SMC will remain liable for the damage or degradation caused by its activities throughout the life cycle of the mining operations until effective decommissioning and rehabilitation has been achieved and a closure certificate obtained.

## 7.8 Closure Phase Activities

After decommissioning, closure activities will include maintenance and aftercare that will form part of the SMC closure objectives. All rehabilitation measures will be monitored until vegetation has effectively established. The closure objectives for the TSF and associated infrastructure can be summarized as follows:

- The required final side slope and top surface geometries will be achieved during the operation phase. The top surface will either be divided into smaller compartments and/or the water will be allowed to drain in a controlled fashion to the historical pool area from where the runoff will be allowed to evaporate or discharged in a controlled manner to the environment;
- Rehabilitation of TSF extension and surrounding areas: This will involve the rehabilitation of the side slopes of the TSF extension and the disturbed areas around the TSF extension. Rehabilitation of surrounding areas will comprise the ripping of compacted soils and re-vegetation of disturbed areas; and
- Generally all surface structures (i.e. pump stations, pipelines, powerlines, etc.) will be removed.

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<sup>2</sup> In terms of the correspondence dated 17 December 2014 from NWREAD to DEA it was indicated that should the powerline not be relocated it would be located in the proposed TSF footprint.



## 8 Project Alternatives

In terms of Regulation 28(1)(c) of GN R543 of 18 June 2010 as description of all identified potential alternatives, including the advantages and disadvantages that these alternatives may have on the environment will be discussed. Should no feasible or reasonable alternatives, as contemplated in Regulation 28(1)(c) of GN R543 of 18 June 2010, exist a motivation will be provided to the competent authority in terms of Regulations 28(3) of GN R543 of 18 June 2010.

During the Screening and Scoping Phase of the Project, based on professional judgement of the EAP, the engineering design consultants and informed by Stakeholder and I&AP comments, various alternatives have been considered for the TSF extension and associated infrastructure. Many of these alternatives have been identified as being non-viable and will be excluded from the Impact Assessment Phase. Section 8 of this report provides a description of the alternatives to the proposed development. In addition to these alternatives, the “no-go” alternative was assessed.

### 8.1 Tailings Disposal Alternatives

Tailings are the waste materials left over after the valuable constituents have been abstracted from the ore. Tailings produced by most conventional milling processes are comprised of a mixture of solids and solution. A high level trade off study between paste, conventional and thickened tailings disposal/storage was performed by Knight Piésold (2010).

#### **Paste technology for tailings disposal:**

Tailings materials are produced in specialised paste thickeners, or ultra-high-density thickeners and transported by positive displacement pumps. Paste is best used for backfill in underground workings, where transport and placement is aided by gravity. Paste is generally discharged with 70-85% solids by weight.

It is recommended for use at mines with low production rates with water and space constraints as well as inexpensive energy. Paste is best used to backfill underground workings. It is not recommended for moderate to high production mines or with coarse tailing materials

#### **Thickened technology for tailings disposal:**

Tailing materials are ‘thickened’ through the use of high-density or deep-cone thickeners to about 65-72% solids by weight. This creates a structurally stable tailing that can be deposited at an impoundment site with little segregation and releases very small amounts of reclaim water.

It is recommended for use at mines with small to moderate production rates where disposal areas are spacious and almost flat. This method can also be suitable for areas with weak foundation materials, which preclude the development of an embankment. Thickened disposal may not be feasible in areas with heavy precipitation, low temperatures and little sun to enhance evaporation.

#### **Conventional technology for tailings disposal:**

Tailing materials are dewatered in conventional thickeners to about 30-55% by weight and transported as a slurry to the repository. Tailing particles typically segregate during deposition and the deposits release significant amounts of water for recovery in reclaim water ponds. Conventional disposal involves the use of dams, embankments or surface impoundments and may use either cycloning or spigoting for deposition.

It is recommended for use at any production rate, but in particular at high production mines where the mine’s topography lends itself to storage of the tailing in surface impoundments. Environmental concerns related to TSFs can be minimised by favourable site geologic conditions and engineered controls or by lining the impoundment.

Benefits claimed for paste tailings include:

- More water recovered for recycling;
- Reduced seepage water;
- Greater TSF storage capacity;
- Fewer earthworks;
- Improved geotechnical performance;
- Increased operational flexibility;
- Earlier rehabilitation.

Disadvantages of paste tailings:

- Paste tailings methods within the platinum industry are not well established;
- Additional resources required i.e. thickeners, positive displacement pumps, control equipment and people;
- Thickeners are sensitive to properties of the feed material, whereas conventional tailings facilities can tolerate quite large variations in slurry density and particle size distribution;
- Operators are still unfamiliar with the system;
- Larger ground footprint may be required, depending on topography and configuration;
- Capital and operating cost – thickeners, stronger pipes, flocculants, positive displacement pumps and additional power.

In addition to the higher capital and operating costs associated with paste tailings, the associated technological risks (as the paste tailings methodology within the tailings industry is not well established) may require extensive research and investigation before this option can be implemented with confidence.

It is anticipated that the conventional thickened tailings disposal technique will be the selected option. This will however be confirmed during the Impact Assessment Phase.

## 8.2 Tailings Storage Facility Location

As mentioned previously, the TSF site, located on Uitvalgrond 103 JQ and adjacent to the current BRPM TSF site, has always been earmarked to accommodate the tonnage generated from the SMC. The availability of this disposal site is now in question as RBPlat has not currently been able to secure surface lease agreements with the land owners, and the availability of alternate TSF sites in line with the expansion strategy has been investigated.

As part of the original Styldrift EIA/EMPR (2008), Knight Piésold (2010) assessed 21 alternative locations for the TSFs as depicted in Figure 8-1. Subsequently to the TSF site, located on Uitvalgrond 103 JQ becoming unavailable, seven (7) of the Knight Piésold alternative locations were revisited during 2011. Of these sites only three (3) sites were found suitable in terms of the site selection criteria for the location of the proposed TSF.

The TSF site selection was done by taking cognisance of the following factors:

- Required capacity and footprint extent (the TSF needs to be able to handle both tailings produced by the Styldrift shaft 1 as well as for the future proposed Styldrift shaft 2);
- Existing and future infrastructure and servitudes e.g. powerlines, roads etc.;
- Position in relation to other mine infrastructure;
- Distance from the Concentrator Plant;

- Area available for development as a TSF;
- Sterilisation of ore reserves/outcrops;
- Environmental and Social Constraints;
- General topography;
- Geology of the site;
- Surface geotechnical conditions in the footprint zone;
- Geohydrology;
- Watercourse locations;
- Land use;
- Land ownership;
- Burial and archaeological sites;
- Proximity to settlements.

The location alternatives for the TSF have been investigated and the preferred location alternative was determined based on the site selection criteria and based on the anticipated impacts on the receiving environment i.e. biodiversity, heritage, water sources and surrounding communities.

### **TSF Alternative 1 (preferred alternative)**

The proposed alternative is located on the Farm Boschkoppie 104 JQ. This alternative would be constructed in phases. The first phase located along the western border of the existing BRPM TSF, followed by the second phase located on the southern border of the existing BRPM TSF.

This alternative is located in close proximity to existing infrastructure. This alternative offers the advantage of making use of the same pipe route as the existing TSF and being adjacent to the existing TSF, it will be less costly to operate, as labour, plant and the required booster pump station could be shared with the current TSF. The area where the extension of the TSF is proposed to be constructed comprises of a transformed environment, with a historic chromite opencast mine south-west of the existing TSF present on the property. This alternative will have the smallest impact zone considering the size of the footprint of approximately 150 ha. This alternative is situated within the BRPM mining right in an area already disturbed by mining activities. Due to its proximity to existing infrastructure a minimal visual impact will be realized as well as shorter pipelines. The location of the preferred alternative can be found in Figure 8-2.

### **TSF Alternative 2**

In terms of the MPRDA EMPR approval RBPlat has approval to extend the existing BRPM TSF located on the farm Boschkoppie 104 JQ onto the farm Uitvalgrond 105 JQ (footprint size of approximately 330 ha) to accommodate additional tailings produced by the modified BRPM Concentrator Plant. No approval was granted in terms of the NEMA EIA Regulations.

However, surface lease agreements for the extension of the existing BRPM TSF onto the Farm Uitvalgrond 105 JQ have not been successful to date. This necessitated RBPlat to investigate alternative sites/locations for the extension of the proposed TSF to accommodate the future tailings produced by the modified BRPM Concentrator Plant. The location of Alternative 2 is illustrated in Figure 8-3.

## **8.3 Return Water Dams**

Two RWDs will be required in support of the proposed TSF extension. Figure 8-2 illustrates the location of the RWDs. No site alternatives will be investigated as the location of the RWDs will depend on the area available in close proximity of the proposed TSF extension.

The northern RWD is located approximately 2.5 km from the modified BRPM concentrator plant and the eastern RDW is located approximately 5 km from the modified BRPM concentrator plant, thus reducing transportation costs for the piping of water from the RWD back to the concentrator for reuse and recycling.

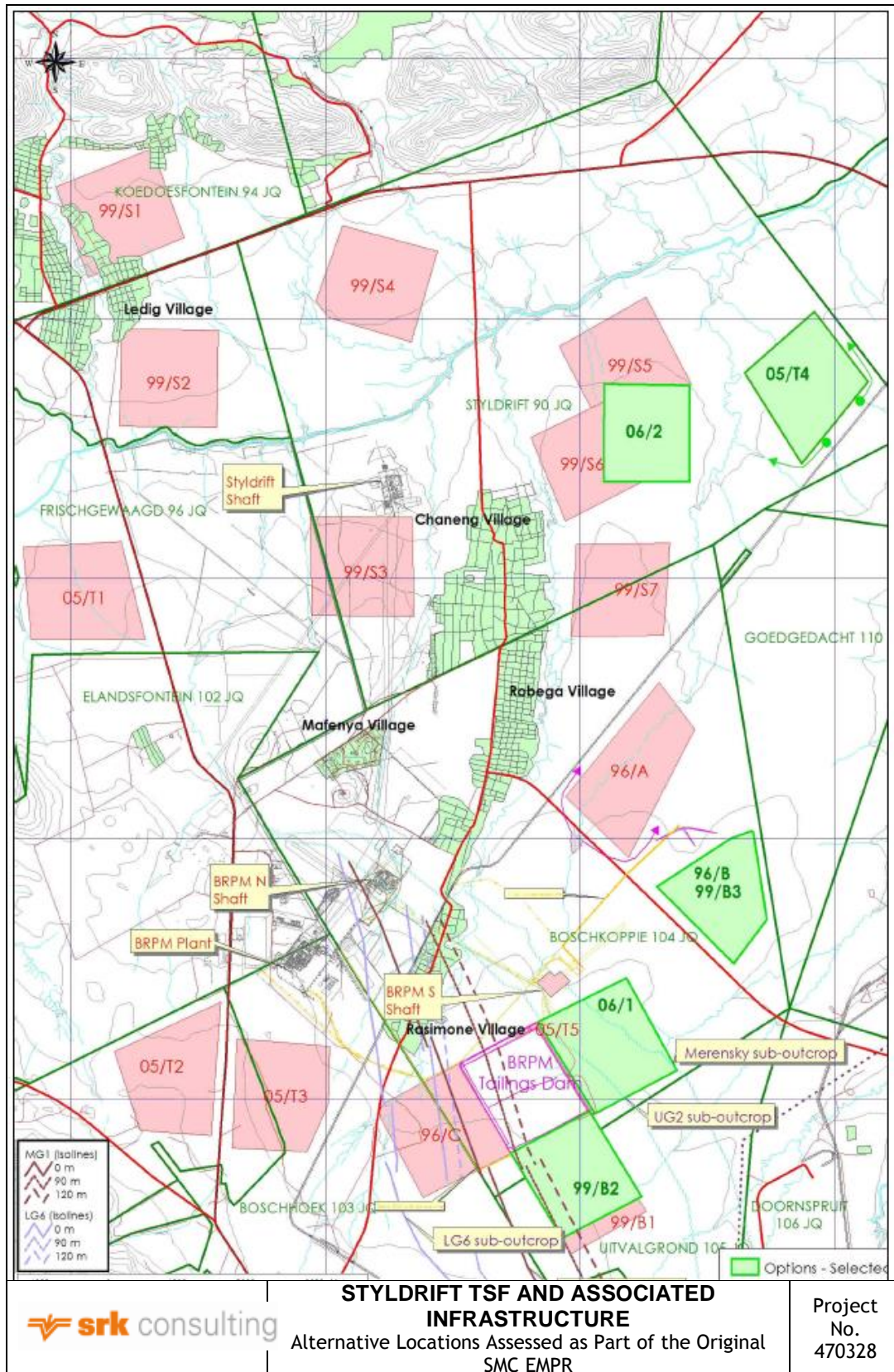
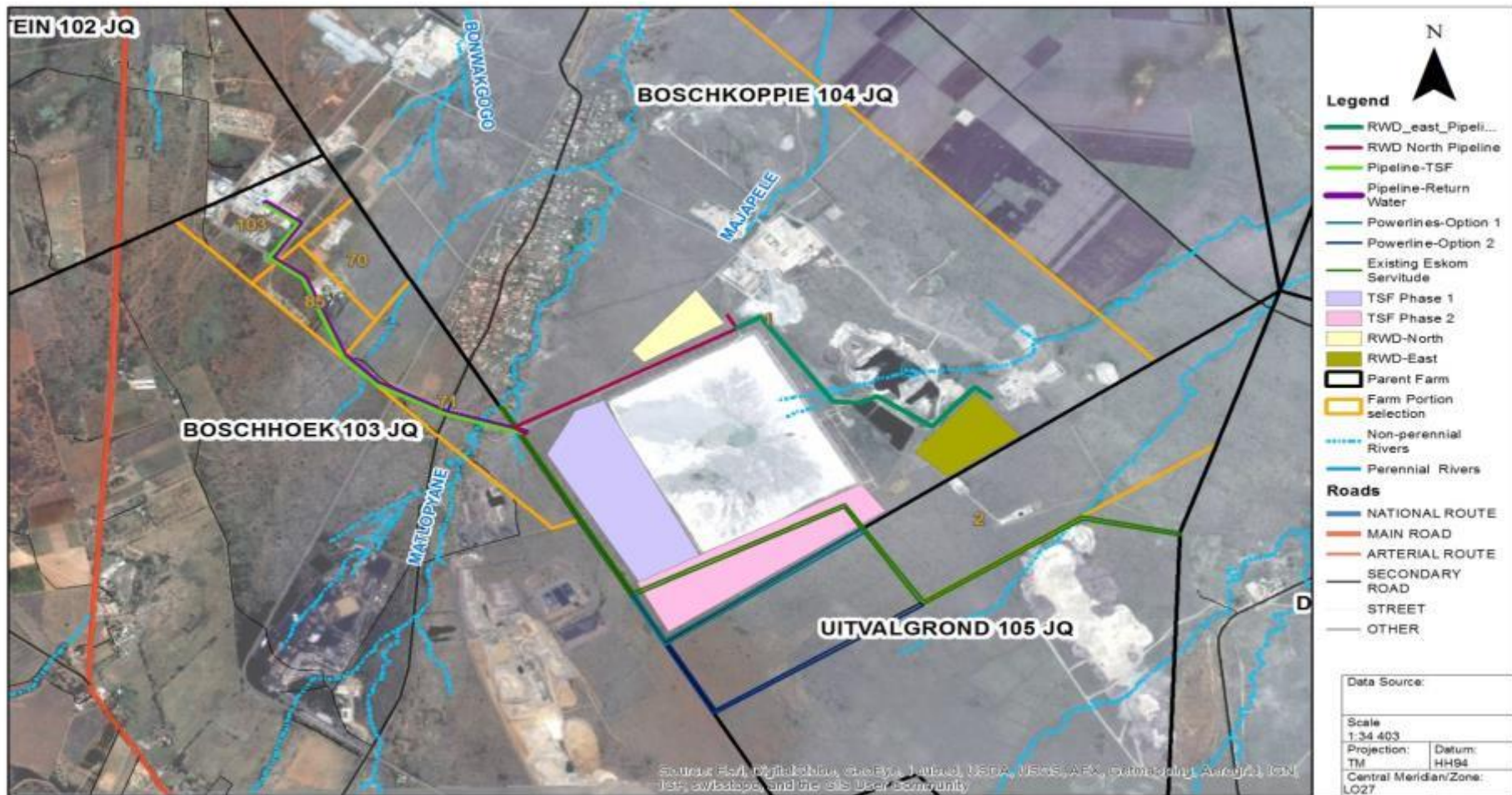


Figure 8-1: Alternative Locations Assessed as Part of the Original SMC EMPR





**Figure 8-2: Map indicating the Location of the Alternative 1 (Preferred)**

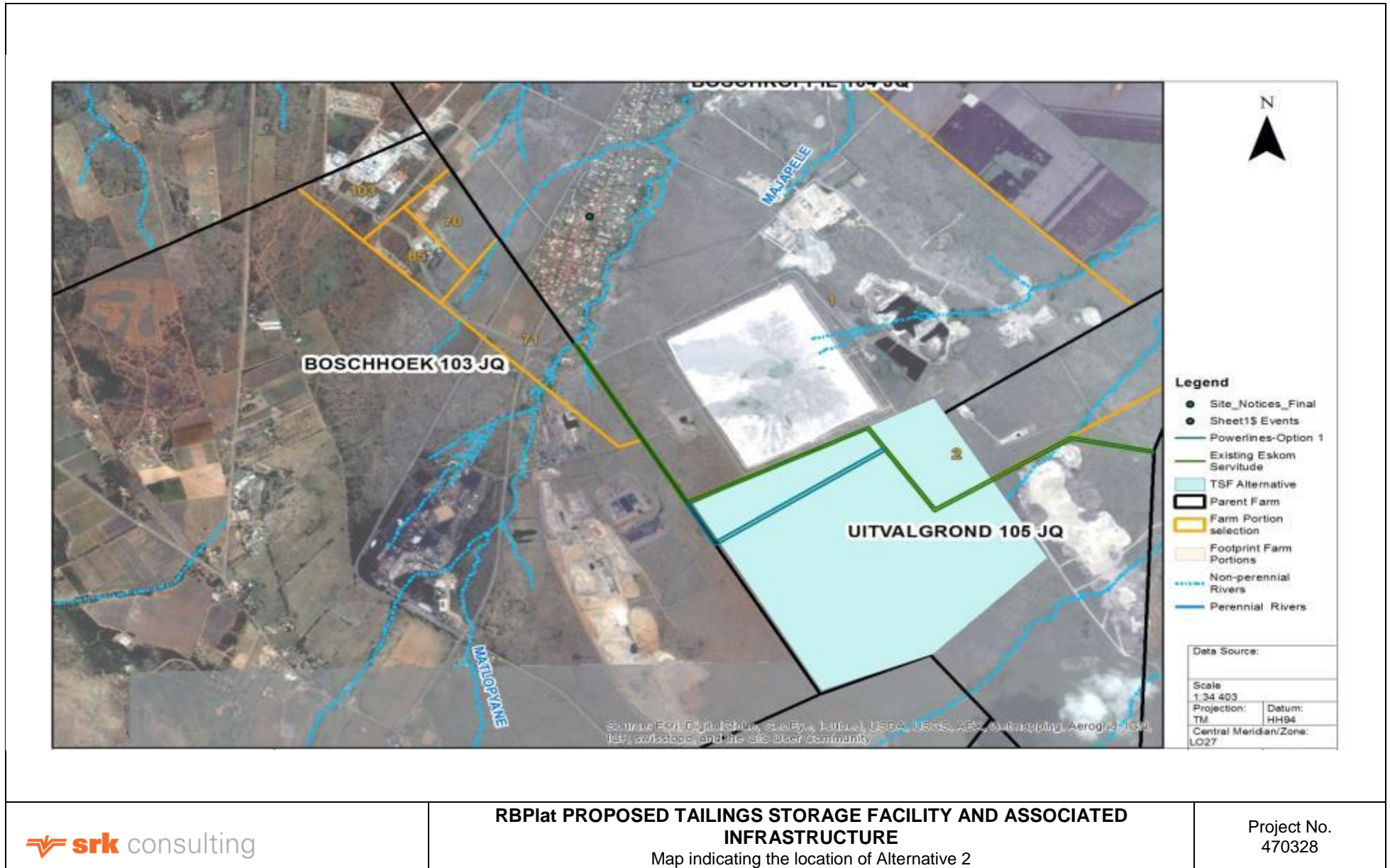


Figure 8-3: Map indicating the Location of Alternative 2



## 8.4 No-go alternative

The 'no-go' option would entail that the TSF would not be extended. This could result in the closure of the mining activities at SMC as mining activities result in the generation of tailings which requires disposal. The SMC will employ between 200 and 800 contract workers during the construction phase for the Styldrift mine Phase 1 project. Between 2000 and 3000 personnel will be permanently employed during the operational phase of the SMC. The additional infrastructure as proposed in this application will provide a number of temporary and permanent job opportunities to the surrounding communities. A new mine or an extension to an existing mine can supply the growing platinum demand whilst generating economic returns for stakeholders such as employees, their dependants, shareholders, the community, local, provincial and national government. The SMC will thus increase economic activities in the area and will earn valuable foreign exchange for South Africa. If the project does not go ahead, then these economic benefits will not realise.

The total tailings production from the existing BRPM operations and SMC (Phase 1 now being constructed) will average 515 kilo ton per month (ktpm) (Knight-Piésold, 2010). The current BRPM TSF cannot accommodate 500 ktpm. An extension to the TSF capacity is thus be required to handle the SMC tailings arising from 2016. The existing BRPM TSF will not be able to accommodate the future production from the SMC. In order for the SMC to achieve its objective of initially supplementing, and eventually replacing, the production at BRPM, additional TSF capacity is required to accommodate the tailings. Approval for the construction of a new TSF was granted in terms of the MPRDA on the Farm Uitvalgrond 105 JQ. However, the surface lease agreements for the extension of the existing BRPM TSF onto the Farm Uitvalgrond 105 JQ have not been successful to date and it necessitated that RBPlat investigate alternative areas for the extension of the proposed TSF to accommodate the future tailings produced by the modified BRPM Concentrator Plant.

The benefits of this project i.e. to extend the existing TSF are considered too outweigh the possible implementation of the 'no-go' option.

# 9 Motivation for the Proposed Project

## 9.1 Need and Desirability

The Merensky reserves at the existing BRPM South shaft and North shafts are now being depleted, with the South Shaft reducing Merensky production during 2012 and North Shaft in 2018. The SMC is planned to initially supplement and eventually replace production at BRPM.

The existing BRPM TSF will not be able to accommodate the future production from the SMC. In order for the SMC to achieve its objective of initially supplementing, and eventually replacing, the production at BRPM, additional TSF capacity is required to accommodate the tailings.

Approval has already been obtained for the SMC to extend the existing BRPM TSF onto Uitvalgrond 105 JQ (Styldrift EIA/EMPR, 2008). However, securing surface lease agreements for Uitvalgrond 105 JQ has proved problematic and therefore alternative TSF capacity locations have been investigated.

The complete SMC project will contribute to the National and North West Provincial economy in terms of an increase in Gross Domestic Product (GDP) due to the R 11.3 billion capital expenditure. The TSF will be required to realize the GDP increase of the SMC. The TSF alone will contribute approximately R276 000 000 to the GDP of the North West Province.



Mining has a dominant role in the economy of the North West Province employing a quarter of the labour force and contributing about 55% of its GDP with significant multiplier effects in the service and trade sectors.

The GDP of the BPD could increase by approximately 4.32 %, while that of the Province could benefit by approximately 1.35 %. Although the project will have a high positive impact on the economy for a minimum of 25 years, the dependence of the province on a single district (BPD) for at least 31 % of its economic activity necessitates greater diversification at a provincial level.

## 10 Baseline Environment

In this section of the report, a summary of the baseline environment of the areas on which the proposed project is to be location is described. This has been compiled on the basis of the following:

- Available information from the existing MPRDA EMPR for the SMC;
- Specialist reports conducted in and around the proposed development footprint on previous applications lodged;
- South African Weather Service;
- South African National Biodiversity Institute (SANBI);
- Existing information on the environmental parameters of the area;
- TSF prefeasibility alternative assessments;
- Stakeholder and I&AP comments received from the Background Information Document (BID) and Draft Scoping Report.

### 10.1 Regional Setting

The proposed extension of the existing TSF and associated infrastructure is located in the proximity of neighbouring communities which include Chaneng, Rasimone, Mafenya and Robega Villages, and approximately 6 km south of the Pilaesberg National Park and Sun City. The SMC is surrounded by several other mining operations, including mines from the following mining companies; Bafokeng Rasimone Platinum Mine (BRPM), Anglo American Platinum Limited and Rustenburg Platinum Mines Limited (RPM).

In terms of the administrative boundaries, the proposed project is located within the North West Province. The project is located within the Rustenburg Local Municipality (RLM) of the Bojanala Platinum District (BPD) Municipality. The proposed TSF and associated infrastructure will be located within Ward 1 and 2 of the RLM. The towns and residential areas close to the proposed project area are given in Table 10-1 (line-of-sight distances).

**Table 10-1: Nearest Towns to the Proposed Development**

Town	Distance (km)	Direction
Rasimone	2 km	North of the proposed TSF
Robega	3.5 km	North of the proposed TSF
Boshoek	3.5 km	South-west of the proposed TSF
Mafenya	4 km	North of the proposed TSF
Ga-Luka	4.5 km	South of the proposed TSF
Chaneng	6.0 km	North of the proposed TSF
Frischgewaagd	12 km	North of the proposed TSF
Sun City	13.5 km	North of the proposed TSF

Town	Distance (km)	Direction
Pilanesberg Game Reserve	13.5 km	North of the proposed TSF
Ledig	15 km	North of the proposed TSF
Rustenburg Central	21 km	South of the proposed TSF

## 10.2 Climate

The RLM can be classified as a humid subtropical climate. The climate is characterized by relatively high temperatures and evenly distributed precipitation throughout the year. Summers are usually wetter than winters, with much of the rainfall coming from conventional thunderstorm activity. The average annual rainfall is 462.9 mm, 84% of which occurs in the summer months. The temperatures peak during the summer months and are lower during the winter months, dropping to below 0°C during some nights. Average summer temperatures range from 13-30°C and approximately 2 -24°C in winter. The average amount of precipitation in Rustenburg is 675.6 mm. The month with the most precipitation on average is January with 137.2 mm. The month with the least precipitation on average is July with an average of 2.5 mm.

### 10.2.1 Wind Direction and Speed

The winds are predominantly east-northeast, south-west and north-northwest in the Rustenburg area. The average wind speeds are higher during the period from September to February coinciding with the warmer periods of the year. During the period from March to August, the prevailing wind conditions are calmer with the exception of a few days when high speed winds are observed. The BRPM site where the construction activities are proposed to take place is located approximately 40 km northwest of Rustenburg in the North West Province. The impacts on the air quality of the area will be considered during the Impact Assessment Phase of the project.

## 10.3 Topography

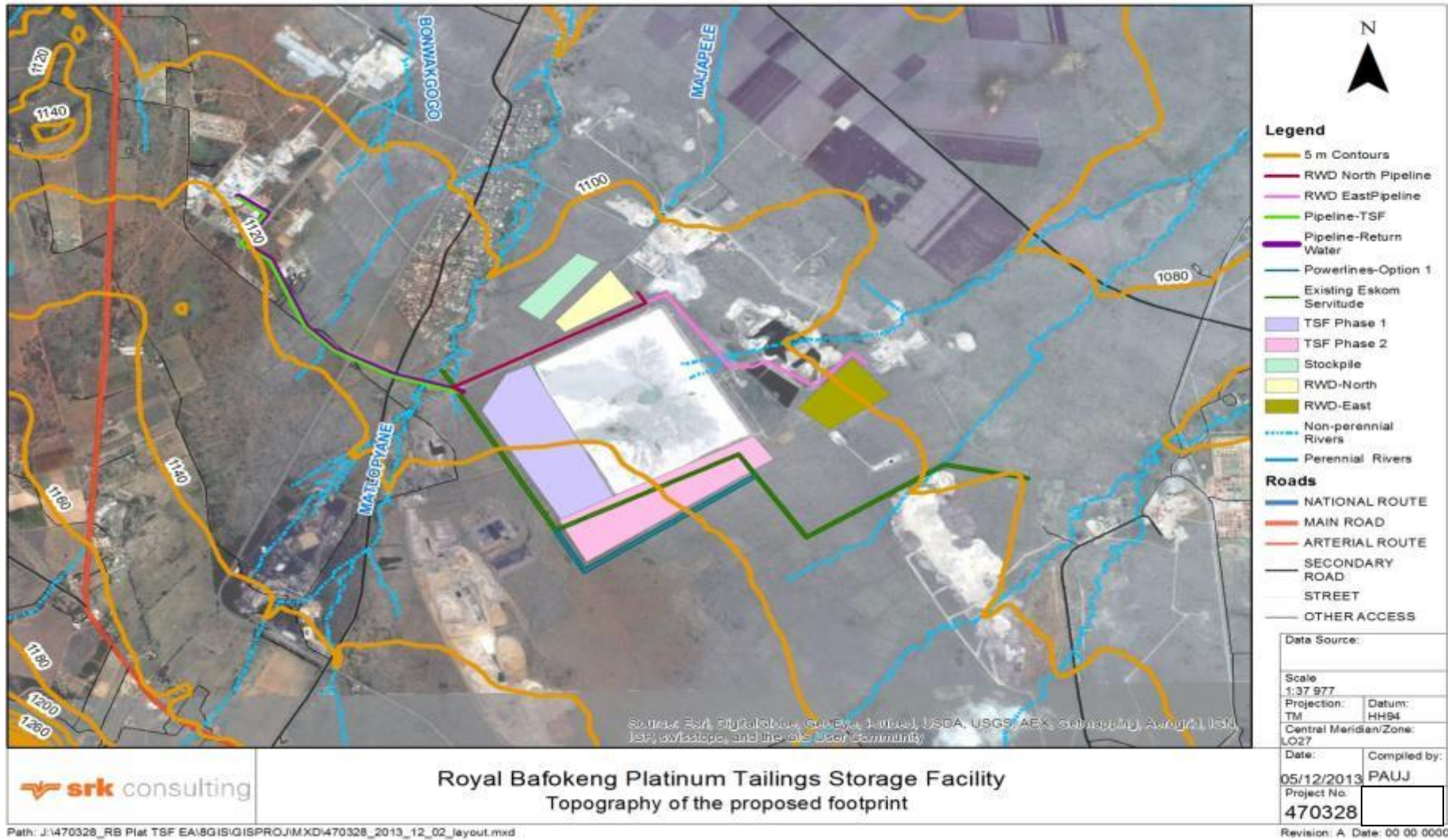
The general topographic gradient of the RLM area is between 0 and 9%. The site-specific topography is generally flat with two drainage lines on the eastern side of the existing BRPM TSF, draining to the Leragane Stream from 1 100 meters above mean sea level (m.a.m.s.l.) to 1 060 m.a.m.s.l., along a distance before the convergence of approximately 7 km. To the east of the proposed footprint area the proposed pipelines transect the Matlopyane Stream which ultimately runs into the Elands River. Approximately 4 km to the east of the proposed site the elevation rises to 1 300 m.a.m.s.l.

Figure 10-1 provides an illustration of the contours of the proposed project area. The footprint of the planned TSF is located on a historic chromite opencast mine south-west of the existing TSF. It is unknown to who was responsible for the historical mining of this area. Merafe Resources is currently using the open cast area to dump non-hazardous waste. All authorisations are in place for the Merafe Resources activities. Merafe Resources will be complete with their mining activities and will evacuate the area once the open cast has been rehabilitated by June 2015. Knight Piésold has been appointed to design the TSF and will be doing geotechnical studies to determine the stability of the area. Groundwater studies will also be conducted to determine the impact of the existing open cast area.

## 10.4 Geology

According to published 1:250 000 scale geological map (sheet 2529 Pretoria) the proposed site is underlain by the mafic rocks of the Lower, Critical and Main zones within the Western Limb of the Rustenburg Layered Suite (RLS), Bushveld Igneous Complex (BIC), with a small portion of the

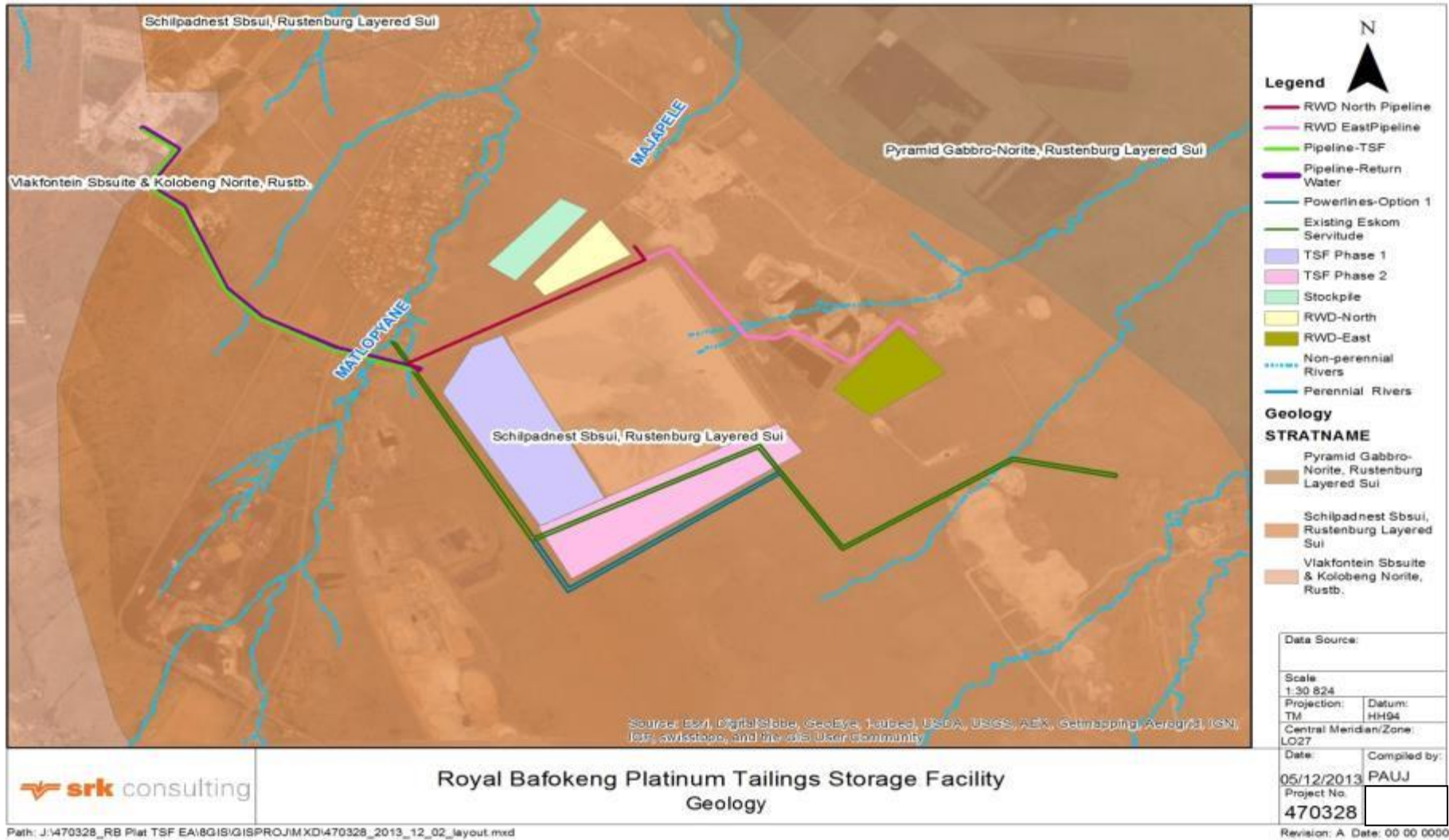
Pilanesberg Complex to the north. The BIC is well known for its large platinum and palladium resources and consists of three different ore bodies namely the Merensky Reef, UG2 Chromitite and Platreef. Although the dip direction of both reefs varies across the properties it follows the regional trend in direction. Iron-rich ultramafic pegmatoids have been encountered at BRPM and will in all likelihood be encountered underground at Styldrift. Figure 10-2 provides a simple illustration of the geology in the proposed development area.



	<p><b>STYLDRIFT TSF AND ASSOCIATED INFRASTRUCTURE</b> Illustration of the Topography in and around the Proposed Project Site</p>	<p>Project No. 470328</p>
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**Figure 10-1: Illustration of the Topography in and around the Proposed Project Site**





	<b>STYLDRIFT TSF AND ASSOCIATED INFRASTRUCTURE</b> Map Illustrating the Geology of the Proposed Project Area	Project No. 470328
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Figure 10-2: Map Illustrating the Geology of the Proposed Project Area

## 10.5 Soils, Land Use and Land Capability

### 10.5.1 Soils

Soils in the area are predominantly of the Hutton, Arcadia and Bonheim forms. These soil types of the class 'DA' are black and red strongly structured clayey soils with a high base status. The soils are derived from norite, anorthosite and pyroxenite lithologies and much of the area is covered with black turf. Soils present in riparian zone/s are characterized by clayey and stony soils with sandy soils in places.

The general soil type within the footprint of the proposed development has a depth of approximately 750 mm with a clay content of more than 35%. The erosion indices for the dominant soil forms are highly variable across the study area and classify across the whole range, having a moderate to high erodability index on the soils with low clays and low organic carbon contents, while the more clay rich materials are less sensitive, but still in the moderate to high range if disturbed (Jones, 2013).

### 10.5.2 Land Use

The land use where the proposed activities will take place comprises predominantly of mining activities. The majority of the proposed development footprint is located on open and impacted Bushveld habitat. It is recognising that the local communities do use land in the area for low level livestock grazing.

### 10.5.3 Land Capability

Soils found within the proposed development footprint have generally shallow rooting depth with good water holding capability but poor drainage. The land capability in the area has poor to limited arable potential. The footprint of the planned TSF is located on a historic chromite opencast mine south-west of the existing TSF. Suitable land capabilities for the post decommissioning phase will be considered during the Impact Assessment Phase.

## 10.6 Surface Water

The proposed project footprint falls within the A22F quaternary catchment within the Crocodile West and Marico Water Management Area. The SMC receives fresh water from the Magalies Water Board as the regional Water Service Provider. No surface water is abstracted for the SMC. The non-perennial streams of Bonwakgogo, Matlopyane and Majapele originate on the Farm Boschkoppie 104 JQ. The Matlopyane originates approximately 5 km south of the Farm Boschkoppie 104 JQ. These streams drain northwards into the Elands River which in turn drains into the Crocodile River.

These rivers mainly flow after heavy rain events; therefore no permanent surface water sources occur. The streams that flow through the regional area are non-perennial and therefore surface water usage from these streams could only take place during and for short periods after rainfall occurrence. The uses during these periods could be livestock watering, irrigation, informal domestic and recreational (fishing/swimming). No watercourses flow directly through the footprint area of the proposed TSF extension, but given the size of the TSF extension and associated RWD's and infrastructure, it is expected that watercourse diversion will be required to accommodate effective stormwater management in terms of Regulation 704. The surface and groundwater monitoring points illustrated in Figure 10-3 form part of the SMC and BRPM monitoring network. With the construction of the proposed TSF, additional monitoring points may be required and will be considered during the Impact Assessment Phase.

## 10.7 Geohydrology

The depth to ground water level is determined primarily by the type of aquifer and the hydraulic characteristics of the water-bearing formations and is expected to reflect piezometric levels in shallow and deep seated weathered and fractured hard bedrock aquifers comprising weathered and fractured, layered pyroxenite, norite-anorthosite and gabbro-norite rocks (Evans & Mnisi, 2007). The average weathering depth of norite/pyroxenite units is approximately 30 m, indicating a well-established, saturated shallow weathered zone aquifer.

SMC, in association with BRPM, has an extensive groundwater monitoring network. Any reduced groundwater quality is actively identified through the groundwater monitoring programme. With the construction of the TSF extension, additional monitoring points may be required. The location of the groundwater monitoring network is illustrated in Figure 10-3. The potential impacts associated with the geohydrological aspects will be further considered during the Impact Assessment Phase.

### 10.7.1 Aquifer System and Classification

The aquifer around the Styldrift area is classified as a Minor source aquifer system, according to the DWA classification system. The aquifer system present at the site is characterized as a confined to semi-confined weathered and/or fractured rock aquifer associated with the layering of the RLS. The weathered zone has a low development potential but provides storage and recharge to the regional groundwater system. Although the regional aquifer does not produce large yields, it is a source of water for some domestic supplies and base flow to rivers.

However, there is no current evidence that the TSF footprint aquifer contributes to any domestic supplies or base flow to rivers. Municipal water is supplied to the villages in the vicinity of SMC, and although some boreholes exist that can supply some domestic water, none of the communities are totally reliant on groundwater.

It is estimated that only 2% of the regional population uses groundwater as a source of water (Mabenge & Duthe, 2013), and it is understood that these are not located within the immediate vicinity of the proposed TSF extension.

### 10.7.2 Hydraulic Characteristics

The mafic rocks tend to weather to a low permeability clay known as "black turf". Literature values for clay soils range from 10<sup>-8</sup> m/day to 10<sup>-5</sup> m/day. Work done in similar environments has shown a higher hydraulic conductivity for the black turf (1 x 10<sup>-4</sup> m/day). For the purposes of this study we will assume that the underlying black turf has a hydraulic conductivity of 1 x 10<sup>-5</sup> m/day; classified as low permeability. The low permeability of the black turf is considered to reduce seepage and recharge to the underlying aquifers (Mabenge & Duthe, 2013).

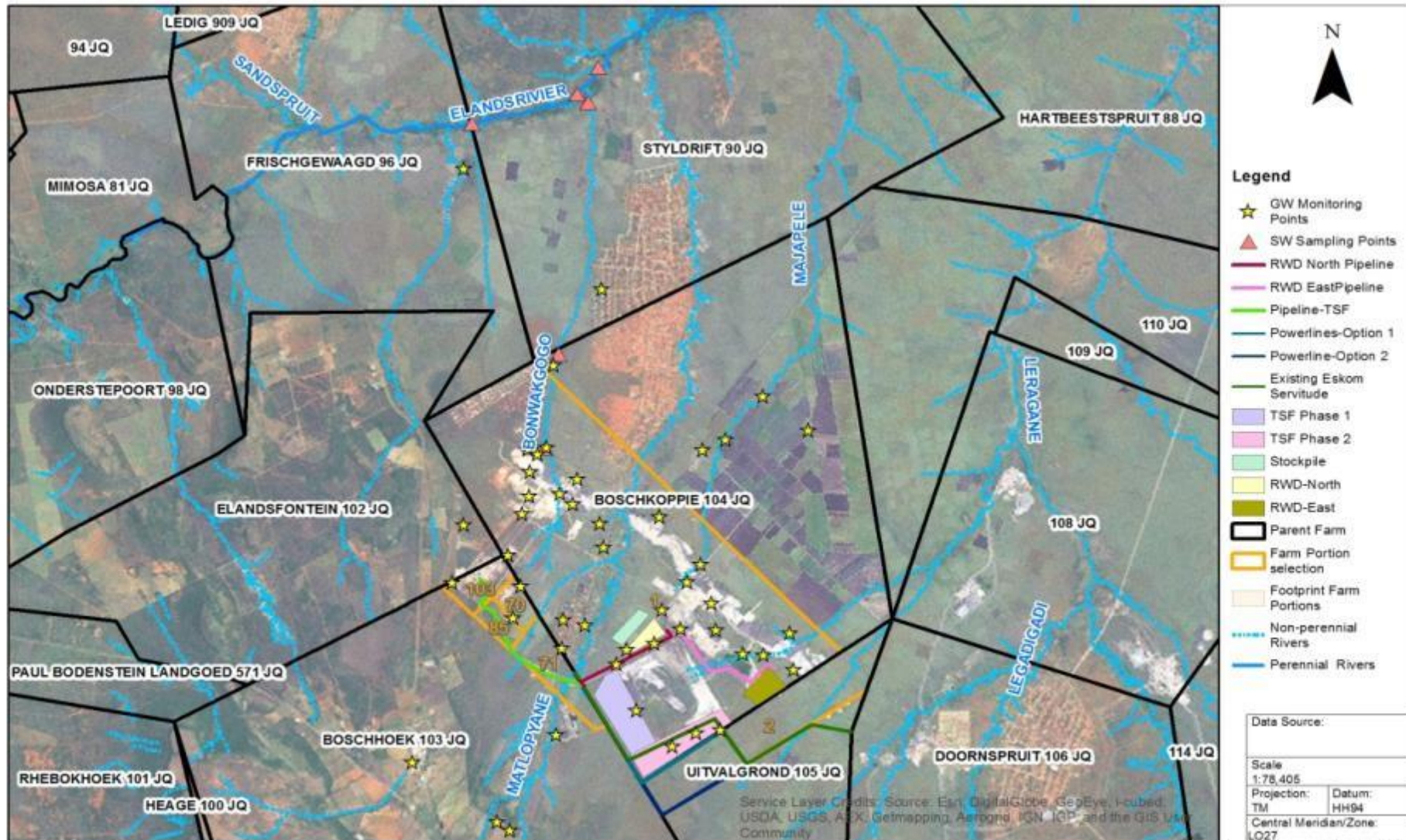
### 10.7.3 Groundwater Quality

The SMC in association with BRPM has a groundwater monitoring programme that encompasses the current mining area and existing TSF. Groundwater samples are collected from monitoring boreholes and analysed for chemical analysis. The monthly and quarterly results are evaluated against DWA drinking water quality standards and South African National Standards (SANS) 241: 2005 (drinking water specifications).

### 10.7.4 Wetlands

No wetlands have been identified in and around the proposed development. However, a wetland specialist will be consulted in order to assess the site where the proposed construction activities will take place.





	<p><b>STYLDRIFT TSF AND ASSOCIATED INFRASTRUCTURE</b> Surface and Groundwater Sampling Network</p>	<p>Project No. 470328</p>
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**Figure 10-3: Surface and Groundwater Sampling Network**



## 10.8 Ecology

### 10.8.1 Flora

The project area falls within the Savanna Biome, Central Bushveld Bioregion and falls within the Zeerust Thornveld and Gold Reef Mountain Bushveld vegetation types (Mucina & Rutherford, 2006).

A number of alien floral species were identified during the field assessment. The majority of alien plant species are Category 1 and 3 invaders and are present within the Transformed and Impacted Bushveld Habitat Units (van Staden, et al., 2013). A number of medicinal floral species were identified during the field assessment. However, no other Red Data List (RDL) floral species were identified during the assessment (van Staden, et al., 2013).

### 10.8.2 Fauna

High levels of historical anthropogenic activity within large portions of the subject property and within the surrounding area have led to a high level of disturbance of natural faunal habitat within large portions of the subject property. Despite the disturbed nature of large portions of the subject property and the immediate surroundings, habitat integrity and ecological function was still largely intact in many habitat units. The greater than 60% Probability of Occurrence (POC) likelihood of these RDL faunal species is largely due to them utilising the subject property for foraging purposes (van Staden, et al., 2013).

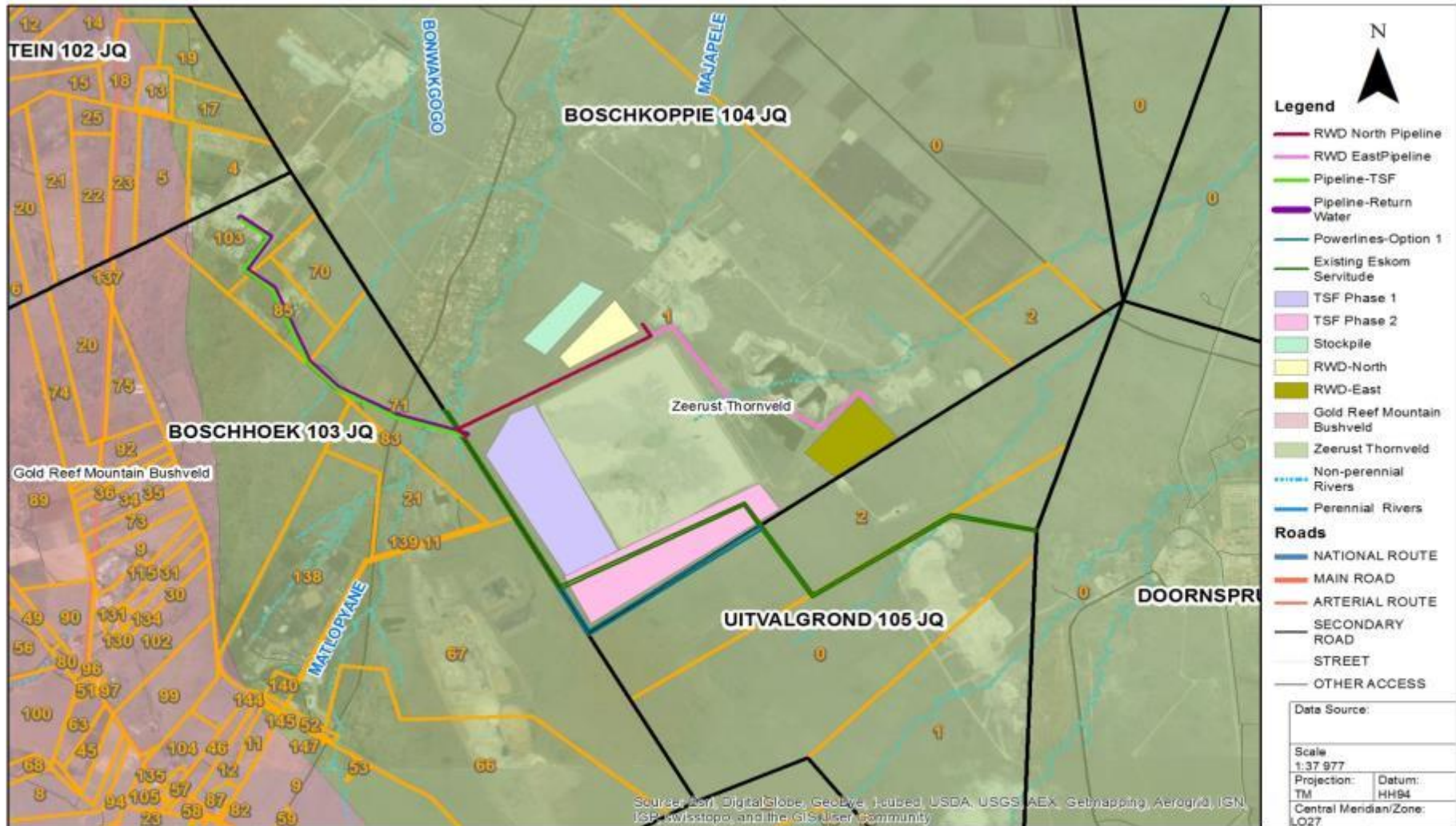
Avifaunal surveys were conducted across the entire study area and all avifauna species seen or heard during the time of the field assessment were recorded. No species identified was listed as threatened, however it should be noted that suitable breeding and foraging habitat exists for a number of species within the study area with special mention of the Wetland Habitat Unit and the Open Bushveld Habitat Unit (van Staden, et al., 2013). No threatened RDL avifauna was identified during this site survey.

Reptile species identified during the assessment were namely, the *Agama atra* (Southern Rock Agama), the *Trachylepsi striata* (African Striped Skink) and *Trachylepsis varia* (Variable Skink). None of these reptile species are considered threatened by the North West Province (van Staden, et al., 2013).

No amphibian species were encountered during any of the field assessments. It is expected that the majority of amphibian species most likely to occur on the study area are inhabitants of wetland and riparian areas and the study area wetland habitat were completely dry during the time of survey considered the reason why no amphibians were encountered.

No RDL invertebrate species were recorded during the assessment. The abundance of invertebrate species may vary over time due to many factors such as habitat loss or fragmentation, pollution and noise. Due to the already existing mining infrastructure the natural habitat has already undergone a transformation to some degree. Furthermore, artificial lighting near mining infrastructure, impacts on insect populations resulting in the death of thousands of individuals and can cause a substantial decrease in abundance on the surrounding populations.

No threatened spider or scorpion species are listed in the North West State of the Environment Report in 2002. Therefore, a record of threatened spiders and scorpions was acquired from the most recent RDL spider and scorpion data available for South Africa using the SANBI threatened species database, <http://www.speciesstatus.sanbi.org>.



	<b>STYLDRIFT TSF AND ASSOCIATED INFRASTRUCTURE</b> Vegetation Map of the Proposed Project Footprint	Project No. 470328
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Figure 10-4: Vegetation Map of the Proposed Project Footprint

## 10.9 Air Quality

The project area and surrounding land can be described as being rural and mainly used for mining operations and small residential villages such as Chaneng, Robega, Rasimone, and Mafenya. There are major tourist attractions to the north of the mine area i.e. Sun City and Pilanesberg National Park. The following sources of air emissions have been identified in the area (Naidoo & Reddy, 2013):

- Mining activities in the region;
- Road network;
- Windblown dust (windblown dust especially during the dry season);
- Vehicle tailpipe emissions;
- Domestic fuel combustion.

The TSF will be engineered and operated to manage the impact on sensitive receptors of atmospheric emissions, but the ability to mitigate the emissions to acceptable levels is dependent upon the local proximity of receptors. Atmospheric emissions are recognised to be a primary concern of local residents, particularly associated with dust emissions (Naidoo & Reddy, 2013).

The proposed development will likely be a source of dust during the construction phase. The air quality study conducted in 2008 by Airshed Planning Consultants, before the SMC was built, indicated that the main impacts likely to occur during construction are increased Total Suspended Particulates and PM<sub>10</sub> (particulate matter) concentrations. The same applies during the operational phase. An air quality study will need to be conducted to determine a new baseline, and to make recommendations for a new air quality monitoring plan. The location of the existing PM<sub>10</sub> and Dust Fall Out monitoring stations are illustrated in Figure 10-5 (Naidoo & Reddy, 2013). The Waterberg – Bojanala Priority Area (GN 104 of 2013 with reference to GN 459 of 2012) and the NWREAD Air Quality Management Plan will be considered by the air quality specialist during the air quality study. Further, dust fallout rates within the residential and industrial threshold are generally tolerated, while action and alert threshold dust fallout, generally result in public complaints, and are therefore considered to be action levels, at which sources of excessive dust must be investigated (if not known) and suitable mitigation measures instituted. The National Dust Control Regulations published under GN R 827 of 1 November 2013 in terms of the NEM: AQA provides a standard for acceptable dust fall rates for residential and non-residential areas as per the local town planning scheme.

## 10.10 Noise

A baseline noise survey was conducted in 2008 to indicate the noise levels pre-mining, as well as the operational noise levels. Noise sensitive environments include Chaneng, Robega, Mafenya and Rasimone. Based on the SANS, SANS 10103 of 2008 (noise thresholds), residential daytime ambient noise levels should not exceed 55 Decibels (dBA) and night time levels should not exceed 45 dBA. Industrial areas daytime and night time levels should not exceed 70 and 60 dBA, respectively. It is not expected that the noise levels within the vicinity of the proposed project will exceed these levels. It must be noted that noise impacts are not a line source and additional noise sources does not necessarily cause the noise pollution to increase.

Noise will be generated during the construction and operation of the proposed project through vehicular movement and construction activities. A noise specialist has however been consulted for the purpose of this study and the findings and assessment will be incorporated into the Draft and Final EIAR.





**Figure 10-5: Dust Fall Out Monitoring Locations**

## 10.11 Visual quality

The proposed site is situated on a relatively flat topography and vegetation cover. The visual quality of the area is relatively moderate. The quality has been affected by the intrusion of anthropogenic influences such as mining activities, cultivated lands and infrastructure.

The proposed TSF is located south of the existing SMC. The Rasimone village is approximately 1.87 km north of the proposed position of the TSF. The area can be described as being degraded/modified grassland, therefore placing this site into the modified rural landscape category. The positioning of the proposed TSF should be preferably compatible with the surrounding land use. Further, due to the height of the proposed TSF it is visible by various viewers. However, with the proposed TSF being situated in close proximity the existing BRPM TSF, the viewer sensitivity will be decreased (Jordaan & Allan, 2013).

## 10.12 Vibration

Due to the nature of the proposed infrastructure, it is anticipated that no vibration impact is associated with the construction and operation of the TSF and the associated infrastructure. A Vibration specialist will be consulted during the Impact Assessment Phase to provide a specialist opinion with respect to the aforesaid.

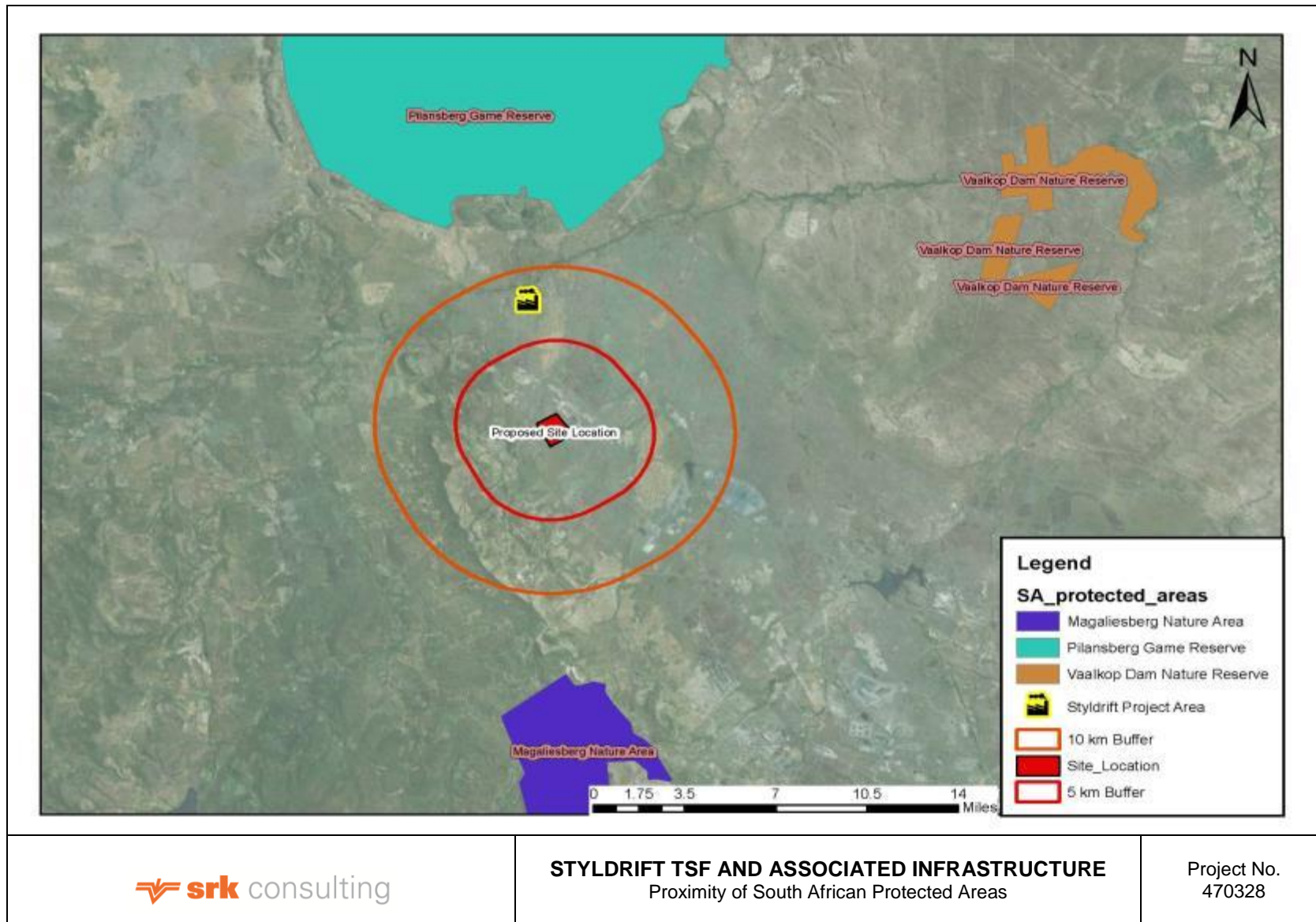
## 10.13 Archaeological, Cultural and Paleontological Resources

Heritage environment as defined in the NHRA is a broad, generic term used to include all human-made phenomena and intangible products that are the result of the human mind. Natural, technological or industrial features may also be part of heritage resources, as places that have made an outstanding contribution to the cultures, traditions and lifestyles of the people or groups of people of South Africa. Cultural aspects of the proposed project area may not be directly defined and various impacts may only come to light at a later stage of the project.

The specialist study carried by the archaeologist, local community members and BRPM's Environmental Assistant carried out additional investigations to identify potential graves and places of cultural significance in the footprint of the new project infrastructure. The investigations were carried out in two parts. It is recognised that archaeological deposits usually occur below ground level. Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted and a university or museum notified in order for an investigation and evaluation of the find(s) to take place (Coetzee, 2013). Heritage resources found in the Styldrift project area included two stone tools, two formal graveyards and several historical houses.

In conclusion, it is highly unlikely that heritage resources of significant number or archaeological value would occur in the footprints of the new project infrastructure. None of these artefacts were found in the vicinity of the new TSF and associated infrastructure.

It should be kept in mind that archaeological deposits usually occur below ground level. Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and a university or museum notified in order for an investigation and evaluation of the find(s) to take place (Coetzee, 2013). The possible presence of archaeological sites and artefacts are further enhanced by the proximity of the Pilanesberg National Park and other protected areas nearby. The proximity of the Pilanesberg and Magaliesberg Protected areas are illustrated in Figure 10-6.



**Figure 10-6: Proximity of the Pilanesberg and Magaliesberg Protected Area**

## 10.14 Regional Socio-Economic structure

This section provides an overview of the areas that will be affected by the proposed Styldrift Phase 1 Project. This overview will be provided per Ward. It must be noted that the ward demarcations are large and include several sub-places.

The BPD District Municipality comprises five local municipalities namely Kgetlengriver, Moretele, Moses Kotane, Madibeng and RLM. The total population of BPD Municipality is 1 507 492 persons. Almost a third of the population of BPD Municipality is from RLM which has a population of 549 574. 42 % of the population earn no income and 36% of the population earn a low income. 12 % of the population earn in the middle income bracket. 30% of the population earn an income in the formal sector, 9% in the informal sector and 3% work and earn as private households (Nemai Consulting, 2013). The proposed project falls within Ward 1 of the RLM.

In Ward 1 of the RLM, forty two percent of the population earn no income and thirty six percent of the population earn a low income. Twelve percent of the population earn in the middle income bracket. Thirty percent of the population earn an income in the formal sector, nine percent in the informal sector and three percent work and earn as private households (Nemai Consulting, 2013).

In Ward 2 of the RLM, 46% of the population earn no income. 33 % of the population earn in the low income bracket and 16% of the population earn in the middle income bracket. In terms of sector employment, 33% of income is earned in the formal sector, 14% in the informal sector and 2% as private households. Of those who earn an income, it is more likely that they will be employed in the formal sector as it is larger than the informal sector. Those who earn in the middle and high income bracket are part of the formal sector. The informal sector only employs persons who earn an income in the low income bracket or those who earn no income at all.

Ward 2 has a larger informal settlement than Ward 1. Thus it can be inferred that the informal sector has more presence in the informal settlement of Ward 2 (Nemai Consulting, 2013).

## 11 Public Participation Process

As part of the proposed project to construct the TSF, RWDs and associated infrastructure, it is necessary to relocate an existing powerlines that runs through the site where the expansion of the TSF will take place. Due to the fact that the construction of a powerline was proposed the application was lodged with the DEA as they are the competent authority for energy related activities.

After considerable consultation with the NWREAD and DEA it became apparent that only the powerline listed activity could be authorised by the DEA and the remaining listed activities associated with the proposed TSF, RWDs and associated infrastructure would have to be authorised by the NWREAD. A request for delegation from DEA to NWREAD was unresolved and due to the narrow timeframes involved in the completion of this project, it was decided to split the application and submit separate applications to NWREAD and DEA for the TSF, RWDs and associated infrastructure. As a result of the application submitted to the DEA the PPP commenced (notification of I&APs) under the powerlines application. Based on the fact that the PPP commenced under the application submitted to DEA and subsequently to splitting the applications, a request to deviate from the PPP in terms of Regulation 54(5) of GN R543 of 18 June 2010 was lodged with the NWREAD. The deviation was to follow a combined PPP for these applications. The deviation was granted by NWREAD on 25 November 2014.

The PPP forms an important aspect of the Scoping Phase of a project. The PPP is primarily aimed at affording I&APs and Stakeholders the opportunity to gain an understanding of the project. In addition, the purpose of consultation with the landowner, affected parties, interested parties and



communities is to provide them with the necessary information about the proposed project so that they can make informed decisions as to whether the project will affect them, and provide the EIA team with local knowledge on the area and raise concerns relating to the biophysical and social impact that may arise.

Additional objectives of stakeholder engagement include the following;

- Providing details on EIA process, as well as the requisite authorisation required prior to implementation of the project;
- Providing I&APs with an opportunity to obtain information about the project;
- Providing an opportunity for I&APs to give input and comment on the proposed development;
- Allowing I&APs to comment on the contents and findings of the Scoping Report;
- Allowing I&APs the opportunity to provide suggestions for alternatives and enhanced benefits related to the proposed development;
- Assisting I&APs to raise concerns or matters, and ensuring that the matters brought forward are captured and taken into consideration;
- Facilitating and ensuring effective stakeholder engagement.

## 11.1 Interested and Affected Parties Register

An I&APs Register was developed using RBPlat's existing databases compiled during monthly community meetings with the surrounding communities, as well as responses to the advertisements associated with this specific project and distribution of BID's and Stakeholder and I&AP consultation, as well as from I&AP databases from other projects conducted in the area. The I&APs Register will be maintained for the duration of the study where the details of stakeholders are captured and automatically updated upon communication to the EAP. The identification, registration, and comments from I&APs will be an on-going activity. Refer to the Stakeholder Engagement Report (SER) (Appendix D) for a copy of the I&AP Register.

## 11.2 Site Notices

Sites notice boards (Size A2: 600 mm X 420 mm) notifying stakeholders and I&APs of the proposed activity were placed at conspicuous places on the project area. A copy of the site notices and proof of their placement is provided in Appendix D. Table 11-1 provides a list of these site locations.

**Table 11-1: Site Notice Locations**

Site Notice	Location	Coordinates	
		Latitude	Longitude
1	Chaneng Village Council Offices	25.42082921 S	27.11893832 E
2	Robega Community Offices	25.42720941 S	27.12052625 E
3	Robega Police Station	25.43308271 S	27.1208709 E
4	Rasimone Village Council Offices	25.46323868 S	27.11260495 E
5	Mafenya Middle School	25.43132268 S	27.10301029 E
6	General Dealer at Mafenya	25.43366998 S	27.0982667 E
7	Meeting Place of the Elders in Chaneng	25.4101604 S	27.12111515 E
8	Entrance to Chaneng village Opposite Styldrift Mine	25.39809266 S	27.12058857 E
9	Chaneng Post Office	25.40992067 S	27.12209028 E
10	Engen Garage Next To Sun City Main Entrance	25.36205067 S	27.09998108 E
11	Entrance gate to the Chaneng Clinic	25.41323704 S	27.12461931 E



### 11.3 Background Information Document

A Background Information Document (BID) was compiled and were sent to all I&APs to provide background information on the proposed project, outline the EIA process, and to notify stakeholders of the initial introductory public meeting. The BID gave the public the opportunity to register as I&APs. I&APs for whom no e-mail address could be located were sent a Short Message Service (SMS) notifying them of the proposed project, and the contact number of SRK personnel where additional information could be obtained. The BID was also placed at the following public places:

- Rasimone Community Office;
- Robega Community Office;
- Robega Police Station;
- Chaneng Community Office;
- Chaneng Community Clinic;
- General Dealer at Mafenya.

### 11.4 Advertisements

SRK placed English advertisements in the Rustenburg Herald and Platinum Weekly on 14 February 2014. A Setswana advertisement was placed in the Leseding News on 26 February 2014. A copy and proof of the newspaper advertisements can be found in Appendix D.

### 11.5 Public Meeting

I&APs were notified of the public meeting via e-mail, SMSs and flyers distributed in the area. Notification to the introductory public meeting was physically hand delivered to the Headsmen of the potentially affected villages. Two days prior to the meeting loud hailers were commissioned in and around the surrounding communities to remind all inhabitants of the public meeting date and times.

The public meeting was held on 09 April 2014 in the Bonwakgogo Primary School Hall at 16:00.

Special arrangement was made for the BRPM bus to transport interested community members to the meeting. Buses collected individuals at 15h00 at the following venues:

- Chaneng - Bus Circle; Kagiso Butchery; Four way stop signs (Robega and Chaneng);
- Mafenya - Middle School;
- Robega - Charora High School;
- Bonwakgogo Primary Bus Stop;
- Rasimone Kgotla Office;
- Rasimone 2 way stop signs next to Dan Sekano Business.

The aim of the meeting was to inform the public on the proposed project, provide the public with technical background on the activities proposed to take place and the environmental process that will be followed. The public meeting gave additional opportunity for the public to register as I&APs, and to raise their concerns, issues and queries relating to the proposed project.

The recording of the meeting is available electronically on CD on request and the minutes of the meeting are available for review in Appendix D.

## 11.6 Authority Consultation

All commenting authorities were informed in writing of the availability of the DSR for comment. The DSR was made available comment for a 40-day period from Wednesday 10<sup>th</sup> September 2014 to Monday 20<sup>th</sup> October 2014.

A meeting was held with NWREAD on 07 August 2014. The purpose of the meeting was to provide a technical background to the proposed project, the need and desirability for the proposed project and to raise the potential environmental impacts associated with the proposed project.

## 11.7 Stakeholder Engagement Report

A SER was compiled to document the outcomes of the PPP. The issues raised during the Scoping Phase were captured in the SER and incorporated into the FSR. The SER will be updated on an on-going basis to include any contributions received by I&APs during the Impact Assessment Phase. The SER is attached as Appendix D.

## 11.8 Comments and Response Report

All views, issues and concerns raised throughout the Scoping Phase have been captured into the in the CRR as part of the SER and can be found in Appendix D. The comments received related to:

- Potential impact on water resources and the management thereof;
- The perception that inadequate engagement exists between the mine and the community;
- Potential impact of mining on the tourism industry and other sectors in the area;
- Potential impact on air pollution;
- Potential erosion related impacts;
- Potential negative impact on the environment and the social impact associated following mine closure;
- Procurement and Recruitment opportunities;
- Impact on vibration and cracking of houses;
- Mining methods;
- EA processes to be followed.

Detailed responses to these and other comments received can be found in the CRR (Appendix D).

## 11.9 Public Review of the DSR

The DSR was compiled in terms of Regulation 28 of 18 June 2010. All comments received thus far was incorporated as part of the DSR, the SER and listed in the Comments and Response Report (CRR). The DSR was made available for a 40-day commenting period from Wednesday 10<sup>th</sup> September 2014 to Monday 20<sup>th</sup> October 2014. The availability of the DSR was announced by means of letters, emails and SMSs to I&APs and key Organs of State and commenting authorities.

The DSR aims amongst other to provide I&APs with documentary proof that their contributions have been captured and addressed. The issues and comments raised by I&APs as well as issues raised by the environmental technical specialists have been used to inform the terms of reference (TOR) compiled for the specialist assessments which will be conducted during the Impact Assessment Phase of the project. Copies of the DSR were placed at the following venues listed in Table 11-2.

**Table 11-2: List of places the DSR will be places for public review**

Public Place	Locality	Telephone
Rustenburg Public Library	Rustenburg	(014) 590 3060/3295
Robega Village Community Office	Robega	(073) 757 1585
Chaneng Village Community Office	Chaneng	(083) 729 2989
Rasimone Community Office	Rasimone	(078) 398 6190
Mafenya Primary School	Mafenya	(073) 666 0161
SRK Website	Pretoria	(012) 361 9821

## 11.10 Public Review of the FSR

The FSR was compiled in terms of Regulation 28 of 18 June 2010. All the comments received during the PPP associated with the DSR were incorporated and addressed in the FSR. Thus the FSR is an updated version of the DSR to reflect the issues, concerns, comments and suggestions raised during the commenting period.

The FSR will be made available for a 21-day commenting period from 19 January 2015 to 9 February 2015. The availability of the FSR will be announced as follows:

- Notification letters (including reply forms), offering copies of the FSR on request, and listing the public places where the report will be made available;
- Announcement of the availability of the FSR for public review and comment;
- A notification sent to I&APs by their preferred means of communication (postage, e-mail, fax or SMS notification);
- Personal delivery of the FSR and related notification documents (notification letter and Comments and Response Forms) to public places;
- A notification letter, the FSR and the comment sheets will be placed at the same public places used during the announcement phase and the DSR phase of the project. ;
- Site notices will be placed in English and Setswana at the same public locations used during the announcement phase;
- Personal delivery to Headmen of the communities;
- FSR will be made available on the SRK Consulting website (<http://www.srk.co.za/en/page/za-public-documents>); and
- A copy of the FSR will be sent to stakeholders upon request.

## 11.11 Submission of the FSR to the Competent and Commenting Authorities

The FSR will be made available to the competent and commenting authorities during the PPP. The following authorities will be consulted and informed of the availability of the FSR:

- NWREAD;
- DMR;
- DWS;
- North West Department of Public Works, Roads and Transport (DPWR);
- Bojanala District Municipality;
- RLM;

- National and/or Provincial Heritage Resources Agency – electronic submission.

## 11.12 Key Comments Received

Table 11-3 provides a summary of the main issues, expectations and perceptions expressed by stakeholders during the stakeholder engagement process to date. A comprehensive record of stakeholder comments and responses has been included in the SER. The SER is attached as Appendix D.

**Table 11-3: Key Comments from Stakeholders during Scoping**

Stakeholder group	Expectations/ perceptions/ views/ concerns expressed by stakeholders
<b>Mining and Industry</b> Maseve/Platinum Group Metals (via DLA Cliffe Dekker Hofmeyer)	<ul style="list-style-type: none"> <li>• Concerned on how the environmental impacts of the proposed project would impact on their properties;</li> <li>• Requested more information on the proposed project as well as the associated EA processes;</li> <li>• Requested more information on the proposed water uses to be authorised.</li> </ul>
<b>Non-governmental Organisation</b> FSE	<ul style="list-style-type: none"> <li>• Concern was made to diversify the economy within the area away from reliance on platinum and to ensure and not to sacrifice sustainable end land uses in the post closure phase of mining;</li> <li>• Short, medium and long term (post closure) environmental and socio-economic impacts of the proposed project should be assessed;</li> <li>• Economic benefits of tourism, eco-tourism and subsistence farming in the region to be assessed;</li> <li>• Environmental impacts to be assessed in regional context and not in isolation;</li> <li>• Mechanised mining may have an impact on local job creation resulting in escalated conflicts and social decay;</li> <li>• Mine closure practices should have a holistic approach to closure planning;</li> <li>• Information dissemination to community members should occur after work hours and should be done continuously over a long period of time before meetings occur;</li> <li>• Of the opinion that it is impossible for I&amp;APs, particularly poor, disempowered communities, who lack experience and knowledge of potential impacts and benefits associated with large developments to comment meaningfully and intelligently on the proposed project based on the information supplied;</li> <li>• Local communities should be capacitated in order for communities to participate meaningfully and intelligently in the process;</li> <li>• Requested better communication and responsiveness on the part of the Applicant to address local community concerns;</li> <li>• Requested that the Applicant to assist the local and district municipality to address the disconnection between Magalies Water and the municipalities and to facilitate the co-operation between Magalies Water and the municipalities;</li> <li>• Requested that the Applicant comply with the recommendations of the Status Report published by The Department of Water Affairs' Strategy Steering Committee of the Crocodile West Water Supply System;</li> <li>• Requested that the Applicant assist the DEA to prepare an Environmental Management Framework for the Pilanesberg Area;</li> <li>• Requested that a closure plan is prepared, not in isolation, but in co-operation with the neighbouring mines and I&amp;APs that fall within that</li> </ul>

Stakeholder group	Expectations/ perceptions/ views/ concerns expressed by stakeholders
	<p>region;</p> <ul style="list-style-type: none"> <li>Cumulative impacts of platinum mining on agriculture, tourism and eco-tourism sectors to be assessed;</li> <li>Raised concerns relating to the stakeholder engagement process and that the meeting was flawed;</li> <li>Noted that the corporate social responsibilities of the mine should link up with the Social and Labour Plan.</li> </ul>
<b>Business and Commerce</b> Sun City	<ul style="list-style-type: none"> <li>Concern related to the impact of the proposed project on water reserves in the area;</li> <li>Query on the estimated electricity consumption and whether approval has been obtained for the additional supply.</li> </ul>
<b>Landowners</b>	<ul style="list-style-type: none"> <li>Concerned about the impact of the proposed project on their property.</li> </ul>
<b>Affected parties in zone of influences</b> Various members of the surrounding communities (Public meeting)	<ul style="list-style-type: none"> <li>Various concerns were raised associated with the public meeting and stakeholder engagement in general;</li> <li>Requested that SRK provide support to enable young people to become contractors to RBPlat;</li> <li>The independence of specialists were questioned;</li> <li>Concerned about the impact of the proposed project on air quality;</li> <li>Concerns relating to the impact of the proposed project on noise and vibration were raised;</li> <li>Queried opportunities for recruitment and procurement associated with the proposed project;</li> <li>Concerns associated with the potential impact of the proposed project on water supply were raised;</li> <li>Impact of proposed project on houses resulting in cracking thereof.</li> </ul>

**Table 11-4: Comments Received After the Submission of the Draft Scoping Report**

Category	Summary of Comment	Main Commentators
General	Indicate to us the exact area/s or village/s where the farms Styldrift is situated	Kathleen Matshidiso
General	<p>Please note the following comments the scoping report for extending the tailings storage capacity of BRPM:</p> <ul style="list-style-type: none"> <li>It needs to be clarified whether the expansion is a sequential or phased development from the other project currently out for public review related to expanding the mineral rights of Styldrift mining complex and the interrelatedness of the regional impacts created by this. The Styldrift extension document mentions no surface infrastructure extension is needed since it is covered elsewhere in approved rights, yet for this project a significant increase in tailings storage space is requested.</li> <li>The regional impacts related to air quality, surface water and groundwater will need to</li> </ul>	Piet Smit

Category	Summary of Comment	Main Commentators
	<p>be quantified in the impact assessment report and specific impacts on Portion 2 of the farm Uitvalgrond 105JQ needs to be discussed.</p> <ul style="list-style-type: none"> <li>It would be important to do a detailed micro- and macro-economic study of the impacts of this project on the smaller land owners in the area, something that is not listed as a planned specialist study in your document.</li> </ul>	
General	<p>The Rustenburg Local Municipality confirmed that the Department has no objections to the proposed project, but would like the following to be noted:</p> <ul style="list-style-type: none"> <li>All mitigation and recommendation measures recorded by the specialist in the scoping report and EMP must be adhered to. The applicant will be held responsible for the implementation thereof and will be legally binding to the contractor/subcontractor;</li> <li>For the proposed new tailings dam mitigation measures must be implemented to minimise health hazards e.g. dust emissions (i.e. risk to nearby residential areas);</li> <li>There is a possibility of seepage from the tailings dam in to the groundwater, which may contain elevated level of elements; therefore water monitoring should be done on the proposed tailings storage facility;</li> <li>Potential erosion of tailings dam can also increase sediment pollution in the nearby rivers; this will be more pronounced if rehabilitation measures are not successfully implemented;</li> <li>The stripped stockpiled topsoil may be chemically altered due to storage, this can potentially alter nutrient level in the soil and result in loss of fertility, therefore proper management of stockpile topsoil must be ensured;</li> <li>During the operational phase the tailings disposal facility is susceptible to wind entrainment and can lead to some environmental impacts especially if there are sensitive receptors down wind. It is therefore recommended that proper rehabilitation measures be put in place;</li> <li>Dust generated by construction activities must be effectively controlled by water spraying and/or other dust -alloying agents;</li> <li>No mining or digging must take place within the 1:50 year floodline or 100m from the edge of the river/tributaries without the necessary authorisation from the DWS;</li> <li>A storm water management plan must be</li> </ul>	Lillian Sefike

Category	Summary of Comment	Main Commentators
	<p>put in to place and the project must take into account the storm water drainage system in the area and how the project can possibly affect it;</p> <ul style="list-style-type: none"> <li>As far as possible, employment opportunities should be given to the local skilled, semi- skilled and unskilled labour force during the construction and operation phase to the local and regional economy as per social and labour plan.</li> </ul>	

Stakeholder consultation is an on-going process throughout the EA process and the CRR will be updated throughout the process.

## 12 Plan of Study for EIA

A full EIA process will be conducted by SRK for the proposed project. The Draft and Final EIAR will be submitted to the competent authority for decision making purposes.

The Scoping Phase is designed to identify impacts and determine whether they require specialist investigation in the Impact Assessment Phase. The POS for EIA is compiled in terms of Regulation 28(1)(n) and provides an indication of the tasks to be undertaken during the Impact Assessment Phase of the project, the impact assessment methodology, the PPP and when authority consultation will take place. The purpose of the POS is to layout an effective methodology to be followed during the assessment of impacts, should this be deemed necessary, in order to meet the minimum legal requirements.

### 12.1 Tasks to be undertaken during the Impact Assessment Phase

The objectives of the Impact Assessment Phase will be to:

- Identify and assess the environmental (biophysical and social) impacts of the construction, operation, decommissioning and post closure impacts of the proposed project. The cumulative impacts of the proposed development will also be identified and evaluated;
- Alternative activities and locations will be determined and assessed in parallel with the proposed activity;
- Identify and evaluate potential management and mitigation measures that will reduce the negative impacts of the proposed development and enhance the positive impacts;
- Compile monitoring, management, mitigation and training needs in the EMPr;
- Provide the decision-making authorities with sufficient and accurate information in order to make an informed decision on the proposed development.

### 12.2 Environmental Impact Assessment Methodology

The anticipated impacts associated with the proposed project have been assessed according to SRK's standardised impact assessment methodology which is presented below. This methodology has been utilised for the assessment of environmental impacts where the consequence (severity of impact, spatial scope of impact and duration of impact) and likelihood (frequency of activity and frequency of impact) have been considered in parallel to provide an impact rating and hence an interpretation in terms of the level of environmental management required for each impact.

The first stage of any impact assessment is the identification of potential environmental activities<sup>3</sup>, aspects<sup>4</sup> and impacts which may occur during the commencement and implementation of a project. This is supported by the identification of receptors<sup>5</sup> and resources<sup>6</sup>, which allows for an understanding of the impact pathway and an assessment of the sensitivity to change. Environmental impacts<sup>7</sup> (social and biophysical) are then identified based on the potential interaction between the aspects and the receptors/resources.

The significance of the impact is then assessed by rating each variable numerically according to defined criteria as outlined in Table 12-1. The purpose of the rating is to develop a clear understanding of influences and processes associated with each impact. The severity<sup>8</sup>, spatial scope<sup>9</sup> and duration<sup>10</sup> of the impact together comprise the consequence of the impact and when summed can obtain a maximum value of 15. The frequency of the activity<sup>11</sup> and the frequency of the impact<sup>12</sup> together comprise the likelihood of the impact occurring and can obtain a maximum value of 10. The values for likelihood and consequence of the impact are then read off a significance rating matrix table as shown in Table 12-2.

This matrix thus provides a rating on a scale of 1 to 150 (low, medium low, medium high or high) based on the consequence and likelihood of an environmental impact occurring.

Natural and existing mitigation measures, including built-in engineering designs, are included in the pre-mitigation assessment of significance. Measures such as demolishing of infrastructure, and reinstatement and rehabilitation of land, are considered post-mitigation.

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<sup>3</sup>An **activity** is a distinct process or task undertaken by an organisation for which a responsibility can be assigned. Activities also include facilities or pieces of infrastructure that are possessed by an organisation.

<sup>4</sup>An **environmental aspect** is an 'element of an organisations activities, products and services which can interact with the environment'. The interaction of an aspect with the environment may result in an impact.

<sup>5</sup>**Receptors** comprise, but are not limited to people or man-made structures.

<sup>6</sup>**Resources** include components of the biophysical environment.

<sup>7</sup>**Environmental impacts** are the consequences of these aspects on environmental resources or receptors of particular value or sensitivity, for example, disturbance due to noise and health effects due to poorer air quality. Receptors can comprise, but are not limited to, people or human-made systems, such as local residents, communities and social infrastructure, as well as components of the biophysical environment such as aquifers, flora and palaeontology. In the case where the impact is on human health or well-being, this should be stated. Similarly, where the receptor is not anthropogenic, then it should, where possible, be stipulated what the receptor is.

<sup>8</sup>**Severity** refers to the degree of change to the receptor status in terms of the reversibility of the impact; sensitivity of receptor to stressor; duration of impact (increasing or decreasing with time); controversy potential and precedent setting; threat to environmental and health standards.

<sup>9</sup>**Spatial scope** refers to the geographical scale of the impact.

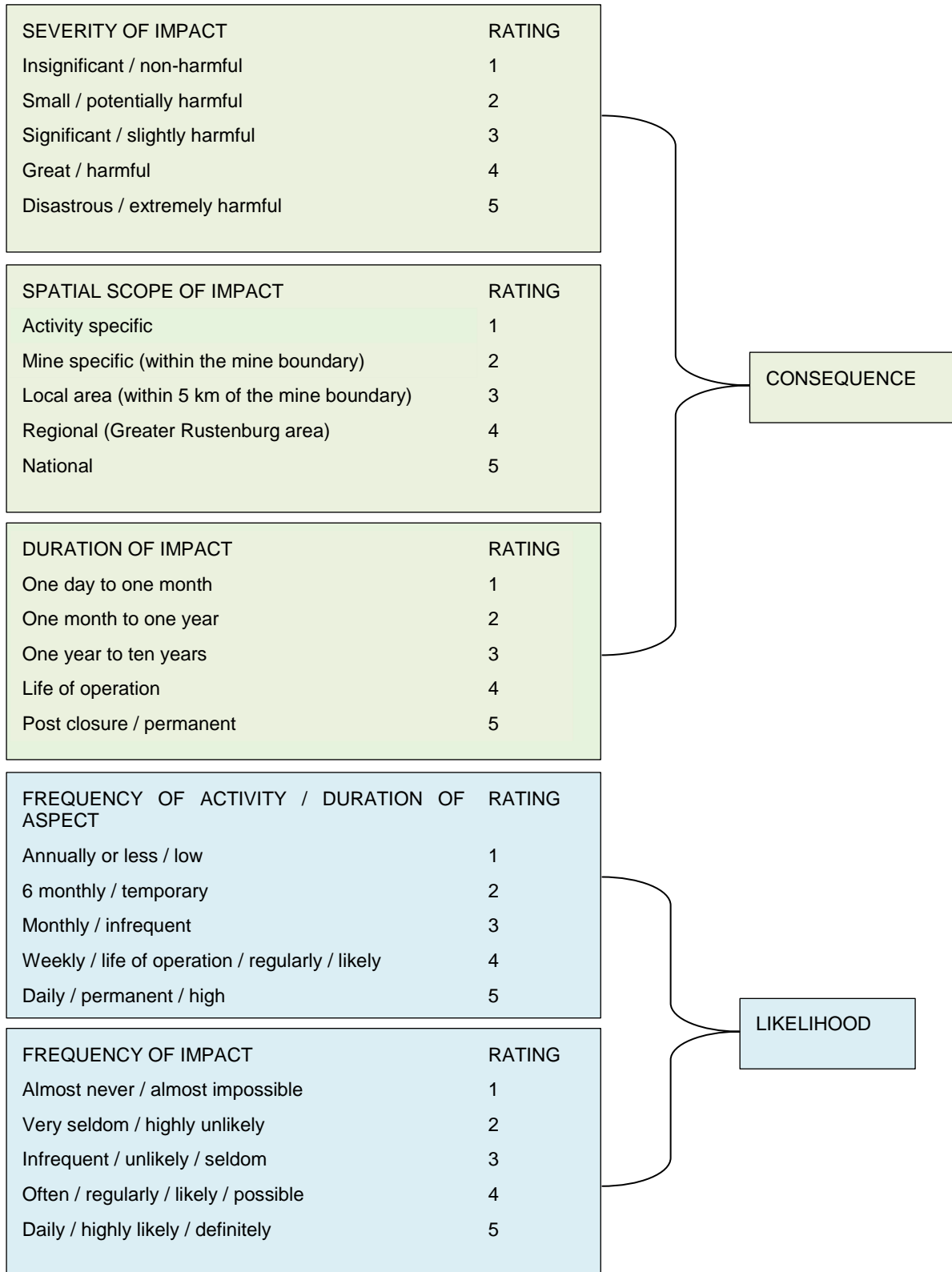
<sup>10</sup>**Duration** refers to the length of time over which the stressor will cause a change in the resource or receptor.

<sup>11</sup>**Frequency of activity** refers to how often the proposed activity will take place.

<sup>12</sup>**Frequency of impact** refers to the frequency with which a stressor (aspect) will impact on the receptor.



**Table 12-1: Criteria for Assessing Significance of Impacts**



**Table 12-2: Interpretation of Impact Rating**

		Consequence														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Likelihood	1	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
	2	4	6	9	12	15	18	21	24	27	30	33	36	39	42	45
	3	6	9	12	16	20	24	28	32	36	40	44	48	52	56	60
	4	8	12	16	20	25	30	35	40	45	50	55	60	65	70	75
	5	10	15	20	25	30	36	42	48	54	60	66	72	78	84	90
	6	12	18	24	30	36	42	49	56	63	70	77	84	91	98	105
	7	14	21	28	35	42	49	56	64	72	80	88	96	104	112	120
	8	16	24	32	40	48	56	64	72	81	90	99	108	117	126	135
	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160

High	76 to 150	Improve current management
Medium High	40 to 75	Maintain current management
Medium Low	26 to 39	
Low	1 to 25	No management required

**SIGNIFICANCE = CONSEQUENCE x LIKELIHOOD**

### 12.3 Specialist Studies to conducted during the Impact Assessment Phase

Detailed specialist studies have been performed for the majority of the areas impacted on by the SMC (Styldrift EIA/EMPR, 2008). Existing specialist studies will be revisited to ensure that these are aligned with current regulatory requirements and that newly impacted areas are covered. The Specialist Reports will be compiled in accordance with Regulation 32 of GN R543 of 18 June 2010.

Due to the potential impacts that may arise as result of the proposed development and due to the issued raised during the PPP inputs towards the following specialist studies will be undertaken during the Impact Assessment Phase:

- Air quality assessment;
- Biodiversity assessment:
  - Aquatic;
  - Faunal;
  - Floral;
  - Wetlands
- Heritage, Archaeological and Paleontological assessment;
- Noise impact assessment;
- Sensitive landscapes assessment;
- Soils; Land use and land capability;
- Vibration impact statement;
- Hydrology (surface water and groundwater);
- Closure/rehabilitation plan.

## Terms of Reference for the Specialist Studies

The TOR proposed for the envisaged specialist studies can be found in Table 12-3.

**Table 12-3: Specialist TOR**

Specialist Study	Scope
Air Quality assessment	<p>The Air Quality Impact Assessment TOR is not limited to, but must include the following:</p> <ul style="list-style-type: none"> <li>• The literature review with respect to air quality and climate for the study area must be done in a radius of 5 km from the project area;</li> <li>• Undertaking of a site inspection to: <ul style="list-style-type: none"> <li>– Characterise the receiving environment, including the sensitivity, proximity and direction;</li> <li>– Review the suitability of the existing dust monitoring network with respect to the proposed TSF location;</li> <li>– Assess existing monitoring systems, if available.</li> </ul> </li> <li>• Develop an emissions inventory; excluding Greenhouse Gasses and carbon foot print studies;</li> <li>• Set up and run an air dispersion model for dust and gas that integrates the information obtained for 3 scenarios with respect to the concentrator plant location and 3 scenarios with respect to the proposed TSF location and operation;</li> <li>• Identification of all sources of atmospheric emissions that are associated with the proposed new infrastructure;</li> <li>• Simulations of the ground level PM<sub>2.5</sub>, PM<sub>10</sub> concentrations and dust fallout for highest daily and annual PM<sub>10</sub> concentrations and total daily dust deposition due to routine and upset emissions from the proposed new infrastructure.</li> </ul>
Aquatic assessment	<p>The aquatic assessment must make allowance for the assessment of two representative aquatic ecological assessment points to characterise and to define the Present Ecological State (PES) of aquatic resources at strategic points within on the system. Allowance has been made for one round of assessment. The aquatic ecological assessment must focus on, amongst other:</p> <ul style="list-style-type: none"> <li>• On site biota specific water quality testing (including pH, conductivity, dissolved oxygen and temperature);</li> <li>• Instream habitat integrity and conditions for aquatic macro-invertebrates (IHAS, HCR and IHIA);</li> <li>• Assessment of the aquatic macro-invertebrate community based on the SASS5 index. Making use of the MIRIA Ecostatus tool to characterise and define the PES and potential risks to the aquatic macro- invertebrate community;</li> <li>• Assessment of the fish community based on the FRAI11</li> </ul>

Specialist Study	Scope
	<p>Ecstatus tool to characterise and define the PES and potential risks to the aquatic macro-invertebrate community;</p> <ul style="list-style-type: none"> <li>• Assessment of the riparian vegetation community integrity;</li> <li>• Assessment of the toxicological according to the Direct Estimation of Ecological Effect Potential to assist in defining the discharge requirements;</li> <li>• Findings must be compiled into a report which will highlight the PES, Ecstatus and Ecological Importance and Sensitivity (EIS) of the system.</li> </ul>
Faunal assessment	<p>The faunal assessment will be conducted using the following methods:</p> <ul style="list-style-type: none"> <li>• Extensive consideration will be given to determining the ecological importance and sensitivity (EISC) of the subject property according to relevant databases. The relevant North West Province databases for the QDS will also be consulted and will serve as the reference data to which field surveys will be compared to;</li> <li>• Visual observations of actually occurring species;</li> <li>• Identification of evidence of occurrence, e.g. call spoor, droppings, etc.;</li> <li>• Capture of fauna by various methods including netting, trapping and dragging. In this regard special mention is made of the use of pitfall traps and sweep netting for invertebrates as well as the use of Sherman traps to determine the composition of the small mammal community on the site. Rope dragging methods will also be used to flush birds from areas where RDL avifaunal species are deemed likely to occur;</li> <li>• Nocturnal studies to identify nocturnal animals in the area may take place if it is deemed necessary;</li> <li>• The reports produced will include sensitive habitat types and impacts from habitat disturbance, faunal assemblages at risk and an assessment of impacts on migratory routes;</li> <li>• The RDSIS index will also be considered in order to quantify the importance of the subject property in terms of RDL faunal conservation;</li> <li>• Based on the findings a detailed impact assessment on all identified significant risks will take place; and</li> <li>• Recommendations on management and mitigation measures (including opportunities and constraints) with regards to the construction and operation of the proposed development in order to manage and mitigate impacts on the faunal assemblage of the area will be provided.</li> </ul>
Floral assessment	<p>The proposed methodology includes both a desktop review and a field work component. A desktop review of distribution lists</p>

Specialist Study	Scope
	<p>(including Red Data Listed (RDL) species) and available literature will be conducted to guide the field work component. The vegetation type of the area will be defined according to sources such as Mucina &amp; Rutherford (2006). Extensive consideration will also be given to determining the ecological importance and sensitivity (EISC) of the subject property according to relevant provincial and national conservation databases. The SANBI and PRECIS databases for the Quatered Degree Square (QDS) will also be consulted and will serve as the reference data to which field surveys will be compared to. The assessment will include a detailed assessment for the entire area to be affected by mining activities as well as the surrounding zone of influence. The field assessment will identify:</p> <ul style="list-style-type: none"> <li>• Various habitat types;</li> <li>• A description of each habitat type based on conservation importance and present ecological state;</li> <li>• Floral species associated with each habitat component: <ul style="list-style-type: none"> <li>– Focus on sensitive habitat types and impacts associated to them in order to fulfil the requirements of the study. Such sensitive areas will be mapped where detail will be given of the ecological aspect of concern in each sensitivity zone;</li> <li>– Focus on establishing the presence of RDL species and other sensitive species identified as well as suitable habitats for any of these species;</li> <li>– Specific focus will also be given to identifying areas of severe weed and alien vegetation encroachment, which will be mapped;</li> <li>– Medicinal plant species will also be identified and the location of special medicinal species will be presented on maps;</li> <li>– Veld condition will be quantitatively assessed according to a pre-defined veld condition index and will also be quantitatively compared to the typical vegetation for the vegetation type of the area according to Mucina &amp; Rutherford (2006);</li> <li>– Species lists for each habitat unit will be developed;</li> <li>– Based on the findings a detailed impact assessment on all identified significant risks will take place;</li> <li>– Recommendations on management and mitigation</li> </ul> </li> </ul>

Specialist Study	Scope
	<p>measures with regards to the construction and operation of the proposed development in order to manage and mitigate impacts on the ecology of the area; and</p> <ul style="list-style-type: none"> <li>– Rehabilitation and closure requirements will be considered.</li> </ul>
Wetland assessment	<ul style="list-style-type: none"> <li>• The wetland assessment will comprise of detailed desktop assessments of the National</li> <li>• Freshwater Ecosystem Priority Areas (FEPA) database as well as available regional wetland layers in order to define the wetland features based on existing desktop data. The wetlands will then be delineated in the field according to the Department of Water Affairs (DWA) (2005) guideline methodology. Once the wetland boundary has been defined it will be mapped and the relevant buffers applied.</li> <li>• Delineation of the wetland resources will take place according to the DWAF (2005) guidelines and an assessment of the wetland Present Ecological State (PES), Index of Habitat Integrity (IHI), WET-Health, wetland vegetation (VEGRAI) and wetland function and ecoservices will take place according to DWA approved protocols. Recommendations for mitigating impacts on the aquatic environment will also be provided.</li> <li>• The assessment will be undertaken to best meet the requirements of the DWA in order to supply specialist information in support of the mandatory supplementary information required for Section 21 (c) &amp; (i) licenses Form DW781 suppl.</li> <li>• Results will be compiled into a report which will include a discussion on the findings. Specific attention will be given to the impacts associated with the proposed development with impacts being assessed according to a pre-defined impact assessment methodology.</li> <li>• Extensive attention will be given to the development of recommendations for mitigating impacts on the receiving environment. These mitigation measures can then be incorporated into the EMP for the development to ensure that the wetland ecology of the area is adequately protected.</li> </ul>
Aquatic Assessment	<p>Allowance has been made for the assessment of two representative aquatic ecological assessment points to characterise the aquatic ecology of the local environment. A Detailed aquatic ecological assessment will be undertaken with specific focus on:</p> <ul style="list-style-type: none"> <li>• Visual assessment of each assessment site;</li> <li>• Biota specific water quality;</li> </ul>

Specialist Study	Scope
	<ul style="list-style-type: none"> <li>• Instream habitat assessment (IHAS, HCR and IHIA);</li> <li>• Instream biota assessment (SASS5/MIRAI and FRAI11); and</li> <li>• Riparian vegetation community integrity (VEGRAI).</li> </ul>
Heritage and Palaeontology assessment	<p>The HIA and desktop Palaeontology Assessment must be conducted. The purpose of the heritage survey is to ascertain if any archaeological or historical remains occur in the survey area and if they are of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value. Attention must be given to both tangible and intangible heritage remains. The Heritage and desktop Palaeontology Assessment TOR is not limited to, but must include the following:</p> <ul style="list-style-type: none"> <li>• Liaison with SAHRA and search SAHR Information Systems for existing reports and information of the survey area;</li> <li>• Compile detailed maps of the survey area indicating all cultural heritage resources (Stone Age, Iron Age and Historical Period);</li> <li>• Utilise Geographic Information System (GIS) systems and Google Earth (also topographic maps and aerial photographs);</li> <li>• Survey of the survey area; reconnoitre larger area with vehicle and foot survey of sensitive spots and areas;</li> <li>• Random consultation with local people to ascertain aspects of intangible heritage;</li> <li>• Recording and documenting of all sites using standard archaeological field work techniques;</li> <li>• Recording of sites with a Geographic Positioning System (GPS) and compiling maps;</li> <li>• Detailed description of all archaeological and historical artefacts, structures (including graves) and settlements documented in the area (including photographs) will be included in the phase 1 heritage report;</li> <li>• Establish the level of sensitivity/importance of the archaeological and historical (both tangible and intangible) remains in the area;</li> <li>• Cultural traditions related by the local communities will be a high priority when establishing the significance of archaeological and historical remains as well as graves in formal cemeteries and informal burials;</li> <li>• Provide the relevant authorities with appropriate documents for their review and decision-making. In particular, copies of the Heritage Report must be sent to SAHRA and the relevant Provincial Heritage Resource Agency;</li> <li>• The desktop Palaeontology Assessment must include: <ul style="list-style-type: none"> <li>– A description of significant fossil occurrences;</li> </ul> </li> </ul>

Specialist Study	Scope
	<ul style="list-style-type: none"> <li>– Recommendation on whether a phase 1 Paleontological Impact Assessment will be required.</li> </ul>
Noise assessment	<p>The Noise Assessment TOR is not limited to, but must include the following:</p> <ul style="list-style-type: none"> <li>• Determine the prevailing noise levels in and around the proposed concentrator, pipe line and proposed shaft tailings dams;</li> <li>• The noise study must be applicable on the following areas: <ul style="list-style-type: none"> <li>– Abutting noise sensitive areas;</li> <li>– Boundary of the mining area;</li> <li>– Existing haul roads;</li> <li>– Tailings dam;</li> <li>– Crushing and screening plants;</li> <li>– Pipe line – existing and new.</li> </ul> </li> <li>• This noise survey from an environmental noise point of view must be done during the daytime period and the night-time period in order to evaluate the recommended residual noise levels laid down by SANS 10103:2008 and to get a representative residual noise level for the areas where the proposed activities will or takes place;</li> <li>• There will likely be two types of noise sources of which the one is a point source at the proposed concentrator site with its own noise sources which will have to be identified and addressed and the line source which will be the pipe line and haul routes. These two categories of noise sources will determine how mitigation and the management thereof will be addressed;</li> <li>• The proposed noise survey will consist out of the following: <ul style="list-style-type: none"> <li>– Preliminary survey and identification of measuring points;</li> <li>– All measurements will be done on the boundary of the property;</li> <li>– Sound pressure readings will also be done at the closest residential area – if applicable;</li> <li>– Noise survey at the identified measuring sites – Ambient noise measurements;</li> <li>– Calculation of noise propagation;</li> <li>– Analysing of results;</li> <li>– Results of the survey, report and recommendations and</li> </ul> </li> </ul>



Specialist Study	Scope
	mapping of noise contours for the sites.
Sensitive Landscapes assessment	<p>The Sensitive Landscapes Assessment TOR is not limited to, but must include the following:</p> <ul style="list-style-type: none"> <li>• The assessment must identify sensitive landscapes;</li> <li>• The assessment must include the compilation and analysis of the data.</li> </ul>
Soil, Land Use and Land Capability Assessment	<p>The Soil, Land Use and Land Capability Assessment TOR are not limited to, but must include the following:</p> <ul style="list-style-type: none"> <li>• A detailed soil survey must be conducted at the proposed area where the proposed development project will be. The maps generated during the desktop study phase must be used to determine a grid and these areas will be traversed on the pre-determined transects and auger samples will be studied. In areas of great soil form variety, more samples points must be evaluated as well as to establish soil form boundaries;</li> <li>• Observations must 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 must be noted and logged with a GPS. The location of these auger points must be indicated in a Survey Points Map to be included in the final specialist report. Soil samples for chemical analysis must be taken at 25 sampling points and at each point both topsoil (0-300mm) and subsoil (300-600mm) will be sampled;</li> <li>• 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;</li> <li>• The 24 representative soil samples must be stored in perforated soil sampling plastic bags on site and sent by courier to SGS Soil Laboratory in Somerset West for chemical soil analysis;</li> <li>• Samples must be analysed for pH, phosphorus content, cations (calcium, magnesium, potassium and sodium), electrical conductivity, organic carbon content and relative fractions of sand, silt and clay;</li> <li>• The results of the soil survey must be mapped and zones of similar soil forms indicated. Once soil form groups have been outlined, soil potential and land capability must be determined using the guidelines developed by the Agricultural Research Council unless otherwise specified by</li> </ul>

Specialist Study	Scope
	<p>the client;</p> <ul style="list-style-type: none"> <li>• The possible impacts of the proposed project on soil, agricultural potential and land capability must be evaluated.</li> </ul>
Vibration impact statement	<p>The Vibration Impact Statement TOR must include, but is not limited to the following:</p> <ul style="list-style-type: none"> <li>• Review all existing ground vibration and air blast data from the proposed project,</li> <li>• Review available vibration data from area;</li> <li>• Review the proposed sites for various facilities with regards to possible influences,</li> <li>• Prepared basic guideline on ground vibration and air blast if construction blasting is to be done,</li> <li>• Results of the survey, report, recommendations and mapping of vibration contours for the proposed site.</li> </ul>
Visual assessment	<p>The Visual Impact Assessment (VIA) TOR is not limited to, but must include the following:</p> <ul style="list-style-type: none"> <li>• The assessment must establish a view catchment area, view corridors, viewpoints and receptors;</li> <li>• The assessment must indicate the potential visual impacts using established criteria;</li> <li>• The assessment must include amongst other potential lighting impacts at night;</li> <li>• The report must be based upon the WC Guidelines the proposed activities would require a Level 3 assessment; and must include amongst other: <ul style="list-style-type: none"> <li>– Identification of issues raised during the EIA process;</li> <li>– Undertake a desktop VIA analysis;</li> <li>– Conduct a site visit to verify the scope of the VIA as well as gain an understanding of the receiving environment;</li> <li>– Describe the receiving environment with regards to the various elements of the project;</li> <li>– Conduct a viewshed analysis of the proposed expansions, identifying potential sensitive receptors;</li> <li>– Identify any potential mitigation measures (including lighting impacts – should they be raised and potential impacts on tourism in the area); and</li> <li>– Identify potential alternatives, mitigation measures and monitoring programmes.</li> </ul> </li> <li>• The data required for the project includes, but is not limited to, structural heights, alignments and footprint areas for the</li> </ul>

Specialist Study	Scope
	<p>proposed expansions. Once these data are made available the following must be undertaken:</p> <ul style="list-style-type: none"> <li>– Review of the information based on information supplied;</li> <li>– Perform a desktop analysis to outline the baseline visual aspects of the site and to identify preliminary sensitive visual receptors – the classification of the landscape’s visual character and possible receptors to the proposed project;</li> <li>– Consult with the EAP to discuss the project and attend to any questions that may have arisen from the EIA process;</li> <li>– Liaise with the EAP to obtain any I&amp;APs concerns noted by the EAP regarding the potential visual impacts the proposed expansions may have; and .</li> <li>– The data required for the project includes, but is not limited to: structural heights and footprint areas for the proposed expansions.</li> </ul> <ul style="list-style-type: none"> <li>• The viewshed analysis must include the compilation of a preliminary spatial model (based on the proposed expansions). Tasks will include: <ul style="list-style-type: none"> <li>– Compile a preliminary spatial model (based on the plans and contour information) for the proposed expansions using a GIS three dimensional software modelling package;</li> <li>– Compile a set of viewpoints from areas that are deemed to be potentially visually influenced by the proposed expansions;</li> <li>– Using these viewpoints in conjunction with a site visit assess the visual impacts of the proposed expansions;</li> <li>– Provide descriptions of the possible visual impacts that the proposed expansions may have on the surrounding landscape using viewshed analysis, including the identification of potential sensitive viewers / receptors informed by the EIA process, as well from the viewshed.</li> </ul> </li> </ul>
<p>Water: Ground Water assessment</p>	<p>The Ground Water Assessment TOR is not limited to, but must include the following:</p> <ul style="list-style-type: none"> <li>• Assess the hydrogeological regime and establish baseline conditions in terms of the groundwater in the environs of the Tailings Disposal site, including the associated RWD’s, pipelines and powerlines;</li> </ul>

Specialist Study	Scope
	<ul style="list-style-type: none"> <li>• Evaluate existing and potential environmental impacts on the hydrogeological environments as input to the EIA;</li> <li>• Review the management of groundwater on site, which can be incorporated into the NEMA EMPr;</li> <li>• Specific tasks required to meet the objective will be to:</li> <li>• Identify all approvals required and scheduling of approval process;</li> <li>• Initial project review including evaluation of geology and hydrogeology based on existing data;</li> <li>• Initial hydro-chemical baseline study including surface and groundwater sampling as required;</li> <li>• Determine current groundwater status and identify main hydrogeological risks (Aquifer Characterisation);</li> <li>• Undertake detailed site evaluation necessary for completion of approvals process including sampling and modelling of groundwater;</li> <li>• Define the significance of those impacts in terms of water availability to other users, and risks to the environment and human health as input to the amended EIA;</li> <li>• Provide input into the tailings dam design;</li> <li>• Review and revise existing monitoring plan for incorporation into the NEMA EMPr;</li> <li>• The main methodology of the hydrogeological study are to: <ul style="list-style-type: none"> <li>– Initial Project Review;</li> <li>– Hydrogeological Baseline Study; and</li> <li>– Detailed Field Investigations and Data Analysis.</li> </ul> </li> <li>• Data must be collected and analysed during the field investigation activities outlined below: <ul style="list-style-type: none"> <li>– Geophysical survey;</li> <li>– Drilling and Hydraulic Testing;</li> <li>– Hydrochemical Analysis;</li> <li>– Conceptual Hydrogeological Model; and</li> <li>– Groundwater Modelling.</li> </ul> </li> </ul>
Surface Water assessment	<p>The Surface Water Assessment TOR is not limited to, but must include the following:</p> <ul style="list-style-type: none"> <li>• Water related considerations must be guided by the NWA Regulation 704 and the DWS Best Practice Guidelines;</li> <li>• The surface water study must consider the following items: <ul style="list-style-type: none"> <li>– Assess crossings and diversions against details and</li> </ul> </li> </ul>

Specialist Study	Scope
	<p>visuals where the pipeline crosses the rivers and identify if there are going to be additional impacts with the construction of a new pipe crossing;</p> <ul style="list-style-type: none"> <li>– Identify areas where ponding / restriction of flow is occurring due to structural restrictions or operational activities;</li> <li>– Assess stability of river banks at crossings and diversions. Relate findings to actual suspended solids/turbidity data in BRPM's water quality database;</li> <li>– Assess crossings and diversions for potential to be impacted by spills and ability to handle such spills, with specific reference to tailings and wastewater pipeline crossings;</li> <li>– Review floodlines and revise as appropriate;</li> <li>– Identify any unauthorised activities within the floodline or 100m of the watercourse including infrastructure, operations, storage of materials, dumping etc;</li> <li>– Document all erosion controls, energy dissipaters and end-of-pipe practices where stormwater releases occur to the natural environment specifically at crossings and river diversion outlets.</li> <li>– Assess crossing and diversion infrastructure for damage and document maintenance work done within the last 5-10 years relative to rainfall records. Identify areas where measures are required to ensure compliance to the WUL conditions, for example structural maintenance and removal of accumulated debris to maintain capacity.</li> <li>– Assess watercourses at crossings and diversions for erosion, signs of current/previous flooding. Review inspection records, if any. Identify areas where maintenance or rehabilitation have been implemented or are required e.g. energy dissipation, erosion repairs/controls, removal of accumulated debris to maintain capacity etc.</li> </ul> <ul style="list-style-type: none"> <li>• Stormwater Management Plan must include the following: <ul style="list-style-type: none"> <li>– A site audit to understand the existing stormwater layout and the future stormwater controls;</li> <li>– Hydrology of the site to indicate the storm volumes</li> </ul> </li> </ul>

Specialist Study	Scope
	<p>emenating from the various sub catchments within the site (Calculation of the stormwater runoff based on impervious surface of the site);</p> <ul style="list-style-type: none"> <li>– Describe the hydrology in relation to the position of the major pans in the area;</li> <li>– Provide layout drawings (3 drawings) of the following elements: <ul style="list-style-type: none"> <li>○ Indicate the site in relation to watercourses in the area;</li> <li>○ Indicate the existing layout of where the stormwater flows are;</li> <li>○ Detailed property designed layout and demarcation clean and dirty water areas as well as proposed stormwater controls and monitoring points;</li> <li>○ Describe what stormwater controls are required to ensure that the site will be environmentally compliant from a stormwater point of view.</li> </ul> </li> </ul>
Rehabilitation Plan and Closure assessment	<p>This will be done for the proposed project and associated infrastructure using baseline information collected during the compilation of the EIA, with this used to identify possible opportunities and constraints at closure. This information will also be utilised to identify potential post closure land uses. A short closure and rehabilitation plan for the site will be developed to mitigate the potential risks associated with the site at closure.</p> <p>The approach to calculating the closure liability as described in the DMR “Guideline document for the evaluation of the quantum of closure related financial provisions provided by a mine” will be used to calculate the expected closure liability for the operation, with this being the figure used to raise a provision for closure for the project.</p> <p>The rehabilitation plan will include the following:</p> <ul style="list-style-type: none"> <li>• A detailed list of the various steps that need to be undertaken to return an activity and its sub-units to its post mining land use;</li> <li>• Determine the various actions required to demolish the infrastructure.</li> </ul>

## **12.4 Documents that will be produced during the Impact Assessment Phase**

The following documents will be produced during the course of the Impact Assessment Phase:

- Draft EIAR;
- Final EIAR;
- NEMA EMPr.

### **12.4.1 Draft Environmental Impact Assessment Report**

Upon acceptance of the FSR by the competent authority a Draft EIAR will be compiled in terms of Regulation 31 of GN R543 of 18 June 2010. The purpose of the Impact Assessment Phase of this EIA is to systematically assess the impacts of the proposed project on the immediate and surrounding biophysical, cultural and socio-economic environment.

### **12.4.2 Draft Environmental Management Programme**

A Draft EMPr will be compiled in accordance with Regulation 33 of GN R543 of 18 June 2010. This will provide effective management and mitigation measure pertaining to the proposed development relating to the identified environmental impacts. These management and mitigation measures will strive to minimise the negative impacts of the proposed development and enhance the positive impacts.

### **12.4.3 Final Environmental Impact Assessment**

The Final EIAR will be compiled in terms of Regulation 31 of GN R543 of 18 June 2010. In addition, the Final EIAR will also contain all comments received during the PPP. These comments will be addressed and taken into consideration during the compilation of the Final EIAR prior to submission to the competent authority, NWREAD.

### **12.4.4 Final Environmental Management Programme**

A Final EMPr will be compiled in accordance with Regulation 33 of GN R543 of 18 June 2010. In addition, the Final EMPr will also contain all comments received during the PPP. These comments will be addressed and taken into consideration during the compilation of the Final EIAR prior to submission to the competent authority, NWREAD.

## **12.5 Public Participation during the Environmental Impact Assessment Phase**

The PPP undertaken during the Scoping Phase of the project will continue in the Impact Assessment Phase and will be undertaken in terms of Regulations 54 to 57 of GN R543 of 18 June 2010.

All comments received from the I&APs during the Impact Assessment Phase will be incorporated into the Draft EIAR and Final EIAR. The I&APs Register will be updated as necessary (i.e. with new contact details, new I&APs etc.). The I&APs will be informed of the availability of reports for comment, where/how these reports can be accessed and the commenting timeframes and the manner in which comment can be submitted to SRK. Proof of the PPP undertaken during the Impact Assessment Phase will be appended to the Draft EIAR and Final EIAR;

Tasks to be performed to inform the registered I&APs of the availability of the documents for comment:

- The Draft EIAR will be made available to the public for a 40-day commenting period;
- The Final EIAR will be made available to the public for a 21-day commenting period;
- All registered and I&APs will be informed of the availability of the reports for comment by means of notices sent via an advertisement, posted letters, e-mails and SMSs;
- These reports will be made available for comment by means of:
  - Placement of the Draft EIAR and Final EIAR on the SRK website;
  - Placement of the Draft EIAR and Final EIAR at the same public places used during the Scoping Phase of the project. Table 12-4 below lists these public places:

**Table 12-4: Public Review of Reports**

<b>PUBLIC PLACE</b>	<b>LOCALITY</b>	<b>TELEPHONE</b>
Rustenburg Public Library	Rustenburg	(014) 590 3060/3295
Robega Village Community Office	Robega	(073) 757 1585
Chaneng Village Community Office	Chaneng	(083) 729 2989
Rasimone Community Office	Rasimone	(078) 398 6190
Mafenya Primary School	Mafenya	(079) 235 6646
SRK Website	Pretoria	(012) 361 9821

## 12.6 Authority Consultation

The Draft EIAR will be made available to the competent and commenting authorities during the PPP. The following authorities will be consulted and informed of the availability of the Draft EIAR and of the Final EIAR:

- NWREAD;
- DMR;
- DWS;
- North West Department of Public Works, Roads and Transport (DPWR);
- Bojanala District Municipality;
- RLM;
- National and/or Provincial Heritage Resources Agency – electronic submission.



## 12.7 Decision Making Timeframe in terms of the Impact Assessment Phase

The following is an outline of the tasks to be performed by the competent authority during the course of the Impact Assessment Phase. Figure 12-1 illustrates the NEMA EIA process.

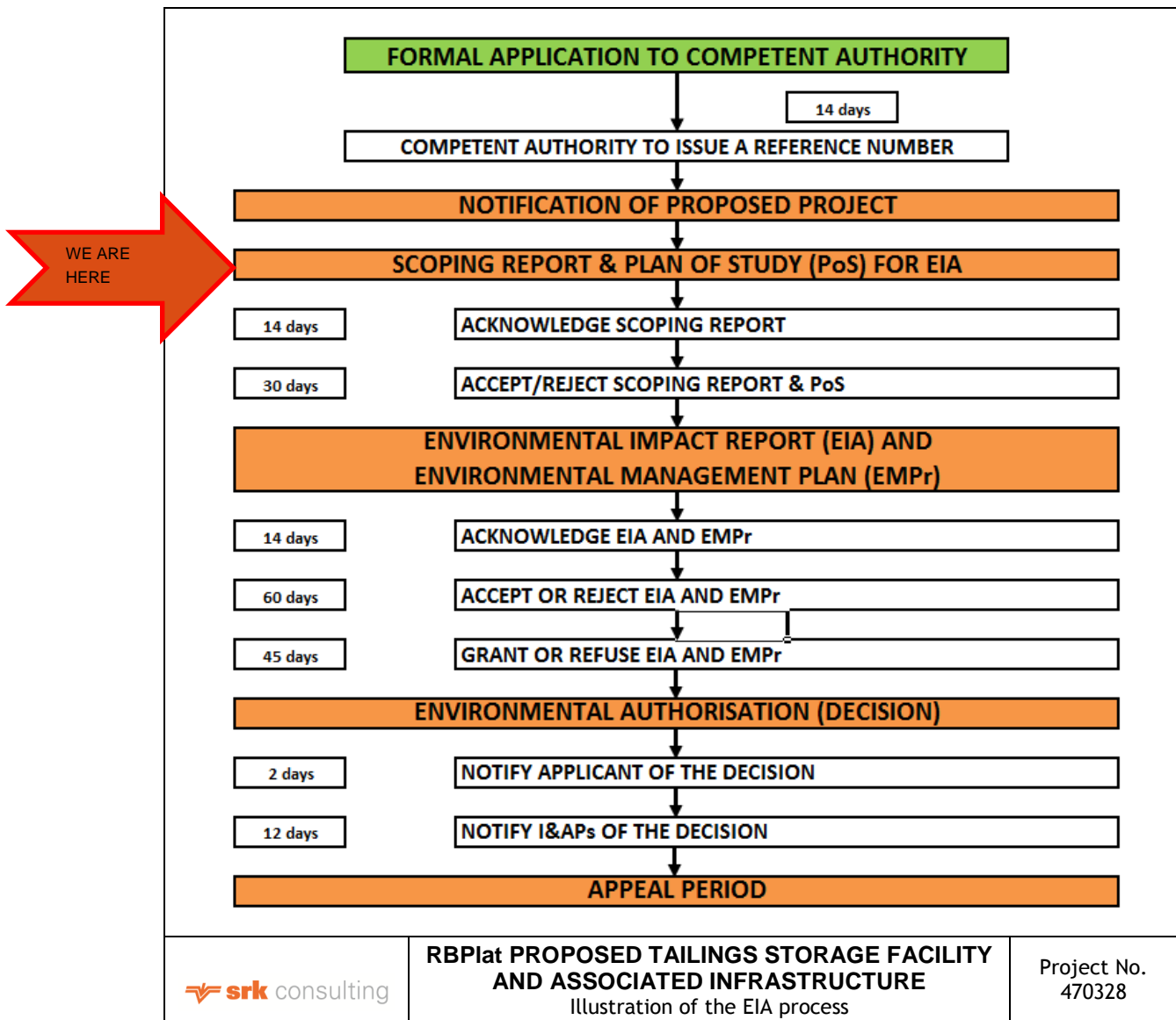


Figure 12-1: Illustration of the NEMA EIA process

## 12.8 Appeal

All registered I&APs will be notified within the legislated timeframes of the outcome of this application for EA, the reasons for the decision and their attention will be drawn to the fact that an appeal may be lodged against the decision made by the competent authority and draw their attention in the manner in which they can access the decision. A notice to appeal the decision must be submitted to the competent authority within 20 days after the date of the decision.

## 13 Anticipated Environmental, Social and Cultural Impacts

Issues and impacts for the Scoping Phase were identified through focus group discussions with key stakeholder groups, during the public open days as part of the announcement and scoping phase of the project, the authorities and potential directly affected landowners as well as comments received in writing and telephonically from stakeholders, and the project team's understanding of the project and previous experience on projects of similar nature.

The anticipated environmental impacts in terms of the project component areas are presented in Table ES1 below. As the proposed project is an extension of the TSF which has already been assessed in detail, it is not expected that the proposed extension will have material environmental and social impacts that cannot readily be mitigated and managed in accordance with the development and operation of the existing TSF. However, in accordance with the Regulations, the potential cumulative impacts associated with the proposed project will be addressed during the Impact Assessment Phase. Measures to minimise the cumulative impacts will be identified and included in the NEMA Environmental Management Programme (EMPr) compiled during the Impact Assessment Phase for the proposed project

The identified potential impacts will be assessed and confirmed through the undertaking of the various specialist investigations during the Impact Assessment phase of the study (refer to Section 11.12) and appropriate management measures will be assigned and included in the Impact Assessment Phase of the project:

The potential biophysical and socio-economic impacts identified and raised by the I&APs are summarised in Table 13-1.

**Table 13-1: Summary of Potential Environmental impacts associated with the proposed development**

Element of Environment	Potential Impact Descriptions
Socio-Economic	<p>The new infrastructure has a positive impact in the form of additional temporary and permanent employment opportunities.</p> <p>Negative social-economic impacts through job losses resulting from the closure of the SMC at the end of the life of mine.</p> <p>Potential health and safety impacts of surrounding community members as a result of increased traffic during the construction phase and waste generation.</p> <p>Potential visual impacts on surrounding sensitive receptors including neighbouring communities, tourist destinations.</p>
Topography	<p>The topography of the site will be altered as a result of the construction and operation of the TSF and other infrastructure.</p>
Groundwater	<p>Potential modifications to groundwater flow.</p> <p>Potential groundwater contamination.</p> <p>Potential residual impacts after closure.</p>
Surface water	<p>Potential surface water contamination.</p> <p>Potential silt generation impact of surface water.</p> <p>Potential discharge of water to natural environment.</p> <p>Potential decrease of quantity of surface water run-off to surrounding minor catchments.</p> <p>Potential degradation of wetlands.</p>
Geology	<p>No impacts are anticipated on the geology as a result of the construction of the new equipment and infrastructure.</p>
Air Quality	<p>Potential for dust generation during the construction phase of the new TSF and associated infrastructure.</p> <p>Potential dust and fume emissions associated with vehicle movement with respect to site preparation and driving to and from site.</p> <p>Potential for dust to be generated from the TSF, and the gravel surfaced roads.</p> <p>These emissions may affect the local residents and the workers on the project and may have a wider influence on the regional air quality.</p>
Noise and Vibration	<p>Potential for construction activity at the project site to result in some localised noise.</p> <p>Potential for ambient noise to be generated by the booster pump stations during operation.</p>
Visual	<p>Facilities would be expected to be located outside of direct line of sight, as far as practical, i.e. not on topographical highs if possible. However, recognizing that TSF's are elevated structures and the area is generally quite flat some visual impact will occur to some close by community members and some screening of the facilities may be required.</p>

Element of Environment	Potential Impact Descriptions
Soils/Land Use/Land Capability	<p>Potential loss of soil resource.</p> <p>Potential loss of land capability.</p> <p>Potential for construction infrastructure to lead to a loss of resource and change in land capability due to hydrocarbon and other contamination.</p> <p>Potential change in land use.</p> <p>Potential soil erosion from run-off passing over disturbed areas and soil stockpiles.</p> <p>Potential soil contamination due to spillage of oil, fuel and chemicals.</p> <p>Existing land capability will be disturbed.</p>
Biodiversity	<p>Potential disturbance of vegetation and fauna.</p> <p>Potential for roads and pipelines to contribute to fragmentation of local biodiversity, however the indigenous flora and fauna has already been disturbed by human and mining activities.</p> <p>Potential vibration, as a result of the proposed development, and will be assessed and the impact on the biodiversity in the area should be determined.</p>
Heritage	<p>Potential disturbance of areas of heritage resources of significance during the construction phase.</p>
Cumulative Impacts	<p>Where possible, the potential cumulative impacts associated with the proposed new project will be addressed during the EIA. Measures to minimise the impacts will be identified and included in the EMP for the proposed project.</p>

## 14 Conclusions and Recommendations

This concludes the Final Scoping Report. The report has presented:

- The environmental process undertaken so far;
- A brief description of the proposed amendment project;
- A baseline description of the current environment;
- The issues and concerns raised by stakeholders during the scoping phase;
- The potential environmental and social impacts identified to date and the ability to be mitigated and managed, as this informs the scope of work for specialists studies;
- The alternatives being considered by the project team; and
- The recommended environmental process to be followed to develop the Impact Assessment Phase.

No fatal flaws have been identified during the Scoping Phase of this project. There are however several anticipated impacts that will require a more detailed investigation, assessment and potential for mitigation and management. As the proposed project is an extension of the TSF which has already been assessed in detail, it is not expected that the proposed extension will have material environmental and social impacts that cannot readily be mitigated and managed in accordance with the development and operation of the existing TSF. However, in accordance with the Regulations, the potential individual and cumulative impacts associated with the proposed extension of the TSF and associated infrastructure will be addressed during the Impact Assessment Phase. Measures to minimise the individual and cumulative impacts will be identified and included in the NEMA EMPr compiled during the Impact Assessment Phase for the proposed project.

There are, however, anticipated impacts that will require more detailed investigation and assessment in terms of the environmental authorisation process.

It is currently expected that it is unlikely that during the Impact Assessment Phase further material impacts may be identified.

A comprehensive public involvement process has been implemented during scoping and it is assumed that all critical issues have been identified through this process.

The EIA process is however, iterative and therefore additional potential issues/impacts may be identified during the impact assessment phase that may require further investigation/consideration.

It is envisaged that the process followed during the detailed assessment phase will meet the requirements of the legislation to ensure that the regulatory authorities receive sufficient information to enable informed decision-making.

The FSR will now be made available for a 21-day commenting period. The FSR will also be lodged with the competent authority for decision making purposes in terms of the adequacy of the report. Upon acceptance of the FSR by the competent authority SRK will commence with the compilation of the Draft EIAR with EMPr which will be compiled in terms of Regulation 31 and Regulation 33 of GN R543 of 18 June 2010. The Draft EIAR with EMPr will be made available for a 40-day commenting period.

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Dr Andrew Wood  
Partner

All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

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# Appendices

## **Appendix A: CVs of the Project Team**

## **Appendix B: SRK's Project Experience**

## **Appendix C: Declaration of Interest**

## **Appendix D: Stakeholder Engagement Report**

## SRK Report Distribution Record

Report No.	470328/FSR
Copy No.	

Name/Title	Company	Copy	Date	Authorised by
<b>Competent Authorities</b>				
Mr. Phumudzo Nethwadzi	Department of Mineral Resources	1 (HC)	November 2014	L. Coetser
Ms Queen Imasiko	North West Department of Rural, Environmental and Agricultural Development (NWREAD)	2-5 (HC) 6-8 (PDF)	November 2014	L. Coetser
<b>Commenting Authorities</b>				
Ms Cornia Theunissen	Department Water and Sanitation (DWS)	9 (HC)	November 2014	L. Coetser
Ms Pretorius	North West Department of Public Works, Roads and Transport	10 (HC)	November 2014	L. Coetser
SAHRA Website	North West Provincial Heritage Resources Agency – Provincial via SAHRA ( <b>Electronic</b> )	11 (PDF)	November 2014	L. Coetser
Ms Kelebogile Mekgoe	Rustenburg Local Municipality	0 <sup>13</sup>	November 2014	L. Coetser
Mrs. Violet Molotsi	Bojanala Platinum District Municipality	13 (HC)	November 2014	L. Coetser
<b>Review Venues</b>				
Mr. Pieter Louw (Rustenburg)	Rustenburg Public Library in Rustenburg	15 (HC)	November 2014	L. Coetser
Mr Tommy Mntande (Robega)	Robega Village Community Office	16 (HC)	November 2014	L. Coetser
Mr Jacob Setshwane (Chaneng)	Chaneng Village Community Office	17 (HC)	November 2014	L. Coetser
Clr Mzizi (Mafenya)	Mafenya Primary School	18 (HC)	November 2014	L. Coetser
Mr Thabo Diale (Rasimone)	Rasimone Community Office	19 (HC)	November 2014	L. Coetser
<b>Other</b>				
Ms Reotshepile Tlhapane	Royal Bafokeng Nation - RBN Civic Centre	20 (.PDF)	November 2014	L. Coetser
<b>Client/Applicant</b>				
Portal	RBPlat Portal (Electronic)	21 (PDF)	November 2014	L. Coetser
Mr. Steven Manda	RBPlat	22 (HC)	November 2014	L. Coetser

<sup>13</sup> Comment was received from the Rustenburg Local Municipality on 22 September 2014 and the FSR is therefore not forwarded to the Municipality for review purposes, the Draft EIAR will however be forwarded to the Municipality to ensure that their comments raised were adequately incorporated.

<b>SRK</b>				
SRK Library	SRK	23 (HC)	November 2014	L. Coetser
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