

Draft Basic Assessment Report for the Proposed Surge Tanks Capacity Expansion Project at Anglo American Platinum's Rustenburg Base Metals Refiners (RBMR), North West Province

DEDECT Ref: To be confirmed

Report Prepared for
Anglo American Platinum Ltd
Rustenburg Base Metals Refiners
(RBMR)



Report Number 571528



Report Prepared by



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Executive Summary

Introduction

Anglo American Platinum's Rustenburg Platinum Mines Limited (Rustenburg Section Retained Operations) which includes the Rustenburg Base Metals Refiners (RBMR) and the Precious Metals Refinery (PMR) have received Environmental Authorisations (EAs) and Environmental Management Programme (EMPr) approval for their operations over the years. In March 2017 the Rustenburg Section Retained Operations applied for and received approval (Ref: NW 30/5/1/2/3/2/1/82 EM) for the consolidation of eleven (11) EMPs pertaining to their operations.

The approved consolidated EMP includes the operation of surge tanks at RBMR, which although not specifically listed in the authorisation, formed part of the RBMR activities authorised by RBMR EMP (Ref: RDNW(KL) 6/2/2/24).

The BMR assessed the current authorised surge tank capacity and concluded that additional capacity is required to reduce overflow spillage from the surge tanks Dam 3B. The BMR circuit inter-section surge capacity is insufficient to allow for continuous production without inventory overflow. Within normal operating periods within the past decade, tank overflow and subsequent bund wall overflow from various inventories within the RBMR has resulted in heavy metal department of Copper (Cu), Nickel (Ni) and Cobalt (Co) to Dam 3A which overflows to Dam 3B. The annualised typical metal transfer to Dam 3B is 667-ton Ni, 127-ton Cu and 22-ton Co.

RBMR Operations is planning to reduce overflow spillage from the surge tanks that currently report to Dam 3B. The reduction will be achieved by building additional surge capacity tanks and upgrading the existing tanks currently on the RBMR site, which will improve performance on site from 2025

. RBMR is therefore proposing to increase the inter surge capacity at the plant to allow for the operation at 33ktpa Ni cathode production rate without spilling valuable metal to the dam. The project will entail:

- Expansion of Copper Removal Overflow Storage (CRS), Copper Advance Solution (CuAdv) and Selenium/Tellurium (Se/Te) feed tank inventories into other areas;
- Conversion of old CRS inventory to Copper Removal Residue/Non-Oxidising Belt Filter Residue (CRR/NOXR) inventory;
- Conversion of old Nickel Feed (NiFd) inventory to Nickel Atmospheric Leach Solution (NALS) inventory and old NALS inventory to Non-Oxidising Leach Solution/Nickel Dissolution Solution (NOXS/NiDS); and
- Expand current Copper Spent Storage (CuSP) inventory into old Copper Advance Solution (CuAdv) inventory.

The construction and operation of the proposed surge capacity expansion project triggers activities listed in Government Regulation Notice (GNR) 983 (as amended by GNR327 of 7 April 2017) of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) and will therefore require an Environmental Authorisation (EA) from the North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT). GNR 326 of the NEMA stipulates that all activities listed in GN327 require that a Basic Assessment (BA) process be conducted.

Who is conducting the impact assessment and compiling the EMP?

SRK Consulting (SA) (Pty) Ltd (SRK) has been appointed by RBMR as the independent Environmental Assessment Practitioner (EAP) to conduct the EA application process for the construction and operation of the surge capacity tanks.

The reports and documentation for the EA application process are being compiled and finalised for submission to the DEDECT for the EA application in terms of the NEMA for consideration and decision making. The DEDECT will consult with other government authorities as required in terms of Section 24(K) of the NEMA.

Who will evaluate the impact assessment and EMPr?

Before the proposed surge tanks capacity expansion project can proceed, approval must be obtained from the regulatory authorities. The Basic Assessment Report (this report) will be submitted to the Competent Authority (CA), DEDECT, for review and decision making as to whether the project may proceed or not.

Description of the Proposed Development

Construction of additional tanks and/conversion of the tanks will be undertaken by Contractors that will be appointed by the RBMR. The general construction activities will include:

- Site preparation;
- Earthworks: Establishment of foundations;
- Civil works:
 - Erection of structures and infrastructure associated with the project;
 - Foundation excavations and compaction;
 - Concrete work including the mixing of concrete;
 - Steelwork including grinding and welding; and
 - Rehabilitation of disturbed areas after general site construction is completed.

All waste will be re-used, recycled or disposed as a last resort at an appropriately licensed/registered facility depending on the type of waste.

The operation and maintenance of the project will be undertaken by the current RBMR personnel.

Project Need and Desirability

The environmental right is contained in the Constitution of the Republic of South Africa, Act 108 of 1996 (hereafter referred to as "The Constitution"). Section 24 of the Constitution enshrines environmental rights in South Africa, which are interpreted to have a two-fold purpose. The first part guarantees a healthy environment to every person. The second part mandates the State to ensure compliance with the first part. The State is prohibited from infringing on the right to environmental protection and is further required to provide protection against any harmful conduct towards the environment.

The construction and operation of the proposed surge tanks capacity expansion project will reduce the risk of overflow from surge tanks and contamination of soil and water resources, which would pose a health risk to aquatic organisms as well as downstream users.

The needs and desirability assessment of the proposed surge capacity expansion as per Notice 792 of 2012 is provided in Table ES-1.

Table ES-1: Need and Desirability Assessment of the proposed surge capacity expansion project

Questions (Notice 792, NEMA, 2012)		Response
PART I: NEED		
1.	Is the land use associated with the activity being applied for considered within the timeframe intended by the existing approved SDF agreed to be the relevant environmental authority?	N/A. The proposed project will be located in the RBMR property and has no bearing on the SDF.
2.	Should the development, or if applicable, expansion of the town/area concerned in terms of this land use occurs here at this point in time?	Yes. Authorising the project will reduce potential environmental impacts that may be incurred in terms of potential overflowing of the surge tanks and bund walls which would have an impact on water resources.
3.	Does the community/area need the activity and the associated land use concerned? This refers to the strategic as well as local level.	Yes. Authorising the project will reduce potential environmental impacts that may be incurred in terms of potential overflowing of the surge tanks and bund walls which would have an impact on water resources.
4.	Are the necessary services with adequate capacity currently available (at the time of application) or must additional capacity be created to cater for the development?	No additional capacity will be required. The construction of the surge tanks capacity expansion project will be conducted by a contractor and operation will be undertaken by current RBMR personnel. It is not envisaged that additional water and power will be required from the providers because of the project except for during the construction period for concrete works.
5.	Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of the services and opportunity cost)?	Not applicable. The objective of the project is to construct and operate the surge tanks capacity expansion project within the RBMR precinct and will have no bearing on the infrastructure planning of the municipality.
6.	Is the project part of a national programme to address an issue of national concern or importance?	The objective of the project is to construct and operate the surge tanks capacity expansion project within the RBMR, which will result in a reduction in potential environmental impacts that may be incurred should the plant not be authorised in terms of potential overflowing the current tanks, which would have an impact on water resources.

Questions (Notice 792, NEMA, 2012)		Response
		The protection of water resources forms part of the National Water Resources Strategy II that was adopted by the Government in 2013. The water resource protection theme emphasises the need to protect our freshwater ecosystems, which are under threat because of pollution from many sources. The NWRS (II) states that South Africa's water ecosystems are not in a healthy state. Of the 223 river ecosystem types, 60% are threatened, with 25% of these critically endangered. Less than 15% of river ecosystems are located within protected areas, many of which are threatened and degraded by upstream human activities.
PART II: DESIRABILITY		
7.	Is the development the best practicable environmental option for this land/site?	Yes. Authorising the project will reduce potential environmental impacts that may be incurred in terms of potential overflowing of the surge tanks and bund walls which would have an impact on water resources.
8.	Would the approval of this application compromise the integrity of the existing approved and credible IDP and SDF as agreed to by the relevant authorities?	No. The project has no bearing on the IDP or SDF of the Rustenburg LM, Bojanala DM and/or North West Province. The objective of the project is to construct and operate a surge tanks capacity expansion project which will reduce the risk of water resource contamination that may occur due to overflowing of the current tanks.
9.	Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g. as defined in EMFs), and if so, can it be justified in terms of sustainability considerations?	No. The project will be located within the existing RBMR precinct and will have no implications on the integrity of the EMFs.
10.	Do location factors favour this land use at this place? (this relates to the contextualization of the proposed land use on this site within its broader context).	Yes. The proposed surge tanks will be located in the existing RBMR precinct. The location is considered the best as it will tie in with the rest of the infrastructure.
11.	How will the activity of the land use associate with the activity being applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	The area where the proposed surge tanks will be located is already affected by the RBMR infrastructure and will not have impact on any sensitive environmental attributes. There are no

Questions (Notice 792, NEMA, 2012)		Response
		cultural or heritage resource areas that will be affected by the project.
12.	How will the development impact on people's health and well-being? (Eg. In terms of noise, odours, visual character and sense of place, etc.)?	<p>During construction, there will be particulate emissions (dust) related to debris handling, materials transportation, storage, handling and transfer; open areas (windblown emissions). Gas emissions are also expected to occur due to vehicle and construction equipment activity (exhaust fumes). These impacts, however, taking into consideration, the area where the surge tanks will be located, are expected to be of low significance and can be mitigated and managed to acceptable levels, with a post mitigation impact that is negligible.</p> <p>Movement of construction vehicles and machinery result in the production of construction related noise from construction vehicles and machineries which may cause a nuisance to people working and living in the vicinity of the RBMR. However, the implementation of appropriate mitigation measures such as the use of Personal Protective Equipment (PPE) would reduce the noise levels to remain within applicable and acceptable SANS levels (SANS 10103:2008). Occupational health and safety standards will apply.</p> <p>It is expected that the project will not have an impact on the visual character and sense of place, especially since the surge tanks will be located within the RBMR plant area.</p>
13.	Will the proposed activity or the land use associated with the activity being applied for, result in unacceptable opportunity costs?	No. The objective of the project is to construct and operate the surge tanks capacity expansion project within the RBMR, which will result in a reduction in potential environmental impacts that may be incurred should the project not be authorised in terms of potential overflowing of the current tanks, which would have an impact on water resources.
14.	Will the proposed land use result in unacceptable cumulative impacts?	No. It is expected that the project may result in negligible cumulative impacts on water and air quality. The impacts will be short lived, during the construction phase. It is however expected that implementation of the mitigation measures included in the EMPr will reduce the significance of the impact to very low.

Alternatives Considered

There are no site alternatives that were identified. This is due to the limitation in availability in space where the surge tanks could be located. Alternative sizes for the surge tanks were assessed using Monte Carlo and circuit variance propagation simulations as inputs to a Business Structure Planning model.

The assessment will however include a no-go option, as is required by the EIA Regulations. The no-go option will mean that the surge tanks capacity expansion project will not be implemented. The current surge tanks have insufficient capacity, which in the past decade has resulted in tank and bund wall overflow. The circuit inter section surge capacity is insufficient to allow for continuous production without inventory overflow, the no-go option will therefore limit production efficiency of the process.

Other environmental risks posed by the no-go option include contamination of soils and water resources (ground and surface) should the overflow from the surge tanks continue. The expansion of the surge tank capacity is therefore a form of mitigation as it will minimise the chances of overflows occurring.

Summary of the Baseline Environment

The following section presents an overview of the biophysical and socio-economic environment in which the proposed project is located, to:

- Understand the general sensitivity of and pressures on the affected environment;
- Inform the identification of potential issues and impacts associated with the proposed project, which was assessed during the Impact Assessment Phase;
- Identify gaps in available information to inform specialist study requirements; and
- Start conceptualising practical mitigation measures.

This section has been compiled, based on the following:

- Available information from the existing specialist studies and monitoring reports;
- Existing information on the environmental parameters of the area;
- Agricultural GIS;
- SANBI; and
- South African Weather Service.

It must be noted that although baseline information has been given for the RBMR as a whole, that the baseline environment associated with the surge tanks capacity expansion project, should actually be viewed along with the changes that the RBMR project already had on the baseline environment. The baseline environment for the proposed surge tanks capacity expansion project will therefore already have been impacted on because of the various construction and operational activities associated with the RBMR infrastructure.

The environmental status quo is summarised in Table ES-2.

Table ES-2: Project Area Status Quo Assessment

Aspect	Description
Climate	<p>The proposed surge tanks capacity expansion project will be located in the Rustenburg Local Municipal area. Rustenburg falls within the Summer Rainfall Climatic Zone. The area is characteristically warm with erratic and variable rainfall, ranging from 450 to 750 mm per annum. The rainfall in the area is almost exclusively due to thunderstorms that occur during the summer months (October to March); whilst winter months are normally dry. The region is classed under the calm category whereby wind speeds are relatively low, with between 19 and 24 days of frost per year. The area is fog free and hailstorms are a rare occurrence.</p>
Topography	<p>The region of Rustenburg Local Municipality comprises of escarpment hills and lowlands with parallel hills, plains, slightly undulating plains and undulating hills. A large series of ridges and koppies are situated mostly in the central parts, with various mountain ranges and ridges making up the most prominent topography of the area of Bafokeng. The area is mostly dominated by flat undulating slope ranging from 0 to 9%. However, the central part of the area is characterised by elevated slope ranging from 9 to 15% covering the MPE and Kgaswane Mountain Reserve. Some patches of the medium elevated slope ranging between 15 to 25% are also found in the central part. The elevation is an average of 1180 Meters Above Mean Sea Level (mamsl). The RBMR is located in an area with an elevation of between approximately 1 140 mamsl and 1 180 mamsl.</p>
Geology	<p>The project area is located in the Bushveld Igneous complex, in an area characterised by Gabbro and norite, with interlayered anorthosite</p>
Soils, landuse and land capability	<p>The soils are classified as moderate to deep clayey loam soils. The net primary agriculture production is classified as low (4-6%). It must however be noted that the land has already been changed as a result of the construction of the existing RBMR plant. The area where the surge tanks capacity expansion project will be located is characterised by plant infrastructure, concrete paving and tarred roads</p>
Air Quality	<p>RBMR conducts air quality monitoring in and around the plant. The assessments include dust fallout in residential areas around the plant: The results show that dust fallout levels in all the monitored areas are below the SANS 1929:2005 Ambient Air Quality evaluation criteria for dust fall out monitoring for residential areas.</p> <p>The Rustenburg LM has three ambient air monitoring stations that monitor the levels of priority pollutants. The results from the sampling show that generally there is an improvement in the ambient air in the Rustenburg Local Municipality due to less exceedances recorded.</p> <p>The project is also located within the Waterberg–Bojanala Priority Area (WBPA) which was declared a priority area by the Minister of</p>

Aspect	Description
	Environmental Affairs on 15 June 2012 as the third National Priority Area.
Surface Water	<p>The RBMR is situated within the Hex River catchment just upstream from the Bospoort Dam (Quaternary catchment A22H). Various continuous, seasonal or event-linked discharges of affected process water takes place into seasonal tributaries of the Hex River, which drains the processing areas. The tributaries affected by Anglo's Rustenburg Process Division that drain into the Hex River are the Klipfonteinspruit and Klipgatspruit. The water quality issues identified associated with the Rustenburg Process Operations are as follows:</p> <ul style="list-style-type: none"> • Raised salinity, calcium, magnesium, sodium, sulphate, chloride, nickel and inorganic nitrogen are indicative of the water type associated with the processing activities of the Rustenburg Process Division; • Nitrate and salinity contamination are the most prominent parameters sourced from the processing activities. • The salt loads in the receiving environments, particularly chloride, sulphate, sodium and calcium, and the base metal nickel, especially in the Klipfonteinspruit were also identified as being of concern. <p>The sampling upstream and downstream of the Klipfonteinspruit revealed significant deteriorating conditions from the upstream to the downstream locality at RBMR. Sulphate, fluoride and nickel concentrations revealed the most significant increases and may be as a direct result of process water from the RBMR dams which are dominated by these constituents.</p> <p>The process water dams at RBMR were sampled and the water quality profiles for most of the sampled dams are similar with Sodium (Na) and Potassium (K) as the main contributing cation and sulphate as the main contributing anion. Fluctuating concentrations of TDS and metals were recorded in all samples.</p>
Groundwater	<p>Three distributed components of the groundwater system have been identified, of which all three have been affected to some extent. These form part of the lower part of the Main Zone and the Critical Zone of the Layered Bushveld Igneous complex.</p> <p>There are three aquifer types identified in the area: floodplain alluvial aquifers. Deep aquifer system and shallow bedrock aquifers in the weathered zone. In terms of the Parsons Aquifer classification system the aquifers in the project area are classified as minor or non-aquifers.</p> <p>RBMR is currently undertaking annual groundwater quality monitoring at 15 boreholes located in and around the RBMR. According to the groundwater monitoring report, the larger part of the surface area underlying the actual refinery is lined by concrete surfaces, but historical</p>

Aspect	Description
	<p>leaks and dumping caused the formation of a large diffuse source area for contamination. Seepage and leachate formation thus still emanate from the RBMR area and remediation plans target the RBMR as the priority area. The RBMR is situated on the southern banks of the Klipfonteinspruit directly opposite the Waterval Processing area. The groundwater flow and mass transport from the site is northwards in the direction of the Klipfonteinspruit.</p> <p>The annual report on Groundwater Monitoring 2018/2019 Report indicates that significant pollution impacts from the RBMR occur on the groundwater environment. This processing complex consists of a large base metal refinery area with associated effluent dams for storage of process water. The most notable of these are the sodium sulphate solution area to the south-east of the refinery where highly concentrated sodium sulphate solution by-product is treated and dried. The groundwater pollution in this area is by far the dominant impact of the RBMR area, because of leachate formation as well as seepage from effluent dams, where historical liners were not fully impervious.</p>
Wetlands	<p>According to the wetlands study that was conducted for the RBMR and surrounding areas, there are no wetlands associated with the location of the proposed surge tanks capacity expansion project. This is supported by the South African National Biodiversity Institute (SANBI) National Wetlands database which show no wetlands located in the</p>
Biodiversity	<ul style="list-style-type: none"> • General Biodiversity: A study conducted by Clean Stream Environmental Services in 2005 found that the biodiversity management plan concluded that the Rustenburg Section area is quite diverse regarding the number of natural biotopes present in the area. • Flora: The study identified six (6) natural vegetation types or untransformed indigenous vegetation type of which Low Closed Woodland (on ridges, koppies and rocky outcrops) and Tall Closed Woodland (on banks of streams) have the highest species richness. Of the plant communities described in this study, the Seasonal Marsh and other riparian vegetation as well as the Low Closed Woodland on ridges, koppies and rocky outcrops have the highest variability in habitats and species composition. • Terrestrial Fauna: At the time of the study, there was diversity regarding the number of natural biotopes present in the area and the associated faunal diversity (and potential diversity) that is present or expected to occur. After analysing the results of the biodiversity survey, it was concluded that 13 frog species, 57 reptile species, 270 bird species and 85 mammal species are expected to occur in the area. • Aquatic Fauna: At the time of the study, it was evident that the habitat diversity was generally high in the study area. As can be

Aspect	Description
	<p>expected, the diversity was lower in the seasonal marshes than in the Hex River. Nine (9) of an expected thirteen indigenous fish species were present in the Hex River section of the area. It is expected that the fish species diversity of the area has been reduced by four (4) species, mainly as a result of water quality degradation and the presence of migration barriers. No Red Data species are expected to occur or are present within the study area. Various human activities in the area, as well as up- and downstream catchments, resulted in the degradation of the aquatic ecosystems integrity, and thus biodiversity. A total aquatic macro-invertebrate diversity of 47 taxa was observed in the area. Of the 47 taxa in the study area, 32 can be classified as being highly tolerant to pollution, while 15 are moderately tolerant to pollution. No taxa with a low tolerance to pollution were observed in the study area, which is indicative of some adverse impact.</p> <p><i>The biodiversity where the surge capacity expansion project will be located will already have been removed and/or disturbed as part of the construction and operational activities at RBMR. The project area has already been sterilized following the construction and operational activities currently taking pace at RBMR.</i></p>
Areas of Conservation Concern	<p>The RBMR is not located in areas classified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) and the biodiversity status of the area is classified as hardly protected. In addition, there are no protected areas that are near the RBMR.</p> <p>The affected area where the proposed surge capacity expansion project will be located is highly disturbed due to the construction and operation of the RBMR.</p>
Visual	<p>The project area is located within the jurisdiction of the Rustenburg Local Municipality within the Bojanala District Municipality in the North West Province. Photshaneng and Bokamoso are the closest residential areas, approximately 6.5 km North and North East respectively of RBMR and Rustenburg is the closest town, being approximately 4.9 km North Westerly of the complex</p> <p>Due to current operations at RBMR and its associate mines in close vicinity to the location of the proposed surge tanks capacity expansion project, it is expected that the project will not result in any significant additional visual impacts. The impact assessment section of the report includes an assessment of the visual impacts and the EMPr provides for practical mitigation measures that may be implemented to avoid and/or minimise the impacts.</p>
Socio-Economy	<p>This site falls within the Bojanala Platinum District and Rustenburg Local Municipality. The RLM accommodates about 16% of the provincial population, and it is estimated that it will in future experience significant</p>

Aspect	Description
	<p>population growth (up to 32.9% of the provincial population growth). Rustenburg town represents the centre of population concentration, employment opportunities and shopping opportunities. This attracted urban development towards the town. With 645 000 people, the Rustenburg Local Municipality housed 1.1% of South Africa's total population in 2017. Based on the present age-gender structure and the present fertility, mortality and migration rates, Rustenburg's population is projected to grow at an average annual rate of 1.7% from 645 000 in 2017 to 700 000 in 2022.</p> <p>The primary sector consists of two broad economic sectors namely the mining and the agricultural sector. Between 2007 and 2017, the agriculture sector experienced the highest growth in 2017 with an average growth rate of 43.3%. The mining sector reached its highest point of growth of 19.5% in 2015. The agricultural sector experienced the lowest growth for the period during 2015 at -18.2%, while the mining sector reaching its lowest point of growth in 2014 at -13.0%. Both the agriculture and mining sectors are generally characterised by volatility in growth over the period.</p> <p>The secondary sector consists of three broad economic sectors namely the manufacturing, electricity and the construction sector. Between 2007 and 2017, the manufacturing sector experienced the highest growth in 2010 with a growth rate of 3.6%. The construction sector reached its highest growth in 2007 at 14.6%. The manufacturing sector experienced its lowest growth in 2010 of -11.6%, while construction sector reached its lowest point of growth in 2010 with -4.6% growth rate. The electricity sector experienced the highest growth in 2009 at 10.9%, while it recorded the lowest growth of -13.4% in 2008.</p> <p>The RBMR Rustenburg Operations employs locals as far as possible and have implemented several community initiatives, both of which are improving the local socioeconomic situation in the area.</p>

Impact Assessment Process

An Environmental Impact Assessment (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 were followed: the environmental technical and impact assessment process and the stakeholder engagement process. A summary of the BA process is show in Figure ES-1.

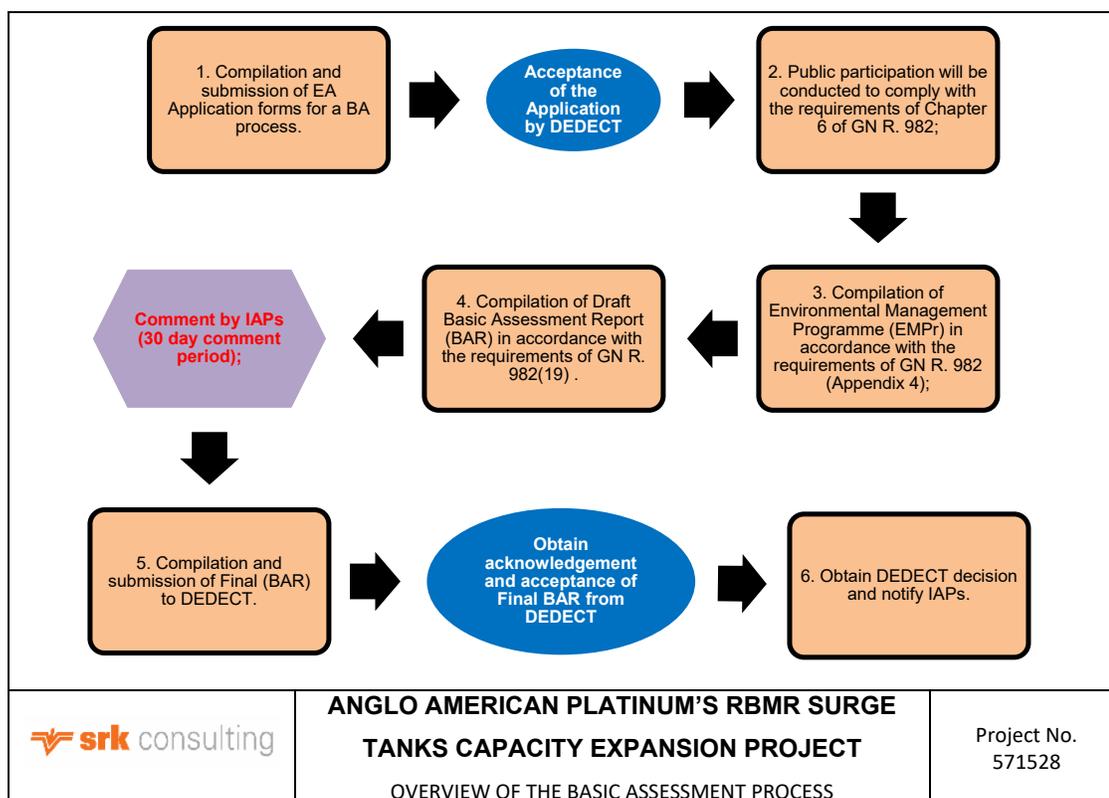


Figure ES-1: Overview the Basic Assessment Process

Stakeholder Engagement Process

The stakeholder engagement process, which was undertaken for this project, was aimed to comply with the relevant legislative requirements of the NEMA, as prescribed in Chapter 6 of the NEMA and GNR 982. The process included:

- Development of a stakeholder database;
- The compilation and management of the stakeholder database;
- Providing I&APs with the opportunity to participate in the impact assessment process and to register as an Interested and Affected Party (I&AP) as announced in July 2021 through the following means:
 - Letter of invitation to register was distributed to I&APs on 28 July 2021;
 - Media advertisements in English and Setswana were placed in the Rustenburg Herald on 28 July 2021;
 - Site notices were erected at several places in and around the study area on 30 July 2021; and
 - Collation of comments received into a Comments and Responses Report (CRR).

The Draft Basic Assessment Report (draft BAR) will be made available for a 30-day commenting period between 2 September 2021 and 4 October 2021. All issues, comments and suggestions received from I&APs will be collated into a CRR. Where necessary, comments from I&APs will be incorporated into the Final BAR that will be submitted to the DEDECT for decision-making.

Specialist Studies

The plant will be located within the RBMR areas, already impacted by other activities. It is therefore anticipated that no specialist studies are necessary for the EIA. The assumption is mostly supported by findings from the Department of Forestry, Fisheries and the Environment (DFFE) Screening Tool which identified terrestrial biodiversity specialist studies as the only specialist study required. However, it is the considered opinion of the EAP that biodiversity assessments are not necessary since the affected area is already sterilized by the existing infrastructure and does not have any remaining flora or fauna.

Summary of the Impact Assessment Process

This section contains the assessment of potentially positive and negative environmental impacts that could possibly be caused by the proposed project.

Specific emphasis was placed on any relevant environmental, social and economic impacts identified by the comments received during the stakeholder engagement process, issues highlighted by relevant authorities; as well as a professional judgement of the EAP team through appraisals on the project description, listed activities and the receiving environment.

The objectives of the assessment for each of the potential environmental impacts identified was to determine their significance and to identify mitigation measures that may be implemented to reduce the impacts to an acceptable level where required.

Since the location of the proposed surge tanks capacity expansion project is on the approved RBMR footprint, the study found that the construction and operation of the surge tanks capacity expansion project will not have any significant additional impacts on the environment (biodiversity, socio-economic environment, visual, noise, wetlands, air quality and hydrology).

The anticipated impacts were rated against a set impact rating methodology ranging from Insignificant to High. The potential impacts evident from the detailed impact assessment (Section 10) of the proposed project are both positive and negative in nature and can be managed to acceptable levels.

It is not expected that the tanks will be decommissioned in the near future, and should decommissioning be required, the impacts associated with the process will be similar to the ones associated with the construction phase of the project. It is expected that should decommissioning be required, an EIA will be conducted in compliance with the environmental legislation applicable at that time. As such, no impact assessment was conducted for the decommissioning and closure phase of the project.

The summary of the quantitative impact assessment can be found in Table ES-3.

Table ES-3: Summary of potential Impacts

PHASE	ASPECT	NATURE OF POTENTIAL IMPACT/RISK	ENVIRONMENTAL IMPACT SIGNIFICANCE BEFORE MITIGATION	ENVIRONMENTAL IMPACT SIGNIFICANCE AFTER MITIGATION
CONSTRUCTION PHASE	Social-economic	<i>Possible boost in short term employment and local small business opportunities.</i>	Medium (+)	Medium (+)
		<i>Potential impact on safety and security, the occurrence of additional trucks on the roads, uncontrolled lighting of fires on site, littering and driving irresponsibly.</i>	Medium (-)	Very-Low (-)
		<i>Health and safety risk because of the movement of vehicles increasing the risk of accidents</i>	Low (-)	Insignificant (-)
		<i>Health risk due to contagious diseases (such as the Corona virus) due to working near each other</i>	Medium (-)	Low (-)
		<i>Potential unlawful occupation of surrounding areas by job seekers.</i>	Very-Low (-)	Insignificant (-)
	Groundwater	<i>Local spillages of oils from vehicles and machinery leading to groundwater contamination.</i>	Low (-)	Insignificant (-)
		<i>Improper storage and handling of hazardous materials leading to groundwater contamination.</i>	Low (-)	Insignificant (-)
		<i>Potential contamination of groundwater due to accidental damage to existing tanks, and release of content.</i>	Medium (-)	Insignificant (-)
	Surface Water Quality	<i>Potential deterioration in water quality because of accidental spillages of hazardous substances such as hydrocarbons from vehicles and machinery used during the construction of the surge tanks.</i>	Medium (-)	Insignificant (-)
		<i>Potential contamination of water resources due to accidental damage to existing tanks, and release of content.</i>	Medium (-)	Insignificant (-)
		<i>Possible contaminated dirty water runoff to surrounding areas resulting in the impact on local surface water quality</i>	Medium (-)	Insignificant (-)
		<i>Poor stormwater management leading to runoff from stockpiled material removed causing pollution of the water resources.</i>	Medium (-)	Insignificant (-)
		<i>Debris from poor handling of materials and/or waste blocking watercourses may result in flow impediment and pollution</i>	Medium (-)	Insignificant (-)
	Wetlands and Aquatic Ecosystems	<i>No impacts are anticipated.</i>		

PHASE	ASPECT	NATURE OF POTENTIAL IMPACT/RISK	ENVIRONMENTAL IMPACT SIGNIFICANCE BEFORE MITIGATION	ENVIRONMENTAL IMPACT SIGNIFICANCE AFTER MITIGATION
	Air Quality	<i>Possible increase in dust generation, PM₁₀ and PM_{2.5}, because of earthworks, operation of heavy machinery, and vehicle movement.</i>	Low (-)	Insignificant (-)
		<i>Increase in carbon emissions and ambient air pollutants (NO₂ and SO₂) because of movement of vehicles and operation of machinery/equipment.</i>	Low (-)	Insignificant (-)
	Climate change	<i>Emissions of Green House Gases because of the use of vehicles and machinery used during the construction activities.</i>	Very-Low (-)	Insignificant (-)
	Heritage and Palaeontology Resources	<i>No impacts are anticipated.</i>		
	Biodiversity	<i>Movement of construction vehicles and machinery may result in collision with fauna, resulting in loss of fauna.</i>	Insignificant (-)	Insignificant (-)
		<i>Proliferation of alien invasive species due to ineffective management and control of alien invasive plant species.</i>	Insignificant (-)	Insignificant (-)
	Visual	<i>Visual intrusion because of the movement of machinery and the establishment of the required infrastructure.</i>	Low (-)	Insignificant (-)
		<i>Indirect visual impact due to dust generation because of the movement of vehicles and materials, to and from the site area.</i>	Very-Low (-)	Insignificant (-)
	Noise	<i>The use of vehicles and machinery during the construction phase may generate nuisance noise in the immediate vicinity</i>	Low (-)	Insignificant (-)
	Soils, land use and land capability	<i>No impacts are anticipated.</i>		
	Traffic	<i>Increase in traffic volumes because of transportation of materials from the softener plant site during and after decommissioning and closure, which may lead to an increase in traffic congestion on roads around the project area increasing the chances of road accidents.</i>	Medium (-)	Very-Low (-)
		<i>The increase in vehicles results in an increased potential for road degradation of the road network in the vicinity of the project.</i>	Medium (-)	Insignificant (-)
	Waste Management	<i>Poor waste management during construction could result in the contamination of surface runoff resulting in the deterioration of water quality of the watercourse.</i>	Medium-Low (-)	Low (-)

PHASE	ASPECT	NATURE OF POTENTIAL IMPACT/RISK	ENVIRONMENTAL IMPACT SIGNIFICANCE BEFORE MITIGATION	ENVIRONMENTAL IMPACT SIGNIFICANCE AFTER MITIGATION
		<i>Stockpiling material from the construction activities may result in secondary pollution and contamination of the watercourses.</i>	Medium-Low (-)	Low (-)
		<i>Disposal of hazardous waste including hydrocarbon contaminated soils, rags etc. could result in the contamination of surface runoff resulting in the deterioration of water quality of the watercourse.</i>	Medium-Low (-)	Low (-)
OPERATIONAL PHASE	Groundwater	<i>Potential overflow from the surge tanks due to failure (electrical or pump etc) leading to groundwater contamination.</i>	Low (-)	Very-Low (-)
	Surface Water Quality	<i>Potential overflow from the surge tanks due to failure (electrical or pump etc) leading to groundwater contamination.</i>	Low (-)	Insignificant (-)

Environmental Management Programme

The project specific EMPr for the construction and operation of the surge tanks capacity expansion project has been included in Appendix F. The mitigation measures included in the EMPr are deemed adequate to minimise and/or avoid degradation of the environment that may occur because of the proposed surge tanks capacity expansion project.

Conditions to be included in the EA

The EAP recommends that the surge capacity expansion be authorised for a period of 40 years and the following recommendations should be adhered to:

Construction Phase:

- All storage containers, storage areas and bunding areas for hazardous substances must comply with the relevant SANS standards to prevent leakage and to contain all hazardous substance if any container ruptures.
- Bulk storage of hazardous material must be undertaken in a dedicated area outside the project site and must include a bund or a drain where necessary to contain any spillages during the use, loading and off-loading of the substances.
- No dumping of waste shall be permitted. If any spills occur, they should be immediately cleaned up.
- All vehicles shall be inspected for leaks on a regular basis. Re-fuelling must take place on a sealed surface area to prevent ingress of hydrocarbons into topsoil;
- Informal fires by construction personnel within the project area shall be prohibited.
- It must be ensured that soil disturbance does not occur outside of the development footprint, as to ensure that further alien proliferation does not occur within the vicinity of the development footprint, which would further reduce the present ecological state of the surrounding area; and

Operational Phase:

- Surge tanks must be provided with concrete foundations to minimise potential for ingress into groundwater.
- Bund walls, allowing adequate capacity for containment, must be provided for the surge tank areas.
- Regular inspection and maintenance of the surge tanks and their associated bund walls shall be undertaken during the operation phase to ensure the integrity of the tanks and bund walls is not compromised.

Conclusion

SRK has undertaken the impact assessment and compiled the EMPr for the proposed construction and operation of the surge tanks capacity expansion project in accordance with the requirements of the NEMA. This has included a comprehensive stakeholder engagement process which has sought to provide I&APs with an adequate opportunity to participate in the project process and guide technical investigations that have taken place as part of this study.

To date, there are no fatal flaws or red flags that have been identified for the proposed project. The location of the surge tanks capacity expansion project is already highly disturbed, and it is the considered opinion of the EAP that there will be no additional impacts due to the construction and

operation of the surge tanks capacity expansion project. The project itself can be considered as a form of mitigation. The groundwater monitoring reports show that there is groundwater contamination due to activities at the RBMR. The proposed surge tanks capacity expansion project will result in reduced chances of tank overflows and associated potential groundwater, soil and surface water contamination.

An EMPr has been developed as part of this BA process to ensure the mitigation of identified impacts as far as practicable. It is anticipated that it will be possible to successfully mitigate the environmental impacts to acceptable levels and the implementation will be monitored and audited to determine the effectiveness of the measures implemented. The EMPr is considered adequate to assist the project in striving towards the principles of the NEMA.

Many of the impacts identified were classified as medium (-) to low (-) and insignificant (-) without mitigation. All the identified impacts can be mitigated to low (-), very-low (-) and insignificant (-) impact rating. The cumulative impacts were considered to be negligible.

The project team believes that the impact assessment undertaken for the construction and operation of the surge tanks capacity expansion project fulfils the process requirements of the NEMA. The EAP recommends that an EA be issued by the DEDECT and that the construction and operation of the surge tanks capacity expansion project should be conducted under duty of care and must be in accordance with the recommendations that were included in this BAR and the accompanying EMPr.

YOUR COMMENT ON THE DRAFT BASIC ASSESSMENT REPORT (DRAFT BAR)

This Draft BAR will be available for comment for a period of 30 days from **2 September 2021** to **4 October 2021**. Copies of the Draft BAR Report have been made available at the following public places for review:

Public Place	Locality	Telephone
SRK	OneDrive	A link will be created and shared with the I&APs
SRK	Other Electronic Transfer Platforms	A link will be created and shared with the I&APs
SRK Website	www.srk.co.za	(012) 361 9821
Rustenburg Library	Heystek/Thabo Mbeki Drive, Rustenburg	014 590 3701 plouw@rustenburg.gov.za

An electronic copy will also be available on CD on request from the stakeholder engagement officers. Interested & Affected Parties (I&APs) are requested to provide comments and information on the following aspects of the proposed project:

1. Information on how I&APs consider that the proposed activities will impact on them or their socio-economic conditions.
2. Written responses stating their suggestions to mitigate the anticipated impacts of each activity.
3. Information on current land uses and their location within the area under consideration.
4. Information on the location of environmental features on site to make proposals as to how and to what standard the impacts on site can be remedied; and
5. How to mitigate the potential impacts on their socio-economic conditions and to make proposals as to how the potential impacts on their infrastructure can be managed avoided or remedied.

DUE DATE FOR COMMENT

4 October 2021

Please submit comments to the stakeholder engagement officers:

Ndomupei Masawi/Vusi Masango
 SRK Consulting
 P O Box 35290, Menlo Park, 0102
 Phone: (012) 361 9821
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Disclaimer

The opinions expressed in this Report have been based on the information supplied to SRK Consulting (South Africa) (Pty) Ltd (SRK) by Anglo American Platinum's Rustenburg Base Metals Refiners (RBMR). The opinions in this Report are provided in response to a specific request from RBMR to do so. SRK has exercised all due care in reviewing the supplied information. Whilst SRK has compared key supplied data with expected values, the accuracy of the results and conclusions from the review are entirely reliant on the accuracy and completeness of the supplied data. SRK does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them. Opinions presented in this report apply to the site conditions and features, as they existed at the time of SRK's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this Report, about which SRK had no prior knowledge nor had the opportunity to evaluate.

List of Abbreviations

BA	Basic Assessment
BAR	Basic Assessment Report
CA	Competent Authority
CBA	Critical Biodiversity Areas
CO	Carbon Monoxide
Co	Cobalt
CO ₂	Carbon Dioxide
COVID19	Novel Coronavirus
CRR	Comments and Responses Report
CuAdv	Copper Advance Solution
CuSP	Copper Spent Storage
CRR	Copper Removal Residue
DEA	Department of Environmental Affairs
DEFF	Department of Environment, Fisheries and Forestry
DFFE	Department of Forestry, Fisheries and the Environment
DEAT	Department of Environmental Affairs and Tourism
DEDECT	North West Department of Economic Development, Environment, Conservation and Tourism
DWS	Department of Water and Sanitation
DMR	Department of Mineral Resources
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EMPr	Environmental Management Plan Report
ESA	Ecological Support Areas
GA	General Authorisation
GIS	Geographic Information Systems

GNR	Government Regulation Notice
IAPs	Interested & Affected Parties
IDP	Integrated Development Plan
IWWMP	Integrated Water and Waste Management Plan
K	Potassium
mamsl	Meters Above Mean Sea Level.
MC	Motor Control
MPE	Magaliesberg Protected Environment (MPE)
Na	Sodium
NALS	Nickel Atmospheric Leach Solution
NAAQS	National Ambient Air Quality Standards
NEM: AQA	National Environmental Management: Air Quality Act
NEM: BA	National Environmental Management: Biodiversity Act
NEM: WA	National Environmental Management Waste Act
NEMA	National Environmental Management Act
NFA	National Forestry Act
NIDS	Nickel Dissolution Solution
NiFd	Nickel Feed
NO	Nitric Oxide
NOXR	Non-Oxidising Belt Filter Residue
NOXS	Non-Oxidising Leach Solution
NWA	National Water Act
NWRS (II)	National Water Resources Strategy II
O ₃	Ozone
PAIA	Promotion of Access to Information Act
PGEs	Platinum-Group Elements
PM	Particulate Matter
PPE	Personal Protective Equipment
PMR	Precious Metals Refinery
POPIA	Protection of Personal Information Act

PPP	Public Participation Process
RBMR	Rustenburg Base Metals Refiners
RLM	Rustenburg Local Municipality
RPD	Rustenburg Process Division
RPM-RS	Rustenburg Platinum Mines – Rustenburg Section
SACNASP	South African Council for Natural Scientific Professions
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANS	South African National Standard
SDF	Spatial Development Framework
SRK	SRK Consulting (Pty) Ltd
TDS	Total Dissolved Solids
TLL	Tertiary Leach Liquor
WMA	Water Management Area
WML	Waste Management Licence
WUA	Water Use Authorisation
WMP	Waste Management Plan

1 Introduction

1.1 Background

Anglo American Platinum's Rustenburg Platinum Mines Limited (Rustenburg Section Retained Operations) which includes the Rustenburg Base Metals Refiners (RBMR) and the Precious Metals Refinery (PMR) have received Environmental Authorisations (EAs) and Environmental Management Programme (EMPr) approvals for their operations over the years. In March 2017 the Rustenburg Section Retained Operations applied for and received approval (Ref: NW 30/5/1/2/3/2/1/82 EM) for the consolidation of eleven (11) EMPs pertaining to their operations which included:

- Rustenburg Base Metals Refinery EMP [RDNW(KL) 6/2/2/24];
- Precious metals refinery EMP [RDNW(KL) 6/2/2/782];
- Waterval Smelter EMP [RDNW (KL) 6/2/2/378];
- Rustenburg Base Metals Refinery Amendments/Addendum [RDNW(KL) 6/2/2/24] EMP;
- Waterval Smelter ACP EMP Amendment/Addendum [RDNW(KL) 6/2/2/378];
- Waterval Smelter: Slag Cleaning Furnace Amendment/Addendum [RDNW(KL) 6/2/2/378] EMP;
- Precious Metals Refinery: Capacity increase Amendment/Addendum [RDNW(KL) 6/2/2/782] EMP;
- Rustenburg Base Metals Refinery: Steam Generation Plant EMP Amendment/Addendum [RDNW(KL) 6/2/2/24];
- Base Metals Refinery Expansions EMP Amendment [RDNW(KL) 6/2/2/24];
- Precious Metals Refinery: Capacity increase Project 2 EMP Amendment/Addendum [RDNW(KL) 6/2/2/782]; and
- Waterval Smelter: Slag Cleaning Furnace 2 Amendment/Addendum [RDNW(KL) 6/2/2/378] EMP.

The approved consolidated EMP includes the operation of surge tanks at RBMR, which although not specifically listed in the authorisation, formed part of the RBMR activities authorised by RBMR EMP (Ref: RDNW(KL) 6/2/2/24).

The Base Metal Refinery (BMR) assessed the current authorised surge tank capacity and found that additional capacity is required to reduce overflow spillage from the surge tanks that currently report to Dam 3B. The BMR circuit inter section surge capacity is insufficient to allow for continuous production without inventory overflow. Within normal operating periods within the past decade, tank overflow and subsequent bund wall overflow from various inventories within the RBMR has resulted in heavy metal deportment of Copper (Cu), Nickel (Ni) and Cobalt (Co) to Dam 3A which overflows to Dam 3B. Dam 3B is transferred to the Waterval smelter complex as the BMR process equipment material of construction is unable to cope with the dam chloride levels under a dam recovery operating regime. The annualised typical metal transfer to the Waterval Smelter complex are 667-ton Ni, 127-ton Cu and 22-ton Co.

The improved performance will be achieved by increasing the surge tank capacity and upgrading the existing tanks currently on the RBMR site by 2025. Increasing the inter surge capacity at the plant will allow for operation at 33 (kilo ton per annum) ktpa Ni cathode production rate without spilling valuable metal to the dam. The proposed construction and operation of the capacity of the surge tanks triggers

activities listed in Government Regulation Notice (GNR) 983 (as amended by GNR327 of 7 April 2017) of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) and will therefore require an EA from the North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT).

GNR 326 of the NEMA stipulates that all activities listed in GN327 require that a Basic Assessment (BA) process be conducted. SRK Consulting (SA) (Pty) Ltd (SRK) has been appointed RBMR as the independent Environmental Assessment Practitioner (EAP) to conduct the EA application process for the project.

The reports and documentation for the EA application process will be compiled and finalised in terms of the NEMA for submission to the DEDECT for consideration and decision making. The DEDECT will consult with other government authorities as required in terms of Section 24(K) of the NEMA.

1.2 Purpose of this study

An Environmental Impact Assessment (EIA) is defined as the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made. The aim of an EIA is to prevent substantial damage to the environment. The objectives of this study are:

- To comply with the requirements of NEMA and associated Regulations;
- Identify and assess the environmental (biophysical, socio-economic, and cultural) impacts of activities associated with the construction and operation of the proposed surge tanks capacity expansion project. The cumulative impacts of the proposed development will also be identified and evaluated;
- Identify and evaluate potential management and mitigation measures that will reduce the possible negative impacts of the proposed development and enhance the positive impacts;
- Compile monitoring, management, mitigation and training needs in the EMP; and
- Provide the DEDECT with sufficient and accurate information to make a sound decision on the proposed development and set conditions that must be adhered to.

1.3 The Objectives of this Report

This Basic Assessment Report (BAR) was compiled with the aim to document the Basic EIA process that was conducted for the project. The Draft BAR will be made available to Interested and Affected Parties (I&APs) for their comments. All comments received will be considered and incorporated into a Final BAR that will be submitted to the DEDECT for decision making.

1.4 Report Index in Relation to the NEMA Regulations

Regulation 2, Appendix 1 of GNR 982 published in terms of NEMA and amended by GNR326 of 7 April 2017 stipulates the minimal requirements and issues that need to be addressed in the BAR. This report strives to address all these requirements as per the regulations. Table 1-1 indicates the regulations that have been addressed and the section of the BAR where these requirements can be found.

Table 1-1: Requirements of Appendix 1 of GNR 982

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for Basic Assessment Reports	Section
Appendix 1: 3 (1) (a)	Details of –	Section 1.5.2

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for Basic Assessment Reports	Section
	the EAP who prepared the report; and the expertise of the EAP, including a curriculum vitae	
Appendix 1: 3 (1) (b)	The location of the activity, including – The 21-digit Surveyor General code of each cadastral land parcel; Where available, the physical address and farm name; Where the required information in items (i) and (ii) is not available, coordinates of the boundary of the property or properties.	Section 4
Appendix 1: 3 (1) ©	A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is – A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or On land where the property has not been defined, the coordinates within which the activity is to be undertaken; or.	Figure 2-2
Appendix 1: 3 (1) (d)	A description of the scope of the proposed activity, including – All listed and specified activities triggered and being applied for; A description of the activities to be undertaken, including associated structures and infrastructure.	Section 2
Appendix 1: 3 (1) ©	A description of the policy and legislative context within which the development is proposed including- an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and have been considered in the preparation of the report; and how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	Section 5
Appendix 1: 3 (1) (f)	A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location.	Section 7
Appendix 1: 3 (1) (g)	A motivation for the preferred site, activity and technology alternative.	Section 3
Appendix 1: 3 (1) (h)	A full description of the process followed to reach the proposed preferred activity, site and location within the site, including-	Section 3
	Details of all alternatives considered;	Section 3
	Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Section 6
	A summary of the issues raised by interested and affected parties, and an indication of the way the issues were incorporated, or the reasons for not including them;	Section 6.8
	The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 8

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for Basic Assessment Reports	Section
	The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration, and probability of the impacts, including the degree to which the impacts- (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed, or mitigated.	Section 10
	The methodology used in deterring and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	Section 10
	Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographic, physical, biological, social, economic, heritage and cultural aspects;	Section 10
	The possible mitigation measures that could be applied and level of residual risk;	Section 10
	The outcome of the site selection matrix;	N/A
	If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and;	Section 3
	A concluding statement indicating the preferred alternatives, including preferred location of the activity.	Section 3
Appendix 1: 3 (1) (i)	a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including— a description of all environmental issues and risks that were identified during the environmental impact assessment process; and an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	Section 9.2.3
Appendix 1: 3 (1) (j)	An assessment of each identified potentially significant impact and risk, including— cumulative impacts; the nature, significance and consequences of the impact and risk; the extent and duration of the impact and risk; the probability of the impact and risk occurring; the degree to which the impact and risk can be reversed; the degree to which the impact and risk may cause irreplaceable loss of resources; and the degree to which the impact and risk can be avoided, managed or mitigated;	Section 10
Appendix 1: 3 (1) (k)	where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report;	N/A/ No specialist studies were conducted for the project. Please see Section 9.1 for details

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for Basic Assessment Reports	Section
Appendix 1: 3 (1) (l)	an environmental impact statement which contains— a summary of the key findings of the environmental impact assessment; a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	Section 13
Appendix 1: 3 (1) (m)	based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed [impact management objectives and the impact management outcomes for the development for inclusion in the EMPr;	Section 0
Appendix 1: 3 (1) (n)	any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;	Section 14
Appendix 1: 3 (1) (o)	a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Section 11
Appendix 1: 3 (1) (p)	a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	Section 15
Appendix 1: 3 (1) (q)	where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised;	N/A. The activity includes operational aspects.
Appendix 1: 3 (1) ®	An undertaking under oath or affirmation by the EAP in relation to- The correctness of the information provided in the report; The inclusion of the comments and inputs from I&APs and interested and affected parties; The inclusion of inputs and recommendations from the specialist reports where relevant; and Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.	Section 16
Appendix 1: 3 (1) (s)	where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	Not Applicable
Appendix 1: 3 (1) (t)	Any specific information required by the competent authority.	Not Applicable
Appendix 1: 3 (1) (u)	Any other matter in terms of Section 24(4)(a) and (b) of the NEMA	Not Applicable

1.5 Contact Details

1.5.1 Applicant

Table 1-2 presents the details of the applicant and facility owner.

Table 1-2: Applicant Contact Details

Contact details of the Applicant:
Anglo American Platinum's Rustenburg Base Metals Refiners (RBMR) Physical Address: 55 Marshall Street, Marshall Town, Johannesburg , 2001, South Africa Contact Person: Prakashim Moodliar Tel: 011 373 6292 E mail: Platinum.Environmental@angloamerican.com

1.5.2 Environmental Assessment Practitioner

SRK was established in 1974 and has since undertaken 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. South African offices are staffed with over 350 professional consultants in nine offices, operating in a range of disciplines, mainly related to the environment, water, social and mining sectors. Back-up and peripheral expertise are available within these offices for all environmental projects.

SRK has been appointed by RBMR as the EAP. The EAPs involved in the compilation of this BAR and their contact details are provided in Table 1-3.

Table 1-3: EAP Contact Details

EAP Name	Contact Number	Fax Number	Email Address
Ndomupe Masawi	012 361 9821	012 361 9912	nmasawi@srk.co.za
Manda Hinsch	012 361 9821	012 361 9912	mhinsch@srk.co.za
Vusi Masango	012 361 9821	012 361 9912	vmasango@srk.co.za
Cassia Mlangeni	012 361 9821	012 361 9912	CMlangeni@srk.co.za

The project manager, Ndomupe Masawi is a registered Professional Natural Scientist (SACNASP Reg Number 400045/14) with a master's degree in Environmental Management, Geographic Information Systems (GIS) and Remote Sensing. She has more than 14 years of Integrated Environmental Management and project management experience. Her experience includes compiling Environmental Management Programmes, undertaking Public Participation Processes, providing GIS Services and undertaking the processes and assessments to support applications for Environmental Authorisations, WULs, Waste Management Licences and Air Emission Licences, for roads, railway lines, power stations, airports, dams, housing developments, schools in South Africa, Tanzania, Botswana, Lesotho, Zimbabwe and Uganda. She has also recently completed her Post Graduate Diploma in Integrated Water Resource Management. Ms Masawi is also a Registered EAP with the EAPASA (Reg:2020/401).

Manda Hinsch (SACNASP 400164/09) is an experienced and professionally certified environmental assessment practitioner with over 38 years of experience. Manda has an honour's degree in Water Utilisation from the University of Pretoria in South Africa. Manda is a Principal Environmental Consultant and Partner of SRK Consulting (South Africa), and presently heads the Pretoria Business Unit in SRK. She has worked on a wide range of water and environmental projects throughout Africa. She serves as project partner on large environmental and social impact assessments including in the mining sector.

Vusi Masango currently employed by SRK Consulting as a Junior Scientist in the Pretoria office in the Environmental Department. Vusi has completed a National Diploma in Agricultural Science at Tshwane University of Technology in 2012 and is busy with his Bachelor of Arts in Environmental Management in Unisa. Vusi also attended the following courses (Report Writing, Microsoft word level 1 and Microsoft Excel level). He has more than 7 years' experience in stakeholder engagement as well as water quality monitoring.

Cassia has more than 3 years' experience in the field of disaster management and environmental management. She is currently employed by SRK Consulting as a junior Environmental Management Scientist. Cassia has worked in the public sector dealing with environmental management and disaster risk reduction mainly on community level. Her expertise includes project coordination, project administration, communication, environmental impact assessments, water use license applications, basic assessment reports, risk assessments, and public participation.

The *Curriculum Vitae* of the EAP team and the background on experience gained by SRK in the field of Environmental Impact Assessments is provided in Appendix A and Appendix B and respectively.

1.5.3 Competent Authority Details

The details of the competent authorities are provided in Table 1-4.

Table 1-4: Competent Authority Details

Department	Contact Person	Contact Details	
DEDECT	Ms Gasewabone Ellis Thebe	Tel	018 389 5099
		Email	gethebe@nwpg.gov.za >

1.5.4 Local Authority Details

The project area is located within the jurisdiction of the Rustenburg Local Municipality within the Bojanala District Municipality in the North West Province. Photshaneng and Bokamoso are the closest residential areas, approximately 6.5 km North and North East respectively of RBMR and Rustenburg is the closest town, being approximately 4.9 km North Westerly of the complex.

Details of the relevant municipality are provided in Table 1-5.

Table 1-5: Local and District Municipality Details

Department	Contact Person	Contact Details	
Bojanala Platinum District Municipality	Mr P Shikwane / Ms Tsholofelo B Dikgole	Tel	014 590 4502
		Email	tsholofelod@bojanala.gov.za / pogisos@bojanala.gov.za
Rustenburg Municipality	Lillian Sefike/ Mekgoe (Environmental Officer)	Tel	014 590 3075
		Email	lsefike@rustenburg.gov.za / kmekgoe@rustenburg.gov.za

Figure 1-1 provides an illustration of the relevant district and local municipalities surrounding the proposed project.

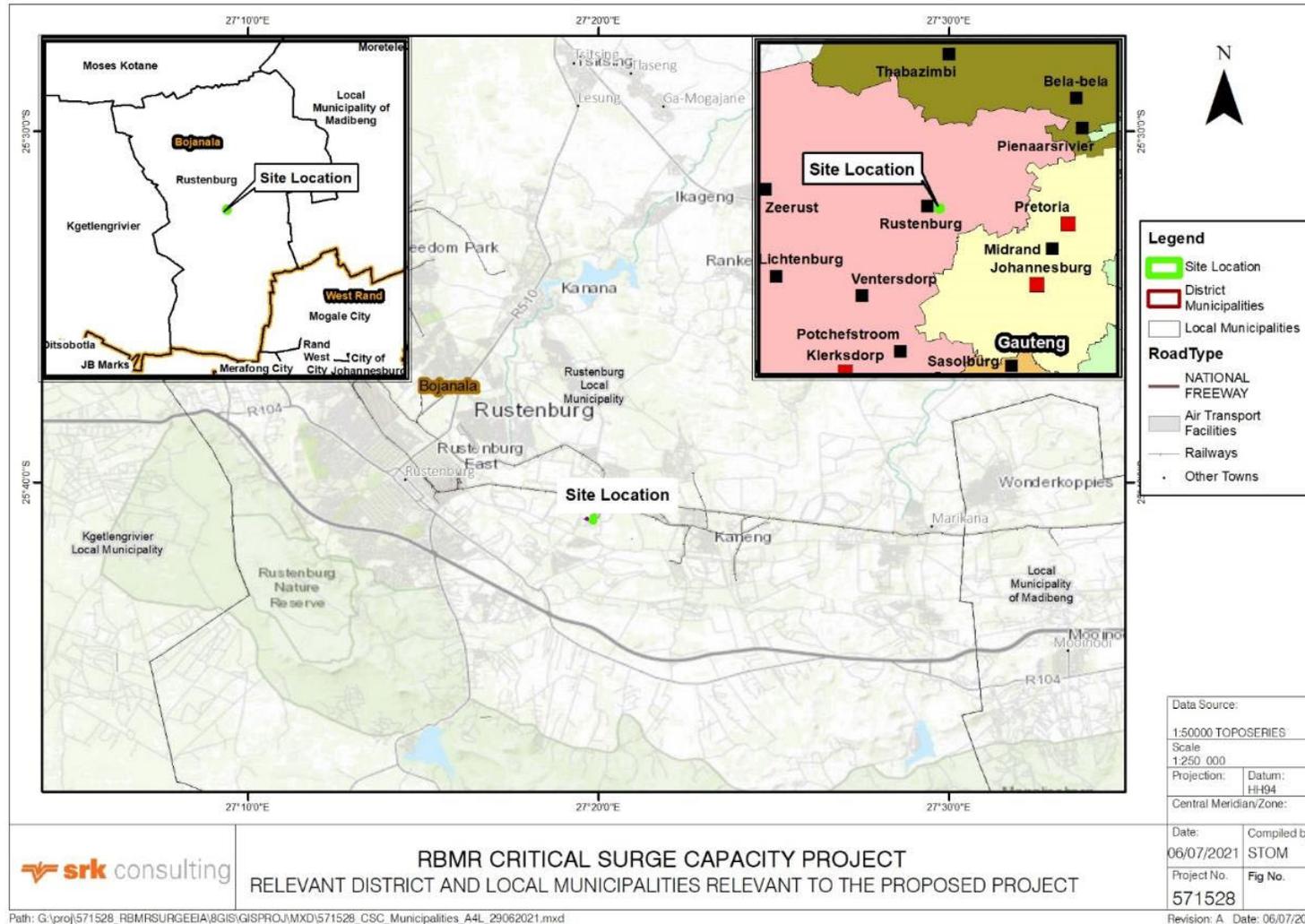


Figure 1-1: Relevant District and Local Municipalities Relevant to the Proposed Project

1.6 Environmental Authorisation Application Process

All activities that trigger activities listed in GNR 327 require that a Basic Assessment (BA) process be followed. The BA process will entail:

- Pre-application meeting with the DEDECT per the requirements of the Department of Forestry, Fisheries and the Environment (DFFE) COVID-19 Directives of 5 June 2020;
- Project announcement through notification letters, advertisements and on-site notices;
- Compilation of a Draft BAR and draft EMPr for the public to comment on;
- Compilation and submission of the EA Application to the DEDECT;
- Stakeholder and I&APs review and comment of the draft BAR and EMPr for a period of 30 days; and
- Incorporation of stakeholder and I&APs comments into the final BAR and EMPr.

The DEDECT will have a maximum of 107 days to review and decide on the application.

The BA process will follow the procedure as prescribed in Regulations 19 to 20 and is summarised in Figure 1-2.

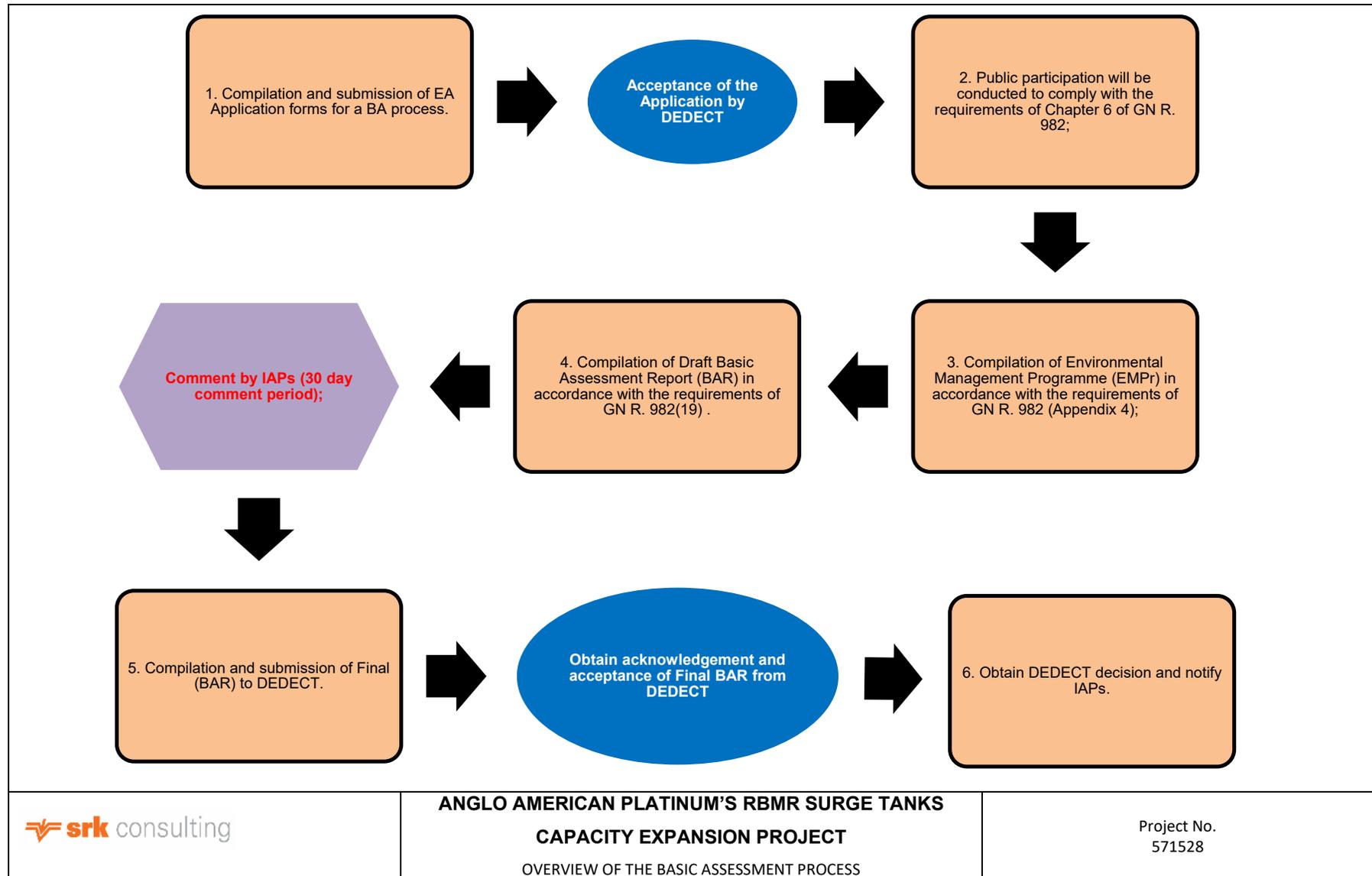


Figure 1-2: Overview the Basic Assessment Process

2 Project Description

The current surge tank layout is shown in Figure 2-1.

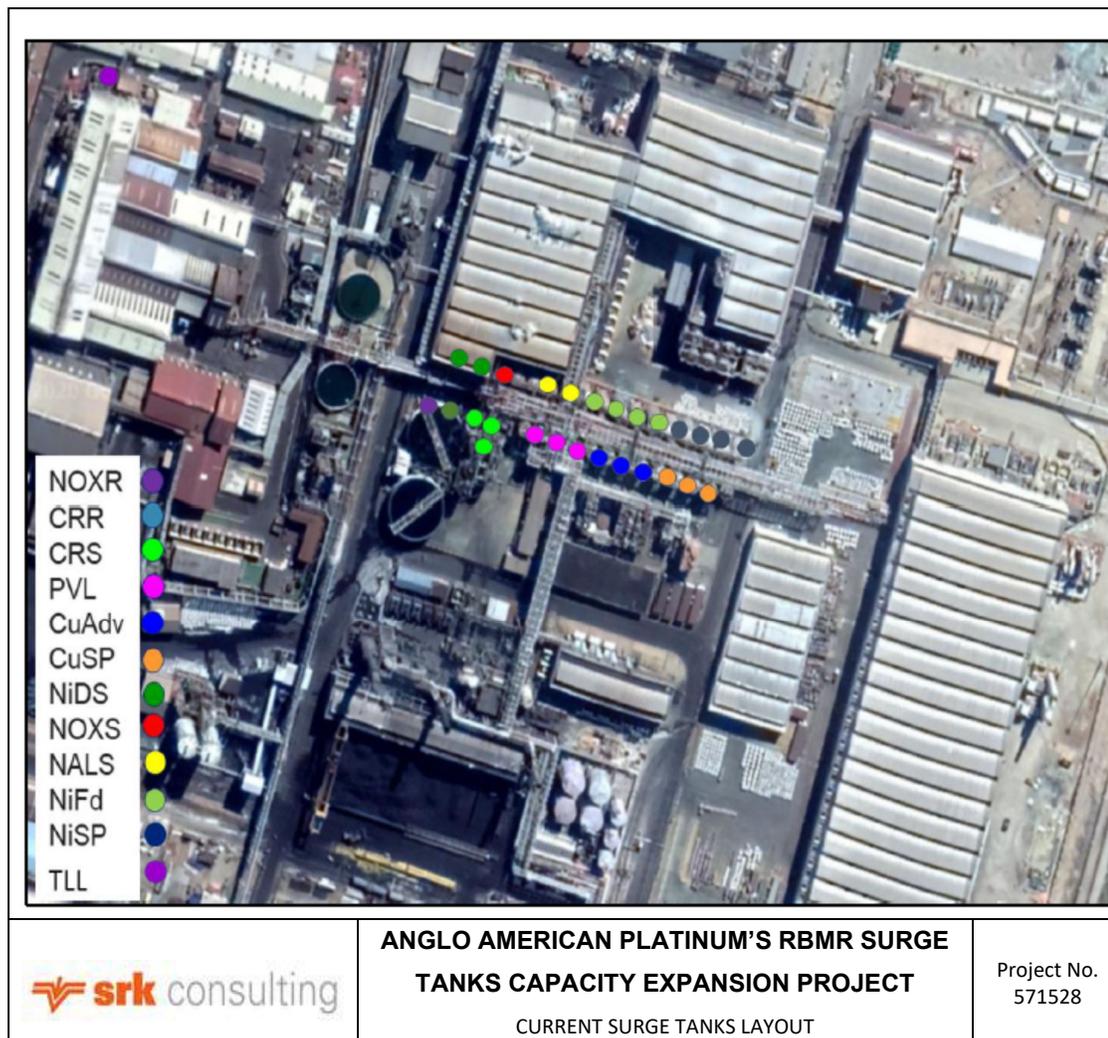


Figure 2-1: Current Surge Tank Layout

The proposed surge tank expansion project will entail:

- Expansion of Copper Removal Overflow Storage (CRS), Copper Advance Solution (CuAdv) and Selenium/Tellurium (Se/Te) feed tank inventories into other areas;
- Conversion of old CRS inventory to Copper Removal Residue/Non-Oxidising Belt Filter Residue (CRR/NOXR) inventory;
- Conversion of old Nickel Feed (NiFd) inventory to Nickel Atmospheric Leach Solution (NALS) inventory and old NALS inventory to Non-Oxidising Leach Solution/Nickel Dissolution Solution (NOXS/NiDS); and
- Expand current Copper Spent Storage (CuSP) inventory into old Copper Advance Solution (CuAdv) inventory.

The project will include civils, structural, piping and pumping, instrumentation and electrical modifications and / or additions.

Table 2-1 provides a summary of the current and required surge tank capacity.

Table 2-1: Summary of the Current and Required Surge Tank Capacity

Inventory	Current (m3)	Required (m3)
Copper Removal Overflow Storage (CRS)	390	2 074
Copper Removal Residue (CRR)	110	153
Copper Spent Storage (CuSP)	360	1 169
Nickel Atmospheric Leach Solution (NALS)	260	1 028
Nickel Dissolution Solution (NIDS)	260	2 397
Selenium (Se) Feed Inventory	265	1 857
Copper Advance Solution (CuAdv)	348	1 886
Non-Oxidising Leach Solution (NOXS)	130	755
NOX Belt Filter Residue (NOXR)	140	230
Tertiary Leach Liquor (TLL)	40	165

Figure 2-2 provides the proposed surge tank layout.

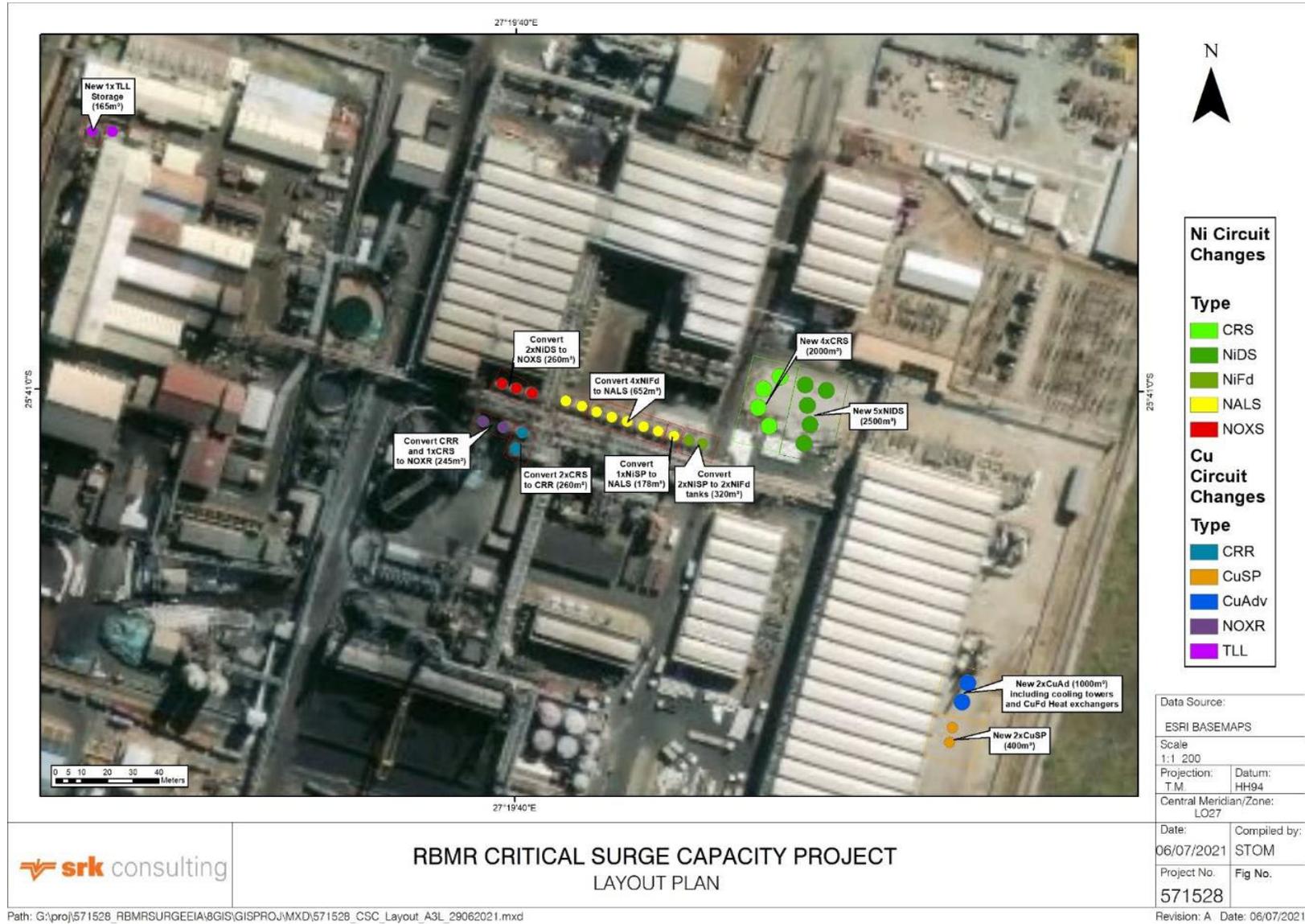


Figure 2-2: Proposed Surge Tanks Layout

The project will be executed in phases to ensure no interruptions to current operations.

2.1 Construction

Construction of additional tanks and/conversion of the tanks will be undertaken by Contractors that will be appointed by the RBMR. The general construction activities will include:

- Site preparation;
- Earthworks: Establishment of foundations;
- Civil works:
 - Erection of structures and infrastructure associated with the project;
 - Foundation excavations and compaction;
 - Concrete work including the mixing of concrete;
 - Steelwork including grinding and welding; and
 - Rehabilitation of disturbed areas after general site construction is completed.

All waste will be re-used, recycled or disposed of only as a last resort at an appropriately licensed/registered facility depending on the type of waste.

2.2 Operation

The operation and maintenance of the project will be undertaken by the current RBMR personnel.

2.3 Employment

RBMR will appoint contractors for the construction phase of the project. The contractor (s) responsible for the construction of the tanks will appoint a team manager and a supervisor who will ensure that:

- All work to be conducted have been assessed in terms of risk;
- Risk assessments are developed according to operating procedures;
- All personnel are trained on procedures;
- Employees' competence is tested and insured; and
- Rules and procedures are enforced.

The operation of the surge tanks will be undertaken within the existing RBMR structures.

3 Alternatives Considered

There are no site alternatives that were identified. This is due to the limitation in availability in space where the surge tanks could be located within the existing site.

The assessment will however include an assessment of the no-go option, as is required by the EIA Regulations. The no-go option will mean that the surge tanks capacity expansion project will not be implemented. As was noted in Section 1.1, the current surge tanks have insufficient capacity, which in the past decade has resulted in tank and bund wall overflow. The circuit inter section surge capacity is insufficient to allow for continuous production without inventory overflow, the no-go option will therefore reduce the efficiency of the process.

Other environmental risks posed by the no-go option include contamination of soils and water resources (ground and surface) should the overflow from the surge tanks continue. The expansion of the surge tank capacity is therefore a form of mitigation as it will minimise the chances of overflows occurring.

4 Location of the Proposed Activity

The proposed project falls within the Bojanala Platinum District Municipality, under the jurisdiction of the Rustenburg Local Municipality in the North West Province. The proposed project is located on the farm portion as illustrated in Figure 4-1. Table 4-1 provides a description of the proposed activities located on the property.

Table 4-1: List of Affected Farms and Farm Portions Illustrating the Relevant Activities

Farm and 21 Digit Survey General Code	Portions	Owner	Proposed Activities
Waterval 303 JQ	42	Anglo American Platinum's RBMR	Construction and operation of a surge tanks capacity expansion project.
T0JQ0000000030300042			

The site coordinates are provided in Table 4-2.

Table 4-2: Site Coordinates

Site Co-ordinates	Latitude (S):			Longitude (E):		
Current Tank Location	25°	41'	0.19"	27°	19'	41.34"
TLL Surge	25°	40'	56.73"	27°	19'	34.36"
Bay 1 and 2	25°	41'	0.05"	27°	19'	44.04"
Bay 3	25°	41'	4.77"	27°	19'	46.09"

The affected property is owned by the applicant, RMBR.



Figure 4-1: Affected Property

5 Legal and Policy Framework

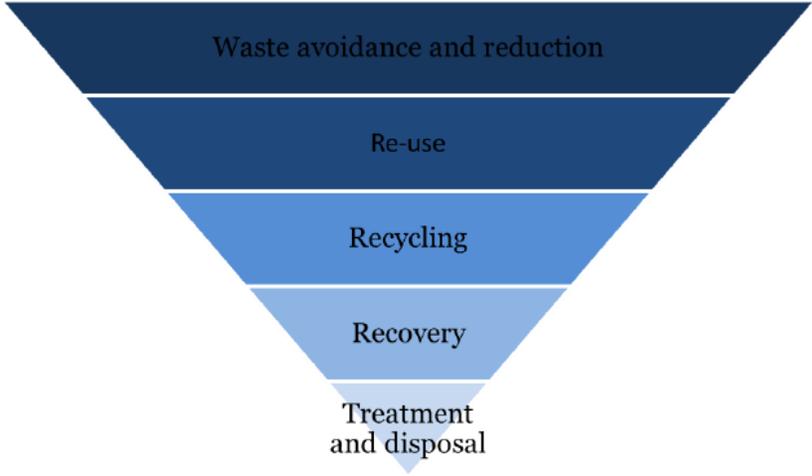
Table 5-1 provides a summary of the applicable legislation, policies and guidelines identified as relevant to the proposed surge tanks capacity expansion project. In addition, a description of how the proposed activity complies with and responds to the legislation and policy context, is provided. This list is not exhaustive but rather represents an indication of the most applicable pieces of legislation relevant to the project.

Table 5-1: Policy and Legislative Context of Proposed Project

Legislation	Description and Relevance	Responsible Authority
Constitution of the Republic of South Africa, (No. 108 of 1996)	<p>Chapter 2 – Bill of rights</p> <p>Section 24 – Environmental Rights</p> <p>The proposed activities shall be conducted in such a manner that significant environmental impacts are avoided, where significant impacts cannot all together avoided be minimised and mitigated to protect the environmental rights of South Africans.</p>	N/A
Promotion of Access to Information Act (Act No. 2 of 2000) (PAIA)	<p>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.</p> <p>The BA/EMPr process was undertaken in terms of the NEMA, where the associated stakeholder consultation process was aligned with the PAIA in the sense that all I&APs will be given an opportunity to register as an I&AP prior to the initiation of the project and all registered I&APs were in turn provided a fair opportunity to review and comment on any reports submitted to the competent authorities for decision making.</p>	N/A
Protection of Personal Information Act (POPIA) which came into effect on 1 July 2021	<p>The new Protection of Personal Information Act (POPIA) which came into effect on 1 July 2021 aims to promote protection of personal information.</p> <p>The stakeholder engagement process will be undertaken in a way that will ensure that personal information is protected as far as possible and that I&APs are provided an opportunity to choose how they prefer to have their personal information handled.</p>	N/A
National Environmental Management Act (NEMA) (No. 107 of 1998)	<p>Section 24 – Environmental Authorisation (control of activities which may have a detrimental effect on the environment)</p> <p>Section 28 – Duty of care and remediation of environmental damage</p> <p>Environmental management principles will be incorporated into the BAR and EMPr, which the applicant will be required to comply with to ensure that negative impacts on the environment are avoided or kept to a minimum and that positive impacts are enhanced.</p>	NW DEDECT

Legislation	Description and Relevance	Responsible Authority
National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) and the EIA Regulations 2014 (Government Notice (GN) 984), as amended	<p>The EIA Regulations (GNR 982) were promulgated in terms of Sections 24 of the NEMA, to manage the process, methodologies and requirements for the undertaking of an EIA. The GNR 982 stipulates that the applicant for activities listed under GNR 983, 984 or 985 must appoint an independent EAP to manage the EIA process. Listed Activities are activities identified in terms of Section 24 of the NEMA which are likely to have a detrimental impact on the environment, and which may not commence without an EA from the Competent Authority (CA). EA required for Listed Activities is subject to the completion of either a Basic Assessment (BA) process or full Scoping and Environmental Impact Assessment (S&EIA) with applicable timeframes associated with each process. The EA must be obtained prior to the commencement of those listed activities.</p> <p>The project triggers activities listed in GNR 327 and will require an EA from the DEDECT. According to GNR 326 of the NEMA, activities listed in GNR 327 require that a Basic EIA be undertaken. The applicable listed activities that will be triggered by the project is provided in Table 5-2.</p>	
Department of Environmental Affairs (DEA) Integrated Environmental Management Guideline Series, Guideline 5: Assessment of the EIA Regulations, 2012 (Government Gazette 805)	Environmental impacts will be generated primarily in the construction phase of this project. These, together with associated operational phase impacts will be assessed as part of the proposed project EIA process.	
Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004	An Environmental Assessment is required for the proposed project as activities are triggered under GN R327.	
Review in Environmental Impact Assessment, Integrated Environmental Management, Information Series 13, Department of Environmental Affairs and Tourism (DEAT), Pretoria.		
DEA Integrated Environmental Management Guideline Series, Guideline 7: Public Participation in the Environmental Impact Assessment Process, 2012 (Government Gazette 807)	Public participation is a requirement of the EIA Process and will be conducted for the proposed project as stipulated in Chapter 6 of the NEMA.	

Legislation	Description and Relevance	Responsible Authority
National Water Act, 1998 (Act 36 of 1998)	<p>Section 21: Specifies a number of water uses that require Water Use Authorisation (WUA) in terms of Section 22(1) of the Act. A WUA process must be conducted to obtain authorisation for any of these activities unless the specific use is listed in Schedule 1 of the NWA or is an existing lawful use. Listed activities that require authorisation - a Water Use Licence (WUL) or General Authorisation (GA) (issued in terms of Section 39 of the NWA) through a registration and application process include: taking water from a water resource, impeding or diverting the flow of water in a watercourse and altering the beds, banks, course or characteristics of a watercourse. The competent authority for WUAs is the Department of Water and Sanitation (DWS).</p> <p>The proposed project does not constitute a water use as per Section 21 of the NWA. A Water Use Authorisation will therefore not be required.</p>	Department of Water and Sanitation (DWS)
National Environmental Management Waste Act (Act No. 36 of 1998)	<p>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.</p> <p>In terms of the NEM: WA, all waste management activities must be licensed. According to Section 44 of the Act, the licensing procedure must be integrated with an EIA process in accordance with the Regulations GNR 982 (as amended) printed in terms of the NEMA. Government Notice 719, which was implemented on 3 July 2009, removed all waste management activities from the EIA regulations GNR 386 and GNR 387, resulting in new NEMA listed activities namely GNR 544 and GNR 545 which were further amended to form GNR 983, 984, and 985. In 2017 GNR 983, 984 and 985 were amended through GNR 324, 325 & 327.</p> <p>GNR 718 listed the waste management activities that require licensing. On 29 November 2013, GNR 718 was repealed and replaced by a new list of waste activities under GNR 921. A distinction is made between Category A waste management activities, which require a basic assessment, and Category B activities, which require a full EIA, and Category C waste management activities which do not require a waste management licence but compliance with relevant requirements or standards. On 24 July 2015, the waste management activities were further amended in GNR 633, which included the establishment or reclamation of a residue stockpile or residue deposit resulting from prospecting or mining activities as a listed activity.</p> <p>The project does not trigger activities listed in GNR921 of the NEM: WA and will therefore not require a Waste Management Licence (WML).The principles of the act, focusing on the waste hierarchy (Figure 5-1) of avoidance and reduction, re-use, recycling, recovery and treatment and disposal has been taken into consideration in the development of the EMPr during the EIA.</p>	NW DEDECT/DEA

Legislation	Description and Relevance	Responsible Authority
	 <p>The diagram is an inverted pyramid divided into five horizontal sections. From top to bottom, the sections are: 'Waste avoidance and reduction' (darkest blue), 'Re-use' (dark blue), 'Recycling' (medium blue), 'Recovery' (light blue), and 'Treatment and disposal' (lightest blue).</p> <p>Figure 5-1: Waste Hierarchy</p>	
<p>National Environmental Management Air Quality Act (Act No. 39 of 2004)</p>	<p>Air quality management Section 32 – Dust control. Section 34 – Noise control. Section 35 – Control of offensive odours.</p> <p>No listed activities in terms of NEM: AQA will be triggered because of the proposed project, however the principles of the act focusing on minimisation of pollutant emissions will be taken cognisance of in the development of the EMP.</p>	<p>Department of Environmental Affairs and Rustenburg Local Municipality</p>
<p>The National Forestry Act, 1998 (Act No. 84 of 1998) (NFA)</p>	<p>The NFA protects against the cutting, disturbance, damage, destruction or removal of protected trees.</p> <p>The proposed project was cleared of vegetation and trees for the construction of the RBMR and currently there are no existing trees and vegetation located on the proposed surge tanks capacity expansion project footprint. As such, no protected trees will be affected by the project and no permit will be required for the removal and/or relocation of the trees.</p>	<p>Department of Environment, Forestry and Fisheries (DEFF)</p>

Legislation	Description and Relevance	Responsible Authority
The National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEM:BA)	<p>The National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEMBA) provides for the management and conservation of South Africa's biodiversity within the framework of NEMA, as well as the protection of species and ecosystems that warrant national protection and the sustainable use of indigenous biological resources. The Act provides for listing of threatened or protected ecosystems, in one of four categories: critically endangered, endangered, vulnerable or protected</p> <p>The proposed project location was cleared of vegetation and trees for the construction of the RBMR and currently there is no existing located on the proposed tanks areas. The management and control of alien invasive species on the impacted areas during all the phases of the project will be governed by the NEM: BA. The NEM: BA ensures that provision is made by the site developer to remove any alien species, which have been introduced to the site or are present on the site. Although the probability of alien invasive plant species proliferating in the area because of the proposed project is negligible, the management and control of potential alien invasive plant species has been assessed and mitigation measures have been included in the EMPr.</p>	DEFF/NW DEDECT
Conservation of Agricultural Resources Act (Act No. 43 of 1983)	<p>Control measures for erosion</p> <p>Control measures for alien and invasive plant species</p> <p>The EMPr will include measures to control and manage alien invasive plant species.</p>	DEFF
National Heritage Resources Act 25 of 1999	<p>Heritage Permit for structures 60 years or older.</p> <p>The proposed project will be located within the RBMR precinct, where the area has been sterilised. It is not expected that any heritage resources and graves will be affected by the proposed surge tanks capacity expansion project. As such, no heritage impact assessment was conducted for the project. The EMPr however includes mitigation measures which would apply, should by chance graves and heritage resources be unearthed by the project.</p>	North West Heritage Resource Authority
Restitution of Land Rights Act, 1994 (Act No. 22 of 1994), as amended in 2014.	<p>Land Claims.</p> <p>The property where the proposed surge tanks capacity expansion project is located is owned by the applicant, RBMR.</p>	Department of Rural Development and Land Reform

5.1 Provincial and Municipal Bylaws

The Bojanala Platinum District Municipality, Rustenburg Local Municipality and the North West Province have developed local bylaws and various policies relating to waste disposal, water, economic development, air quality, etc. The proposed project must ensure that such policies and bylaws are adhered to as far as possible during the construction and operation of the surge tanks capacity expansion and the associated infrastructure.

5.2 Guidelines

The following documents will be considered during the impact assessment process and compilation of the EMP of the proposed project:

- North West Provincial Biodiversity Management Plan;
- Rustenburg Local Municipality Integrated Development Plan (IDP) (2019-2020);
- Bojanala Platinum District Municipality Spatial Development Framework (SDF) (2007);
- DWS, 2010. Operational Guideline: Integrated Water and Waste Management Plan. Resource Protection and Waste;
- Department of Water Affairs and Forestry, 2006. Best Practice Guideline G1 Storm Water Management;
- Department of Water Affairs and Forestry, 2006. Best Practice Guideline G3. Water Monitoring Systems;
- Department of Water Affairs and Forestry, 2008. Best Practice Guideline G4: Impact Prediction;
- DEAT. 2002. Integrated Environmental Management, Information series 3: Stakeholder Engagement. Department of Environmental Affairs and Tourism (DEAT. 2002);
- DEAT. 2002. Integrated Environmental Management, Information series 12: Environmental Management Programmes. Department of Environmental Affairs and Tourism (DEAT. 2002);
- DEA. 2010. Companion to the EIA Regulations 2010 for Comment, Integrated Environmental Management Guideline Series 5, Department of Environmental Affairs;
- DEA. 2010. Companion to the EIA Regulations 2010 for Comment, Integrated Environmental Management Guideline Series 7, Department of Environmental Affairs;
- DEA. 2012. Companion to the EIA Regulations 2010, Integrated Environmental Management Guideline Series 5, Department of Environmental Affairs;
- DEA. 2012. Companion to the EIA Regulations 2010, Integrated Environmental Management Guideline Series 7, Department of Environmental Affairs; and
- Western Cape Department of Environmental Affairs and Tourism. 2010. EIA Guideline and Information Document Series: Guideline on Need and Desirability.

5.3 Listed Activities Triggered

The proposed surge tanks capacity expansion project triggers the following activities in GNR327 as provided in Table 5-2

Table 5-2: Listed Activities triggered

Government Notice and Activity Number	Relevant Activity as per the relevant Listing Notice	Describe the portion of the development as per the project description that relates to the applicable listed activity
Listing Notice 1 (GNR 327): Activity 51	<i>The expansion and related operation of facilities for the storage, or storage and handling, of a dangerous good, where the capacity of such storage facility will be expanded by more than 80 cubic metres.</i>	<p>The project requires the construction and operation of additional tanks that are required to allow for operation at 33ktpa Ni cathode production rate without spilling valuable metal to the dam. The capacity will be expanded by more than 80m³.</p> <p>The current surge tanks were authorised as part of the EMPr consolidation process that the Department of Mineral Resources (DMR) and the DEDECT were part and was undertaken and approved in March 2017 (Ref: NW 30/5/1/2/3/2/1/82 EM). Although the tanks are not specifically listed in the authorisation, they formed part of the RBMR activities authorised.</p>

6 Stakeholder Engagement Process

Stakeholder engagement is a key element of the environmental decision-making process and is primarily aimed at affording I&AP's the opportunity to gain an understanding of the proposed project. In addition, the purpose of consultation with the landowners, key I&APs, and I&AP's 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 EAP team with local knowledge of the area and raise concerns relating to the biophysical, socio-economic and cultural impacts that may arise.

The stakeholder engagement process will be conducted in terms of NEMA, which provides clear guidelines for stakeholder engagement during an EIA as summarised in **Table 6-1**.

Table 6-1: NEMA Stakeholder Guidelines

NEMA Section	Applicability to Stakeholder Engagement
Chapter 1	Outlines the principles of environmental management, several pertaining to public consultation (e.g. Chapter 1, subsections (2), (3), (4) (f), (g), (h), (k), (q) and (r).
Chapter 6,	Regulations 39 – 44 of the amended EIA Regulations GNR) 326, promulgated on 8 December 2014, specify the minimum requirements for stakeholder engagement in an EIA process conducted under the NEMA.
Section 24J of the NEMA	In 2017, the Minister of Environmental Affairs published, Section 24J of the NEMA in terms of, Public Participation Guidelines which guide the Public Participation Process in order to give effect to Section (2)(4)(f), (o) and 24 (1A)(C) of the NEMA.

The guidelines listed in Table 6-1 will be incorporated into the stakeholder engagement process. This application will be submitted to the DEDECT for authorisation as the competent authority. Identified commenting authorities on this application include:

- Department of Water and Sanitation (DWS) – Regional Office;
- SAHRA – Provincial;
- Rustenburg Local Municipality;
- Bojanala Platinum District Municipality; and
- Royal Bafokeng Nation.

6.1 Authority Pre-Application Consultation

A virtual pre-application consultation meeting and site was held with the DEDECT via Microsoft Teams on 30 June 2021. The purpose of the meeting was to discuss the application for an Environmental Authorisation (EA) for the proposed expansion of surge tanks capacity at RBMR. The objectives of the meeting were to:

- Notify the DEDECT of the project and application;
- Discuss and confirm the proposed EA application process, including the required specialist studies;

- Discuss the stakeholder engagement process to be followed; and
- Discuss any other DEDECT requirements.

During the discussion, the DEDECT indicated that for the project to be considered as an expansion project, there is need to establish or demonstrate its legality/lawfulness as follows:

- The activity to be expanded must have an EA in place or;
- The activity to be expanded must have commenced prior to promulgation of the Environmental Conservation Act, 1989 (Act 73 of 1989) (ECA) or the Environmental Impact Assessment (EIA) Regulations; or
- The activity to be expanded must not have triggered a need for an EA.

The current surge tanks were authorised as part of the EMPr consolidation process in which the Department of Mineral Resources (DMR) and the DEDECT participated and was approved in March 2017 (Ref: NW 30/5/1/2/3/2/1/82 EM). Although the tanks are not specifically listed in the authorisation, they formed part of the RBMR activities authorised.

A copy of the pre-application authority consultation meeting presentation and attendance register, and minutes of the meeting are included in Appendix C 7.

6.2 Stakeholder Identification Interested and Affected Parties

Affected and adjacent properties were identified using GIS and cadastral information. The owners of the affected and adjacent properties were then identified using the surveyor general website, www.deedsweb.gov.za. In addition, registered I&AP's were sourced from responses to the advertisements, site notices and written notification to I&AP's associated with the project.

The I&APs register will be maintained for the duration of the study where the details of I&APs are captured and automatically updated upon communication to the EAP. The identification, registration, and comments from I&APs will be an on-going activity.

The affected properties are provided in Table 6-2.

Table 6-2: List of Affected Farm and Farm Portions

Farm	Portions	21 Digit Survey General Code
WATERVAL 303 JQ	42	T0JQ00000000030300042

Table 6-3 provides a list of the adjacent properties.

Table 6-3: List of Adjacent Farms and Farm Portions

Farm	Portions	21 Digit Survey General Code
WATERVAL 303 JQ	33/303	T0JQ00000000030300033
	73/303	T0JQ00000000030300073
	74/303	T0JQ00000000030300074
	75/303	T0JQ00000000030300075
	76/303	T0JQ00000000030300076
	67/303	T0JQ00000000030300067
	68/303	T0JQ00000000030300068
	69/303	T0JQ00000000030300069

Farm	Portions	21 Digit Survey General Code
	70/303	T0JQ00000000030300070
	71/303	T0JQ00000000030300071

Figure 6-1 shows the affected and adjacent properties.

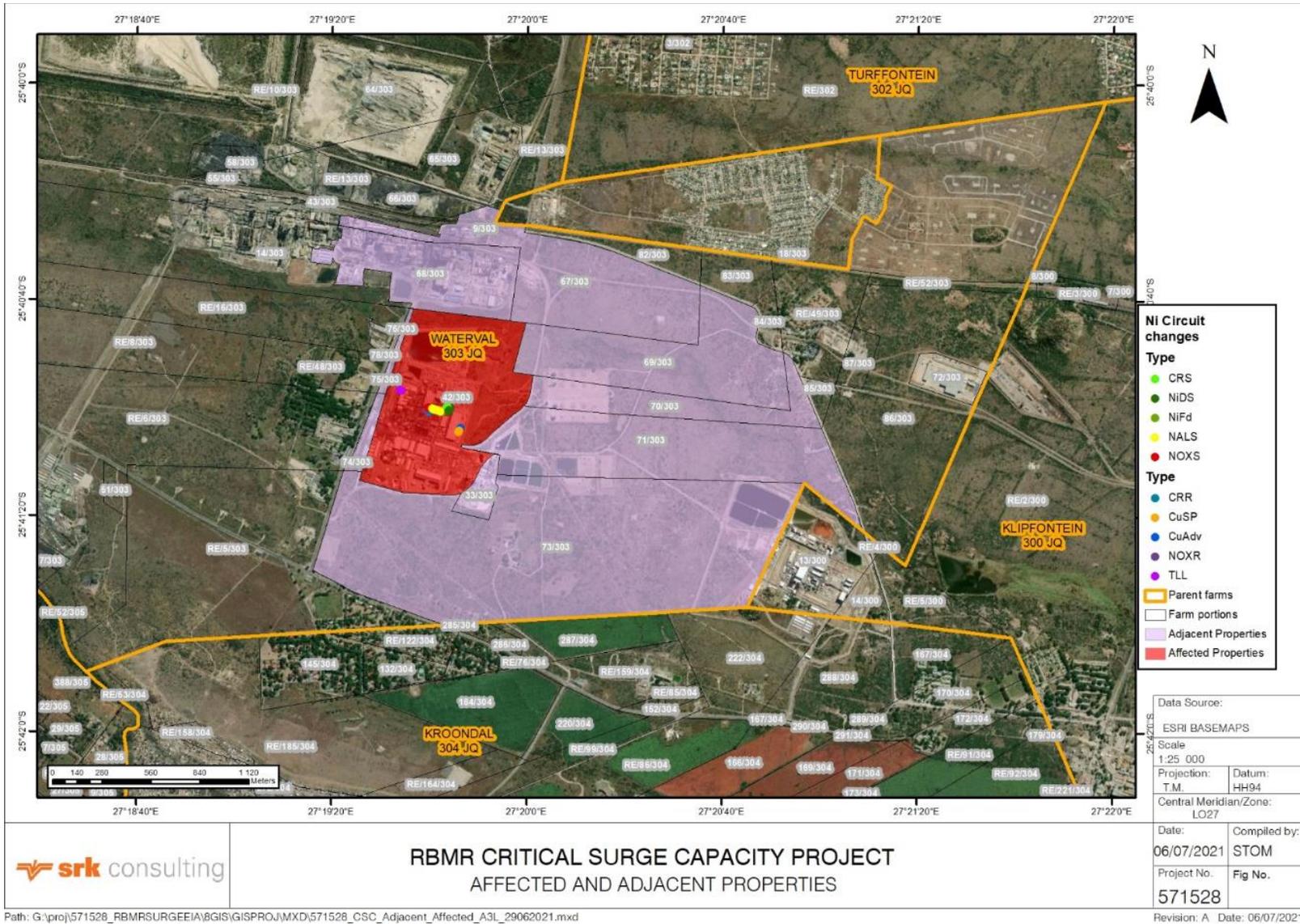


Figure 6-1: Affected and Adjacent Properties

6.3 Project Announcement Phase

SRK made use of various methods to inform stakeholder of RBMR's intention to undertake the required and environmental processes and EA application. I&APs will be provided with the opportunity to participate and register as I&AP's during the announcement phase of the project.

6.3.1 Distribution of Notification Letters

Notification letters were sent to all identified I&AP's (affected and adjacent landowners and land occupiers) informing them of the proposed project. I&APs were requested to provide consent for the EIA team to contact and communicate with them with respect to the project and where required disclose their information per the requirements of the Protection of Personal Information Act (POPIA) which came into effect on 1 July 2021. I&AP's will be made aware of the protection of their personal information as follows:

By registering as a stakeholder, you consent to SRK processing and, if necessary, disclosing your personal information which SRK undertakes to do in accordance with our Protection of Personal Information Policy.

6.3.2 Site Notice Placements

Sites notices (Size A2: 600 mm X 420 mm) notifying I&APs and I&APs of the proposed surge tanks capacity expansion project were placed at conspicuous places in the project area on 30 July 2021. Table 6-4 provides a list of these site locations.

Table 6-4: Site Notice Location and Coordinates

Site Notice	Location	Coordinates	
		Longitude	Latitude
1	Rustenburg Library	27°14'14.10"E	25°40'10.63"S
2	Notice Board at Anglo Canteen Area	27°19'32.01"E	25°41'9.73"S
3	Anglo Big Notice Board	27°19'36.17"E	25°41'9.53"S
4	Entrance Waterval	27°19'32.66"E	25°41'37.59"S
5	Entrance to Anglo Main Entrance (Security Guards)	27°19'27.58"E	25°41'9.00"S

6.3.3 Newspaper Advertisements

English and Setswana newspaper advertisements notifying I&APs about the proposed project and the opportunity to participate in the EIA process were placed in the Rustenburg Herald newspapers on 28 July 2021.

6.4 Draft Basic Assessment Report Phase

The draft BAR was compiled in terms of the requirements of GNR 326. All comments received during the announcement phase of the stakeholder engagement process were incorporated into draft BAR and collated into a Comments and Responses Report (CRR) as an attachment. The draft BAR will be made available for a 30-day commenting period between 2 September 2021 and 4 October 2021.

The availability of the draft BAR will be announced by means of SMSes, letters and emails to registered I&APs. Copies of the draft BAR will be made available at the venues listed in Table 6-5.

Table 6-5: List of places where the draft BAR will be placed for public viewing

Public Place	Locality	Telephone
SRK	OneDrive	A link will be created and shared with the I&APs
SRK	Other Electronic Transfer Platforms	A link will be created and shared with the I&APs
SRK Website	www.srk.co.za	(012) 361 9821
Rustenburg Library	Heystek/Thabo Mbeki Drive, Rustenburg	014 590 3701 plouw@rustenburg.gov.za

The draft BAR will also made available to the competent and commenting authorities during the 30-day review and comment period.

Where requested by the I&APs, a public meeting may be held during the review and comment period of the draft BAR. Should such requests be made, meetings will be held virtually, and where virtual meetings are not possible, face-to-face meetings may be held with I&APs, ensuring that the COVID-19 Regulation requirements are met. I&APs will be informed of the COVID-19 Regulation requirements that will be enforced during the meeting.

Where necessary, comments and concerns received from I&AP's, including commenting authorities, will be incorporated and addressed in the Final BAR. All comments and concerns received from I&AP's and responses to those concerns will also be collated into the CRR prior to submission of the Final BAR to the DEDECT for final decision making.

6.5 Comments and Response Report

All issues and concerns raised by I&AP's during the EA application process, will be recorded and responded to in the CRR which will form part of the Final BAR to be submitted to the DEDECT for decision making.

6.6 Authority Consultation

Ongoing consultation with the different commenting authorities will be conducted during the EA application process. Further consultations with the competent authorities will be conducted should they become necessary. Other authorities that will be included are the local and district municipalities, ward councillors, and others identified in the introductory section of this Chapter.

6.7 Key Comments Received.

Table 6-6 provides a summary of the comments received to date following the newspaper adverts, site notices, written notification of the project and the Draft BAR review period.

Table 6-6: Key Comments Received

The table will be updated once the Draft BAR has been submitted to I&APs for review and comment.

6.8 Comments and Response Report

All issues and concerns raised by I&AP's will be recorded and responded to in the CRR. A copy of the CRR is included as Appendix C 5. The CRR will be updated with comments received from and responses provided to I&APs during the draft BAR commenting period.

7 Need and Desirability of the Proposed Project

The environmental right is contained in the Constitution of the Republic of South Africa, Act 108 of 1996 (hereafter referred to as "The Constitution"). Section 24 of the Constitution enshrines environmental rights in South Africa, which are interpreted to have a two-fold purpose. The first part guarantees a healthy environment to every person. The second part mandates the State to ensure compliance with the first part. The State is prohibited from infringing on the right to environmental protection and is further required to provide protection against any harmful conduct towards the environment.

The construction and operation of the proposed surge tanks capacity expansion project will reduce the risk of overflow from surge tanks and contamination of soil and water resources, which would pose a health risk to aquatic organisms as well as downstream users.

The needs and desirability assessment of the proposed surge tanks capacity expansion project as per GN 792 of 2012 is provided in Table 7-1.

Table 7-1: Need and Desirability Assessment of the Proposed Surge Tanks Capacity Expansion Project

Questions (Notice 792, NEMA, 2012)		Response
PART I: NEED		
1.	Is the land use associated with the activity being applied for considered within the timeframe intended by the existing approved SDF agreed to be the relevant environmental authority?	N/A. The proposed project will be located in the RBMR property and has no bearing on the SDF.
2.	Should the development, or if applicable, expansion of the town/area concerned in terms of this land use occurs here at this point in time?	Yes. Authorising the project will reduce potential environmental impacts that may be incurred in terms of potential overflowing of the surge tanks and bund walls which would have an impact on water resources.
3.	Does the community/area need the activity and the associated land use concerned? This refers to the strategic as well as local level.	Yes. Authorising the project will reduce potential environmental impacts that may be incurred in terms of potential overflowing of the surge tanks and bund walls which would have an impact on water resources.
4.	Are the necessary services with adequate capacity currently available (at the time of application) or must additional capacity be created to cater for the development?	No additional capacity will be required. The construction of the surge tanks capacity expansion project will be conducted by a contractor and operation will be undertaken by current RBMR personnel. It is not envisaged that additional water and power will be required from the providers because of the project.
5.	Is this development provided for in the infrastructure planning of the municipality, and if not what will the	Not applicable. The objective of the project is to construct and operate the surge tanks capacity expansion project within the RBMR precinct and

Questions (Notice 792, NEMA, 2012)		Response
	implication be on the infrastructure planning of the municipality (priority and placement of the services and opportunity cost)?	will have no bearing on the infrastructure planning of the municipality.
6.	Is the project part of a national programme to address an issue of national concern or importance?	<p>The objective of the project is to construct and operate the surge tanks capacity expansion project within the RBMR, which will result in a reduction in potential environmental impacts that may be incurred should the project not be authorised in terms of potential overflowing the current tanks, which would have an impact on water resources.</p> <p>The protection of water resources forms part of the National Water Resources Strategy II that was adopted by the Government in 2013. The water resource protection theme emphasises the need to protect our freshwater ecosystems, which are under threat because of pollution from many sources. The NWRS (II) states that South Africa's water ecosystems are not in a healthy state. Of the 223 river ecosystem types, 60% are threatened, with 25% of these critically endangered. Less than 15% of river ecosystems are located within protected areas, many of which are threatened and degraded by upstream human activities.</p>
PART II: DESIRABILITY		
7.	Is the development the best practicable environmental option for this land/site?	Yes. Authorising the project will reduce potential environmental impacts that may be incurred in terms of potential overflowing of the surge tanks and bund walls which would have an impact on water resources.
8.	Would the approval of this application compromise the integrity of the existing approved and credible IDP and SDF as agreed to by the relevant authorities?	No. The project has no bearing on the IDP or SDF of the Rustenburg LM, Bojanala DM and/or North West Province. The objective of the project is to construct and operate a surge tanks capacity expansion project which will reduce the risk of water resource contamination that may occur due to overflowing of the current tanks.
9.	Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g. as defined in EMFs),	No. The project will be located within the existing RBMR precinct and will have no implications on the integrity of the EMFs.

Questions (Notice 792, NEMA, 2012)		Response
	and if so, can it be justified in terms of sustainability considerations?	
10.	Do location factors favour this land use at this place? (this relates to the contextualization of the proposed land use on this site within its broader context).	Yes. The proposed surge tanks will be located in the existing RBMR precinct. The location is considered the best as it will tie in with the rest of the infrastructure.
11.	How will the activity of the land use associate with the activity being applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	The area where the proposed surge tanks will be located is already affected by the RBMR infrastructure and will not have impact on any sensitive environmental attributes. There are no cultural or heritage resource areas that will be affected by the project.
12.	How will the development impact on people's health and well-being? (E.g. In terms of noise, odours, visual character and sense of place, etc.)?	<p>During construction, there will be particulate emissions (dust) related to debris handling, materials transportation, storage, handling and transfer; open areas (windblown emissions). Gas emissions are also expected to occur due to vehicle and construction equipment activity (exhaust fumes). These impacts, however, taking into consideration, the area where the surge tanks will be located, are expected to be of low significance and can be mitigated and managed to acceptable levels, with a post mitigation impact that is negligible.</p> <p>Movement of construction vehicles and machinery result in the production of construction related noise from construction vehicles and machineries which may cause a nuisance to people working and living in the vicinity of the RBMR. However, the implementation of appropriate mitigation measures such as the use of Personal Protective Equipment (PPE) would reduce the noise levels to remain within applicable and acceptable SANS levels (SANS 10103:2008). Occupational health and safety standards will apply.</p> <p>It is expected that the project will not have an impact on the visual character and sense of place, especially since the surge tanks will be located within the RBMR plant area.</p>
13.	Will the proposed activity or the land use associated with the activity being	No. The objective of the project is to construct and operate the surge tanks capacity expansion project within the RBMR, which will result in a reduction in

Questions (Notice 792, NEMA, 2012)		Response
	applied for, result in unacceptable opportunity costs?	potential environmental impacts that may be incurred should the project not be authorised in terms of potential overflowing of the current tanks, which would have an impact on water resources.
14.	Will the proposed land use result in unacceptable cumulative impacts?	No. It is expected that the project may result in negligible cumulative impacts on water and air quality. The impacts will be short lived, during the construction phase. It is however expected that implementation of the mitigation measures included in the EMPr will reduce the significance of the impact to very low.

8 Description of the Baseline Environment

The following section presents an overview of the biophysical and socio-economic environment in which the proposed project is located, to:

- Understand the general sensitivity of and pressures on the affected environment;
- Inform the identification of potential issues and impacts associated with the proposed project, which was assessed during the Impact Assessment Phase;
- Identify gaps in available information to inform specialist study requirements; and
- Start conceptualising practical mitigation measures.

This section has been compiled, based on the following:

- Available information from the existing specialist studies and monitoring reports;
- Existing information on the environmental parameters of the area;
- Agricultural GIS;
- SANBI; and
- South African Weather Service.

It must be noted that although baseline information has been given for the RBMR as a whole, that the baseline environment associated with the surge tanks capacity expansion project, should actually be viewed along with the changes that the RBMR project already had on the baseline environment. The baseline environment for the proposed surge tanks capacity expansion project will therefore already have been impacted on because of the various construction and operational activities associated with the RBMR infrastructure.

8.1 Climate

Rustenburg falls within the Summer Rainfall Climatic Zone. The area is characteristically warm with erratic and variable rainfall, ranging from 450 to 750 mm per annum. The rainfall in the area is almost exclusively due to thunderstorms that occur during the summer months (October to March); whilst winter months are normally dry. Temperatures vary between the extremes of – 6.0°C and 40°C, with an average of 19°C. The region is classed under the calm category whereby wind speeds are relatively low, with between 19 and 24 days of frost per year. The area is fog- free and hailstorms are a rare occurrence.

The mean circulation of the atmosphere is predominantly anti-cyclonic throughout the year, except near the surface where meso-scale circulations prevail. Fine conditions and light variable winds with a northerly component occur over the region. Elevated inversions, which occur because of the anti-cyclonic subsidence, suppress the diffusion and vertical dispersion of pollutants by reducing the depth of the mixing layer.

Seasonal variations in the position and the intensity of the high-pressure cells determine the extent to which the tropical easterly circulation and the circumpolar westerlies can impact on the atmosphere over the region. The tropical easterlies, and the occurrence of easterly waves and lows, affect the region throughout the year resulting in airflow with a north-easterly to north- westerly component, but their influence is generally weaker during the winter months.

The winter weather is dominated by perturbations in the westerly circulation because of the succession of cold fronts moving over the region. The passage of a cold front is characterised by pronounced

variations in wind direction, wind speed, temperature, humidity and surface pressure. Airflow ahead of the cold front has a distinct north north-westerly to north-easterly component.

Following the cold front, the northerly wind is replaced by winds with a distinct southerly component.

During the summer months, the anti-cyclonic belt weakens and shifts southwards, allowing the tropical easterly flow to resume its influence over the region. The predominant wind is from the south west with greater variation during summer months (Figure 8-1) (Anglo, 2016).

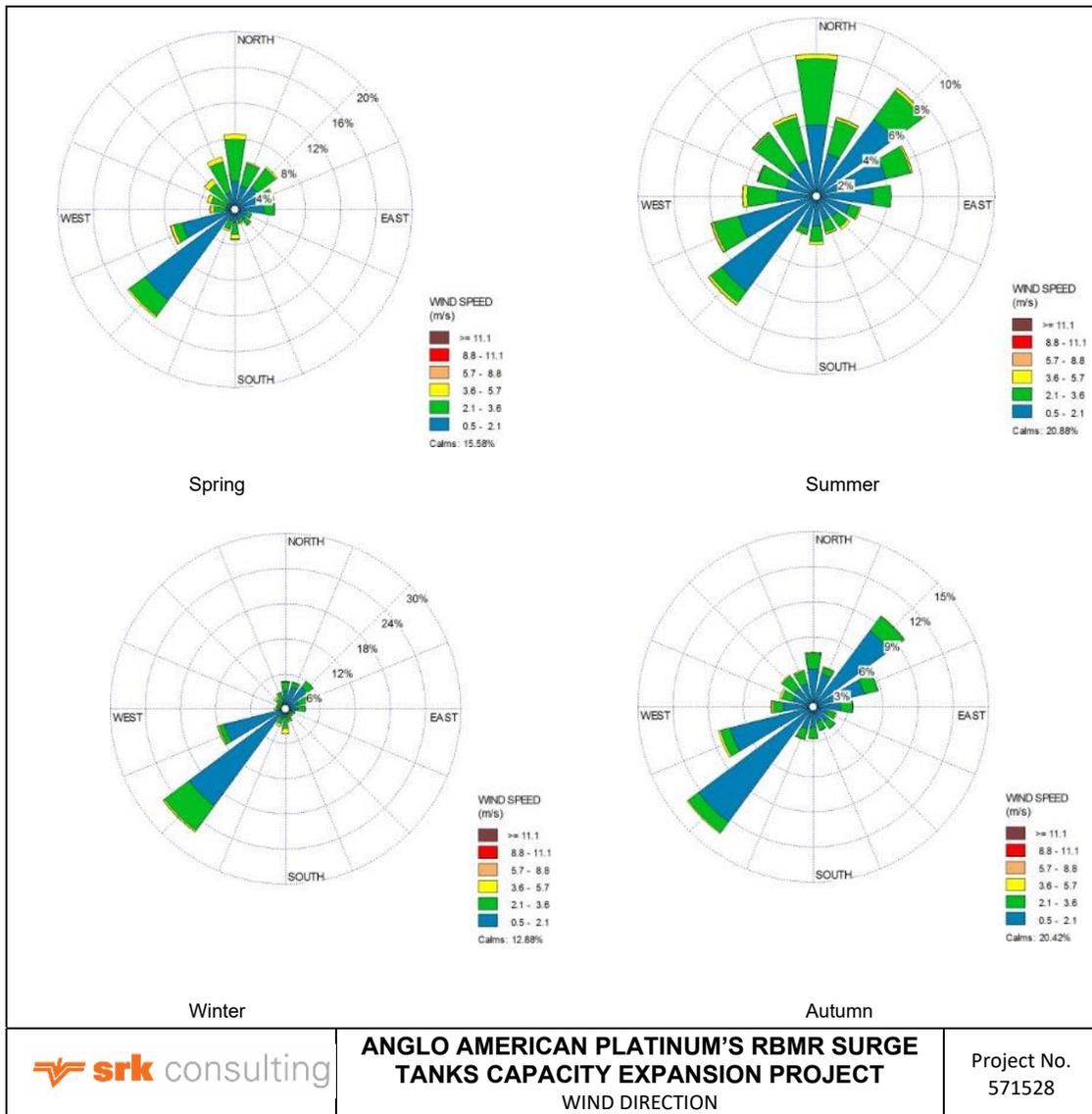


Figure 8-1: Wind Roses for the project area

8.2 Topography

The region of Rustenburg Local Municipality comprises of escarpment hills and lowlands with parallel hills, plains, slightly undulating plains and undulating hills. A large series of ridges and koppies are situated mostly in the central parts, with various mountain ranges and ridges making up the most prominent topography of the area of Bafokeng. The area is mostly dominated by flat undulating slope ranging from 0 to 9%. However, the central part of the area is characterised by elevated slope ranging from 9 to 15% covering the MPE and Kgaswane Mountain Reserve. Some patches of the medium

elevated slope ranging between 15 to 25% are also found in the central part. The elevation is an average of 1 180 Meters Above Mean Sea Level (mamsl) (Anglo, 2016).

The study area consists of wide-stretched, flat to gently sloping foot slopes (with a 1 - 4% gradient) sloping to the drainage lines (watercourses) which eventually feed the Boskop Dam in the north. The Hex River is the main drainage line cutting south-north through the area while minor non-perennial drainage lines occur throughout the area. A rocky ridge, stretching south north, occurs to the east of the site, with slopes varying from moderate to steep (Anglo, 2016).

The RBMR is in an area with an elevation of between approximately 1 140 mamsl and 1 180 mamsl as shown in Figure 8-2.

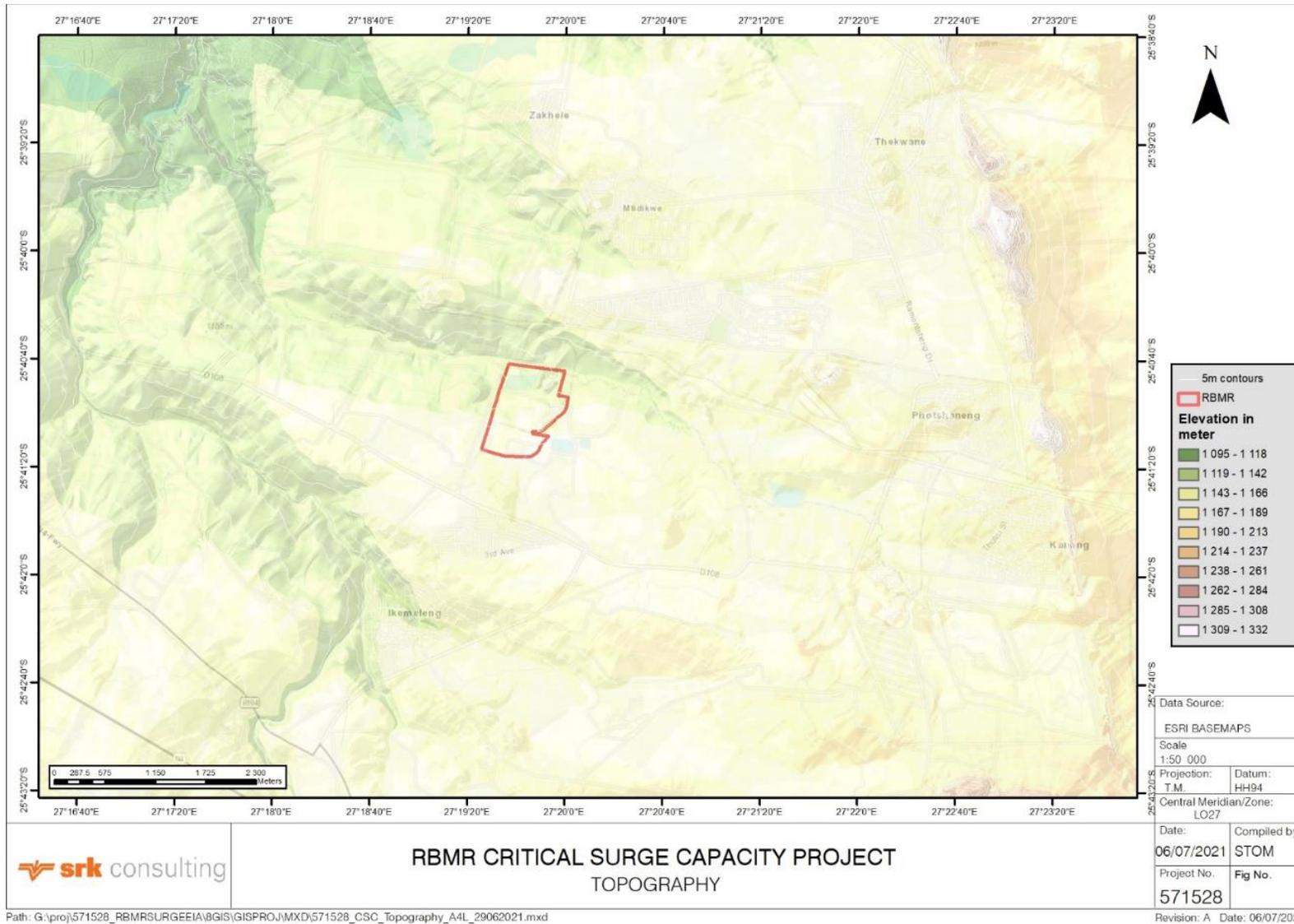


Figure 8-2: Topography

8.3 Geology

The project area is located within one of the largest layered mafic intrusions in the world, namely the Bushveld Igneous Complex. The Bushveld Igneous Complex system is divided into an eastern and western limb with a further northern extension. It contains some of the richest ore deposits on Earth.

The Bushveld Igneous Complex is extensive in size, covering an area of 65 000 km²; stretching approximately 350 km east to west and 250 km north to south. It is roughly saucer-shaped with the edges dipping inwards towards the centre. At the rim of the 'saucer', pyroxenites, norites, gabbros and chromitites are found inter-layered in a variety of combinations ((Anglo, 2016).

The Bushveld Igneous Complex comprises a suite of layered ultramafic/mafic rock, up to nine (9) km thick (known as the Rustenburg Layered Suite), roofed by Rooiberg Group Felsic volcanics and granophyres and a suite of late Bushveld granites. This layered suite is preserved in five (5) lobes: the far western, western, eastern and northern, and the south-eastern lobe. According to Cawthorne et al 1999, the Rustenburg Layered Suite, which ranges in composition from dunite to ferrodiorite, is subdivided into five (5) composite zones as provided in Figure 8-3.

Marginal Zone (this is not always present, comprises up to 880m of heterogeneous noritic rocks along the basal contact of the Bushveld Igneous Complex);

- Lower Zone (this comprises of dunites, harzburgites and pyroxenites);
- Critical Zone (this is characterised by spectacular layering and hosts world-class chromite and platinum deposits in several reefs);
- Main Zone (this is the thickest zone, comprising of a succession of gabbro-norites in which olivine and chromite are absent and anorthosites are rare); and
- Upper Zone (this is 200m thick and is characterised by lithologies of Anorthosite, tractolite and ferrogabbro to diorite).

Unique to the Bushveld Igneous Complex is the presence of two (2) stratiform deposits, known as the Merensky reef and the UG2 reef, that can be traced for hundreds of kilometres along the rim of the deposits and contain economically exploitable quantities of Platinum-Group Metals (PGMs). The Bushveld Igneous Complex remains Anglo American Platinum's primary source of reserves and resources (RDNW(KL) 6/2/2/195(4), 2009).

Platinum-Group Elements (PGEs) are recovered from the tabular Merensky reef that is present along the entire strike length of the South Eastern parts of the Bushveld Igneous Complex. The UG2 (present only in certain pockets along the South Eastern limb) also contains economic quantities of PGE. The Merensky reef is the predominant ore body, but the UG2 reef is also mined in certain pockets (Anglo, 2016).

The project area is characterised by Gabbro and norite, with interlayered anorthosite as shown in Figure 8-4.

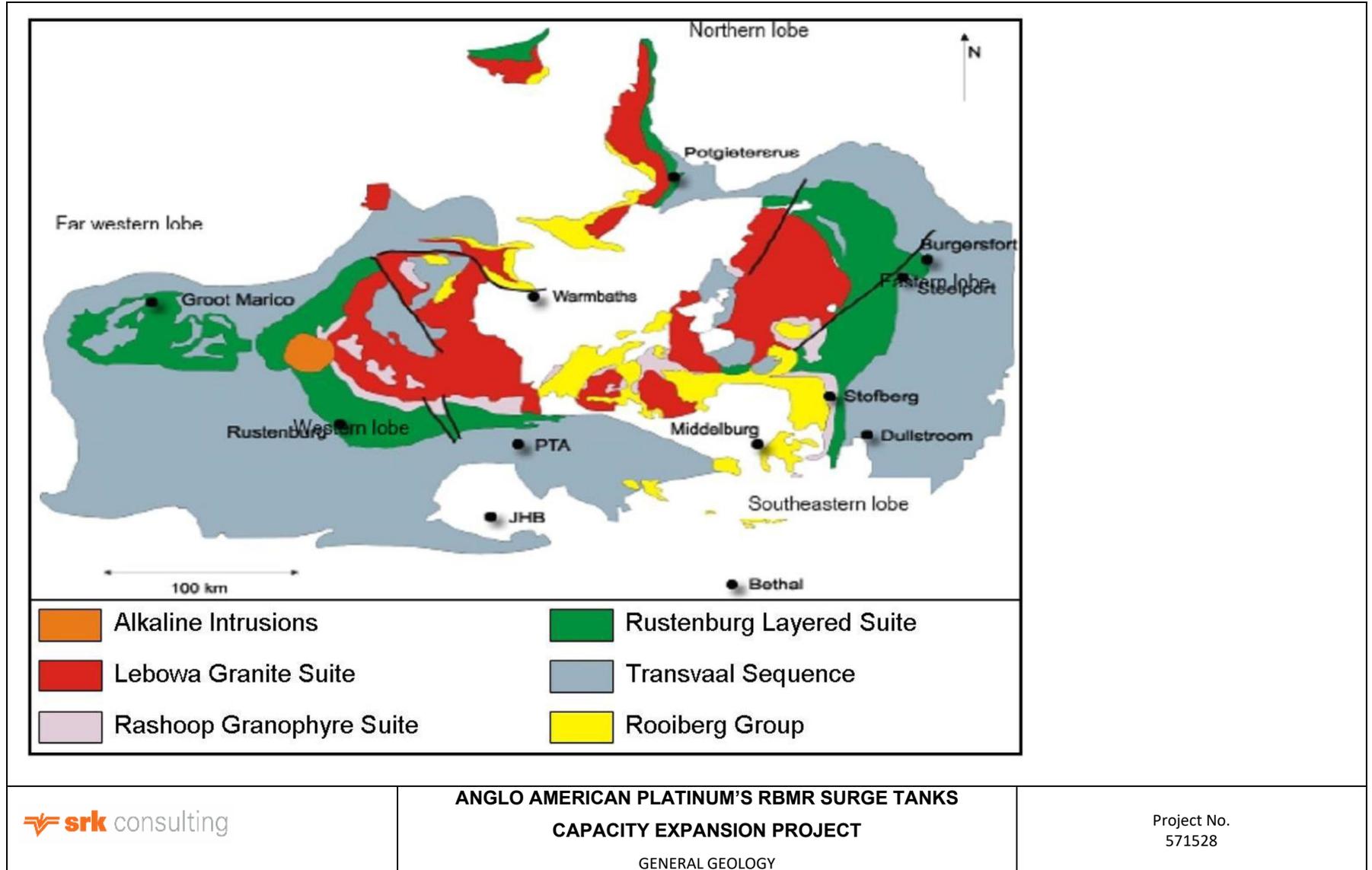


Figure 8-3: General Geology

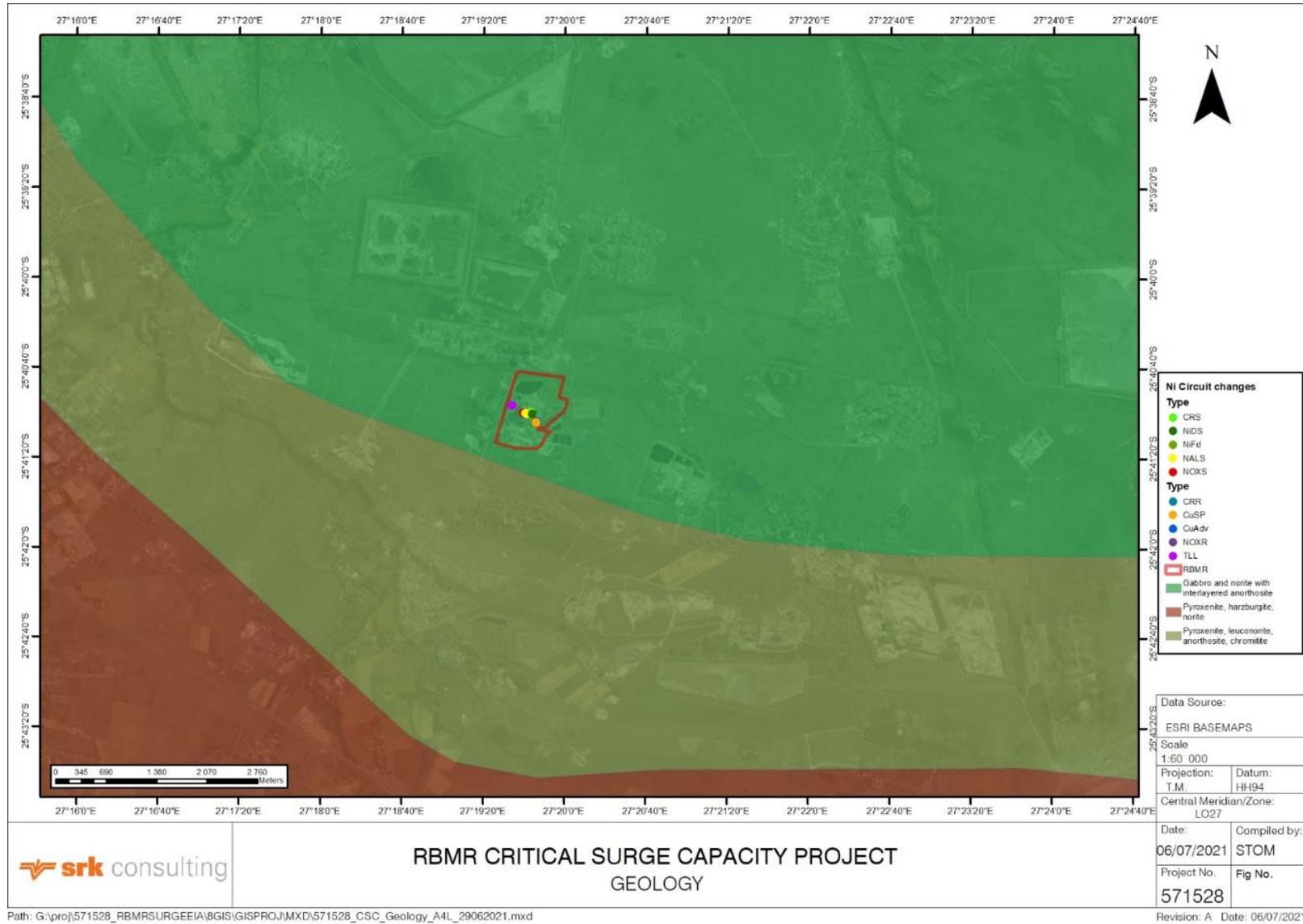


Figure 8-4: RBMR Geology

8.4 Soils, Land-Use and Land capability

The soils of the region are derived from norite which is a mafic rock, rich in basic cations. Generally, the soils are deep, dark brown to black, clayey and have a very coarse blocky or prismatic structure with distinctive slickened sides. Calcium carbonate nodules are abundant throughout the soil profile and on the soil surface. Soils in the wetter areas (along the riverbanks etc.) are generally underlain by gleyed material while soils in the drier regions are abruptly underlain by norite. The dominant soil forms in the region are Arcadia and Rensburg. Shallower soils occur between rocky outcrops. These soils show less structure and are better described by the Milkwood form which comprises of the Melanic A (dark, well-structured A) horizon directly overlying unweathered rock.

A study conducted by Clean Stream Environmental Services in 2015 identified a total of 5 soil units: Ar1, Ar2, Ar/R, Hu and R. The soils are classified as moderate to deep clayey loam soils.

The net primary agriculture production is classified as low (4-6%) (Figure 8-5). The area covered by Rustenburg Section is predominantly used for subsistence farming, in the form of ad hoc grazing of the livestock from many of the formal and informal settlements in the area. The remaining land uses consist of mining, residential and to a limited extent, conservation. It must however be noted that the land has already been changed because of the construction of the existing RBMR plant. The area where the surge tanks capacity expansion project will be located is characterised by RBMR plant infrastructure, concrete paving and tarred roads.



Figure 8-5: Soils

8.5 Air Quality

8.5.1 Waterberg-Bojanala Priority Area

The project area is located within the Waterberg-Bojanala Priority Area. The Minister declared the Waterberg–Bojanala Priority Area (WBPA) on 15 June 2012 as the third National Priority, crossing the North West and Limpopo provincial borders. The emission summary for the WBPA shows the dominant sectors with regards to the major pollutants as summarised in Table 8-1. SO₂ is primarily sourced from industry in the area, with 99.9% of total emissions generated by the sector. Minimal SO₂ contributions are observed from motor vehicles and residential sectors. Total SO₂ emissions for the priority area are estimated at almost 397 000 tons per annum. For NO_x, industrial contributions to the overall pollutant load are 87%, and the contribution from motor vehicles is 13%. Total WBPA NO_x emissions are estimated at approximately 87 000 tons per annum. For PM₁₀, mining contributes the greatest proportion of emissions, approximately 60 000 tons per annum, and over 70% of total emissions. Industry contributions are lower but still significant at 27%. Total priority area PM₁₀ emissions are estimated at approximately 83 000 tons per annum.

Table 8-1: Total emissions for WBPA (in tpa)

	SO ₂	%	NO _x	%	CO	%	PM ₁₀	%
<i>Industry</i>	396 157	99.9	75 082	86.4	39 309	85.7	21 976	26.6
<i>Mining</i>		0.0		0.0		0.0	59 488	71.9
<i>Residential</i>	21	0.0	59	0.1	0	0.0	306	0.4
<i>Motor vehicles</i>	317	0.1	11 608	13.4	0	0.0	435	0.5
<i>Biomass</i>		0.0	202	0.2	6 560	14.3	545	0.7
Total	396 495		86 950		45 869		82 750	

8.5.2 Ambient Air

The Rustenburg Local Municipality (RLM) has three ambient Air Monitoring stations that monitors the levels of priority pollutants. The three Air Monitoring stations are situated at Boitekong Library, Reatile Educational Centre at Tlhabane and Marikana at Regional Community Centre. The following pollutants and meteorological parameters are monitored on a continuous basis:

- Pollutants: Sulphur dioxide (SO₂), Nitric oxide (NO), Nitrogen dioxide (NO₂), Nitrogen oxides (NO_x), Carbon monoxide (CO), Ozone (O₃), Particulate matter (PM₁₀) and Particulate matter (PM_{2.5}); and
- Meteorological parameters: Wind speed and direction, ambient temperature, relative humidity, atmospheric pressure and global radiation (Rustenburg LM, 2019/2020).

The results from the sampling show that generally there is an improvement in the ambient air in the Rustenburg Local Municipality due to less exceedances recorded.

From an air quality perspective, the winter period, especially June and July provide conditions which is more prone to air pollution. These months have low rainfall and low temperatures, factors which could create less turbulence and possible atmospheric stability. In the event of such stable atmospheric conditions, pollutants could be trapped degrading air quality. (Rustenburg LM, 2019/2020)

The pollutants and meteorological data monitored by the RLM Air Monitoring network from the Ambient Air Quality 2018 Report indicates the average, maximum and minimum PM_{2.5} daily concentrations as captured in Table 8-2. This information is based on a daily averaged data. No exceedances of the PM_{2.5} daily average NAAQS was recorded during this reporting period. (Rustenburg LM, 2019/2020)

Table 8-2: Data statistics for PM_{2.5} daily average concentrations for the RLM monitoring network stations for November 2018

Station	Particulate Matter – PM _{2.5} (µg/m ³)			
	Average	Max	Min	Date of Max
Boitekong	11.99	23.79	4.65	15/11/2018
Marikana	12.35	22.44	6.88	01/11/2018

The data statistics for the SO₂ daily average data are presented in Table 8-3, which show that no exceedances of the 48-ppb daily guideline were recorded during the 2018 reporting period

Table 8-3: Statistical analysis of the SO₂ daily averaged data November 2018

Station	Sulphur dioxide – SO ₂ (ppb)			
	Average	Max	Min	Date of Max
Boitekong	8.64	23.60	0.60	13/11/2018
Marikana	3.03	7.28	0.82	29/11/2018
Reatile	-	-	-	-

8.5.3 Dust

In addition to the stack emissions monitoring, RBMR is also conducting monthly dust fallout monitoring at seven locations around the plant (Aquatico, 2020)

The results from the latest sampling round are provided in Table 8-4.

Table 8-4: Dust Fallout Sampling Results (July-August 2020)

VARIABLE	Dust - Insoluble	Dust - Soluble	Dust - Rate	Dust - Rate	Complies with / exceeds guideline	dustfall
UNITS	g/m ² /day	g/m ² /day	g/m ² /day	mg/m ² /day		
ASSESSMENT SET	0.6	-	0.6	600		
DB Bokamoso	0.241	0.03	0.271	271	Complies	
DB Mfidikwe	0.396	0.036	0.432	432	Complies	
DB Photsaneng	0.178	0.027	0.205	205	Complies	
DB Thekwane 1	0.046	0.027	0.073	73	Complies	
DB Thekwane 2	0.03	0.028	0.058	58	Complies	
DB Zakhele	0.163	0.025	0.188	188	Complies	

The results show that dust fallout levels in all the monitored areas are below the SANS 1929:2005 Ambient Air Quality evaluation criteria for dust fall out monitoring for residential areas.

8.6 Water

8.6.1 Hydrology and Drainage

Anglo Platinum Limited Rustenburg Base Metal Refiners is situated within the Limpopo Water Management Area (WMA) in the North West Province. The project area is situated within quaternary catchment A22H.

The nearest perennial river to the project site is the Hex River flowing at ± 2.5 km on the west of the RBMR. Surface contours show general drainage lines for RBMR moving from southeast towards the northwest discharging surface runoff first into Klipfonteinspruit and later into the Hex River. Drainage lines within RBMR Plant boundary have been modified by mining activities such as mine dumps, access roads, haul roads, surface water impoundments and other mining infrastructure. Hex River flowing in the northerly direction drains into Bospoort Dam situated ± 12 km north of RBMR.

8.6.2 Receiving Environment Water Quality

Various continuous, seasonal or event-linked discharges of contaminated process water takes place into seasonal tributaries of the Hex River, which drains the processing areas. The tributaries affected by the Rustenburg Process Division that drain into the Hex River are the Klipfonteinspruit and Klipgatspruit (Aquatico, 2018/2019).

Raised salinity, calcium, magnesium, sodium, sulphate, chloride, nickel and inorganic nitrogen are indicative of the water type associated with the processing activities of the Rustenburg Process Division, whilst raised ammonium and phosphate in the receiving environment is due to sewage pollution (non-RPM related). The Integrated Water and Waste Management Plan (IWWMP) for Anglo's Rustenburg Process Division recommends that impacted or affected water at the business units in the particular catchments be contained within the operation's dirty water circuit to minimize the pollution potential towards the different streams, and ultimately to the Hex River and Bospoort Dam. Discharges and seepages of process dams should be prevented, and their freeboard maintained. Water from the process dams should not be allowed to enter the receiving environment untreated as impacted water could contaminate natural watercourses and groundwater (Aquatico, 2018/2019).

Nitrate and salinity contamination are the most prominent parameters sourced from the processing activities. Additionally, of concern are the salt loads in the receiving environments, particularly chloride, sulphate, sodium and calcium, and the base metal nickel, especially in the Klipfonteinspruit. Although discharges, effluents and dam overflows are kept to a minimum, the groundwater, of which quality is poor in some areas, could contribute to baseflow in rivers (Aquatico, 2018/2019)

Organic pollution most probably from sewage and industrial effluents is also a hazard in the greater Hex River catchment. Various point and diffuse sources of pollution (most of which are not RPM-related) are suspected to contribute towards the organic and nutrient load of the Hex River. These include sewage discharges from formal and informal settlements and treatment plants. A nutrient impact downstream from Waterval Sewage, which is a Central Services responsibility, on the Klipfonteinspruit is evident although the point of actual discharge is unknown. (Aquatico, 2018/2019)

8.6.3 Receiving environment at RBMR

The upstream locality of RBMR, (Klipfonteinspruit between Precious Metals Refinery (PMR) and RBMR on old road to magazine) was sampled in January, February and April 2019, recording dry conditions throughout the rest of the annual period. The downstream locality of RBMR was sampled throughout the year. The average water quality revealed significant deteriorating conditions from the upstream to the downstream locality at RBMR. Sulphate, fluoride and nickel concentrations revealed

the most significant increases and may be as a direct result of process water from the RBMR dams which are dominated by these constituents (Aquatigo , 2018/2019)

8.6.4 Process Water at RBMR

The Process water dams at RBMR are sampled by RBMR staff and samples are then submitted to Aquatigo for analysis. Most RBMR pollution control dam samples were submitted throughout the annual period on a quarterly basis. Water quality profiles for most of the sampled dams at RBMR are similar with Sodium (Na) and Potassium (K) as the main contributing cation and sulphate as the main contributing anion. The concentrations (mg/l) were however different between the dams, with on average, acidic water quality being found at K160 and K161, while most other analysed dam samples had alkaline water quality. RBMR dams 3A and 3B (K160 and K161) also recorded significantly high metal concentrations (copper, nickel, etc.). Fluctuating concentrations of Total Dissolved Substances (TDS) and metals were recorded in all samples (Aquatigo , 2018/2019)

A summary of the surface water quality monitoring points is presented in Table 8-5.

Table 8-5: Summary of Surface Water Quality Monitoring Points at RBMR (Aquatigo, 2018/2019)

Site Name	Site description	Y-coordinates	X-coordinates
K023	Klipfonteinspruit at base of RBMR dump	-25.67855	27.33039
K028	Klipfonteinspruit after confluence of RBMR west ditch system at Waterval smelter bridge	-25.67849	27.32638
K012	Klipfonteinspruit between PMR and RBMR on old road to magazine	-25.68096	27.34029
K024	Outflow of RBMR Dam 3 stormwater dam	-25.68091	27.32634
K044	Trench to the west of the RBMR dam 3B	-25.68087	27.32612
K059	Culvert at railway entry to RBMR	-25.68543	27.3306
K062	Spillway overflow RBMR stormwater dam 3B	-25.68015	27.32625
K158	RBMR Dam1	-25.68188	27.32676
K159	RBMR Dam2	-25.68163	27.32644
K160	RBMR Dam3A	-25.68157	27.32700
K161	RBMR Dam3B	-25.68034	27.32847
K162	RBMR Triangular Dam	-25.68511	27.33229
K163	RBMR SSSS Dam	-25.68618	27.33532
K187	Trench upstream of RBMR at culvert on access road to South gate	-25.68735	27.32416
K220	RBMR Effluent dam 1	-25.685799	27.331835

Site Name	Site description	Y-coordinates	X-coordinates
K221	RBMR Effluent dam 2	-25.685799	27.331835
K222	RBMR Effluent dam 3	-25.685799	27.331835
K223	RBMR E&S feed dam 1	-25.687804	27.330812
K224	RBMR E&S feed dam 2	-25.687661	27.330610

Figure 8-6 provides the location of the surface water monitoring points at the RBMR.

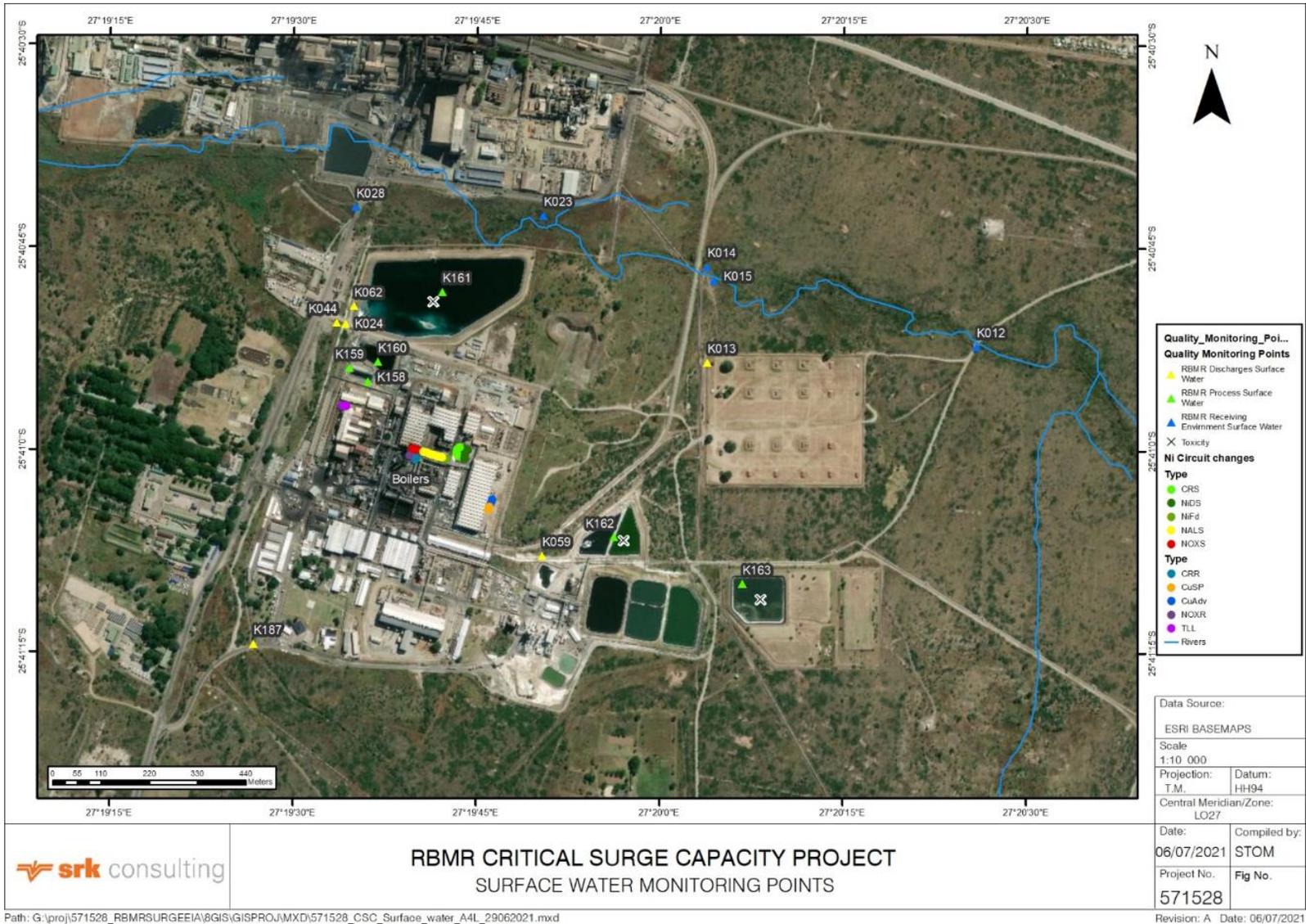


Figure 8-6: RBMR Surface water monitoring points and the major catchment basin

8.7 Geohydrology

Three distributed components of the groundwater system have been identified, of which all three have been affected to some extent. These form part of the lower part of the Main Zone and the Critical Zone of the Layered Bushveld Igneous complex.

8.7.1 Aquifers

There are three aquifer types identified in the RPM-RS lease area that are listed and briefly characterized in Table 8-6. Apart from the floodplain alluvial type aquifers and the deep aquifer system, the remaining aquifers identified are collectively regarded as shallow bedrock aquifers in the weathered zone. In terms of the Parsons Aquifer classification system, the aquifers in the project area are classified as minor or non-aquifers. (Aquatico , 2018/2019)

Table 8-6: Types and characteristics of groundwater systems

Type of aquifer		Main characteristics
Shallow Groundwater systems	Floodplain alluvial aquifers	Restricted to alluvium along the Hex River. Groundwater quality is generally good, water levels between 1 and 10 mbs, yields of up to 10 l/s.
	Shallow bedrock aquifer	Developed in transmissive fractures and grains in shallow weathered zone. Occur most widespread over the lease area in the weathered zone within 25 mbs. Rest water levels 3-20 mbs, qualities generally good (TDS of 450) but can be poor where compartments occur. Yields between 0 to 4 l/s with a mean around 0.3 l/s.
Deep aquifer system		Very heterogeneous, developed in transmissive fractured in the solid bedrock at depths of more than 50 mbs. Rest water levels deeper than 30mbs, qualities generally poor with salinity often more than 2000 mg/l TDS.

8.7.2 Groundwater

RBMR conducts groundwater monitoring at 15 boreholes a summary of the groundwater monitoring points is provided in Table 8-7 and the monitoring points are shown in Figure 8-7 (Aquatico , 2018/2019).

Table 8-7: Summary of Groundwater Monitoring Points (Aquatico, 2018/2019)

Site Name	Site description	Y-coordinates	X-coordinates	Monitoring Frequency
BMRWWTW	Downgradient of Waterval treatment works	-25.680378	27.325227	Quarterly
S011	BMR downgradient west towards Klipfonteinspruit	-25.681508	27.325960	Quarterly
S102	BMR downgradient north of north dump towards Klipfonteinspruit	-25.679347	27.331812	Quarterly
S120	BMR downgradient north of SSS effluent dams	-25.684282	27.332675	Quarterly
S160	BMR downgradient north-east of north dump towards Klipfonteinspruit	-25.679735	27.332518	Quarterly
S230	BMR downgradient of SSS effluent dams	-25.685518	27.335377	Quarterly
S386	BMR upgradient east of BMR rainwater dam	-25.681567	27.329112	Quarterly
S388	Borehole west of BMR magazines	-25.682787	27.333922	Quarterly
S389	BMR upgradient south of north dump	-25.682130	27.332737	Quarterly
S403	BMR downgradient east of SSS effluent dams	-25.685688	27.336937	Quarterly
S405	BMR upgradient south of BMR rainwater dam	-25.681318	27.328167	Quarterly
S409	BMR downgradient north towards Klipfonteinspruit	-25.679103	27.328003	Quarterly
S410	BMR downgradient north-east towards Klipfonteinspruit	-25.679132	27.330390	Quarterly
S418	BMR downgradient northwest of SSS effluent dams	-25.685108	27.331415	Quarterly
NB52	BMR upgradient of SSS effluent dams	-25.689740	27.334303	Quarterly

The larger part of the surface area underlying the actual refinery is lined by concrete surfaces, but historical leaks and dumping caused the formation of a large diffuse source area for contamination. Seepage and leachate formation thus still emanate from the RBMR area and remediation plans target the RBMR as the priority area. The RBMR is situated on the southern banks of the Klipfontein Spruit directly opposite the Waterval Processing area. The groundwater flow and mass transport from the site is northwards in the direction of the Klipfontein Spruit (Aquatico , 2018/2019).

The annual report on Groundwater Monitoring 2018/2019 Report indicates that significant pollution impacts from the RBMR occur on the groundwater environment. This processing complex consists of a large base metal refinery area with associated effluent dams for storage of process water. The most notable of these are the sodium sulphate solution area to the south-east of the refinery where highly concentrated sodium sulphate solution by-product is treated and dried. The groundwater pollution in this area is by far the dominant impact of the RBMR area as a result of leachate formation as well as seepage from effluent dams where historical liners were not fully impervious (Aquatico , 2018/2019).

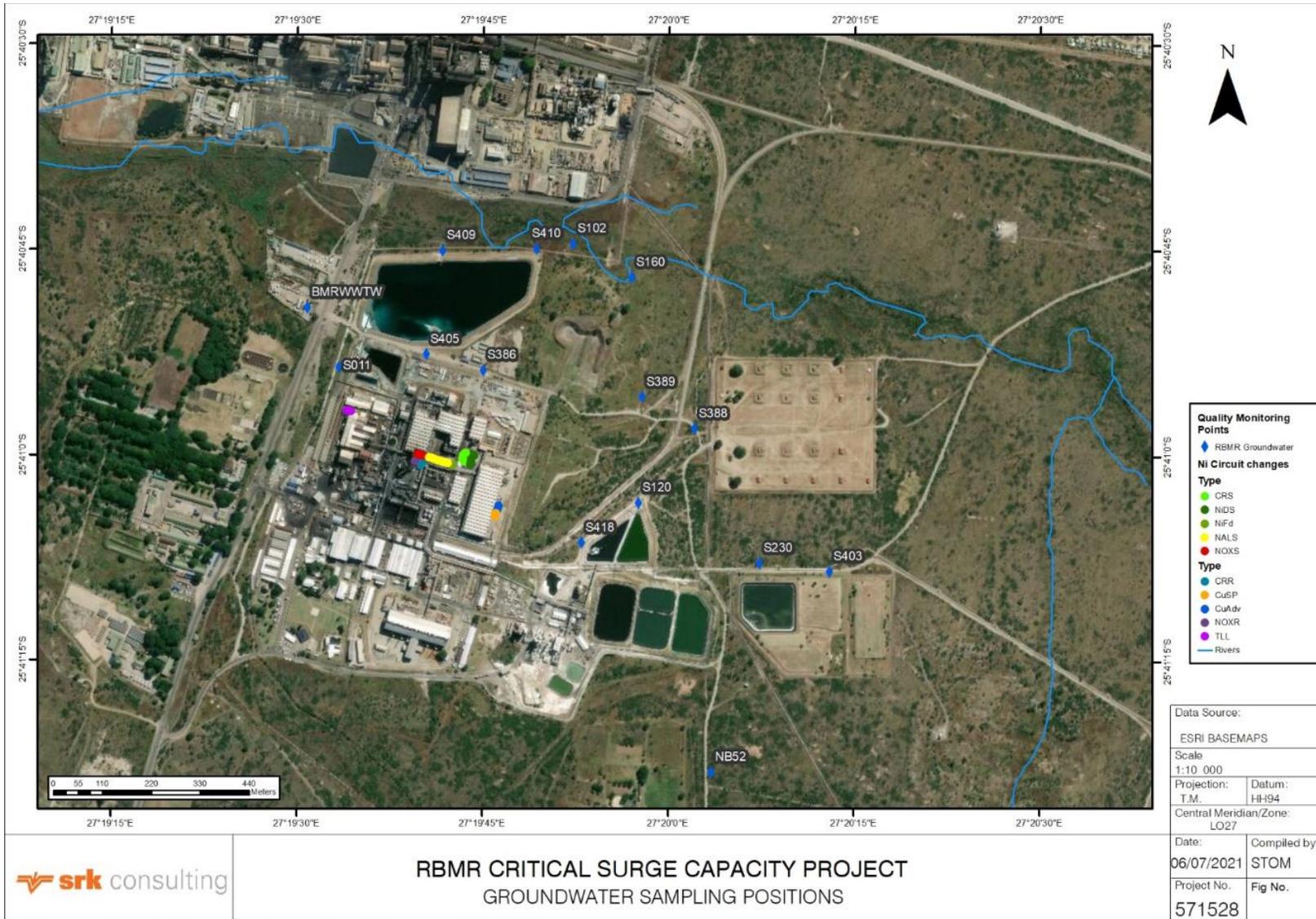


Figure 8-7: Groundwater Sampling Positions

8.7.3 Groundwater Users

Groundwater users at and downstream of the RBMR were identified as follows:

- Domestic and limited agricultural use on farm smallholdings along the Hex River takes place. The source is the Hex River valley aquifer and the UG2 pyroxenite aquifer.
- Historical use (domestic, livestock, and gardens) of groundwater in the townships of Mfidikwe (Klipgat sub-catchment), Kwa Photsaneng (Klipgat sub-catchment) and Thekwane (Klipgat and Paardekraal sub-catchments) was recorded but studies in Mfidikwe and Thekwane during 2007 could not locate any active groundwater use. The source was the shallow weathered bedrock aquifer. The communities indicated that only municipal water is currently utilised (Aquatico , 2018/2019).

8.8 Wetlands

According to the South African National Biodiversity Institute (SANBI) National Wetlands database, there are no wetlands associated with the proposed surge tanks capacity expansion project site (Figure 8-8).

This is supported by a wetlands delineation that was conducted for the Rustenburg Platinum Mines Ltd area, which includes the RBMR area. The delineation found that there are no wetlands associated with or within 500m of the RBMR and the proposed surge tanks capacity expansion project area.

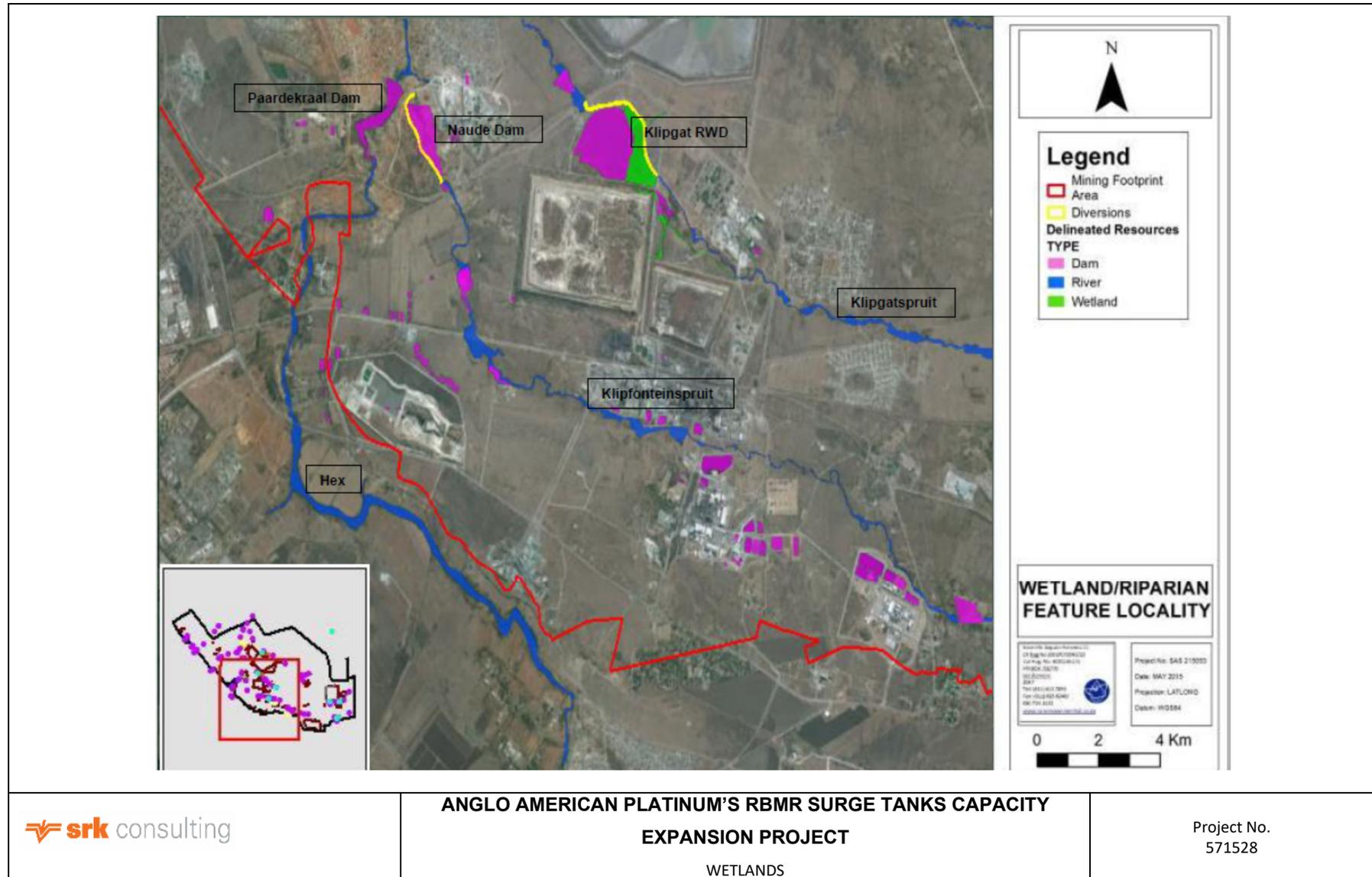


Figure 8-8: Rivers and Wetlands relating to the Study Area

8.9 Areas of Conservation Concern

Areas of high biodiversity was identified from the North West Province Biodiversity Sector Plan and includes, amongst others, Critical Biodiversity Areas (CBAs) and Ecological Support areas (ESAs). The RBMR is not located in any areas classified as CBAs or ESAs and the biodiversity status of the area is classified as hardly protected (Figure 8-9). In addition, there are no protected areas that are in proximity to the RBMR.

The affected area where the proposed surge tanks capacity expansion project will be located is highly disturbed due to the construction and operation of the RBMR.

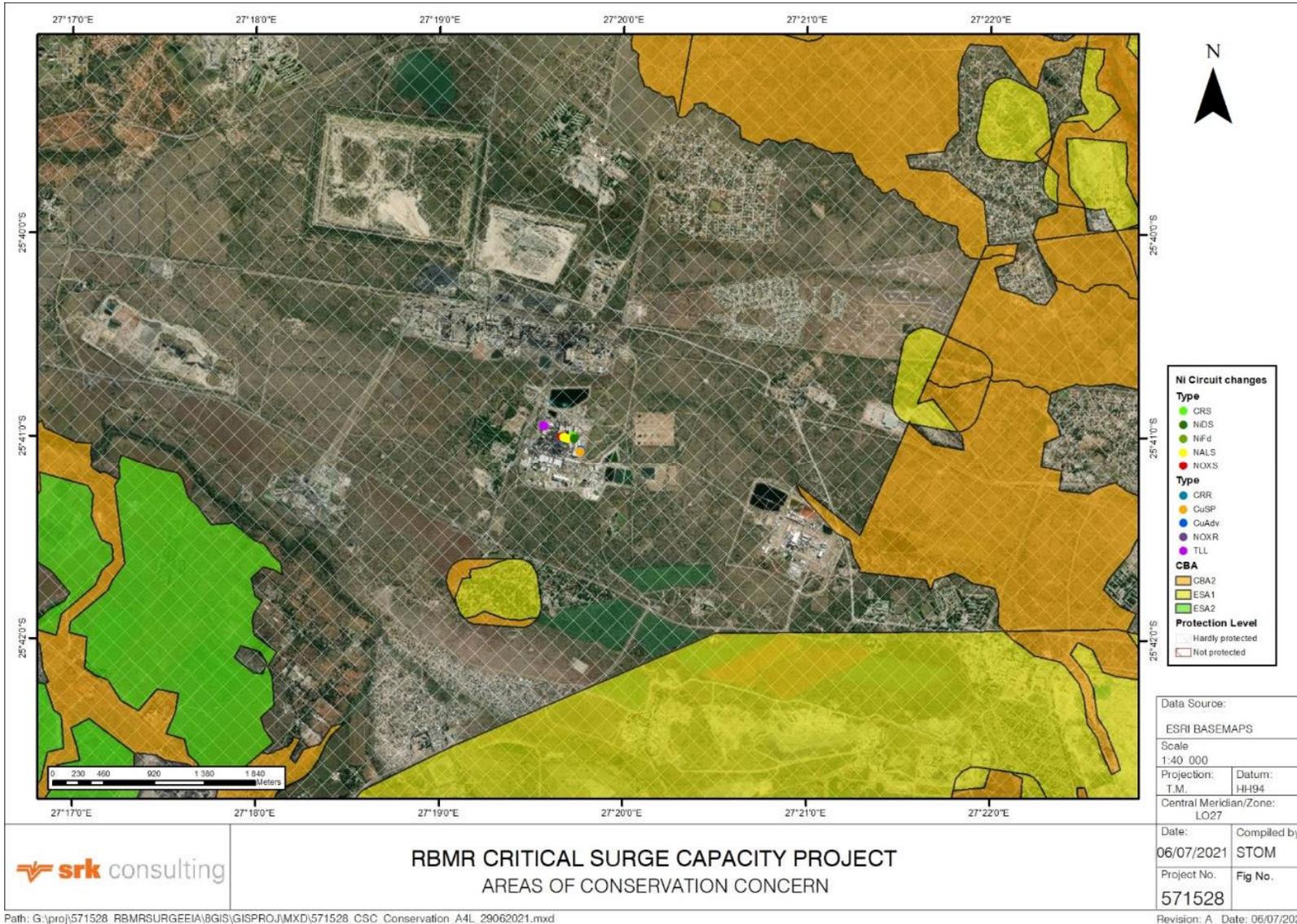


Figure 8-9: Areas of Conservation Concern

8.10 Visual

The project area is located within the jurisdiction of the Rustenburg Local Municipality within the Bojanala District Municipality in the North West Province. Photshaneng and Bokamoso are the closest residential areas, approximately 6.5 km North and North East respectively of RBMR and Rustenburg is the closest town, being approximately 4.9 km North Westerly of the complex.

Due to current operations at RBMR and its associate mines in close vicinity to the proposed surge tanks capacity expansion project location, it is expected that the project will not result in any significant additional visual impacts. The impact assessment section of the report includes an assessment of the visual impacts and the EMP provides for practical mitigation measures that may be implemented to avoid and/or minimise the impacts.

8.11 Biodiversity

Clean Stream Environmental Services was appointed by Anglo American Platinum (Rustenburg Section) to compile a biodiversity management plan for its area in 2005. The biodiversity management plan concluded that the Rustenburg Section area is quite diverse regarding the number of natural biotopes present in the area including:

- Low Closed Woodland (on undisturbed flats – black turf soils);
- Previously Cultivated Areas;
- Secondary Low Closed Woodland;
- Fallow Lands - recently abandoned;
- Secondary Grassland;
- Low Closed Woodland (on undisturbed flats – red soils);
- Low Closed Woodland (on ridges, koppies and rocky outcrops);
- Tall Closed Woodland (on banks of streams);
- Seasonal Marsh (in shallow drainage lines); and
- Human-induced Wetlands (dams and slimes dumps).

The biodiversity where the surge tanks capacity expansion project will be located, has already been impacted on and/or disturbed as part of the construction and operational activities at RBMR. The project area has already been sterilised following the construction and operational activities currently taking pace at RBMR. The Impact Assessment Section includes an assessment of the proposed surge tanks capacity expansion project and mitigation measures that may be implemented to minimise the significance of the impacts on the biodiversity around the surge tanks capacity expansion project have been included in the accompanying EMP.

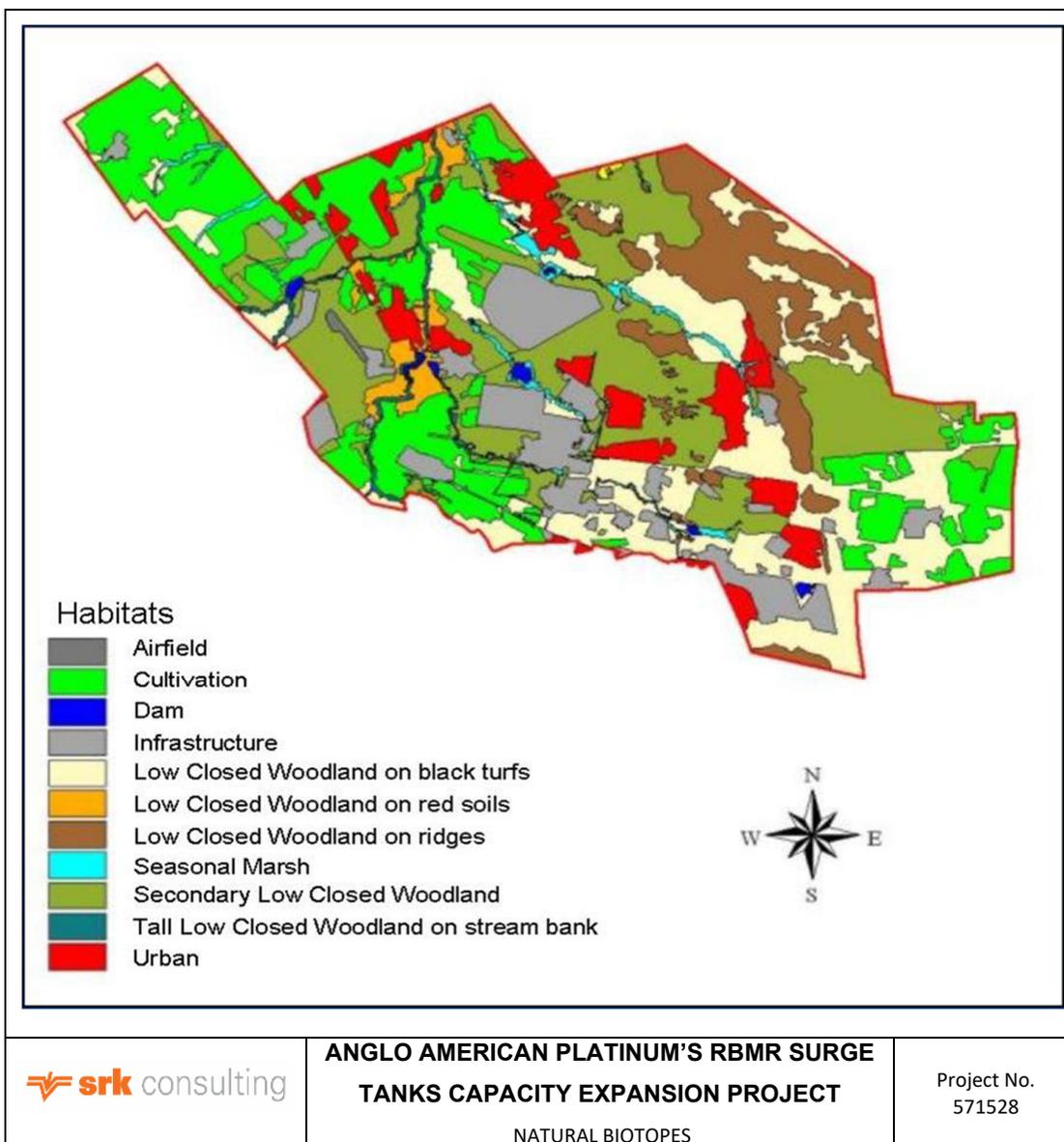


Figure 8-10: Natural biotopes present in RPM-RS

8.11.1 Flora

The study, undertaken by Clean Stream Environmental Services in 2005, identified six (6) natural vegetation types or untransformed indigenous vegetation types (Table 8-8) of which Low Closed Woodland (on ridges, koppies and rocky outcrops) and Tall Closed Woodland (on banks of streams) have the highest species richness. Of the plant communities described in the study, the Seasonal Marsh and other riparian vegetation as well as the Low Closed Woodland on ridges, koppies and rocky outcrops were deemed to have the highest variability in habitats and species composition.

Table 8-8: Summary of vegetation found in RPM-RS

BIOTOPE	DOMINANT AND COMMON AND CONSPICUOUS SPECIES	NUMBER OF SITES	SPECIES PER 100m ²	TOTAL SPECIES
Low Closed Woodland (flats on black turf soils)	<i>Eragrostis rigidior</i> , <i>Vernonia oligocephala</i> , <i>Diospyros lycioides</i> , <i>Corchorus confusus</i> , <i>Ledebouria ovatifolia</i> , <i>Eragrostis chloromelas</i> , <i>Lantana rugosa</i> , <i>Ehretia rigida</i> , <i>Crabbea angustifolia</i> , <i>Rhynchosia caribaea</i>	5	32.2	94
Previously Cultivated Land (Secondary Low Closed Woodland)	<i>Rhynchosia caribaea</i> , <i>Aristida bipartita</i> , <i>Sesbania bispinosa</i> , <i>Cynodon dactylon</i>	3	13.0	26
Low Closed Woodland (on undisturbed flats – red soil)	<i>Eragrostis rigidior</i> , <i>Asparagus suaveolens</i> , <i>Grewia flavescens</i> , <i>Cymbopogon plurinodis</i>	4	35.6	88
Low Closed Woodland (on ridges, koppies and rocky outcrops)	<i>Combretum molle</i> , <i>Lansea discolor</i> , <i>Dombeya rotundifolia</i> , <i>Faurea saligna</i> , <i>Pellaea calomelanos</i> , <i>Loudetia simplex</i> , <i>Sarcostemma viminalis</i>	4	40.3	108
Tall Closed Woodland (on banks of streams)	<i>Combretum erythrophyllum</i> , <i>Rhus lancea</i> , <i>Celtis africana</i> , <i>Gymnosporia buxifolia</i> , <i>Ziziphus mucronata</i> , <i>*Paspalum urvillei</i> , <i>Agrostis lachnantha</i> , <i>Setaria megaphylla</i> , <i>Cyperus sexangularis</i> , <i>Typha capensis</i> and <i>Phragmites australis</i>	10	52.0	156
Seasonal Marshes (in shallow drainage lines)	<i>Cyperus sexangularis</i> , <i>Paspalum distichum</i> , <i>Phragmites australis</i> , <i>Typha capensis</i> , <i>Schoenoplectus corymbosus</i>	3	12.3	27

There are clear indications from data collected, that human impacts shaped the character of the vegetation of the Rustenburg Section area more than any other factor, although natural patterns are still evident in undisturbed areas. Large parts of the area have been cultivated in the past and mining activities, in the area, and infrastructure have transformed some areas of vegetation. The remaining vegetation is impacted upon by heavy grazing, trampling, altered fire regimes and harvesting of natural products, e.g., firewood. No red list plant species were recorded during the survey. It must be noted that any red list plant species that are likely to occur in the area would be found in and around the Low Closed Woodland on ridges, koppies and rocky outcrops or in the Seasonal Marsh area.

The declared weeds identified during the survey are listed in Table 8-9.

Table 8-9: Declared weeds and invaders recorded during the survey

SPECIES	STATUS
<i>*Achyranthes aspera</i> L.	Declared weed (Category 1)
<i>*Agave americana</i> L.	Proposed declared invader
<i>*Argemone ochroleuca</i> Sweet ssp. <i>ochroleuca</i>	Declared weed (Category 1)
<i>*Arundo donax</i> L.	Declared weed (Category 1)
<i>*Cardiospermum grandiflorum</i> Sw. var. <i>hirsutum</i> (Willd.) Radlk.	Declared weed (Category 1)
<i>*Casuarina cunninghamiana</i>	Declared Invader (Category 2)

SPECIES	STATUS
* <i>Cirsium vulgare</i>	Declared weed (Category 1)
* <i>Cuscuta campestris</i> Yunck.	Declared weed (Category 1)
* <i>Datura stramonium</i> L.	Declared weed (Category 1)
* <i>Eucalyptus camaldulensis</i> Dehnh.	Declared Invader (Category 2)
* <i>Melia azedarach</i> L.	Declared Invader (Category 3)
* <i>Morus alba</i> L.	Declared Invader (Category 2)
* <i>Opuntia ficus-indica</i> (L.) Mill.	Declared weed (Category 1)
* <i>Pennisetum setaceum</i> (Forssk.) Chiov.	Declared weed (Category 1)
* <i>Ricinus communis</i> L.	Declared Invader (Category 2)
* <i>Sesbania punicea</i> (Cav.) Benth.	Declared Weed (Category 1)
* <i>Solanum mauritianum</i> Scop.	Declared Weed (Category 1)
* <i>Sorghum halepense</i> (L.) Pers.	Declared Invader (Category 2)

- Category 1: Prohibited and must be controlled.
- Category 2 (commercially used plants): May be grown in demarcated areas provided that there is a permit and that steps are taken to prevent their spread.
- Category 3 (ornamentally used plants): May no longer be planted. Existing plants may be retained if all reasonable steps are taken to prevent the spreading thereof, except within the flood line of watercourses and wetlands.

8.11.2 Terrestrial Fauna

At the time of the study, there was diversity regarding the number of natural biotopes present in the area and the associated faunal diversity (and potential diversity) that is present or expected to occur. After analysing the results of the biodiversity survey, it was concluded that 13 frog species, 57 reptile species, 270 bird species and 85 mammal species are expected to occur in the area (Table 8-10). The presence of the faunal groups will manifest in different ratios regarding the potential habitats in the distinct biotopes.

Table 8-10: Summary of the faunal groups per preferred habitat

FAUNAL GROUP	LOW CLOSED WOODLAND (BLACK TURF)	PREVIOUSLY CULTIVATED LAND	FALLOW LANDS (RECENTLY ABANDONED)	SECONDARY GRASSLAND	LOW CLOSED WOODLAND (RED SOILS)	LOW CLOSED WOODLAND (ROCKY OUTCROPS)	TALL CLOSED WOODLAND (ON BANKS OF STREAMS)	SEASONAL MARSH	DAMS (MAN-MADE)
Frogs	0	0	0	0	0	1	4	7	1
Reptiles	9	3	1	5	13	19	6	1	0
Birds	38	25	13	11	17	54	43	19	50
Mammals	13	6	0	5	7	26	19	9	0

FAUNAL GROUP	LOW CLOSED WOODLAND (BLACK TURF)	PREVIOUSLY CULTIVATED LAND	FALLOW LANDS (RECENTLY ABANDONED)	SECONDARY GRASSLAND	LOW CLOSED WOODLAND (RED SOILS)	LOW CLOSED WOODLAND (ROCKY OUTCROPS)	TALL CLOSED WOODLAND (ON BANKS OF STREAMS)	SEASONAL MARSH	DAMS (MAN-MADE)
Totals: preferred habitat	60	34	14	21	37	100	72	36	51
% of total	14.0	7.9	3.2	4.9	8.6	23.4	16.9	8.4	11.9
Totals: all habitats utilised*	196	128	75	73	155	221	159	123	77
% of total	16.2	10.6	6.2	6.0	12.8	18.3	13.1	10.1	6.3
Number of vertebrates	0	2	0	1	7	42	27	2	26
Number of red-listed species	3	4	1	1	1	8	5	1	3

8.11.3 Red Data Species

The study found that:

- None of the frog species expected to occur in the area are considered Red Data species (Branch, 1988);
- The African rock python is the only Red Data reptile species expected to be found in the area, and is classified as “Vulnerable”;
- Seven (7) of the 15 Red Data bird species (Cape vulture, tawny eagle, martial eagle, black stork, yellow-billed stork, greater- and lesser flamingo) will only visit the area periodically to forage but will probably not nest and breed. This is mainly due to presence of the large human population currently residing in the area and the associated disturbances. The White-backed night-heron might still be found in the dense riverine woods, African marsh harrier and grass owl (observed) in the dense thickets along drainage lines, lesser kestrels and Lanner falcons in the more remote rocky outcrops, and secretary bird, white-bellied korhaan and yellow-throated sandgrouse periodically on the plains; and
- Of the 12 Red Data mammal species expected to be found in the area, five (5) species are bats and two can be classified as small mammal species: hedgehog and Makwassie musk shrew. The honey badger, African wild cat, pangolin, brown hyena, serval and the spotted-necked otter are larger and more conspicuous mammals that might be more vulnerable to persecution by hunting and foraging dogs than any other threat.

8.11.4 Aquatic Fauna

At the time of the study, it was evident that the habitat diversity was generally high in the study area. As can be expected, the diversity was lower in the seasonal marshes than in the Hex River. Nine (9) of an expected thirteen indigenous fish species were present in the Hex River section of the area. It is expected that the fish species diversity of the area has been reduced by four (4) species, mainly because of water quality degradation and the presence of migration barriers. No Red Data species are expected to occur or are present within the study area. Various human activities in the area, as

well as up- and downstream catchments, resulted in the degradation of the aquatic ecosystems integrity, and thus biodiversity.

A total aquatic macro-invertebrate diversity of 47 taxa was observed in the area. Of the 47 taxa in the study area, 32 can be classified as being highly tolerant to pollution, while 15 are moderately tolerant to pollution. No taxa with a low tolerance to pollution were observed in the study area, which is indicative of some adverse impact.

8.12 Socio – Economical Environment

This site falls within the Bojanala Platinum District and Rustenburg Local Municipality. The RLM accommodates about 16% of the provincial population, and it is estimated that it will in future experience significant population growth (up to 32.9% of the provincial population growth). Rustenburg town represents the centre of population concentration, employment opportunities and shopping opportunities. This attracted urban development towards the town. With 645 000 people, the Rustenburg Local Municipality housed 1.1% of South Africa's total population in 2017. Based on the present age-gender structure and the present fertility, mortality and migration rates, Rustenburg's population is projected to grow at an average annual rate of 1.7% from 645 000 in 2017 to 700 000 in 2022 ((Rustenburg LM, 2019/2020).

The primary sector consists of two broad economic sectors namely the mining and the agricultural sector. Between 2007 and 2017, the agriculture sector experienced the highest growth in 2017 with an average growth rate of 43.3%. The mining sector reached its highest point of growth of 19.5% in 2015. The agricultural sector experienced the lowest growth for the period during 2015 at -18.2%, while the mining sector reaching its lowest point of growth in 2014 at -13.0%. Both the agriculture and mining sectors are generally characterised by volatility in growth over the period (Rustenburg LM, 2019/2020).

The secondary sector consists of three broad economic sectors namely the manufacturing, electricity and the construction sector. Between 2007 and 2017, the manufacturing sector experienced the highest growth in 2010 with a growth rate of 3.6%. The construction sector reached its highest growth in 2007 at 14.6%. The manufacturing sector experienced its lowest growth in 2010 of -11.6%, while construction sector reached its lowest point of growth in 2010 with a -4.6% growth rate. The electricity sector experienced the highest growth in 2009 at 10.9%, while it recorded the lowest growth of -13.4% in 2008 (Rustenburg LM, 2019/2020).

The RBMR employs locals as far as possible and have implemented several community initiatives, both of which are improving the local socioeconomic situation in the area (Rustenburg LM, 2019/2020).

9 Environmental Impact Assessment Approach

A basic environmental impact assessment was conducted for the project as required by GNR 982 of the NEMA. The impact assessment process entailed the following:

- Baseline characterisation (provided in Section 8);
- Identification of potential impacts; and
- Quantification of the significance of the identified potential impacts before and after implementation of mitigation measures.

9.1 Specialist Studies

The tanks will be located within the RBMR areas, already impacted by other activities. It is therefore anticipated that no specialist studies are necessary for the EIA. The assumption is mostly supported by findings from the DFFE Screening Tool which identified terrestrial biodiversity specialist studies as the only specialist study required (Please refer to Appendix D for a copy of the DFFE Screening Tool Report). However, it is the considered opinion of the EAP that biodiversity assessments are not necessary since the affected area is already sterilized by the existing infrastructure and does not have any remaining vegetation.

All the environmental monitoring reports that were used in the assessment have been included in Appendix E.

9.2 Impact Assessment Methodology

The main objective of the impact assessment is to identify the negative environmental impacts that can be avoided and/or mitigated and the benefits of the positive impacts that can be enhanced during the expansion of the surge tank capacity.

A quantitative impact assessment methodology was used for the impact assessment. This method makes use of the basic risk assessment approach of deriving an expression for risk from the product of likelihood (probability) and consequences.

9.2.1 Baseline Characterisation of the Environment

The baseline characterisation of the environment (biodiversity, geohydrology, wetlands, air quality and hydrology) included in Section 8 of this BAR is based on existing information on the environmental parameters of the area as well as monitoring reports as well as environmental databases.

It must be noted, that although baseline information has been given for the RBMR as a whole, that the baseline environment associated with the surge tanks capacity expansion project, should actually be viewed along with the changes that the RBMR plant already had on the baseline environment. The baseline environment for the proposed surge tanks capacity expansion project will therefore already have been impacted on because of the various construction and operation of RBMR infrastructure.

9.2.2 Identification of Key Issues

Key potential environmental risks have been identified as part of the impact assessment through the stakeholder engagement process as well as existing information and project description.

The identified potential positive and negative biophysical, socio-economic and cultural impacts are summarised in Table 9-1. It is noted that potential impacts associated with the surge tanks capacity expansion is located are mitigated through the implementation of approved designs as well as by complying with the requirements of existing environmental approvals.

Table 9-1: Summary of Potential Environmental Impacts Associated with the Proposed Development

Element of Environment	Potential Impact Descriptions
Socio-Economic	Possible limited and temporary job opportunities during the construction phase of the project. The operation of the project will be undertaken within the current RBMR structures
Hydrogeology	Possible, but unlikely groundwater contamination.
Surface water	Possible, but unlikely surface water contamination.
Air Quality	Possible, but unlikely impact on air quality in the area.
Noise	Possible generation of noise during the construction phase of the project.
Visual	It is not anticipated that any additional visual impacts will be associated with the proposed project.
Soils/Land Capability	Use/Land As the tanks will be located within the footprint of the RBMR, no loss of soil resource, change in land capability and land use due to the proposed project is expected.
Biodiversity	As the proposed tanks will be located within the footprint of the RBMR, no loss of biodiversity is expected as result of the construction and operation of the plant.
Wetland	There are no wetlands that will be impacted by the proposed project.

The DFFE Screening Tool classified the area as being an area of high biodiversity value. However, it must be noted that the actual location of the surge tanks capacity expansion project will be within the RBMR, which has been sterilised over time due to construction and operation activities already taking place at the plant. As such, the area is characterised by concrete slabs and tarred roads and plant infrastructure, with no vegetation available.

9.2.3 Quantitative Impact Rating (Significance)

The assessment of impacts was based on SRK's professional judgement, field observations and desk-top analysis.

The significance of potential impacts that may result from the proposed project was determined in order to assist decision-makers and is defined as a combination of the consequence of the impact occurring, including possible irreversibility of impacts and/or loss of irreplaceable resources, and the probability that the impact will occur.

The criteria used to determine impact consequence are presented in Table 9-2.

Table 9-2: Criteria used to determine the Consequence of the Impact

Rating	Definition of Rating	Score
A. Extent – the area over which the impact will be experienced		
Local	Confined to project or study area or part thereof (e.g. site)	1
Regional	The region, which may be defined in various ways, e.g. cadastral, catchment, topographic	2
(Inter) national	Nationally or beyond	3
B. Intensity – the magnitude of the impact in relation to the sensitivity of the receiving environment, considering the degree to which the impact may cause irreplaceable loss of resources		

Rating	Definition of Rating	Score
Low	Site-specific and wider natural and/or social functions and processes are negligibly altered	1
Medium	Site-specific and wider natural and/or social functions and processes continue albeit in a modified way	2
High	Site-specific and wider natural and/or social functions or processes are severely altered and/or irreplaceable resources ¹ are lost	3
C. Duration – the timeframe over which the impact will be reversed		
Short-term	Up to 2 years	1
Medium-term	2 to 15 years	2
Long-term	More than 15 years or irreversible	3

The combined score of these three criteria corresponds to a Consequence Rating, as follows:

Table 9-3: Method used to determine the Consequence Score

Combined Score (A+B+C)	3 – 4	5	6	7	8 – 9
Consequence Rating	Very low	Low	Medium	High	Very high

Once the consequence was derived, the probability of the impact occurring was considered, using the probability classifications presented in Table 9-4.

Table 9-4: Probability Classification

Probability – the likelihood of the impact occurring	
Improbable	< 40% chance of occurring
Possible	> 40% - 70% chance of occurring
Probable	> 70% - 90% chance of occurring
Definite	> 90% chance of occurring

The overall significance of impacts was determined by considering consequence and probability using the rating system prescribed in Table 9-5.

Table 9-5: Impact significance ratings

		Probability			
		Improbable	Possible	Probable	Definite
Consequence	Very Low	INSIGNIFICANT	INSIGNIFICANT	VERY LOW	VERY LOW
	Low	VERY LOW	VERY LOW	LOW	LOW
	Medium	LOW	LOW	MEDIUM	MEDIUM
	High	MEDIUM	MEDIUM	HIGH	HIGH
	Very High	HIGH	HIGH	VERY HIGH	VERY HIGH

Finally, the impacts were also considered in terms of their status (positive or negative impact) and the confidence in the ascribed impact significance rating. The prescribed system for considering impacts status and confidence (in assessment) is laid out in Table 9-6.

¹ Defined as important cultural or biological resource which occur nowhere else, and for which there are no substitutes.

Table 9-6: Impact status and confidence classification

Status of impact	
Indication whether the impact is adverse (negative) or beneficial (positive).	+ ve (positive – a 'benefit')
	– ve (negative – a 'cost')
Confidence of assessment	
The degree of confidence in predictions based on available information, SRK's judgment and/or specialist knowledge.	Low
	Medium
	High

The impact significance rating should be considered by authorities in their decision-making process based on the implications of ratings ascribed below:

- Insignificant: the potential impact is negligible and will not have an influence on the decision regarding the proposed activity/development.
- Very Low: the potential impact is very small and should not have any meaningful influence on the decision regarding the proposed activity/development.
- Low: the potential impact may not have any meaningful influence on the decision regarding the proposed activity/development.
- Medium: the potential impact should influence the decision regarding the proposed activity/development.
- High: the potential impact will affect the decision regarding the proposed activity/development.
- Very High: The proposed activity should only be approved under special circumstances.

10 Environmental Impact Assessment Results

Environmental impacts on the biophysical and socio-economic environment, which could potentially occur throughout the construction and operational phases of the proposed project are described in the following sections.

10.1 Preconstruction and Construction Phase

10.1.1 Socio Economic

The project will result in the generation of some employment during the construction phase. It is expected that contractors will be appointed by RBMR for the construction of the proposed surge tanks capacity expansion project. The contractors will be responsible for the recruitment of labour, both casual and specialised, through the Department of Labour.

During the construction phase, there will be limited additional employment opportunities that will be attributed to the surge tanks capacity expansion project. The positive impacts (creation of employment) are therefore expected to be of medium (+) significance.

The expansion of the surge tank capacity could potentially result in the following negative socio-economic impacts:

- Generation of dust potentially resulting in a health and nuisance impact;
- Impact on safety and security as a result of theft, the occurrence of additional trucks on the roads, uncontrolled lighting of fires on site, littering and driving irresponsibly;
- Health and safety risk as a result of the movement of construction vehicles increasing the risk of accidents; and
- Influx and unlawful occupation of the area by job seekers.

During the construction phase, the potential negative impacts on the socio-economic environment are expected to be of medium (-) to low (-) significance. With the implementation of mitigation measures provided in Table 10-1 which have been incorporated into the EMP, the significance of the socio-economic impacts can be reduced to be of low (-) to insignificant (-) significance.

The cumulative impact on the socio-economic environment during the construction phase of the surge tanks capacity expansion project will be negligible.

Table 10-1: Socio-Economic Impact Assessment Results for the Construction Phase

Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence	
<i>Possible boost in short term employment and local small business opportunities.</i>	Without mitigation	Regional	Medium	Medium-term	Medium	Definite	MEDIUM	+ve	High	
		2	2	2	6					
	Essential mitigation measures:									
	<ul style="list-style-type: none"> • RBMR will appoint contractors who will be responsible for recruitment. Where possible, encourage the local employment • Where possible, enforce a tender procedure requirement that bidders (contractors) commit to a recruitment process that includes a preference for local recruitment and promotion of local SMME's. 									
	With mitigation	Regional	Medium	Medium-term	Medium	Definite	MEDIUM	+ve	High	
		2	2	2	6					
	Impact:									
<i>Potential impact on safety and security because of theft, the occurrence of additional trucks on the roads, uncontrolled lighting of fires on site, littering and driving irresponsibly.</i>	Without mitigation	Regional	Medium	Medium-term	Medium	Probable	MEDIUM	- ve	High	
		2	2	2	6					
	Essential mitigation measures:									
	<ul style="list-style-type: none"> • Reduce speed limits to 40 km/h or less when driving. • No fires are allowed on the site, unless in areas demarked and managed for this purpose. • All workers will be made aware of fire risks. • All workers must be provided with Personal Protective Equipment (PPE) and RBMR and contractors must ensure that their personnel make use of PPE and get tested where necessary. 									
	With mitigation	Regional	Medium	Short-term	Low	Possible	VERY LOW	- ve	High	
		2	2	1	5					
Impact:										
<i>Health and safety risk because of the movement of vehicles increasing the risk of accidents</i>	Without mitigation	Regional	Medium	Short-term	Low	Probable	LOW	- ve	High	
		2	2	1	5					
	Essential mitigation measures:									
	<ul style="list-style-type: none"> • Reduce speed limits to 40 km/h or less. 									
	With mitigation	Regional	Low	Short-term	Very low	Improbable	INSIGNIFICANT	- ve	High	
		2	1	1	4					
Impact:										
		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence	

<i>Health risk due to contagious diseases (such as the Corona virus) due to working near each other</i>	Without mitigation	Regional	Medium	Medium-term	Medium	Probable	MEDIUM	- ve	High	
		2	2	2	6					
	Essential mitigation measures:									
	<ul style="list-style-type: none"> All workers will be made aware of risks associated with contagious diseases. All workers must be provided with PPE and RBMR and contractors must ensure that their personnel make use of PPE and get tested where necessary. Ensure that employees are provided with adequate health support, including the dissemination of the Health and Safety Policy. 									
	With mitigation	Regional	Medium	Medium-term	Medium	Possible	LOW	- ve	High	
		2	2	2	6					
Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence	
<i>Potential influx and unlawful occupation of the area by job seekers</i>	Without mitigation	Local	Low	Short-term	Very low	Probable	VERY LOW	- ve	High	
		1	1	1	3					
	Essential mitigation measures:									
	<ul style="list-style-type: none"> RBMR will appoint contractors who will be responsible for recruitment. Where possible, encourage the local employment Where possible, enforce a tender procedure requirement that bidders (contractors) commit to a recruitment process that includes a preference for local recruitment and promotion of local SMME's. 									
	With mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	- ve	Low	
		1	1	1	3					

10.1.2 Groundwater

The tanks for the surge tanks capacity expansion project will be located within the RBMR footprint area, which is characterised by concrete covered grounds and tarred roads. This will limit the potential impact on groundwater because of the construction activities of the surge tanks capacity expansion project.

Potential discharges to groundwater, and subsequent impact on the groundwater system, could potentially occur because of:

- The use of earth moving machinery and construction vehicles on site which poses the risk of chemical spillages including fuel and oils;
- Potential contamination of groundwater due to accidental damage to existing tanks, and release of content; and
- Improper storage and handling of hazardous materials.

The impacts on groundwater due to the expansion of the surge tanks capacity expansion project are expected to be of low (-) significance and can be mitigated to be of insignificant significance as provided in Table 10-2.

The cumulative impact on groundwater during the construction phase of the surge tanks capacity expansion will be negligible.

Table 10-2: Groundwater Impact Assessment Results for the Construction Phase

Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence	
<i>Local spillages of oils from vehicles and machinery leading to groundwater contamination</i>	Without mitigation	Local	Medium	Medium-term	Low	Probable	LOW	- ve	High	
		1	2	2	5					
	Essential mitigation measures:									
	<ul style="list-style-type: none"> • RMBR, where the surge tanks are located, is characterised by concrete covered grounds and tarred road which will limit the probability of infiltration to groundwater. • All spillages will need to be cleaned up as soon as practically possible. • Maintain construction vehicles and encourage contractors to follow best practice procedures of implementing a spill response system whereby employees and contractors report, react and manage all spills and leaks so that action can be taken to immediately minimise contamination to the groundwater. • Spill kits will be made available in areas of likely spillage. • All equipment utilising hydrocarbons will be stored on hard-standing surfaces. • Place oil traps under stationary machinery and dispose contaminated material (soil, etc.) at licensed sites only. • Ensure vehicles and equipment are in good working order and drivers and operators are properly trained. 									
	With mitigation	Local	Low	Medium-term	Very low	Possible	INSIGNIFICANT	- ve	High	
		1	1	2	4					
Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence	
<i>Improper storage and handling of hazardous materials leading to groundwater contamination</i>	Without mitigation	Local	Medium	Medium-term	Low	Probable	LOW	- ve	High	
		1	2	2	5					
	Essential mitigation measures:									
	<ul style="list-style-type: none"> • Surface bulk storage of hydrocarbons and hazardous materials must be situated in a dedicated area, which will include a bund or a drain where necessary to contain any spillages during the use, loading and off-loading of the substance. • All hydrocarbon and hazardous material storage containers will be stored within bunded areas which are watertight and able to contain 110% of the stored volume. • Bund areas must be impermeable • Contaminated water shall be pumped into a container for appropriate removal and disposal. • Regular inspections shall be carried out to ensure the integrity of the bund walls. • All servicing of earth moving equipment and vehicles shall be conducted in designated areas. 									
	With mitigation	Local	Low	Medium-term	Very low	Possible	INSIGNIFICANT	- ve	High	
		1	1	2	4					
Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence	

<i>Potential contamination of groundwater due to accidental damage to existing tanks, and release of content.</i>	Without mitigation	Regional	Medium	Medium-term	Medium	Probable	MEDIUM	- ve	High
		2	2	2	6				
	Essential mitigation measures:								
	<ul style="list-style-type: none"> Contaminated runoff will be contained where necessary. No direct discharge of polluted water to the environment is permitted. Maintain current monitoring and management of the overall RBMR. RBMR shall make use of the existing stormwater management infrastructure to ensure the clean and dirty water segregation. Remediation of spillages must be conducted on a continual basis. Spill kits to be made available at areas of possible spillages of hazardous substances. 								
With mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	- ve	High	
	1	1	1	3					

10.1.3 Surface Water

The potential impacts on surface water during the construction phase of the proposed project are as follows:

- Accidental spillages of hazardous substances from construction vehicles used during construction, as well as from hazardous storage areas.
- Contamination of runoff by poor materials/waste handling practices;
- Debris from poor handling of materials and/or poor waste management practises;
- Contaminated dirty water runoff to surrounding areas resulting in the impact on local surface water quality;
- Potential contamination of water resources due to accidental damage to existing tanks, and release of content; and
- Increase of surface runoff and potentially contaminated water that needs to be controlled in the areas where site clearing occurred.

It is expected that without the implementation of mitigation measures, the impacts on the surface water quality and the hydrology of the area will be of medium (-) significance, which can be reduced to low (-) significance with the implementation of mitigation measures.

The cumulative impact on surface water during the construction phase of the surge tanks capacity expansion project will be negligible.

The no-go option will mean that the surge tanks capacity expansion project will not be implemented. This means that the above-mentioned possible surface water impacts associated with the construction phase of the project will not occur. However, it must be noted that the aim of the proposed project is to reduce the possibility of overflow of tanks, which, if not implements will result in contamination of water resources.

Table 10-3: Surface Water Impact Assessment Results for the Construction Phase

Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>Potential deterioration in water quality because of accidental spillages of hazardous substances such as hydrocarbons from vehicles and machinery used during the construction of the surge tanks.</i>	Without mitigation	Regional	Medium	Medium-term	Medium	Probable	MEDIUM	- ve	High
		2	2	2	6				
	Essential mitigation measures:								
<ul style="list-style-type: none"> • RBMR shall make use of the existing stormwater management infrastructure to ensure the clean and dirty water segregation. • Spill kits to be made available at areas of possible spillages of hazardous substances. • Remediation of spillages must be conducted on a continual basis. • Contaminated runoff will be contained and re-used where necessary. • No direct discharge of polluted water to the environment is permitted. 									
	With mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	- ve	High
		1	1	1	3				
Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>Possible contaminated dirty water runoff to surrounding areas resulting in the impact on local surface water quality</i>	Without mitigation	Regional	Medium	Medium-term	Medium	Probable	MEDIUM	- ve	High
		2	2	2	6				
	Essential mitigation measures:								
<ul style="list-style-type: none"> • No washing of vehicles shall be allowed outside demarcated areas. Washing bays for vehicles and other equipment will be clearly demarcated and will not be allowed to contaminate any surface runoff. • Maintain current monitoring and management of the overall RBMR. • RBMR shall make use of the existing stormwater management infrastructure to ensure the clean and dirty water segregation. • Remediation of spillages must be conducted on a continual basis. • Spill kits to be made available at areas of possible spillages of hazardous substances. • No activities shall be allowed within 100 metres from the nearby streams and 500 meters from riparian areas without consent from the DWS. 									
	With mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	- ve	High
		1	1	1	3				
Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>Poor stormwater management leading to runoff from stockpiled material removed causing pollution of the water resources.</i>	Without mitigation	Regional	Medium	Medium-term	Medium	Probable	MEDIUM	- ve	High
		2	2	2	6				
	Essential mitigation measures:								
<ul style="list-style-type: none"> • RBMR shall make use of the existing stormwater management infrastructure to ensure the clean and dirty water segregation. 									

	With mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	- ve	High
		1	1	1	3				
Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>Debris from poor handling of materials and/or waste blocking watercourses may result in flow impediment and pollution</i>	Without mitigation	Regional	Medium	Medium-term	Medium	Probable	MEDIUM	- ve	High
		2	2	2	6				
	Essential mitigation measures:								
<ul style="list-style-type: none"> Contaminated runoff will be contained and re-used where necessary. No direct discharge of polluted water to the environment is permitted. 									
	With mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	- ve	High
		1	1	1	3				
Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>Potential contamination of water resources due to accidental damage to existing tanks, and release of content.</i>	Without mitigation	Regional	Medium	Medium-term	Medium	Probable	MEDIUM	- ve	High
		2	2	2	6				
	Essential mitigation measures:								
<ul style="list-style-type: none"> Contaminated runoff will be contained where necessary. No direct discharge of polluted water to the environment is permitted. Maintain current monitoring and management of the overall RBMR. RBMR shall make use of the existing stormwater management infrastructure to ensure the clean and dirty water segregation. Remediation of spillages must be conducted on a continual basis. Spill kits to be made available at areas of possible spillages of hazardous substances. 									
	With mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	- ve	High
		1	1	1	3				

10.1.4 Air Quality and Climate Change

The movement of construction vehicles and earth moving machinery will likely result in an increase in nuisance dust, PM₁₀ and PM_{2.5}. There is also potential for increase in carbon emissions and ambient air pollution due to the movement of vehicles and construction machinery. It is expected that the implementation of dust suppressing mitigation measures will result in the reduction in nuisance dust.

The impacts on air quality is calculated to be of low (-) significance and can be reduced to insignificant (-) significance when the mitigation measures have been implemented.

The movement of vehicles and earth moving machinery may result in the production of carbon dioxide (Green House Gas), which may have an impact on the climate in the area. The impact on climate change was calculated to be of very low (-) significance and can be mitigated to insignificance (-) significance.

A summary of the air quality and climate change impact assessment results (before and after mitigation) as well as the mitigation measures required to avoid/minimise significance of the impacts are provided in Table 10-4.

The cumulative impact on air quality and climate change during the construction phase of the surge tanks capacity expansion project will be negligible.

The no-go option will result in no additional air quality and climate change impacts since this option means that the air quality and climate change impacts associated with the construction of the surge tanks capacity expansion project will not occur.

Table 10-4: Air Quality Impact Assessment Results for the Construction Phase

Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>Possible increase in dust generation, PM₁₀ and PM_{2.5}, because of earthworks, operation of heavy machinery, and vehicle movement.</i>	Without mitigation	Regional	Medium	Short-term	Low	Probable	LOW	- ve	High
		2	2	1	5				
	Essential mitigation measures:								
<ul style="list-style-type: none"> Mitigation measures must be implemented to reduce dust levels from the entrainment of dust. These measures will range from watering of roads and/or application of a chemical dust suppressant. A speed limit of 40 km/h or less shall apply to limit vehicle entrained dust from the unpaved roads. All equipment used in the construction phase must undergo maintenance to ensure the functioning of the exhaust systems to reduce excessive emissions and limit air pollution. 									
With mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	- ve	High	
	1	1	1	3					
Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>Increase in carbon emissions and ambient air pollutants (NO₂ and SO₂) because of movement of vehicles and operation of machinery/equipment.</i>	Without mitigation	Regional	Medium	Short-term	Low	Probable	LOW	- ve	High
		2	2	1	5				
	Essential mitigation measures:								
<ul style="list-style-type: none"> Mitigation measures may be implemented to reduce dust levels from the entrainment of dust. These measures will range from watering of roads and/or application of a chemical dust suppressant. A speed limit of 40 km/h or less shall apply to limit vehicle entrained dust from the unpaved roads. All equipment used in the construction phase must undergo maintenance to ensure the functioning of the exhaust systems to reduce excessive emissions and limit air. 									
With mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	- ve	Medium	
	1	1	1	3					
Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>Emissions of Green House Gases because of the use of vehicles and machinery used during the construction activities.</i>	Without mitigation	Regional	Low	Short-term	Very low	Probable	VERY LOW	- ve	High
		2	1	1	4				
	Essential mitigation measures:								
<ul style="list-style-type: none"> All the vehicles shall undergo maintenance on a regular basis to ensure the combustion engine vehicle efficiency. 									
With mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	- ve	High	
	1	1	1	3					

10.1.5 Noise

The use of construction vehicles and machinery may result in an increase in ambient noise in the immediate vicinity of the project. However, due to the proposed location of the surge tanks capacity expansion project, where significant activities are already taking place at the RBMR, the significance of the increased ambient noise levels is expected to be of low (-) significance without the implementation of mitigation measures and will be reduced to insignificant with the implementation of mitigation measures. Table 10-5 provides a summary of the noise impact assessment results before and after implementation of mitigation measures, and mitigation measures that can be implemented to reduce the significance of the impacts.

The cumulative noise impacts during the construction phase of the surge tanks capacity expansion project will be negligible.

The no-go option will result in no additional noise impacts since this option means that the nuisance noise impacts associated with the construction of the surge tanks capacity expansion project will not occur.

Table 10-5: Noise Impact Assessment Results for the Construction Phase

Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>The use of vehicles and machinery during the construction phase may generate nuisance noise in the immediate vicinity</i>	Without mitigation	Local	Medium	Medium-term	Low	Probable	LOW	- ve	High
		1	2	2	5				
	Essential mitigation measures:								
	<ul style="list-style-type: none"> • Correct Personal Protective Equipment (PPE) must always be worn by the personnel at the site. • All equipment should be provided with standard mufflers. Muffling units on vehicles and equipment must be kept in good working order. • All equipment must be kept in good working order • Equipment must be operated within specifications and capacity (e.g., no overloading of machines). • Hauling vehicles with low noise levels to be used and regular maintenance of equipment must be undertaken. 								
	With mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	- ve	High
		1	1	1	3				

10.1.6 Visual

The following potential impacts on the visual character of the area because of the proposed project are envisaged during the construction phase:

- Visual intrusion because of the movement of machinery; and
- Indirect visual impact due to dust generation, because of the movement of vehicles and materials, to and from the site area.

It is also expected that due to the proposed location of the surge tanks capacity expansion project, where significant activities associated with the RBMR are already taking place, the significance of the visual impacts will be of low (-) and very low (-) significance before the implementation of mitigation measures. With the implementation of mitigation measures, the significance of the impacts can be reduced to be insignificant as summarised in Table 10-6.

The cumulative visual impact during the construction phase will be negligible.

The no-go option will result in no additional visual impacts since this option means that the visual impacts associated with the construction of the surge tanks capacity expansion project will not occur.

Table 10-6: Visual Impact Assessment Results for the Construction Phase

Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>Visual intrusion because of the movement of machinery and the establishment of the required infrastructure.</i>	Without mitigation	Local	Medium	Medium-term	Low	Probable	LOW	- ve	High
		1	2	2	5				
	Essential mitigation measures:								
	<ul style="list-style-type: none"> Where possible, movement of vehicles and construction machinery must be kept to a minimum. 								
	With mitigation	Local	Low	Medium-term	Very low	Possible	INSIGNIFICANT	- ve	High
		1	1	2	4				
Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>Indirect visual impact due to dust generation because of the movement of vehicles and materials, to and from the site area.</i>	Without mitigation	Local	Medium	Short-term	Very low	Probable	VERY LOW	- ve	High
		1	2	1	4				
	Essential mitigation measures:								
	<ul style="list-style-type: none"> Dust control measures shall be implemented to make sure nuisance dust is kept at a minimum. 								
	With mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	- ve	High
		1	1	1	3				

10.1.7 Soils, Land Use and Land Capability

Prior to the establishment of the RBMR, where the surge tanks capacity expansion project will be located, the land was mainly utilised for agricultural purposes by nearby farmers. With the establishment of the RBMR the land capability and land use of these areas was drastically minimised. The establishment of the RBMR included the stripping of the topsoil for construction and paving of the ground with concrete and tar resulting in the loss of soil potential.

This means that the expansion of the surge tank capacity project will have no impact on soils, land use and land capability. As such, there will be no cumulative impact on soils because of the surge tank capacity project. The same applies to the no-go option.

The expansion of the surge tank capacity is also expected to not have any cumulative impact on biodiversity and the same applies to the no-go option.

10.1.8 Heritage

The surge tanks capacity expansion project will be located within an area that was stripped of any heritage resources. It is therefore expected that the expansion of the surge tank capacity project will have no impact on any heritage resources. There will be no cumulative impact on heritage resources due to the surge tank capacity project. The same applies to the no-go option.

10.1.9 Wetland

There are no wetlands located on or within 500m of the proposed surge tanks capacity expansion project as such no impacts on aquatic ecosystems are anticipated for both the proposed option and the no-go option.

10.1.10 Traffic

Most of the traffic will be associated with the delivery of construction material to the site. The material will be transported to the site via public roads, but that will only require a few trucks a day. Therefore, limited impact on public traffic is expected. The significance of the impacts on traffic was classified as medium (-) significance, which can be mitigated to very-low (-) and insignificant (-).

The cumulative impact on traffic during the construction phase will be negligible.

The results of the quantitative traffic impact assessment for the construction phase are provided in Table 10-7.

Table 10-7: Traffic Impact Assessment Results for the Construction Phase

Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence	
<i>Increase in traffic volumes due to transportation of materials may lead to an increase in traffic congestion on roads around the project area increasing the chances of road accidents.</i>	Without mitigation	Regional	Medium	Medium-term	Medium	Probable	MEDIUM	– ve	High	
		2	2	2	6					
	Essential mitigation measures:									
	<ul style="list-style-type: none"> Speed limits will be reduced to 40 km/h or less to reduce dust and noise generation. All the vehicles shall undergo maintenance on a regular basis to ensure the combustion engine vehicle efficiency. 									
	With mitigation	Regional	Low	Medium-term	Low	Possible	VERY LOW	– ve	High	
		2	1	2	5					
Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence	
<i>The increase in vehicles results in an increased potential for road degradation of the road network in the vicinity of the project.</i>	Without mitigation	Regional	Medium	Medium-term	Medium	Probable	MEDIUM	– ve	High	
		2	2	2	6					
	Essential mitigation measures:									
	<ul style="list-style-type: none"> Speed limits will be reduced to 40 km/h or less to reduce dust and noise generation. All the vehicles shall undergo maintenance on a regular basis. 									
	With mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	– ve	High	
		1	1	1	3					

10.1.11 Biodiversity

The surge tanks capacity expansion project will be located in an area where the clearance of vegetation has already been undertaken as part of the construction RBMR. This means that the proposed construction of the surge tanks capacity expansion project will not have significant additional impacts on biodiversity in the area. Anticipated impacts will include:

Proliferation of alien invasive species due to ineffective management and control of alien invasive plant species.

Movement of construction vehicles and machinery may result in collision with fauna, resulting in loss of fauna.

The significance of the impacts on biodiversity was classified as insignificant (-) before and after implementation of mitigation measures. The cumulative impact on traffic during the construction phase will also be negligible.

The results of the quantitative biodiversity impact assessment for the construction phase are provided in Table 10-8.

Table 10-8: Biodiversity Impact Assessment Results for the Construction Phase

Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>Proliferation of alien invasive species due to ineffective management and control of alien invasive plant species.</i>	Without mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	– ve	High
		1	1	1	3				
	Essential mitigation measures:								
<ul style="list-style-type: none"> Removal of the alien and weed species encountered on the property must continue to take place. Care should be taken with the choice of herbicide to ensure that no additional impact and loss of indigenous plant species occurs due to the herbicide used. 									
	With mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	– ve	Low
		1	1	1	3				
Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>Movement of construction vehicles and machinery may result in collision with fauna, resulting in loss of fauna.</i>	Without mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	– ve	High
		1	1	1	3				
	Essential mitigation measures:								
<ul style="list-style-type: none"> It is recommended that a speed limit of 40km/h or less is implemented on all roads running through the study area in order to minimise risk to fauna from vehicles. 									
	With mitigation	Local	Low	Short-term	Very low	Improbable	INSIGNIFICANT	– ve	High
		1	1	1	3				

10.1.12 Waste Management

Poor waste management practices during the construction phase will result in:

- Contamination of surface runoff resulting in the deterioration of water quality of the watercourse.
- Disposal of hazardous waste including hydrocarbon contaminated soils, rags etc. could result in the contamination of surface runoff resulting in the deterioration of water quality of the watercourse.

The potential impacts from improper management of waste are expected to have a medium (-) impact, and these can be mitigated to insignificant (-). The cumulative impacts from waste management activities are expected to be insignificant.

The results of the waste management quantitative impact assessment for the construction phase are provided in Table 10-9.

Table 10-9: Waste Management Impact Assessment Results for the Construction Phase

Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>Poor waste management during construction could result in the contamination of surface runoff resulting in the deterioration of water quality of the watercourse.</i>	Without mitigation	Regional	Medium	Medium-term	Medium	Probable	MEDIUM	- ve	High
		2	2	2	6				
	<p>Essential mitigation measures:</p> <ul style="list-style-type: none"> Waste management will be undertaken in line with the Anglo-American Platinum's Zero Waste to Landfill (ZW2L) goal, ensuring re-use and recycling of waste as much as possible. <p>Where re-use, recycling or disposal of waste is required, the following shall apply:</p> <p><i>Separation of waste</i></p> <ul style="list-style-type: none"> All waste shall be separated into general waste and hazardous waste. Hazardous waste shall not be mixed with general waste General waste can further be separated in waste that can be recycled and/or reused, if possible No littering shall be allowed in and around the site, enough bins shall be provided for the disposal of waste. Where necessary dedicate a storage area on site for collection of waste. <p><i>Storage of waste</i></p> <ul style="list-style-type: none"> General waste will be collected in an adequate number of litter bins located throughout the site. Bins must have lids in order to keep rainwater out. Bins shall be emptied regularly to prevent the bins from overflowing. All work areas shall always be kept clean and tidy. All waste management facilities will be maintained in good working order. Waste shall be stored in demarcated areas according to type of waste. Flammable substances must be kept away from sources of ignition and from oxidizing agents. No builder's rubble shall be disposed of to the riparian area. If builder's rubble is not removed immediately it shall be stockpiled outside the 1:50 year flood line and outside the sensitive riparian areas. Demolition waste and surplus concrete shall be re-used, recycled or disposed (last resort) of responsibly. Waste shall not be buried or burned on site. <p><i>Disposal of general waste</i></p> <ul style="list-style-type: none"> No dumping shall take place in or near the project site. All general waste shall be re-used, recycled or disposed (last resort) of to a licensed landfill site. Demolition waste and builder's rubble shall be used as cover material at an appropriate licensed landfill site. 								
With mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	- ve	High	
	1	1	1	3					
Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>Stockpiling material from the construction activities may result in secondary pollution and contamination of the watercourses.</i>	Without mitigation	Regional	Medium	Medium-term	Medium	Probable	MEDIUM	- ve	High
		2	2	2	6				

	<p>Essential mitigation measures:</p> <ul style="list-style-type: none"> • If stockpiles are not going to be used immediately the stockpiles shall be rehabilitated to prevent erosion; • Runoff from stockpiles shall be detained in order to support growth of vegetation; • Runoff from the stockpiles shall be suitably managed to ensure that the runoff volumes and velocities are like pre disturbed levels; • Vegetation shall be used to promote infiltration of water into the stockpile instead of increasing runoff; • A monitoring programme will be implemented if the stockpiles are not used within the first year whereby the vegetation of the stockpiles is monitored in terms of basal cover and species diversity; • If it is noticed that the vegetation on the stockpiles is not sustainable, appropriate corrective actions shall be taken to rectify the situation; • Stockpiles shall be maintained until the topsoil is required for rehabilitation purposes; • Topsoil stockpiles shall be monitored regularly to identify alien vegetation, which shall be removed as soon as possible to prevent further distribution of any alien vegetation. 								
	With mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	- ve	High
		1	1	1	3				
Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>Disposal of hazardous waste including hydrocarbon contaminated soils, rags etc. could result in the contamination of surface runoff resulting in the deterioration of water quality of the watercourse.</i>	Without mitigation	Regional	Medium	Medium-term	Medium	Probable	MEDIUM	- ve	High
		2	2	2	6				
	<p>Essential mitigation measures:</p> <ul style="list-style-type: none"> • No dumping shall be allowed in or near the site. • Hazardous containers shall be re-used, recycled or disposed (last resort) of at an appropriate licensed site. • Hazardous waste will be removed and managed by an approved service provider. • A safe disposal certificate will be provided by the approved service provider as proof of responsible disposal of hazardous waste. • The safe disposal certificates shall be stored and provided on request. 								
	With mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	- ve	High
		1	1	1	3				

10.2 Operational Phase

Impacts during the operational phase will result largely due to improper or inadequate maintenance of the surge tanks and where there are operational failures which may result in the leaking of or overflow of the tanks.

10.2.1 Groundwater

The surge tanks capacity expansion project will be located within the RBMR footprint area, which is lined with concrete. This will limit the potential impact on groundwater because of the operation of the surge tanks capacity expansion project.

Potential leaking to ground surface, and subsequent impact on the groundwater system, could potentially occur should there be operation and maintenance failures. The impact of operational activities on groundwater is classified to be of low (-) significance, which can be mitigated to very low (-).

The project itself can be viewed as a form of mitigation. The groundwater monitoring reports show that there is groundwater contamination due to activities at the RBMR. The expansion of the surge tank capacity will result in reduced chances of tank overflows and associated potential groundwater contamination. Should the project not be implemented, it is expected that the groundwater impacts will be of high significance as provided in Table 10-11.

Table 10-10: Quantitative Groundwater Impact Assessment Results for the Operational Phase

Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>Potential overflow from the surge tanks due to failure (electrical or pump etc) leading to groundwater contamination.</i>	Without mitigation	Local	Medium	Medium-term	Low	Probable	LOW	- ve	High
		1	2	2	5				
	<p>Essential mitigation measures:</p> <ul style="list-style-type: none"> • The surge tanks shall be regularly inspected and where required maintenance must be done as soon as possible; • Anglo American shall ensure that required services are sufficient for the additional surge tanks and should it be required, spare equipment such as pumps must be kept on site; • An inspection programme shall be implemented to ensure that all the mechanical equipment is inspected regularly to ensure the optimal functioning of the equipment. • Surge tanks must be provided with concrete foundations to minimise potential for ingress into groundwater. • Bunding areas shall be provided for surge tank areas. • Spill kits shall be readily available to clean up spillages. • Contaminated soil shall be removed and treated, re-used or disposed of to an appropriate licensed landfill site or can be removed by a service provider that is qualified to clean the soil. • It is expected that adequate stormwater management has been incorporated into the design of the RBMR to prevent contamination of water resources from dirty water. • No direct discharge of polluted water to the environment is permitted, other than may be provided for in the RBMR Water Use Licence, and under appropriate control in terms of the RBMR Water Use Licence. 								
With mitigation	Local	Low	Short-term	Very low	Probable	VERY LOW	- ve	High	
	1	1	1	3					

Table 10-11: Quantitative Groundwater Impact Assessment Results for the Operational Phase – no go option

Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>Potential overflow from the surge tanks due to failure (electrical or pump etc) leading to groundwater contamination.</i>	Without mitigation	Regional	Medium	Long-term	High	Definite	HIGH	– ve	High
		2	2	3	7				
	Essential mitigation measures:								
	<ul style="list-style-type: none"> • The surge tanks shall be regularly inspected and where required maintenance must be done as soon as possible. • Anglo American shall ensure that required services are sufficient for the surge tanks and should it be required, spare equipment such as pumps must be kept on site; • An inspection programme shall be implemented to ensure that all the mechanical equipment is inspected regularly to ensure the optimal functioning of the equipment. • Bunding areas shall be provided for surge tank areas. • Spill kits shall be readily available to clean up spillages. • Contaminated soil shall be removed and treated, re-used or disposed of to an appropriate licensed landfill site or can be removed by a service provider that is qualified to clean the soil. • No direct discharge of polluted water to the environment is permitted, other than may be provided for in the RBMR Water Use Licence, and under appropriate control in terms of the RBMR Water Use Licence. 								
	With mitigation	Local	Medium	Medium-term	Low	Definite	MEDIUM	– ve	Low
		1	2	2	5				

10.2.2 Surface Water

The potential impacts on surface water during the operational phase of the proposed project will be because of potential overflow from the surge tanks due to failure (electrical etc) to surrounding areas resulting in the impact on local surface water quality.

It is expected that without the implementation of mitigation measures, the impacts on the hydrology will be of medium-low (-) significance, which can be reduced to very low (-) significance with the implementation of mitigation measures.

As mentioned above, the project itself can be viewed as a mitigation and the expansion of the surge tank capacity will result in reduced chances of tank overflows and associated potential surface water contamination. Should the project not be implemented, it is expected that the surface water impacts will be of high significance as shown in .

The results of the quantitative impact assessment for the operational phase are provided in Table 10-3.

Table 10-12: Quantitative Surface Water Impact Assessment Results for the Operational Phase

Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>Potential overflow from the surge tanks due to failure (electrical or pump etc).</i>	Without mitigation	Local	Medium	Medium-term	Low	Probable	LOW	– ve	High
		1	2	2	5				
	Essential mitigation measures:								
<ul style="list-style-type: none"> The surge tanks shall be regularly inspected and where required maintenance must be done as soon as possible; Anglo American shall ensure that required services are sufficient for the additional surge tanks and should it be required, spare equipment such as pumps must be kept on site; An inspection programme shall be implemented to ensure that all the mechanical equipment is inspected regularly to ensure the optimal functioning of the equipment. Bunding areas shall be provided for surge tank areas. Spill kits shall be readily available to clean up spillages. Contaminated soil shall be removed and treated, re-used or disposed of to an appropriate licensed landfill site or can be removed by a service provider that is qualified to clean the soil. It is expected that adequate stormwater management has been incorporated into the design of the RBMR in order to prevent contamination of water resources from dirty water. No direct discharge of polluted water to the environment is permitted, other than may be provided for in the RBMR Water Use Licence, and under appropriate control in terms of the RBMR Water Use Licence. 									
With mitigation	Local	Low	Short-term	Very low	Possible	INSIGNIFICANT	– ve	High	
	1	1	1	3					

Table 10-13: Quantitative Surface Water Impact Assessment Results for the Operational Phase – No-go Option

Impact:		Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
<i>Potential overflow from the surge tanks due to failure (electrical or pump etc).</i>	Without mitigation	Regional	Medium	Long-term	High	Definite	HIGH	– ve	High
		2	2	3	7				
	Essential mitigation measures:								
<ul style="list-style-type: none"> The surge tanks shall be regularly inspected and where required maintenance must be done as soon as possible; Anglo American shall ensure that required services are sufficient for the surge tanks capacity expansion and should it be required, spare equipment such as pumps must be kept on site; An inspection programme shall be implemented to ensure that all the mechanical equipment is inspected regularly to ensure the optimal functioning of the equipment. Bunding areas shall be provided for surge tank areas. Spill kits shall be readily available to clean up spillages. Contaminated soil shall be removed and treated, re-used or disposed of to an appropriate licensed landfill site or can be removed by a service provider that is qualified to clean the soil. 									

	<ul style="list-style-type: none"> It is expected that adequate stormwater management has been incorporated into the design of the RBMR in order to prevent contamination of water resources from dirty water. No direct discharge of polluted water to the environment is permitted, other than may be provided for in the RBMR Water Use Licence, and under appropriate control in terms of the RBMR Water Use Licence. 								
	With mitigation	Regional	Medium	Long-term	High	Definite	HIGH	- ve	High
		2	2	3	7				

10.3 Decommissioning

It is not expected that the tanks will be decommissioned in the near future, and should decommissioning be required, the impacts associated with the process will be similar to the ones associated with the construction phase of the project. It is expected that should decommissioning be required, an EIA will be conducted in compliance with the environmental legislation applicable at that time. As such, no impact assessment was conducted for the decommissioning and closure phase of the project.

10.4 Cumulative Impacts

Incomparable activities can result in several complex effects on the natural biophysical and social environment. These impacts are mainly identified as direct and immediate effects on the environment by a single entity affecting a variable of the environment. These direct impacts have the potential to combine and interact with other activities, depending on the surrounding environmental state and land use. These impacts may aggregate or interact with other impacts to cause additional effects, not easily quantified when assessing an individual entity.

The NEMA, 2014, specifically requires that cumulative impacts be assessed. This section provides a description and analysis of the potential cumulative effects of the proposed surge tanks capacity expansion, and past and present projects hereby considering the effects of any changes on the:

- Biophysical; and
- Socio – Economic conditions.

For the analysis of cumulative effects to be utilised as a useful tool for decision makers and I&APs, it must be limited to the effects that can be meaningfully evaluated, rather than expanding on resources or receptors that are no longer affected by the development or are not of interest to the I&APs. Two important aspects require consideration prior to the evaluation of cumulative effects:

- The determination of an appropriate spatial and temporal boundaries for evaluation of cumulative effects of the project; and
- The evaluation of relevant projects for consideration in the cumulative effects' analysis.

Spatial and temporal boundaries for analysis of cumulative effects are dependent on several factors, including:

- The size and nature of the project and its potential effects;
- The size, nature and location of past and (known) future projects and activities in the area,
- The aspect of the environment impacted by the cumulative effect; and
- The period of occurrence of effects.

The spatial extent of the cumulative impact analysis is generally aligned with the zone of influence of the project and other projects in the vicinity. Most impact will be localised; however, others may be experienced on a regional scale. This is taken into consideration during the assessment of cumulative impacts. It is reasonably straightforward to identify significant past and present projects and activities that may interact with the surge tanks capacity expansion project to produce cumulative impacts, and in many respects, these are taken into account in the descriptions of the biophysical and socio-economic baseline.

10.4.1 Hydrological and Surface Water Impacts

The potential groundwater and surface water quality impacts associated with the construction and operation of the surge tanks capacity expansion project relate to the potential contamination because of leakages from vehicles and machinery as well as potential overflow of the tanks due to failures. Mitigation measures have been proposed for the impacts on ground water and surface water contamination. It is expected that with the implementation of the mitigation measures the impacts will be reduced to an acceptable level. The hydrological and surface water cumulative impacts resulting from the construction and operation of the surge tanks capacity expansion project will be negligible.

10.4.2 Air Quality Impacts

Most of the land use in the vicinity of the RBMR where the surge tanks capacity expansion project is located is mostly industrial and mining in nature; it is known that pollutants also enter the environment from these sources. The potential air quality impacts associated with the construction and operation of the surge tanks capacity expansion project relate to the potential generation of PM_{2.5}, PM₁₀ and fugitive dust emissions because of vehicular movements.

Mitigation measures have been proposed to mitigate these adverse impacts. It is expected that the implementation of these mitigation measures will reduce this impact to an acceptable standard and that the cumulative air quality impacts from the construction and operation of the surge tanks capacity expansion project will be negligible.

10.4.3 Noise Impacts

The potential noise nuisance associated with the construction and operation of the surge tanks capacity expansion project relates to the movement of vehicles and operation of machinery on site. Mitigation measures have been proposed to avoid and/or reduce the nuisance noise impacts. It is expected that with the implementation of the mitigation measures this impact will be reduced to an acceptable level.

Most of the land use in the vicinity of the RBMR where the surge tanks capacity expansion is located in an industrial and mining environment, land uses associated with significant nuisance noise levels. It is anticipated that the cumulative noise impacts from the construction and operation of the surge tanks capacity expansion project will be negligible.

11 Assumptions, uncertainties and gaps in knowledge

11.1 Assumptions

The EIA team assumed that no specialist studies will be required as has been agreed to with the DEDECT during the pre-application meeting. The information used by the EAP team was from existing information from other processes, environmental databases, monitoring reports and municipal IDPs and SDFs. All the data and information are assumed to be accurate and applicable. It is also assumed that the applicant will comply with all legislation pertaining to the activities of this proposed project and that all permits and license that may be required will be identified and applied for prior to commencement of construction activities.

The public involvement process has been sufficiently effective in identifying the critical issues needing to be addressed in the BAR / EMPr Report by the EAP. The public involvement process has sought to involve key I&APs, including the Competent Authority (DEDECT). Wherever possible the information requested, and comments raised by I&AP's has been sufficiently addressed and incorporated into the BAR / EMPr Report for review and comment. These requests and any further comments will be tracked and recorded in the CRR contained in Appendix C 5.

SRK assumes that RBMR will implement the measures and will adhere to any monitoring procedures contained in the EMPr. A monitoring and evaluation system, including auditing, will be established and operationalised to track the implementation of the EMPr ensuring that management measures are effective to avoid, minimise and mitigate impacts and that corrective action is being undertaken to address shortcomings and/or non-conformances.

11.2 Limitations

No specialist studies were conducted as part of the EIA and the identification and assessment of the significance of potential impacts was based on available information, knowledge of the project area and experience of the EAP team. Due to the location of the proposed surge tanks capacity expansion project, all identified impacts on the environment are deemed to have a minimal effect and were assessed using the professional judgement of the SRK project team.

12 Environmental Management Programme

The project specific EMPr for the construction and operation of the surge tanks capacity expansion project has been included in Appendix F. The mitigation measures included in the EMPr are deemed adequate to minimise and/or avoid degradation of the environment that may occur because of the proposed surge tanks capacity expansion project.

13 Environmental Impact Statement

This section of the report presents the outline of the key findings of the Impact Assessment. A Basic Environmental Impact Assessment has been conducted in accordance with the NEMA regulations which included the required PPP aimed at the key Organs of State and the identified I&APs. Where potential biophysical or social impacts have been identified, mitigation and management measures have been proposed to control and monitor the magnitude of impacts associated with the various aspects of the proposed project.

The identified impacts are manageable through the implementation of mitigation measures contained in the EMPr.

13.1 Summary of Key Findings of the EIA

Since the area where the proposed surge tanks capacity expansion project is located is on the RBMR footprint, the study found that the construction and operation of the surge tanks capacity expansion project will not have additional adverse impacts on the environment (biodiversity, socio-economic environment, visual, noise, wetlands, air quality and hydrology).

It is not expected that the tanks will be decommissioned in the near future, and should decommissioning be required, the impacts associated with the process will be similar to the ones associated with the construction phase of the project. It is expected that should decommissioning be required, an EIA will be conducted in compliance with the environmental legislation applicable at that time. As such, no impact assessment was conducted for the decommissioning and closure phase of the project.

The potential impacts evident from the detailed impact assessment (Section 10) of the proposed project are both positive and negative in nature and can be managed to acceptable levels. Table 13-1 provides a summary of findings from the impact assessment.

Table 13-1: Summary of Potential Environmental Impacts Associated with the surge tanks capacity expansion project

PHASE	ASPECT	NATURE OF POTENTIAL IMPACT/RISK	ENVIRONMENTAL IMPACT SIGNIFICANCE BEFORE MITIGATION	ENVIRONMENTAL IMPACT SIGNIFICANCE AFTER MITIGATION
CONSTRUCTION PHASE	Social-economic	<i>Possible boost in short term employment and local small business opportunities.</i>	Medium (+)	Medium (+)
		<i>Potential impact on safety and security, the occurrence of additional trucks on the roads, uncontrolled lighting of fires on site, littering and driving irresponsibly.</i>	Medium (-)	Very-Low (-)
		<i>Health and safety risk because of the movement of vehicles increasing the risk of accidents</i>	Low (-)	Insignificant (-)
		<i>Health risk due to contagious diseases (such as the Corona virus) due to working near each other</i>	Medium (-)	Low (-)
		<i>Potential unlawful occupation of surrounding areas by job seekers.</i>	Very-Low (-)	Insignificant (-)
	Groundwater	<i>Local spillages of oils from vehicles and machinery leading to groundwater contamination.</i>	Low (-)	Insignificant (-)
		<i>Improper storage and handling of hazardous materials leading to groundwater contamination.</i>	Low (-)	Insignificant (-)
		<i>Potential contamination of groundwater due to accidental damage to existing tanks, and release of content.</i>	Medium (-)	Insignificant (-)
	Surface Water Quality	<i>Potential deterioration in water quality because of accidental spillages of hazardous substances such as hydrocarbons from vehicles and machinery used during the construction of the surge tanks.</i>	Medium (-)	Insignificant (-)
		<i>Potential contamination of water resources due to accidental damage to existing tanks, and release of content.</i>	Medium (-)	Insignificant (-)
		<i>Possible contaminated dirty water runoff to surrounding areas resulting in the impact on local surface water quality</i>	Medium (-)	Insignificant (-)
		<i>Poor stormwater management leading to runoff from stockpiled material removed causing pollution of the water resources.</i>	Medium (-)	Insignificant (-)
		<i>Debris from poor handling of materials and/or waste blocking watercourses may result in flow impediment and pollution</i>	Medium (-)	Insignificant (-)
	Wetlands and Aquatic Ecosystems	<i>No impacts are anticipated.</i>		

PHASE	ASPECT	NATURE OF POTENTIAL IMPACT/RISK	ENVIRONMENTAL IMPACT SIGNIFICANCE BEFORE MITIGATION	ENVIRONMENTAL IMPACT SIGNIFICANCE AFTER MITIGATION
	Air Quality	<i>Possible increase in dust generation, PM₁₀ and PM_{2.5}, because of earthworks, operation of heavy machinery, and vehicle movement.</i>	Low (-)	Insignificant (-)
		<i>Increase in carbon emissions and ambient air pollutants (NO₂ and SO₂) because of movement of vehicles and operation of machinery/equipment.</i>	Low (-)	Insignificant (-)
	Climate change	<i>Emissions of Green House Gases because of the use of vehicles and machinery used during the construction activities.</i>	Very-Low (-)	Insignificant (-)
	Heritage and Palaeontology Resources	<i>No impacts are anticipated.</i>		
	Biodiversity	<i>Movement of construction vehicles and machinery may result in collision with fauna, resulting in loss of fauna.</i>	Insignificant (-)	Insignificant (-)
		<i>Proliferation of alien invasive species due to ineffective management and control of alien invasive plant species.</i>	Insignificant (-)	Insignificant (-)
	Visual	<i>Visual intrusion because of the movement of machinery and the establishment of the required infrastructure.</i>	Low (-)	Insignificant (-)
		<i>Indirect visual impact due to dust generation because of the movement of vehicles and materials, to and from the site area.</i>	Very-Low (-)	Insignificant (-)
	Noise	<i>The use of vehicles and machinery during the construction phase may generate nuisance noise in the immediate vicinity</i>	Low (-)	Insignificant (-)
	Soils, land use and land capability	<i>No impacts are anticipated.</i>		
	Traffic	<i>Increase in traffic volumes because of transportation of materials from the softener plant site during and after decommissioning and closure, which may lead to an increase in traffic congestion on roads around the project area increasing the chances of road accidents.</i>	Medium (-)	Very-Low (-)
		<i>The increase in vehicles results in an increased potential for road degradation of the road network in the vicinity of the project.</i>	Medium (-)	Insignificant (-)
	Waste Management	<i>Poor waste management during construction could result in the contamination of surface runoff resulting in the deterioration of water quality of the watercourse.</i>	Medium-Low (-)	Low (-)

PHASE	ASPECT	NATURE OF POTENTIAL IMPACT/RISK	ENVIRONMENTAL IMPACT SIGNIFICANCE BEFORE MITIGATION	ENVIRONMENTAL IMPACT SIGNIFICANCE AFTER MITIGATION
		<i>Stockpiling material from the construction activities may result in secondary pollution and contamination of the watercourses.</i>	Medium-Low (-)	Low (-)
		<i>Disposal of hazardous waste including hydrocarbon contaminated soils, rags etc. could result in the contamination of surface runoff resulting in the deterioration of water quality of the watercourse.</i>	Medium-Low (-)	Low (-)
OPERATIONAL PHASE	Groundwater	<i>Potential overflow from the surge tanks due to failure (electrical or pump etc) leading to groundwater contamination.</i>	Low (-)	Very-Low (-)
	Surface Water Quality	<i>Potential overflow from the surge tanks due to failure (electrical or pump etc) leading to groundwater contamination.</i>	Low (-)	Insignificant (-)

13.2 Cumulative Impacts

Due to the location of the proposed surge tanks capacity expansion project, all potential cumulative impacts identified are expected to be negligible.

13.3 No-go alternative

The no-go option will mean that the surge tanks capacity expansion project will not be implemented. As was noted in Section 1.1, the current surge tanks have insufficient capacity, which in the past decade has resulted in tank and bund wall overflow. The circuit inter section surge capacity is insufficient to allow for continuous production without inventory overflow, the no-go option will therefore reduce the efficiency of the process.

Other environmental risks posed by the no-go option include contamination of soils and water resources (ground and surface) should the overflow from the surge tanks continue. The expansion of the surge tank capacity is therefore a form of mitigation as it will minimise the chances of overflows an associated impact from occurring.

14 Conditions to be included in the EA

The EAP recommends that the surge capacity expansion be authorised for a period of 40 years and the following recommendations should be adhered to:

14.1 Construction Phase:

- All storage containers, storage areas and bunding areas for hazardous substances must comply with the relevant SANS standards to prevent leakage and to contain all hazardous substance if any container ruptures.
- Bulk storage of hazardous material must be undertaken in a dedicated area outside the project site and must include a bund or a drain where necessary to contain any spillages during the use, loading and off-loading of the substances.
- No dumping of waste shall be permitted. If any spills occur, they should be immediately cleaned up.
- All vehicles shall be inspected for leaks on a regular basis. Re-fuelling must take place on a sealed surface area to prevent ingress of hydrocarbons into topsoil;
- Informal fires by construction personnel within the project area shall be prohibited.
- It must be ensured that soil disturbance does not occur outside of the development footprint, as to ensure that further alien proliferation does not occur within the vicinity of the development footprint, which would further reduce the present ecological state of the surrounding area; and

14.2 Operational Phase:

- Surge tanks must be provided with concrete foundations to minimise potential for ingress into groundwater.
- Bund walls, allowing adequate capacity for containment, must be provided for the surge tank areas.
- Regular inspection and maintenance of the surge tanks and their associated bund walls shall be undertaken during the operation phase to ensure the integrity of the tanks and bund walls is not compromised.

Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr

Through the implementation of the identified proposed mitigation measures, it is anticipated that the identified impacts can be managed and mitigated effectively. All the impacts were assessed to have significance ranging between medium and very low without the implementation of mitigation measures. All the identified impacts will have a reduced significance of low and insignificant when the mitigation measures have been implemented.

The EMPr seeks to achieve a required end state and describes how activities that have, or could have, an adverse impact on the environment and surrounding communities will be mitigated, controlled and monitored. The EMPr will address the environmental impacts and possible unplanned events during each phase of the project (construction and operational). Due regard must be given to environmental protection during the entire project process. Several environmental recommendations are made to achieve environmental protection.

The objectives of impact mitigation and management are to:

- Primarily pre-empt impacts, assess their significance and implement appropriate mitigation and management measures to avoid, minimise and/or remediate the associated impacts where they cannot completely be avoided. This will be achieved by:
 - o Providing sufficient information to strategically plan the proposed surge tanks capacity expansion project as to avoid unnecessary social and environmental impacts;
 - o Provide sufficient information and guidance to plan the project activities in a manner that will reduce impacts (social, physical and biological) as far as is practically possible;
 - o Ensure an approach that will provide the necessary confidence in terms of environmental compliance; and
- Implement an adequate monitoring programme to:
 - o Ensure that mitigation and management measure are effective;
 - o Allow quick detection of potential impacts, which in turn will allow for quick response to issue/impacts; and
 - o Reduce duration of any potential negative impacts.

15 Reasoned opinion as to whether the proposed activity should or should not be authorised

It is the considered opinion of the EAP that the activity should be authorised. The proposed surge tanks capacity expansion project is located in an area already impacted on because of the various construction and operational activities associated with the existing RBMR infrastructure. SRK has undertaken the impact assessment and compiled the EMPr for the proposed construction and operation of the surge tanks capacity expansion project. This has included a comprehensive stakeholder engagement process which has sought to provide I&APs with an adequate opportunity to participate in the project process and guide technical investigations that have taken place as part of this study. To date, no objections have been received from I&APs.

The current surge tanks have insufficient capacity, which in the past decade has resulted in tank and bund wall overflow. The proposed surge tank expansion project is therefore required to minimise the potential for the surge tanks to overflow and in turn would result in contamination of soil and water resources.

According to the impact assessment undertaken for the proposed project, the significance of the potential impacts associated with the project varies between medium to low to insignificant. The significance of the impacts can be reduced to low, very low and insignificant when the mitigation measures are implemented.

The project will also have positive impacts, albeit short lived, due to the employment to be created although for a short term, as well as a short-term boost to local businesses.

The I&APs will also be requested to review and comment on the draft BAR. All comments to be received during the Public Participation Process will be included in the final BAR and EMPr. These comments will be addressed the as far as possible to the satisfaction of the I&APs.

The management of the impacts identified in the impact assessment for all phases of the proposed project will be undertaken through a range of programmes and plans contained in the EMPr. In consideration of the layout plan and the management and mitigation measures contained within the EMPr compiled for the project, which are expected to be effectively implemented, there will be significant reduction in the significance of potential impacts.

Considering the information available, there are no fatal flaws or red flags that have been identified for the proposed project. The location of the surge tanks capacity expansion project is already highly disturbed, and it is the considered opinion of the EAP that there will be no major additional impacts due to the construction and operation of the surge tanks capacity expansion project. As such, the EAP is of the opinion that the project should be authorised.

16 Undertaking of Oath by the EAP

Section 16 (1) (b) (iv), and Appendix 3 Section 2 (j) of the EIA Regulations, 2014 (promulgated in terms of the NEMA), require an undertaking under oath or affirmation by the EAP in relation to:

- The correctness of the information provided in the report;
- The inclusion of comments and inputs from I&APs and I&APs; and
- Any information provided by the EAP to I&APs and any responses by the EAP to comments or inputs made by I&APs.

SRK and the EAPs managing this project hereby affirm that:

- To the best of our knowledge the information provided in the report is correct, and no attempt has been made to manipulate information to achieve a particular outcome. Some information, especially pertaining to the project description, was provided by the applicant and/or their sub-contractors. In this respect, SRK's standard disclaimer pertaining to information provided by third parties applies.
- To the best of our knowledge all comments and inputs from I&APs and I&APs have been captured in the report and no attempt has been made to manipulate such comment or input to achieve a particular outcome. Written submissions are appended to the report while other comments are recorded within the report. For the sake of brevity, not all comments are recorded verbatim, and in instances where many I&APs have made similar comments, they are grouped together, with a clear listing of who submitted which comment(s).
- Information and responses provided by the EAP to I&APs are clearly presented in the report. Where responses are provided by the applicant (not the EAP), these are clearly indicated.

17 Conclusion and Recommendations

SRK has undertaken the impact assessment and compiled the EMPr for the proposed construction and operation of the surge tanks capacity expansion project in accordance with the requirements of the NEMA. This has included a comprehensive stakeholder engagement process which has sought to provide I&APs with an adequate opportunity to participate in the project process and guide technical investigations that have taken place as part of this study.

To date, there are no fatal flaws or red flags that have been identified for the proposed project. The location of the surge tanks capacity expansion project is already highly disturbed, and it is the considered opinion of the EAP that there will be no additional impacts due to the construction and operation of the surge tanks capacity expansion project. The project itself can be considered as a form of mitigation. The groundwater monitoring reports show that there is groundwater contamination due to activities at the RBMR. The proposed surge tanks capacity expansion project will result in reduced chances of tank overflows and associated potential groundwater, soil and surface water contamination.

An EMPr has been developed as part of this BA process to ensure the mitigation of identified impacts as far as practicable. It is anticipated that it will be possible to successfully mitigate the environmental impacts to acceptable levels and the implementation will be monitored and audited to determine the effectiveness of the measures implemented. The EMPr is considered adequate to assist the project in striving towards the principles of the NEMA.

Many of the impacts identified were classified as medium (-) to low (-) and insignificant (-) without mitigation. All the identified impacts can be mitigated to low (-), very-low (-) and insignificant (-) impact rating. The cumulative impacts were considered to be negligible.

The project team believes that the impact assessment undertaken for the construction and operation of the surge tanks capacity expansion project fulfils the process requirements of the NEMA. The EAP recommends that an EA be issued by the DEDECT and that the construction and operation of the surge tanks capacity expansion project should be conducted under duty of care and must be in accordance with the recommendations that were included in this BAR and the accompanying EMPr.

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Manda Hinsch
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.

Appendices

Appendix A: Curriculum Vitae of the Project Team

Appendix B: Project Experience

Appendix C: Stakeholder Engagement

Appendix C 1: Stakeholder Database

Appendix C 2: Announcement Phase Notifications

Appendix C 3: Site Notices

Appendix C 4: Newspaper Advertisements

Appendix C 5: Comments and Responses Report

Appendix C 6: Stakeholder Communications

Appendix C 7: Authority Communication

Appendix D: DFFE Screening Tool Report

Appendix E: Relevant Environmental Monitoring Reports

Appendix F: Environmental Management Programme

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