Non-Technical Summary

for

Client Name: Rustenburg Platinum Mines Limited (Amandelbult Mine)

Project Number: AAPL#001

Project Name: The Reclamation and Processing of the Amandelbult TSF

Kongiwe Environmental (Pty) Ltd.
Registration Number 2016/135562/07
Directors: N Banks, GE Cornish-Bowden (COO), AM Lemon, GL Smith, BJ Thornton (CEO)
Telephone: +27 (10) 140 6508 Email: info@kongiwe.com
Registered Address: 150 Bryanston Drive, Bryanston, Sandton, 2191, South Africa
Mailing Address: PostNet Suite No 163, Private Bag X21, Bryanston, 2021, South Africa
www.kongiwe.com

Table of Content

List of Tables

List of Figures

1. Introduction

1.1 This Document

This Non-Technical Summary (NTS) provides an overview of the Environmental Impact Assessment (EIA) and Amendment process for the proposed Amandelbult Tailings Reclamation and Processing Project, situated in the Thabazimbi Local Municipal area of the Waterberg District Municipality, Limpopo Province. It has been prepared by Kongiwe Environmental (Pty) Ltd. The EIA was undertaken in compliance with the National Environmental Management Act (Act 107 of 1998), as amended, and the EIA Regulations, as amended. The Proposed Project is undertaking an application for Section 102 Amendment for the inclusion on the TSF, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No.28 of 2002) to be submitted to the DMPR in terms of amending the Mining Right and Mine Works Programme. The Department of Mineral, Petroleum Resources (DMPR) Reference number is LP 30/5/1/2/2/48 MR.

The NTS describes the project proposal, and the potential impacts the Project may have on the biophysical and socio-economic environments. It also addresses the measures that the Project will implement to reduce significant negative impacts and to enhance potential social benefits, and how environmental and social issues will be managed during the construction, operation and decommissioning phases. The NTS is a short document written in non-technical language that can be used to share the findings of the EIA and Amendment process to the public.

1.2 Non-Technical Summary

Kongiwe Environmental (Pty) Ltd (Kongiwe) has been appointed by Rustenburg Platinum Mines Limited Amandelbult Mine (AMB), as the independent Environmental Assessment Practitioner (EAP) tasked with conducting the Scoping and Environmental Impact Assessment (S&EIA) process which is aimed at critically evaluating the potential environmental and social impacts of the proposed Reclamation and Processing of Dam 2 of the Amandelbult Tailings Storage Facility Complex (hereafter the Proposed Project). Rustenburg Platinum Mines Limited is a wholly owned subsidiary of Valterra Platinum Limited (previously known as Anglo American Platinum).

The Application for Environmental Authorisation (EA) was submitted to the Department of Mineral and Petroleum Resources (DMPR), which is the Competent Authority (CA) for the Proposed Project, on 17 June 2025. The DMPR accepted the Application on 19 July 2025. The Final Scoping Report (FSR) was submitted on 28 July 2025.

1.3 Project Introduction and Background

The Rustenburg Platinum Mines Limited Amandelbult Mine (AMB) is situated in the Thabazimbi Local Municipal area (TLM) of the Waterberg District Municipality (WDM) in the Limpopo Province and extends over some 20 km from east to west. It is located approximately 250 km northwest of Johannesburg, 15 km north of Northam and 30 km southwest of Thabazimbi on the northern limb of the Platinum Belt.

The main activity at AMB is mining of both the Merensky and UG2 reefs using underground and open pit mining methods. The mine area is divided into western, central and eastern sections. The mine consists of three different operational areas including Tumela Mine, Dishaba Mine and the AMB Concentrator and associated tailings storage facility (TSF) complex located centrally within the mine.

The AMB Concentrator itself consists of two (2) operational plants, namely UG2 1 and UG2 2, that treat mainly UG2 reef and one (1) non-operational plant, namely the Merensky Concentrator plant. This plant previously treated a mixture of Merensky & UG2 underground reef, UG2 opencast reef and low-grade waste rock material. Upon non-use of the Merensky Concentrator plant, UG2 Open cast and low-grade ore are now being treated through the UG2 1 and UG2 2 plants. In addition to the two operational plants, AMB Concentrator operates a Chrome Recovery Plant (CRP) which extracts Chromite from the UG2 slurry produced by the AMB Concentrator UG2 1 and 2 Plants.

The Amandelbult TSF consists of 4 compartments, Dam 1, Dam 2, Dam 3A and Dam 3B, refer to Figure 1 below. Dams 3A and 3B are considered as “wet dams” with the current arisings being deposited mainly on 3B, but also on 3A from time to time. AMB is currently undertaking a Feasibility study, with the objective to explore and investigate the possibility of reprocessing historical tailing dam material from the Amandelbult TSF to recover Chrome and Platinum Group Metals (PGMs) Test work completed has indicated that Dam 2 is currently the priority dam in terms of viable ounces to be reclaimed.

AMB now proposes to reclaim and process the tailings from Dam No. 2. This would also allow for the reuse of this TSF footprint, once reclamation has ceased for future tailings deposition, negating the need for a green fields site. Reclamation activities will reduce rehabilitation and closure liabilities of the TSF complex. This project may be referred to as the Amandelbult TSF Reclamation and Processing Project.

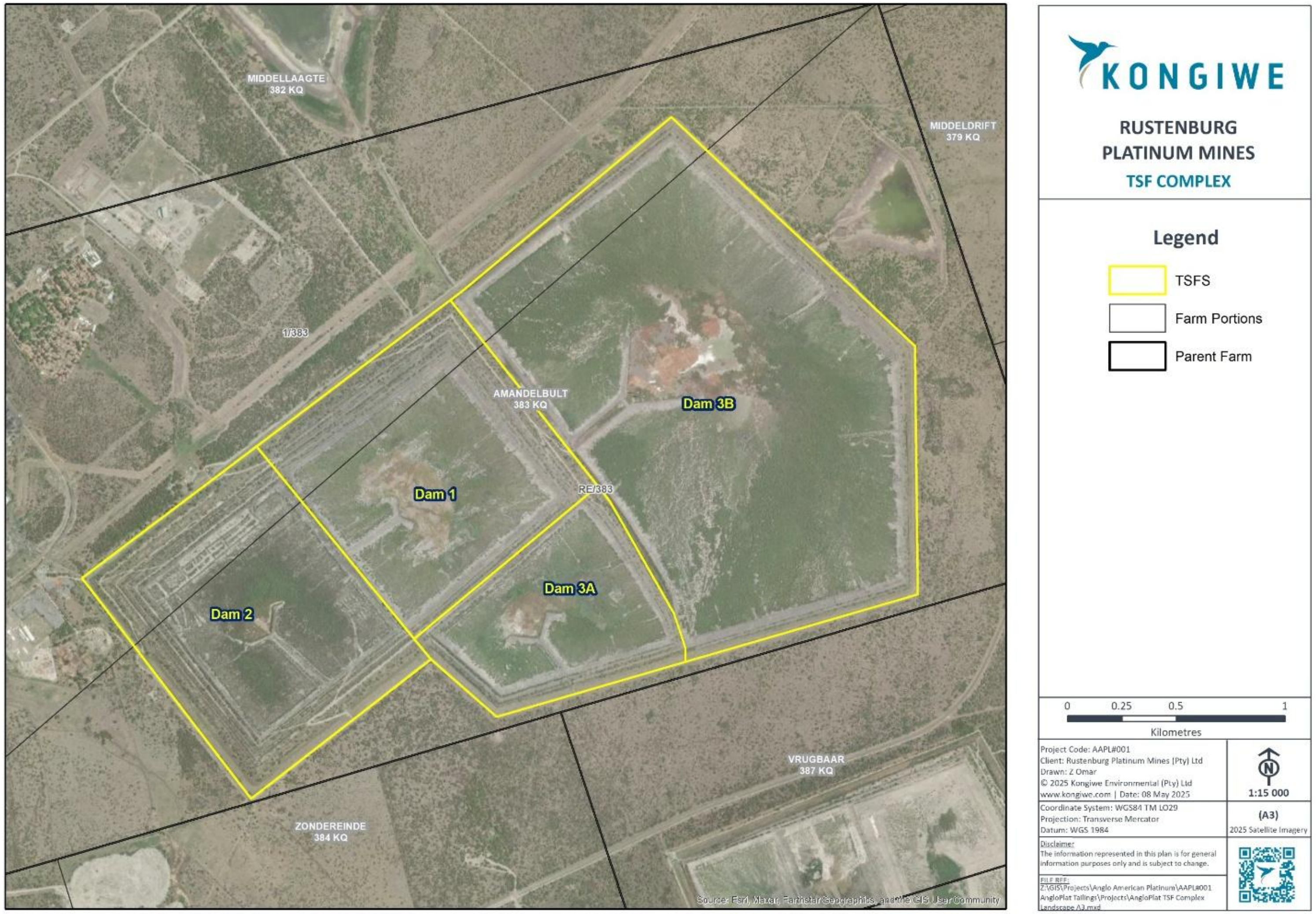

Figure 1: Amandelbult TSF Configuration

1.4 Description of the Project Location

The Proposed Project is located on the Remaining extent and Portion 1 of the farm Amandelbult 383 KQ, and the Remaining Extent of the farm Middellaagte 382 KQ. The project is situated in Wards 6 and 11 of the Thabazimbi Local Municipality (TLM) in the Limpopo Province. See Table 1 below.

Table 1: Property Details

Application Area (ha)	The Proposed Reclamation site, the new proposed plant area and additional infrastructure as indicated in this report covers an area of approximately 104 Ha and project activities 18 Ha (Overall 122 Ha)
Magisterial District	Ward No: 6 and 11 of the Thabazimbi Local Municipality (TLM) within the Magisterial District of Waterberg.
Distance and Direction from Nearest Town	The site is located approximately 15 km North of Northam and 30 km Southwest of Thabazimbi.

1.5 Infrastructure for the Project

The following preferred project design, after alternatives were considered, and reflected in Figure 3 will be established for the reclamation and processing of the TSF Dam 2:

Barge Pump (1 and 2): The barge pump is used to move the generated slurry from the TSF No.2 to the slurry transfer station. The barge pump will be positioned on top of the TSF and move around the location of the lowest point. The barge pump will consist of:

- Spindle pump.
- Concrete bund.
- Motor.
- Control centre.
- Access ladder.

High Pressure Water Tapped Off for Hydroguns: High-pressure water is tapped off and directed to these hydroguns, which dislodge tailings material from the TSF, converting it into a slurry mixture of water and fine mineral particles. Once mobilised, the slurry is channelled to Barge Station 1 and Barge Station 2. These stations serve as intermediate pumping hubs, maintaining consistent flow and pressure as the slurry is transported through pipelines.

Slurry Transfer Station: The slurry transfer station receives the slurry from the barge pump. The slurry transfer station does a second screening out of residual vegetation, and oversize material from the slurry. The slurry transfer station then feeds a surge tank which then feeds tailings to the PGM/Chrome plant for processing. The Slurry booster station located at the foot of the TSF will occupy a footprint of approximately 12 000 m2 (1,2 Ha). Additionally process water will also be supplied to the hydroguns from this transfer station. The Slurry Transfer Station consists of infrastructures below on Table 2:

Table 2: Infructructure Associated with the Slurry Transfer Station

The Slurry Transfer Station	
A vibrating screen	MCC
Set of cyclones	Transformers
Process water tank	Substations
Gland service water tank	Overhead crane
Compressor	Mini workshop
Firewater tank	Ablution facilities
Control room	Offices
Surge tank	Concrete and Steel structures
Instrumentation	Pumps
Piping	

TSF No.2 Laydown Area: The laydown area will be located next to the TSF no 2 and be used to maintain and refuel larger machinery (Yellow Machines). This will have an approximate footprint of 8 000m2 (0,8 Ha). The diesel storage will have the following specifications:

- Storage tanks (approximately 23 000L)
- Fuel dispensing system
- Fuel filtration and Conditioning system
- Fuel monitoring devices
- Refuelling bays

Contractors Laydown Area: This area will be used to by the contractors to house material, equipment and vehicles and as an operational base during the construction.

PCDs: The project will utilise two existing PCDs, one situated centrally between the Amandelbult Central Services Department Offices and the AMB Concentrator, and another located in the Chrome Recovery Plant (CRP) area near the AMB CRP admin offices.

Gravel / Haul Road: An existing haul road will be upgraded to allow for movement between the TSF area and the plant area. The current existing haul road will be lengthened by approximately 1,2 Km and widened by approximately 8-9 m. The area of the road will be approximately 1.1 Ha (11 000m^2).

PGM and Chrome Processing Plant: The project will reuse existing infrastructure, specifically the M3 & M4 Chrome Plant and existing buildings for the existing PGM Plant, which will be located within the Merensky footprint. For PGM recovery the slurry will be sent to the upgraded PGM plant, which features an IsaMill and Jamesons Cells flotation circuit. The IsaMill performs ultra-fine grinding to liberate PGMs from the surrounding gangue material. The finely ground slurry then enters the Jameson cells, where chemical reagents and air bubbles are used to selectively separate PGMs from the rest of the material. The resulting PGM concentrate is collected for further refining off site. The process flow of tailings will either be to the chrome plant first for extraction of chrome whereafter the tailings stream will be directed to the PGM plant for extraction of PGMs. Depending on configuration to be finally determined, the flow might start first at the PGM plant whereafter it is redirected to the Chrome plant. The residual tailings from this recovery process are then transported to the thickening plant, where the slurry is conditioned and thickened to the appropriate density for deposition onto TSF Dam 3B, following standard thickening protocols. The existing plant will consist of:

- TSF PGM Processing Plant. Material from TSF Dam 2 is hydraulically conveyed to the PGM Scavenger Plant, where Platinum Group Metals (PGMs) are efficiently extracted. The scavenger plant incorporates re-recleaner cells, which are instrumental in maximizing PGM recovery by generating a high-grade PGM concentrate. This concentrate undergoes further treatment within the scavenger plant, resulting in the formation of a dewatered product, known as a filter cake. The filter cake is subsequently stockpiled, forming a critical feedstock for the PGM Recovery Plant, thereby facilitating effective material handling and subsequent processing of recovered PGMs. The residual tailings from this recovery process are then transported to the thickening plant, where the slurry is conditioned and thickened to the appropriate density for deposition onto Dam 3B, following standard thickening protocols.
- TSF Services Plant - The TSF Services Plant is designed to deliver critical support services to the plant processing facility, ensuring seamless operational efficiency. Key services provided include the precise dosing of process chemicals such as depressants, frothers, and collectors, as well as the preparation and supply of flocculant for thickener operations. The facility also manages the supply of essential utilities, including makeup water, potable water GSW, compressed air, and instrument air, all of which are vital for maintaining process stability and equipment functionality.
- TSF Chrome Recovery Plant - This phase introduces a chrome flotation circuit at the tail of the PGM circuit. The circuit features a comprehensive chrome flotation system designed to optimize recovery efficiency and product quality. The process begins with feed preparation, where the material is conditioned to achieve optimal particle size and chemical properties for flotation. The flotation system comprises a sequence of rougher, cleaner, and recleaner flotation stages, which are critical to achieving high-grade chrome concentrate. Advanced Turbo cells and column cells will be employed in the flotation process, strategically combined to maximise chrome recovery efficiency. The use of oxide collectors ensures effective separation of chrome minerals from the tailings stream, even in challenging conditions. The rougher cells focus on bulk recovery, while the cleaner and recleaner cells further refine the reclaimed material.
- TSF Tailings Thickening Plant - A tailings thickening plant is a facility designed to reduce the water content in tailings (the waste material generated from mineral processing) to optimize water recovery and prepare the tailings for safe disposal. By thickening the tailings, the plant enhances the efficiency of water recycling and improves the stability of the TSF.

TSF PGM Silos / Bins: The material reclaimed from the TSF after its processing from the plant will be placed in the existing product silos/bins.

Topsoil Stockpiles: Topsoil will be stripped from the areas where construction will be undertaken. This will be stockpiled in an area just north of the TSF Laydown Area. This area will have a footprint of 15 000 m^2 (1,5 Ha). Topsoil will be stockpiled to a height of 3m. The proposed site will have a total available volume of 45 000 m^3.

Tailings Deposition: This will be undertaken by making use of the existing tails circuit. Residual tailings from the TSF Thickener will be transported to the TK-11 Handling tank and then transported to the TSF 3B via existing pipelines.

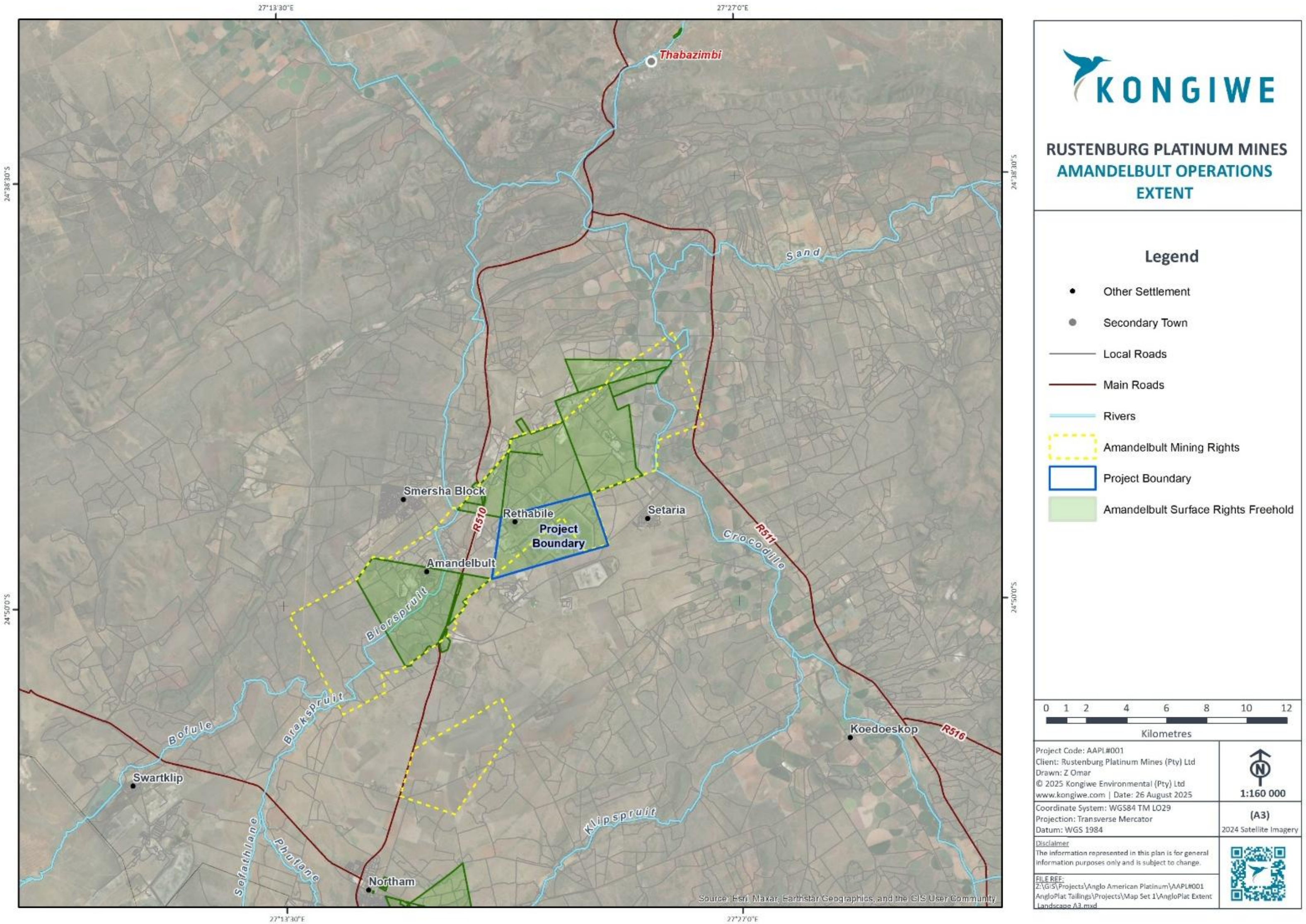

Figure 2: Project Location

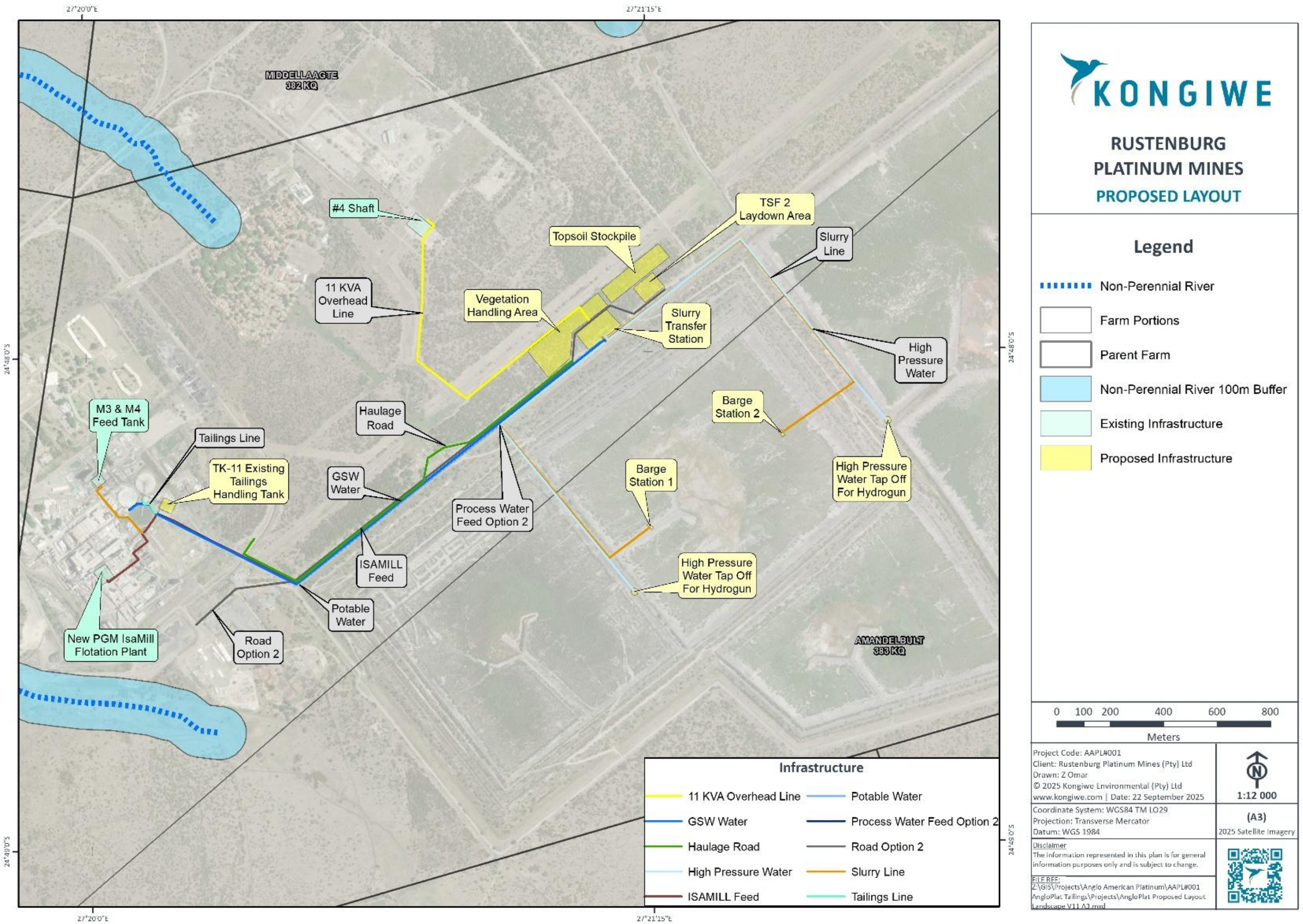

Figure 3: Project Infrastruture Map

2. Method of Reclamation

AMB proposes to utilise a combination of both Hydraulic and Mechanical reclamation methods on site during the proposed reclamation activities. These methods will be implemented either independently or simultaneously in line with the reclamation schedule.

2.1 Mechanical Reclamation

This method involves the removal of dry tailings material from Tailings Storage Facility (TSF) Dam No. 2 using a truck-and-shovel operation. The material will be transported to a designated area within TSF 2 for blending purposes, combining coarse and fine fractions. Once blended, the material will be subjected to hydraulic mining. An example of mechanical reclamation is indicated in Figure 4.

Figure 4: Example of a Truck and Shovel Reclamation

2.2 Hydraulic Reclamation

This technique uses water monitors (or hydroguns) to deliver a high-pressure water jet to hydraulically excavate unconsolidated tailings material within the TSF. The water from the hydroguns mixes with the tailings and forms a slurry with a high solids content. The hydroguns will move on top of the TSF following the progression of reclamation.

The perimeter embankments of the TSF are maintained to function as containment barriers, ensuring that the slurry remains within the designated site footprint. The mobilised slurry gravitates through strategically designed trenches along the bench of the tailings deposit, directing flow towards a collection area (sump) located at the lowest elevation of the active operational area. At this sump, a barge-mounted pump system is deployed to extract and transfer the slurry for further processing. The barge pump will transport the slurry a short distance to the slurry transfer station, whereby the second screening of residual vegetation and oversized material will be removed, as discussed above. The vegetation will be removed from the screened area and transferred back to TSF for composting.

Most of the screened-out vegetation will initially be removed and reworked on the TSF surface and placed in a dedicated area on top of the TSF 1 for further composting of material. Chipping and composting processes will be undertaken on TSF 1. The compost produced will have future use on the side slopes of the remaining TSF dams or other areas requiring composting for rehabilitation.

2.3 Rehabilitation

The property on which the Amandelbult TSF is situated currently belongs to Rustenburg Platinum Mine (RPM). Rehabilitation will be in line with AMB closure plans and EMPRs.

After the removal of the material from Dam 2, the footprint will be reused for future tailings deposition as part of the operational TSF currently active on site. The overall TSF footprint will form part of AMB overall Rehabilitation strategy and Closure Plan. By reprocessing the material from the tailings dams, AMB can address both risk management and production optimisation, thereby aligning safety with profitability. Furthermore, this will reduce liability and potentially open up additional space for further tailings deposition in the future, without extensions onto greenfield areas.

Once the TSF has been reclaimed, processed, and decommissioning of facilities where required has been undertaken, the area will be reused for redeposition of tailings.

2.4 Works schedule and lifecycle of the project

The anticipated life span of the project is approximately 20 years. It is expected that there would be a 2 year construction and ramp up period which would include the placement of infrastructure and site preparation. This will then allow for the 18 years Life of Operation (LOO) where hydraulic and mechanical reclamation would take place. After the removal of the material from Dam 2, it is envisioned that the footprint will be reused for tailings deposition as part of the operational TSF currently active on site. The overall TSF footprint will form part of AMB's overall Business plan and Rehabilitation strategy and Closure Plan.

Figure 5: Example of Hydraulic Reclamation

3. Concerns raised by I&APs during the Scoping Phase

The following concerns were raised during the public consultation undertaken during the Scoping Phase:

- Socio-economic: The project should provide opportunities for skill acquisition, personal growth, job opportunities and people who must be considered for recruitment (workers and SMMEs). First preference should be given to people who reside in Thabazimbi area and nearby areas.
- Air Quality: Ensure that control measures are in place to mitigate the potential impact on air quality in the surrounding areas, due to increase in dust emissions during the activities.
- Water Quality: Evaluate potential impacts on local water sources, including surface water bodies and groundwater, assessing risks of contamination and measures to control water contamination.
- Noise and Vibration: Monitoring of impacts and developing of control measures to minimize disturbances resulting from noise and vibration.
- Waste Management: Monitoring of liquid and solid waste generated during the activities, including tailings deposition. Proper containment and disposal to prevent environmental contamination must be ensured.
- Biological Environment: The Project can have an impact on local flora and fauna due to changes in land use, potential habitat destruction and contamination from mining activities. It is important to identify and mitigate potential threats to biodiversity.
- Cumulative Effects: Ensure that cumulative effects of the proposed activity and future activities are approved and controlled.
- Mitigation Measures: Ensure mitigation measures to prevent water, air and land pollution throughout the development are in place, and continuous monitoring is done.
- Health and safety: Ensure that health and safety measures are in place throughout the reclamation process.
- Future Land use: Consideration of future land use.
- Ensure all interested and affected parties involved are considered in the application.

4. Key Baseline Conditions at the project area and surrounds

4.1 Climate

The project area falls within the Dwaalboom Thornveld vegetation, B climate type (dry climate types). The area is characterised with summer- rainfalls, dry winters and fairly request frost occurrence in winter. The Amandelbult TSF falls within the B climate type (dry climate types) which is classified as a Koppen climate zone, whereby average monthly temperature is greater than 18°C and evaporation exceeds precipitation on the average. This climate type extends northward and southward from the equator to approximately 20-35 degrees of latitude. The average temperatures within the area are greater than 18ºC. More than 80% of rainfall is measured during this period.

4.2 Topography

The topography of the area can be described as relatively flat, with a gentle decrease in elevation towards the easterly direction of the Amandelbult Mine and has been changed with the development of the TSF in the area. The elevation ranges between 920 m and 980 m. The Amandelbult Mine is divided by the R510 road which connects Rustenburg and Thabazimbi, as well as a Transnet railway line, running parallel with the road. There are two watercourses near the Amandelbult Mine, the Bierspruit and the Crocodile River. The Bierspruit is located towards the West of the Amandelbult Mine and flows in a northerly direction, feeding into the Crocodile River. The Crocodile River is situated towards to east of the Amandelbult Mine and flows in a north-westerly direction.

4.3 Geology

The Amandelbult Mine is located within the north-west limb of the Bushveld Complex. The upper Critical Zone of the Bushveld Complex hosts the largest concentration of PGMs in the world. Although the Merensky Reef is generally regarded as a uniform reef type, large variations occur in reef thickness, reef composition, as well as the position of the mineralisation. The UG2 Reef is developed some 20 to 400 meters below the better known Merensky Reef.

The mining area is comprised of mafic and ultra-mafic rocks, with three reefs present beneath the mining area, which are the Merensky reef, Upper Group Chromite layer no.2 (UG2) and the Lower Pseudo Reef (P1).

4.4 Soil and Agricultural Potential

The majority of the proposed site is classified on the screening tool indicates that the 50 m buffer of the Proposed Project area falls within the **'Low to High'** agricultural sensitivity.

The baseline soil findings, current land uses and the calculated land potential dispute the agricultural theme tool, in areas demarcated with **"High"** land capability sensitivities and further concur to an extent with the agricultural theme tool on areas demarcated with "**Very Low to Low"** and "**Low-Moderate to Moderate."** No high potential soils or active crop production were identified within the 50 m buffer of the Proposed Project area.

4.5 Biodiversity

The habitat units for the project area can be seen delineated in Figure 6. Three (3) main habitat types were identified across the Amandelbult Reclamation and Processing of the TSF and include:

- Disturbed Bushveld.
- Water Resources (Wetlands and Artificial Wetlands).
- Modified.

The sensitivities associated with each theme are detailed in Table 3, where they are marked as either disputed or validated. A summative explanation for each result is provided as relevant. The specialist assigned sensitivity ratings are based largely on the Site Ecological Importance (SEI) process refer to Figure 6, and consideration is given to any observed or likely presence of Species of Conservation Concern (SCC) or protected species.

Table 3: Summary of the Screening Tool vs Specialist Assigned Sensitivity

Screening Tool Theme	Screening Tool	Habitat	Specialist	Tool Validated or Disputed by Specialist - Reasoning
Terrestrial Theme	Very Low	Modified	Very Low	Disputed – These areas have been modified and have little to no natural vegetation left.
		Disturbed Bushveld	Low	Validated – Habitat disturbed due to historic and current anthropogenic activities and has therefore lost ecosystem functionality. It still serves as a corridor for flora and fauna dispersion.
		Water Resources	Medium	Disputed – Even though disturbed, the ecological integrity, importance and functioning of these areas play a crucial role as a water resource system locally and regionally, and an important habitat for various fauna and flora.
Animal Theme	High	N/A	Low	Disputed – No SCC were observed, moreover, some fauna SCC may potentially move through the area sporadically, but it is unlikely that they will remain within the area.
Plant Theme	Low	N/A	Low	Validated – No SCCs observed or expected.

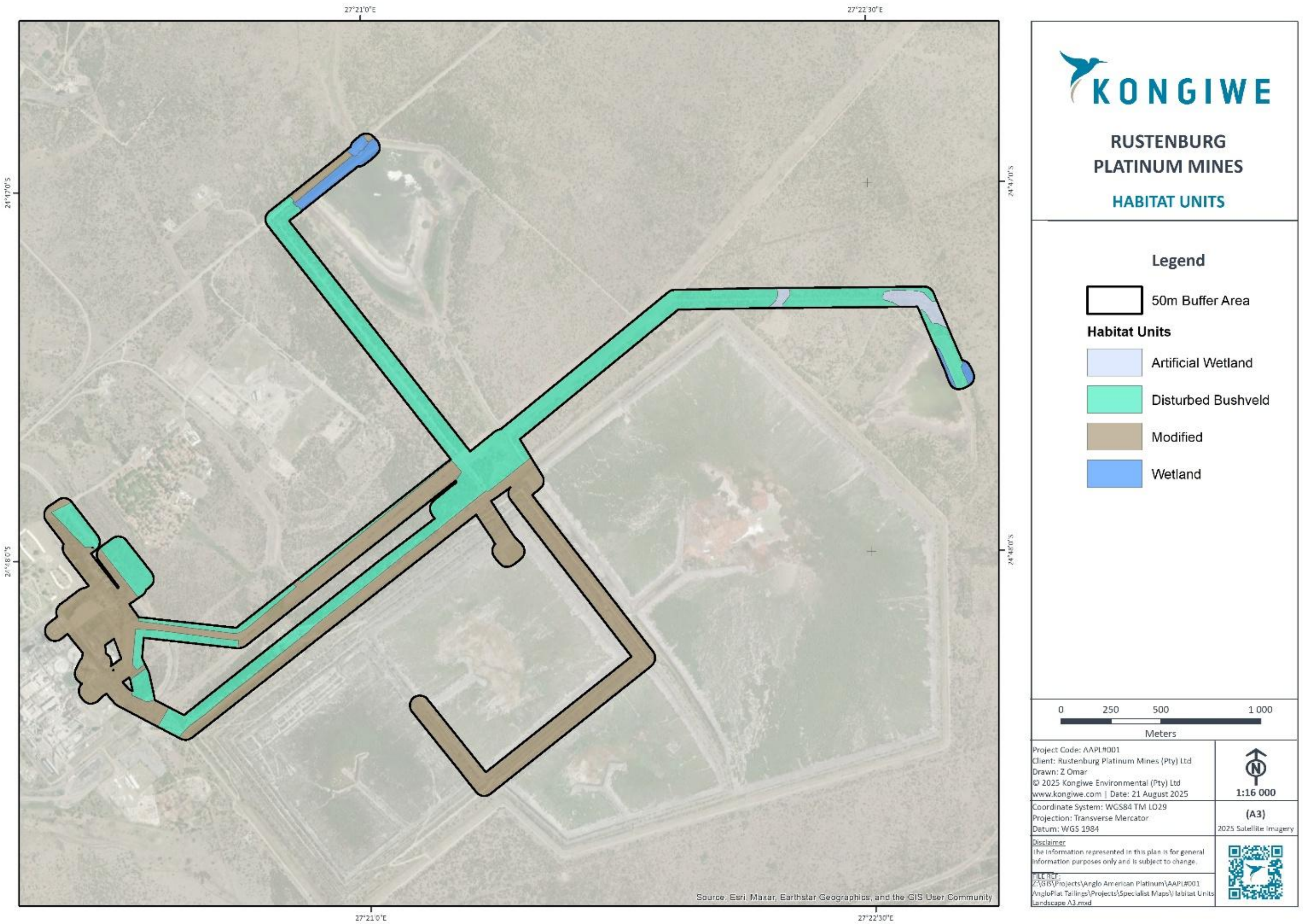

Figure 6: Habitats Identified within the Proposed Amandelbult Project Area

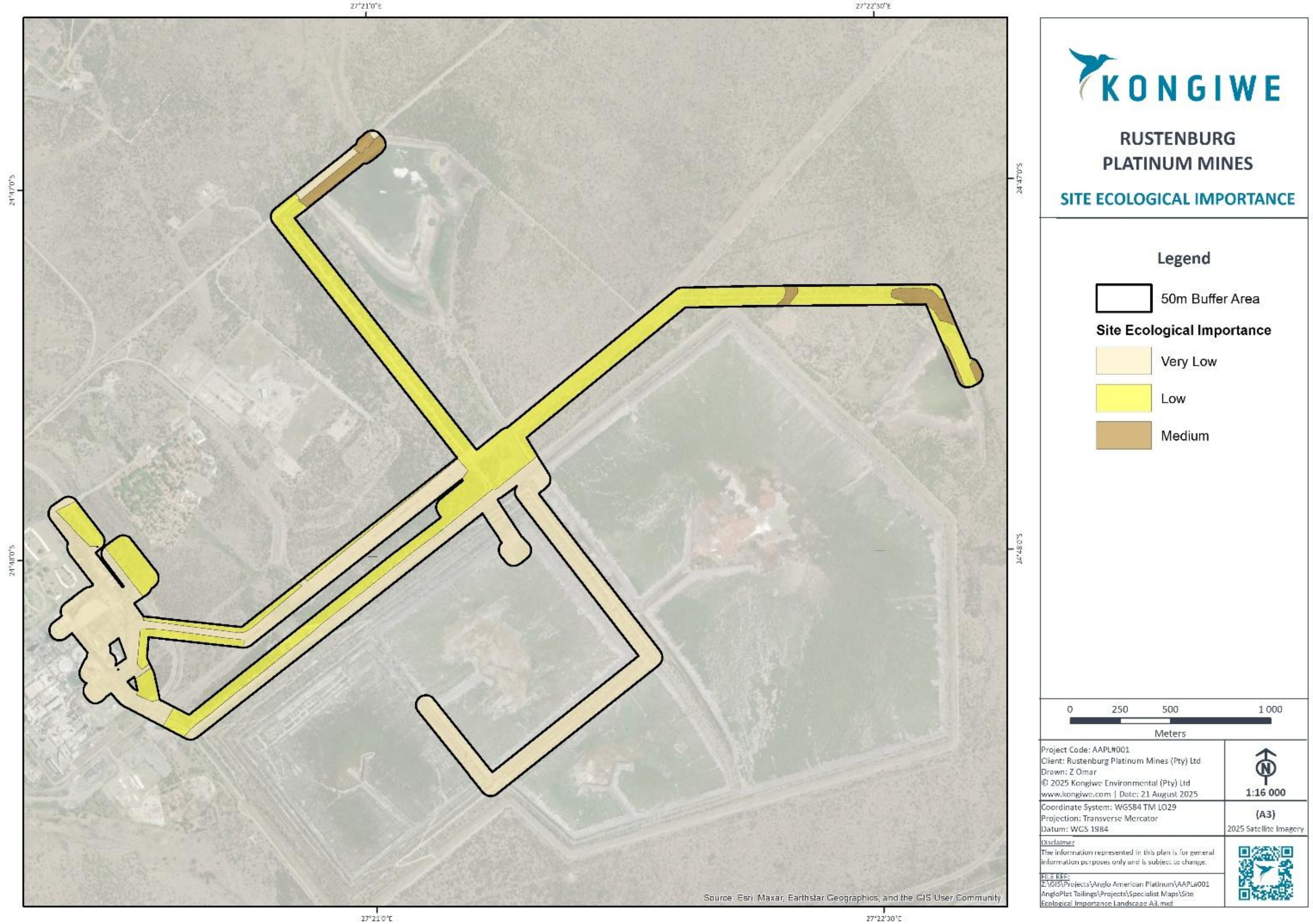

Figure 7: Map Illustrating the Site Ecological Importance for the Project Area of Influence (PAOI)

4.6 Wetlands

The Proposed Project falls outside wetlands and artificial wet areas within the proposed area, including artificial depressions, dams and drainage features.

The proposed project falls outside of the 500-meter buffer around any identified wetlands as identified were identified in Figure 8. These are grouped into a single Hydrogeomorphic (HGM) unit due to their similar function and state. Additionally, several artificial wet areas were observed within the PAOI, including artificial depressions, dams, and drainage features. The proposed TSF infrastructure does not intersect the artificial depressions, and the Hydrogeomorphic (HGM) unit and dams are situated more than 500 m away from the development footprint. the proposed development. All other identified features are effectively avoided by the development area. The specialist assigned sensitivity ratings presented herein consider the presence of features, their size and the ecological characteristics of the wetlands. The sensitivities associated with each theme are detailed in Table 4, where they are marked as either disputed or validated.

Table 4: Summary of the Screening Tool vs Specialist Assigned Sensitivities

Feature	Screening Tool Theme	Screening Tool	Specialist Finding	Tool Validated or Disputed by Specialist - Reasoning
HGM 1	Aquatic Biodiversity Theme	Low	Very High	Disputed – Natural wetlands were identified which provide moderate levels of ecological benefit. These are however entirely avoided by the preferred option.
15 m Buffer	Aquatic Biodiversity Theme	Low	Moderate	Disputed – While the buffer areas do not necessarily represent freshwater features, their conservation is imperative to limiting impact to the wetlands as they form the periphery of the wetlands thereby having spatial connectivity to the wetlands. The sensitivity of the buffers is therefore determined by the landscape and the sensitivity of the features they encompass. These are however entirely avoided by the preferred option.
Artificial Wet Areas, Drainage Feature, Stormwater Channel	Aquatic Biodiversity Theme	Low	Low	Validated – These are artificial features which do not have natural ecological sensitivity and would cease to exist if the artificial hydrological inputs are stopped and if the landscape was returned to its pre-disturbed state. Furthermore, while wetland vegetation was observed within the artificial wet areas, these areas are not considered to have functionality as a fully-fledged natural wetland. These are however entirely avoided by the preferred option.

Feature	Screening Tool Theme	Screening Tool	Specialist Finding	Tool Validated or Disputed by Specialist - Reasoning
Remaining Area	Aquatic Biodiversity Theme	Low	Low	Validated – No natural surface water features were identified within these areas. These are however entirely avoided by the preferred option.

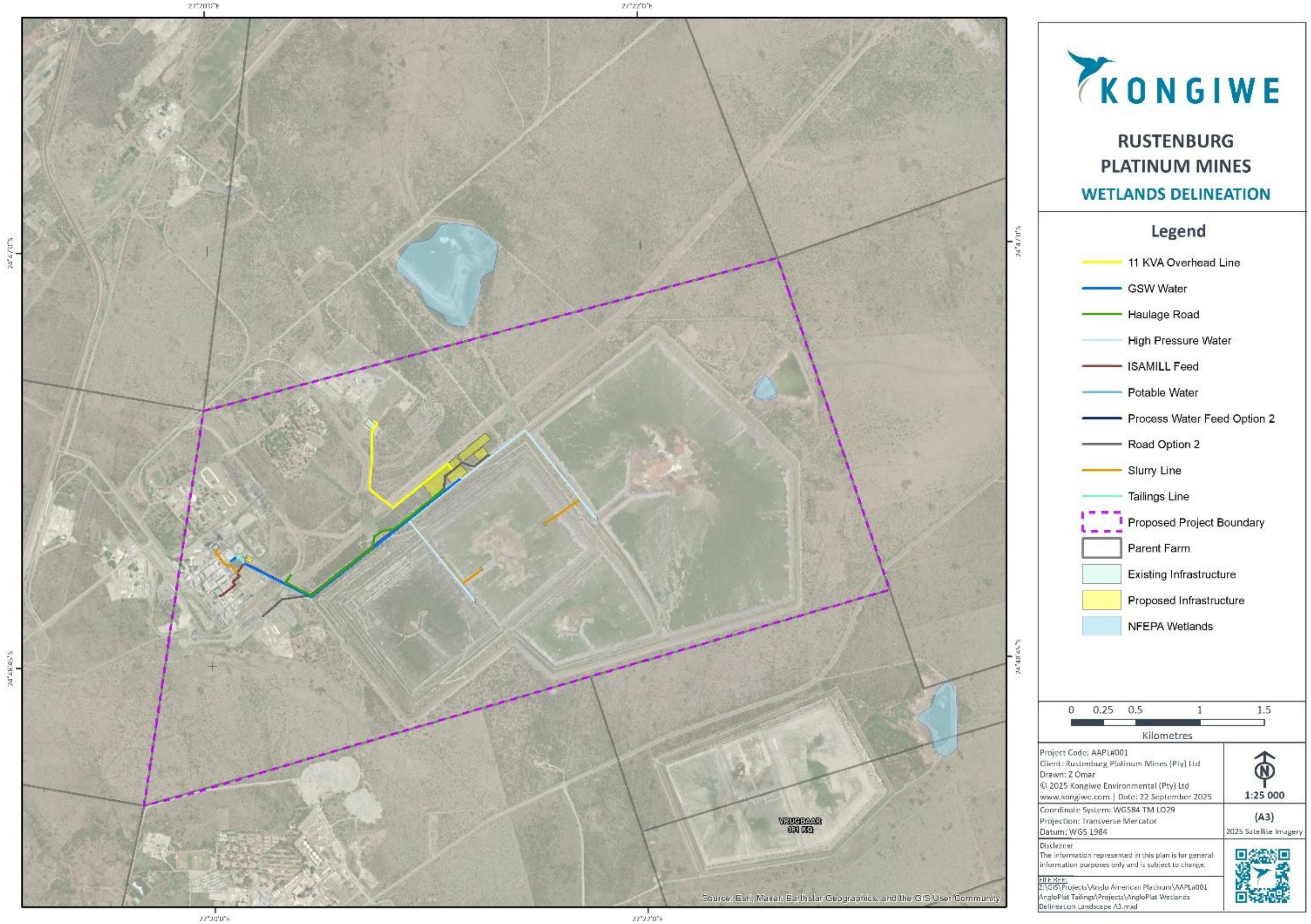

Figure 8: Delineation of Wetland Features within the Project Area of Influence

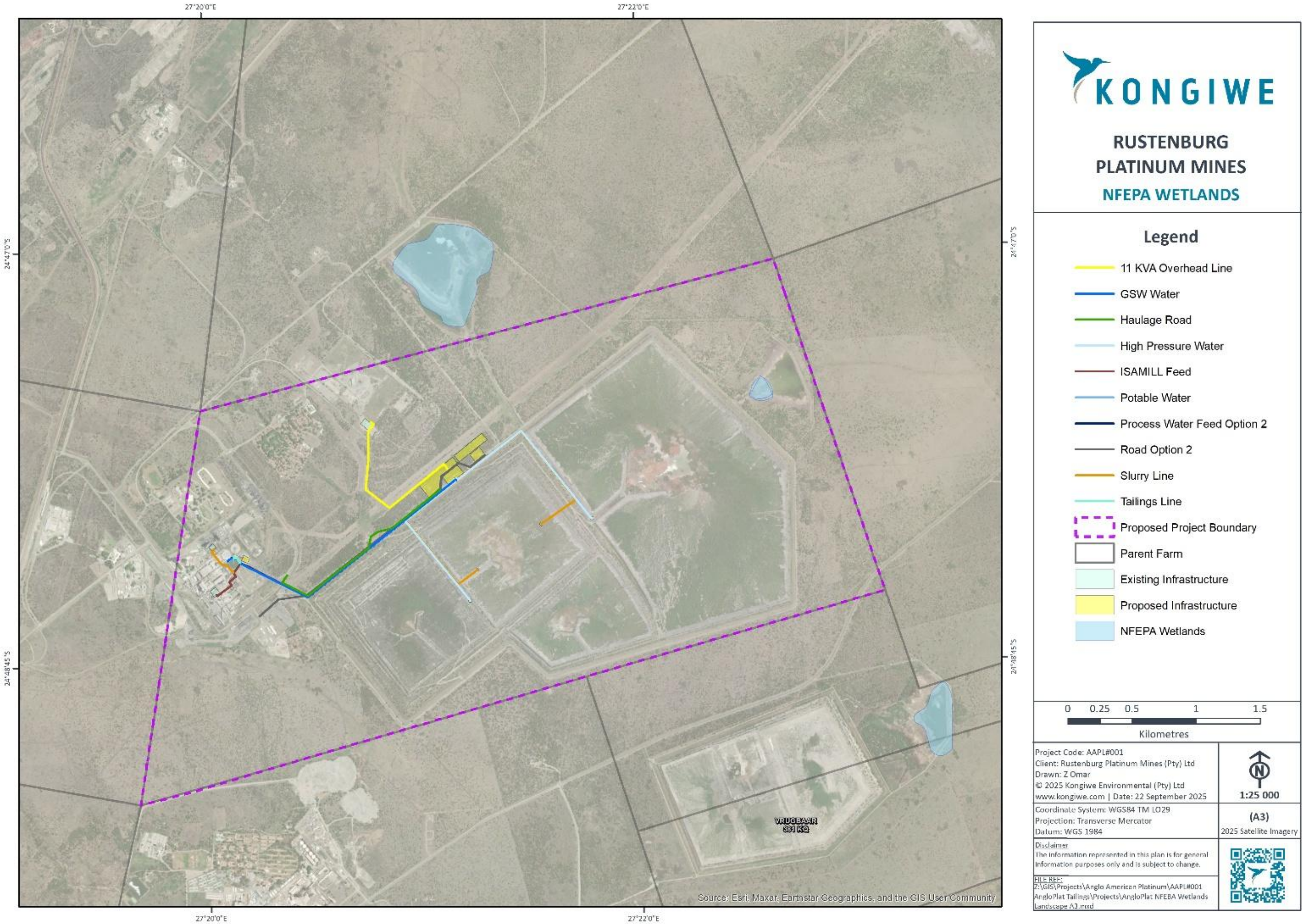

Figure 9: NFEPA Wetlands Map

4.7 Surface water within contained structures on site

The Proposed Project is located within the Limpopo Northwest Water Management Area over two quaternary catchment areas which are A24C (Crocodile) and A24F (Bierspruit). The western part of the mine falls within the A24F catchment area and drains mainly northward and westward towards the non-perennial Bierspruit. The Middellaagtespruit is a tributary of the Bierspruit near the TSF area. The eastern part of the mine falls within the A24C catchment and drains mainly north-eastwards and eastwards via a few small ephemeral streams towards the perennial Crocodile River. The sampling locations are indicated and summarised in Table 5.

Table 5: Description of the Locations of the Surface Water Quality Monitoring Points within Infrastructure on Site

Monitoring Location	Description of Location	Latitude*	Longitude*
AMD J (AMC 02)	Return Water Dam	-24.78177	27.35029
AMD U (AMC 01)	Holding Dam	-24.79265	27.37930
AMD T1 (AMC t1)	Holdings trench	-24.79565	27.35788
AMD T2 (AMC 03)	Trench from plant to Stormwater Dam	-24.80627	27.33068
CRP Stormwater Dam	CRP Stormwater Dam	-24.80382	27.33265
Kilken Turf Dam	Kilken Turf Dam	-24.80348	27.33614

The following provides a summary of the water quality in contained structures on site, reused in a closed loop system:

- pH was within limits except in May 2024 at CRP SWD where pH slightly exceeded the limit.
- Electrical Conductivity (EC) on average exceeded the limits at all monitoring points indicating high dissolved salts in the dirty water circuit.
- Total hardness was generally higher than 600 mg/l at most of the monitoring points and can be described as extremely hard water.
- Sodium and chloride exceeded the limits at all of the monitoring points during most months.
- Elevated levels of nitrate were recorded at most of the monitoring points.
- Heavy metals (aluminium, iron, manganese, chromium, copper, cobalt, cadmium, nickel, lead and zinc) on average exceeded limits at most of the monitoring points.
- E.coli was elevated at all monitoring points.

In summary, the water quality of the dirty water circuit at AMB can be described as having a neutral to alkaline pH, being very saline and hard, as well as having elevated nitrate, heavy metals and E. coli.

4.8 Groundwater

Some of the boreholes tested by Water Hunters were included in the 2025 Hydrocensus. All the Hydrocensus boreholes visited are used for monitoring by AMB and none of the boreholes were fitted with pumps at the time of the Hydrocensus. Borehole depths are shallow, varying between 21 m and 33 m. The depth of the groundwater table varied between 0.52 m and 11.98 m below surface.

The Hydrocensus survey included accessible areas within a 2.5 km radius from TSF 2 and concentrated on identifying existing boreholes to enhance the knowledge of the groundwater movement and groundwater use. Sixteen (16) boreholes were identified, all on AMB properties.

All 16 boreholes are used or were historically used for groundwater monitoring purposes. Some of the boreholes around the RWD were drilled to serve as scavenger boreholes, but to date they were only used for groundwater monitoring purposes.

Groundwater levels were measured by using a dip meter to measure the distance from the mouth of the borehole (borehole collar elevation) to the groundwater table depth in the borehole. The height of the borehole collar was subtracted from the measured water level to define a water level below surface (measured in m bgl). Groundwater samples were also collected, where possible.

Groundwater level measurements were possible from 15 of the 16 boreholes. It is shown that groundwater levels in the region varies, and this is possibly associated with the mining activities, recharge from the TSFs and mine dams, or open fractured aquifer systems. The groundwater level below surface varied between 0.52 m bgl (borehole RWD PO3) and 11.98 m bgl for borehole WM08 (north of the Plant area and railway line). The boreholes adjacent to the Return Water Dam (RWD)and the Holding Dam present groundwater levels that are shallower compared to the other boreholes. The rest groundwater levels in these boreholes are on average 1.4 m below surface. For most of the other boreholes the average depth to water table is 7.4 m below surface.

Based on the water quality results the following conclusions were drawn (SANS 241:2015 comparison):

- **Health Effects:**
  - **Iron** – An elevated iron concentration was measured for borehole EMPR15 (upgradient BH), with an Iron concentration of 4.33 milligrams per litre (mg/L), versus the maximum allowable concentration of 2 mg/L. This borehole is on the northern perimeter (upgradient) of TSF 2 and TSF 3A. The Total Iron concentration at EMPR 08 (downgradient) was 0.034mg/L and the Total Iron concentration was below the detection limit for the toe drain sample (downgradient).
  - The concentration of dissolved Iron in potentially related to the historic mining activities and is dependent on the occurrence of other heavy metals, such as manganese, and the pH of the water.
  - **Manganese** – Manganese is a relatively abundant element, constituting approximately 0.1% of the earth's crust. Borehole EMPR15 measured a Manganese concentration that exceeds the health impact limit – 0.66 mg/L versus the maximum allowable concentration of 0.4 mg/L. Manganese tends to precipitate

out of solution to form a black hydrated oxide which is responsible for staining problems. The Manganese concentration at the other two sampled sites exceeds the aesthetic limit (0.1 mg/L), but was still below the health impact limit of 0.4 mg/L.

- **Sulphate** – Sulphate forms salts with various cations such as potassium, sodium, calcium, magnesium, barium, lead and ammonium (DWAF, 1996). Sulphate is a common constituent of water and arises from the dissolution of mineral sulphates in soil and rock. Since most sulphates are soluble in water it tends to accumulate to progressively increasing concentrations. Contamination by sulphate is to be expected in waters contaminated by mining activities, due to the oxidation of sulphides in the ore and waste.
- The Sulphate concentration was elevated for all three sampled sites, with the concentrations varying between 634 mg/L and 689 mg/L for the boreholes, and 941mg/L for the toe drain sample. The health limit is set at 500 mg/L.

- **Aesthetic / Operational Effects:**
  - **Sodium** – Sodium is abundant in the environment and usually occurs as sodium chloride, but sometimes as sodium sulphate, bicarbonate or even nitrate (DWAF, 1996). Sodium is highly soluble in water and does not precipitate when water evaporates, unless saturation occurs. Borehole EMPR15 (438 mg/L) and toe drain 27 (486 mg/L) present elevated Sodium concentrations that exceed the aesthetic limit (200 mg/L) for drinking water. With the reuse or recycling of water, the sodium concentration will tend to increase with each cycle or addition of sodium to the water. For this reason, sodium concentrations are elevated in runoffs or leachates.
  - **Chloride** – Elevated chloride concentrations were measured at all sampled sites with the measured concentrations varying between 513 and 969 mg/L. The chlorides of sodium, potassium, calcium and magnesium are all highly soluble in water. Once in solution chloride tends to accumulate.
  - Ammonium – The chemistry of ammonia is very complex, especially where transition metals are present in water, and while ammonia itself is of relatively low toxicity, this is not necessarily the case for some of its organometallic complexes (DWAF, 1996). Taste and odour complaints are likely to occur if the ammonia concentration exceeds 1.5 mg/L. High concentrations of ammonia can also give rise to nitrite, which is potentially toxic, especially to infants (DWAF, 1996). Water collected from toe drain 27 presented an elevated Ammonium concentration (4.7 mg/L) that exceeds the aesthetic limits for drinking water with the aesthetic limit set at 1.5 mg/L.
  - The SANS 241 guideline limits for EC and TDS were exceeded for all sampled sites. EC level varied between 287 and 422 mS/m. TDS varied between 2039 and 3114 mg/L.
  - **Total Hardness** – Very hard total hardness values were measured at all three sampled sites. Water hardness is influenced by the presence of calcium and magnesium salts. Other metals such as strontium, iron, aluminium, zinc and manganese may occasionally contribute to the hardness of water, but the calcium and magnesium hardness usually predominates. The Total Hardness values vary between 1454 mg/L and 1755 mg/L.

  - **Turbidity** – The turbidity value was elevated for all sampled sites. The boreholes are not in use and the sampling possibly disturbed the silt inside the borehole cavity. The water from toe drain 27 is associated with consistent water flow, with possible suspended matter in the water. Toe drain 27 presents a much lower Turbidity value.

The numerical modelling is based on the following assumptions:

- Assumed values will be used to characterise the specific yield of the shallow weathered aquifer as well as the rate of recharge.
- Although faults and geological structures were intersected in the underground workings north of TSF 2, there is currently no information available that suggests that any of these extend to surface or to underneath the Amandelbult TSFs. This is of specific reference to the fault zones associated with the Middellaagte graben that extends to the TSF3A footprint.
- There is currently also no field measured data that suggests enhanced aquifer conditions for the projected faults positions. For the purpose of this assessment, it is therefore assumed that no significant faults or intrusions are present underneath the TSFs, that could act as preferential flow paths to groundwater.
- Only the faults associated with the Middellaagte graben are considered in this study. These are located northeast of TSF 2 and do not transect the TSF2 footprint area.
- It is however recommended that the hydraulic characteristics of the fault zones associated with the Middellaagte graben are investigated and confirmed.
- It is assumed that current underground and opencast mining activities will not affect groundwater levels during the reclamation of TSF 2. The current dataset suggests that the zone of impact on groundwater levels, because of mining, does not extend to the Amandelbult TSFs. It is further assumed that future mining activities that will move towards the TSFs will also not affect groundwater levels since the depth of mining will exceed 1300 m below surface. This is due to the vertical separation between the shallow aquifers underneath the TSFs and the underground workings.
- The source characterisation used for the project was inferred from the existing dataset. As leach test data was not made available for the tailings material, the source term was inferred from the groundwater and dirty water monitoring dataset.
- The Precautionary Principle was followed in the absence of specific geochemical information.
- Only advective transport of contaminants was simulated. While it is acknowledged that attenuation will take place in the soils, there is currently insufficient information available to quantify the extent to which this takes place. As such, simulations are based on the Precautionary Principle and take the worst-case scenario into consideration.
- The plan-view extent of the numerical model is based on natural groundwater barriers including water divides, as well as rivers and streams. It is assumed that the vertical extent of potential impacts associated with the TSF will not extend deeper than 100 m below surface.

No risk of decant was identified for this project.

4.9 Air Quality

The main objective of the air quality impact assessment is to determine the significance of impacts on the receiving environment and sensitive receptors given emissions generated by activities proposed as part of the project and recommend suitable management and mitigation measures.

An emissions inventory lists all sources that would generate pollutants of concern such as construction activities, processing emissions, vehicle-entrained dust emissions, Tailings emissions, and Emissions from materials handling operations. PM stands for Particulate Matter, which is a mix of tiny solid particles and liquid droplets suspended in the air. These particles vary in size, origin, and chemical makeup. PM10 represents larger particles that generally irritate the nose and throat and PM2.5represents fine particles that can enter the lungs. The activities and the associated emissions are outlined below together with potential mitigation measures. Because the Amandelbult project area lies within the declared Waterberg-Bojanala Priority Area (WBPA) where particulate matter is one of the major pollutants of concern all aspects of the reclamation project should be mitigated to keep emissions to a minimum. The location of the modelled discrete receptors with their elevation and coordinates presented in Table 6 below:

Table 6: UTM Coordinates and Elevation of Modelled Receptors

Modelled Receptor	Description	UTM Coordinates	Elevation (m)
1	Closest school west-north-west of Amandelbult TSF Dams 1, 2, 3A and 3B	534478.00 m E 7257436.00 m S	970.69
2	Closest house south-west of Amandelbult TSF Dams 1, 2, 3A and 3B	534230.00 m E 7254419.00 m S	985.38
3	Closest house east of Amandelbult TSF Amandelbult TSF Dams 1, 2, 3A and 3B	540207.00 m E 7257386.00 m S	949.91

A comparison of maximum modelled concentrations at the discrete receptors for the three modelled scenarios is presented in Table 7. The modelled concentrations show that the greatest impact of the reclamation process on sensitive receptors will be experienced to the northwest of the Amandelbult TSF Dams 1, 2, 3A and 3B at the Rethabile Primary School and surrounding residential area. The importance of mitigation is also clearly illustrated. This is even more important considering that the mine and its TSF Dams are located in the Waterberg-Bojanala Priority Area where particulate matter concentrations are generally raised.

Table 7: Comparison of Maximum Modelled Concentrations at the Three Discrete Receptors for the Three Modelled Scenarios

Averaging Time	Discrete Receptor	Maximum Modelled Concentration (µg/m3)		
		Status Quo Scenario	Worst-Case Reclamation Scenario	Mitigated Scenario
PM10 24 hours (99th percentile)	1	22.6	66.8	44.9c
	2	14.5	21.8	16.9c
	3	6.4	16.3	6.5c
PM2.5 24 hours (99th percentile)	1	9.4	10.1c	9.2
	2	5.7	6.0c	5.1
	3	2.5	2.4	2.3c

Three scenarios were simulated – a status quo scenario showing the current emissions from all of the Amandelbult TSF Dams before the start of the reclamation process; a worst-case scenario; and a mitigated scenario. The dispersion of particulate matter was modelled up to a distance of 5 km from a central point. The Maps below represented isopleths/lines of the status quo modelling results are given in Figure 10 to Figure 17 below:

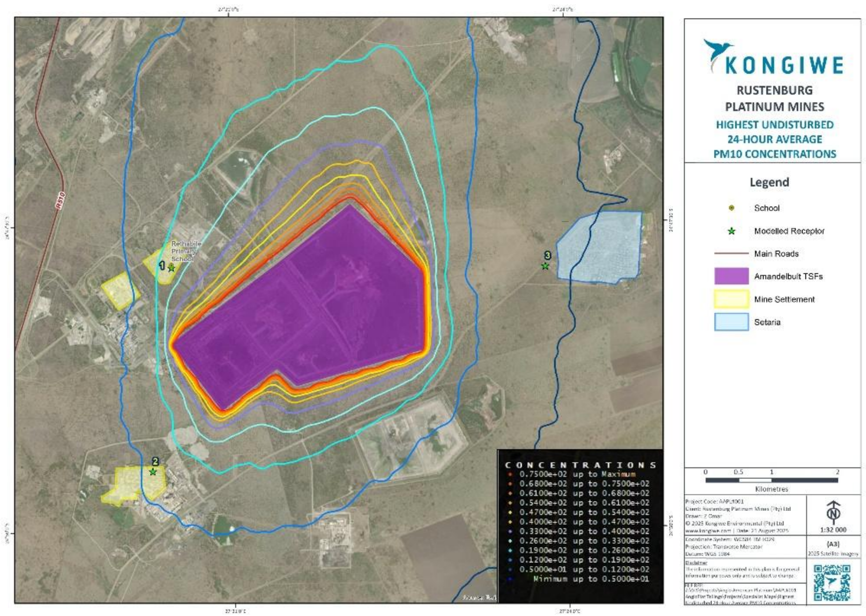

Figure 10: Modelled prediction of highest 24-hour average PM10 concentrations resulting from the undisturbed Amandelbult TSF Dams 1, 2, 3A and 3B.

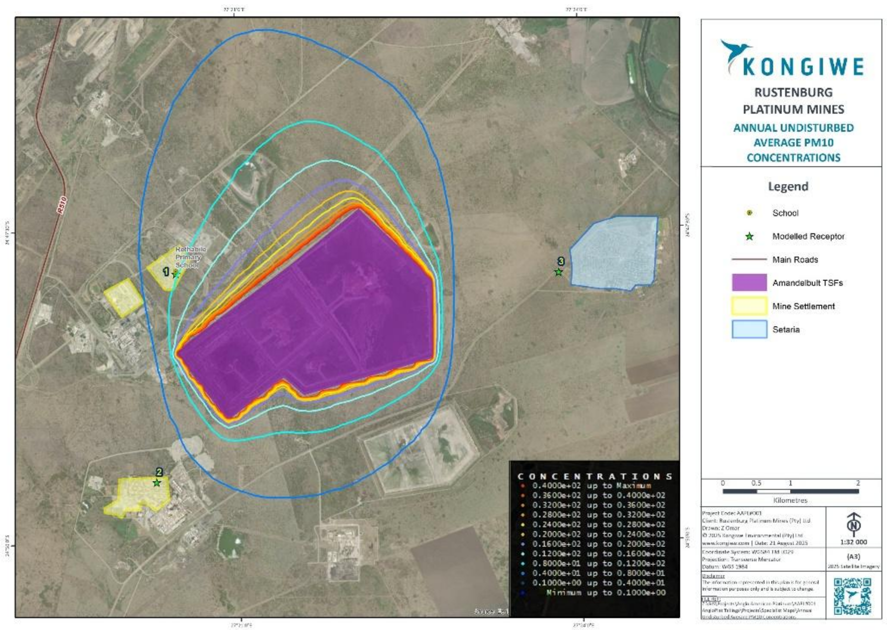

Figure 11: Modelled prediction of the annual average PM10 concentrations resulting from the undisturbed Amandelbult TSF Dams 1, 2, 3A and 3B.

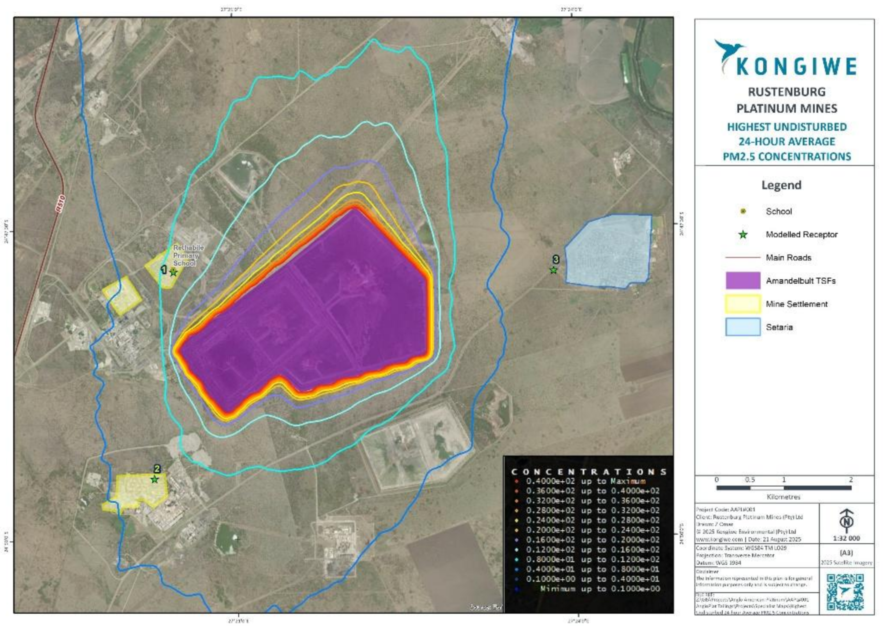

Figure 12: Modelled prediction of the highest 24-hour average PM2.5 concentrations resulting from the undisturbed Amandelbult TSF Dams 1, 2, 3A and 3B.

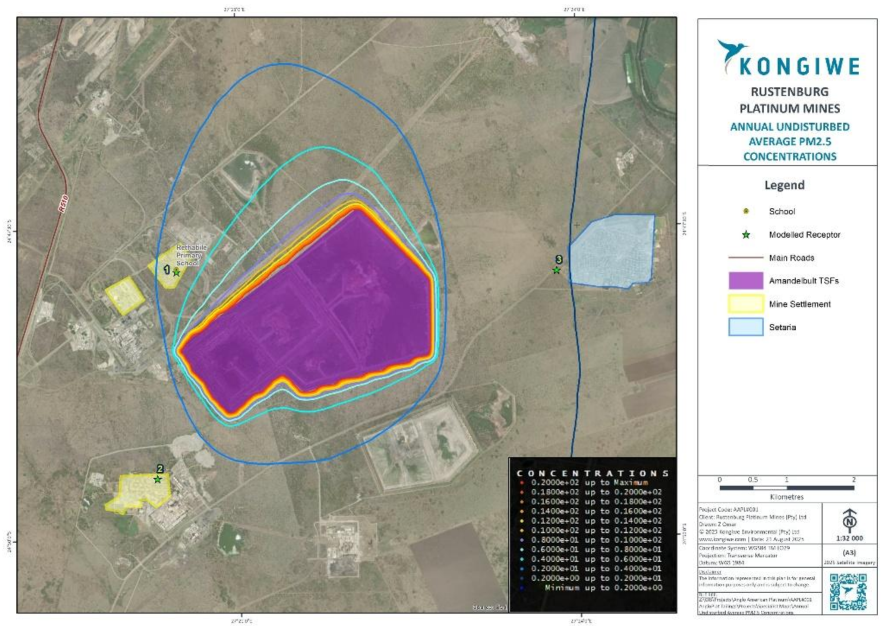

Figure 13: Modelled prediction of annual average PM2.5 concentrations resulting from the undisturbed Amandelbult TSF Dams 1, 2, 3A and 3B.

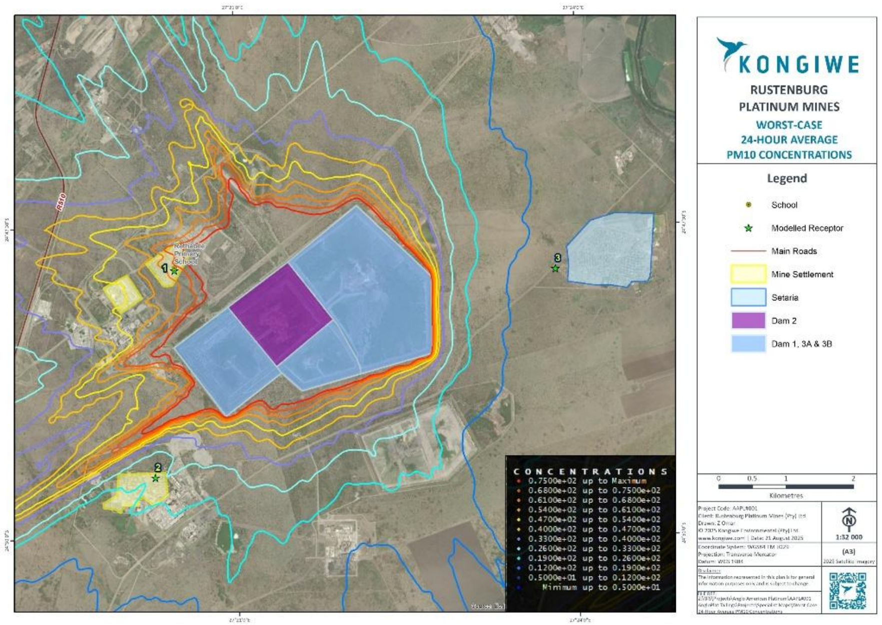

Figure 14: Modelled prediction of the worst-case 24-hour average PM10 concentrations resulting from reclamation at Amandelbult TSF Dam 2.

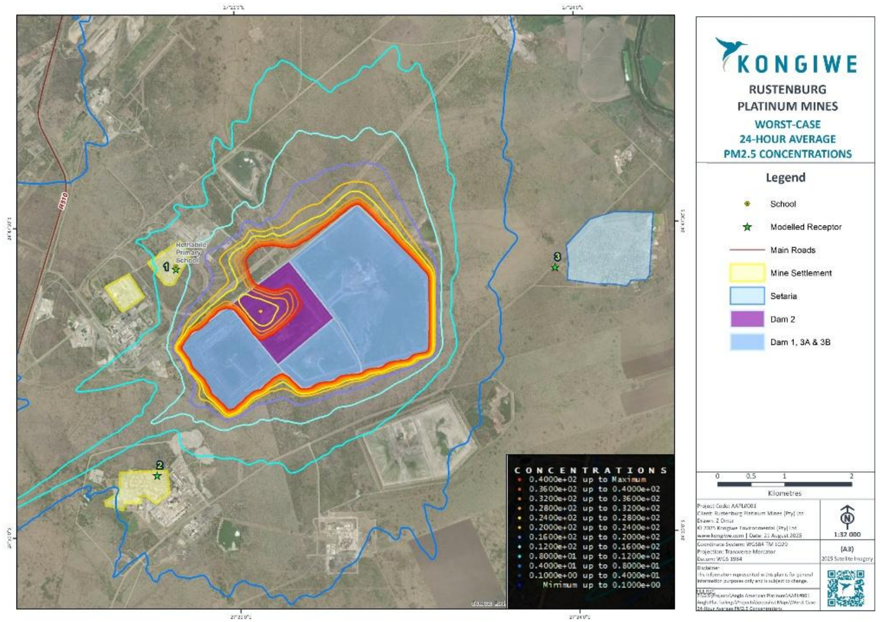

Figure 15: Modelled prediction of the worst-case 24-hour average PM2.5 concentrations resulting from reclamation at Amandelbult TSF Dam 2.

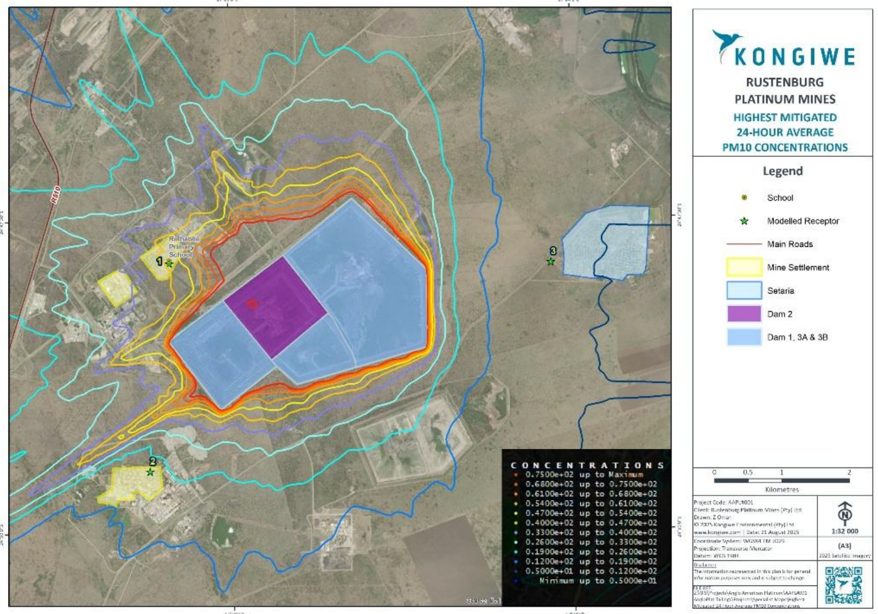

Figure 16: Modelled prediction of the highest 24-hour average PM10 concentrations resulting from the mitigated reclamation scenario.

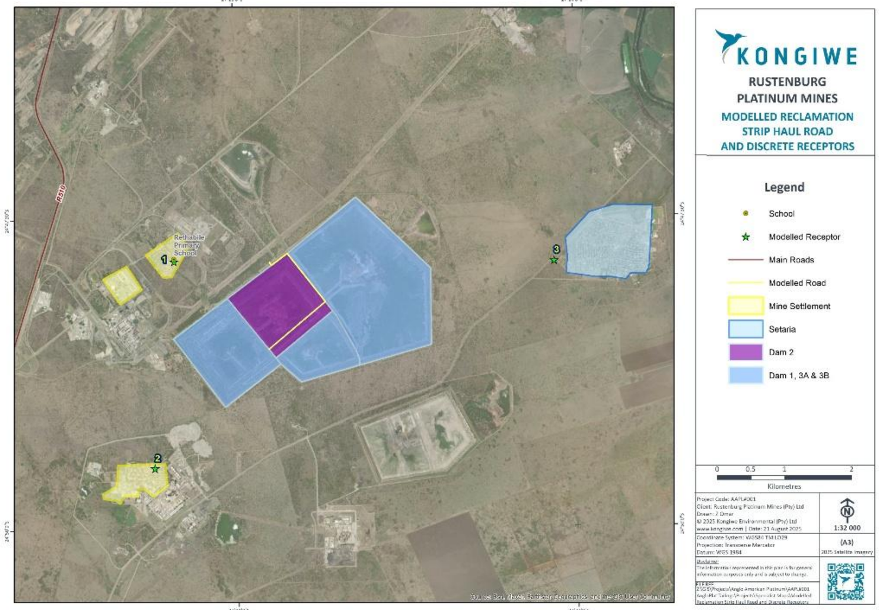

Figure 17: Modelled reclamation strip haul road and discrete receptor

4.10 Noise

Natural sounds are a part of the environmental noise surrounding humans. Ambient sound levels are significantly affected by the area where the sound measurement location is situated. When the sound measurement location is situated within an urban area, close to industrial plants or areas with a constant sound source (ocean, rivers, etc.), seasons and even increased wind speeds have an insignificant to massive impact on ambient sound levels.

The Proposed Project site is in an area with a mixed-use development character. The major noise sources in the area include vehicular traffic on the national and provincial roads in the areas, noises from the local communities and mining related noises.

Considering the average fast-weighted sound level data collected in the area, average:

- Daytime fast-weighted sound levels ranged from 32 to more than 70 dBA, with average sound levels being 47.3 dBA. This is typical of a rural to suburban noise district, setting a zone sound level of 45 dBA for the daytime period; and
- Night-time fast-weighted sound levels ranged from 37 to 56 dBA, with average sound levels being 45.1 dBA. This is typical of an urban noise district, setting a zone sound level of 45 dBA for the night-time period.
- Considering the requirements of the Noise Control Regulations (NCR) activities relating to the Proposed Project should not change the existing ambient sound levels with more than 7 dBA, nor exceed the WHO and IFC noise limits. Recommended upper noise limits therefore would be:
- 55 dBA (as recommended by the IFC, which is less than 7 dBA from the average ambient sound levels measured in the area) for daytime residential use; and
- 48 dBA (as recommended by the IFC) for night-time residential use (3 dBA is added as the existing sound levels already exceed 45 dBA).

The mine should also limit the noise level to less than 60 dBA on the boundary (70 dBA during the daytime period and 60 dBA at night for a 70 dBA day-night noise limit).

4.10.1 Evaluation of Alternatives

Alternative 1: No-go Option

The ambient sound levels will remain as is and the area would keep the existing noise character.

Alternative 2: Proposed Approval of the Mining Project

The proposed development will raise the noise levels at the closest potential NSR, with the highest impact relating to NSR staying within 500 m from the project activities. Noises created by the project could be audible up to 2,000 m from the project area. Members of the local community may consider the increased noise levels to be annoying and even disturbing at night (with the beeping from reverse alarms frequently reported by receptors to be highly annoying). The residential community are however also directly linked to the operation, which would also foster a more positive attitude towards to future noise levels.

The project however will greatly assist in the economic growth and development challenges South Africa is facing by optimising the extraction of the mineral resource. This will assist in providing additional employment and business opportunities for the local communities. Considering only noise, people in the area not directly affected by increased noise levels would have a positive perception of the project and could see the need and desirability of the project. A noise model was developed to illustrate the potential existing noise level contours, with the locations of the various noise sources conceptualised. The projected existing noise levels are illustrated in Figure 18 and defined per Noise-sensitive Receptor (NSR) for the daytime period. These noise levels were used to estimate potential cumulative noise levels for Scenarios 2 and 3; and Figure 19 as well as defined per Noise-sensitive Receptor (NSR) for the night-time period. The noise levels were used to estimate potential cumulative noise levels for Scenarios 2 and 3 which are Projected noise rating levels are illustrated in Figure 20 and defined for the daytime period; and Figure 21 and defined for the night-time period.

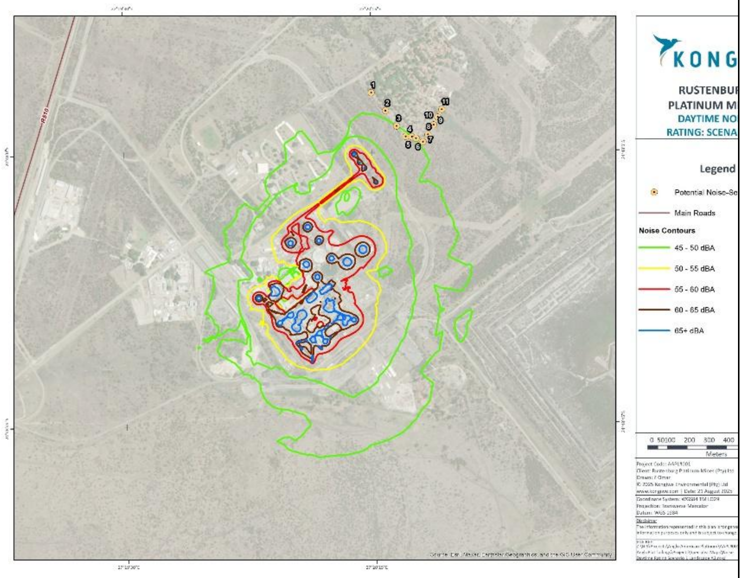

Figure 18: Projected daytime noise rating levels relating to the existing operational activities (scenario 1)

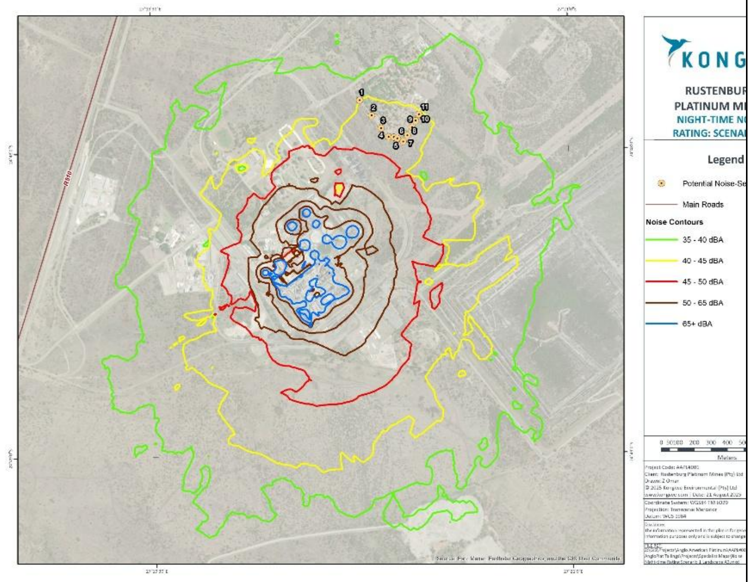

Figure 19: Projected night-time noise rating levels relating to the existing operational activities (scenario 1)

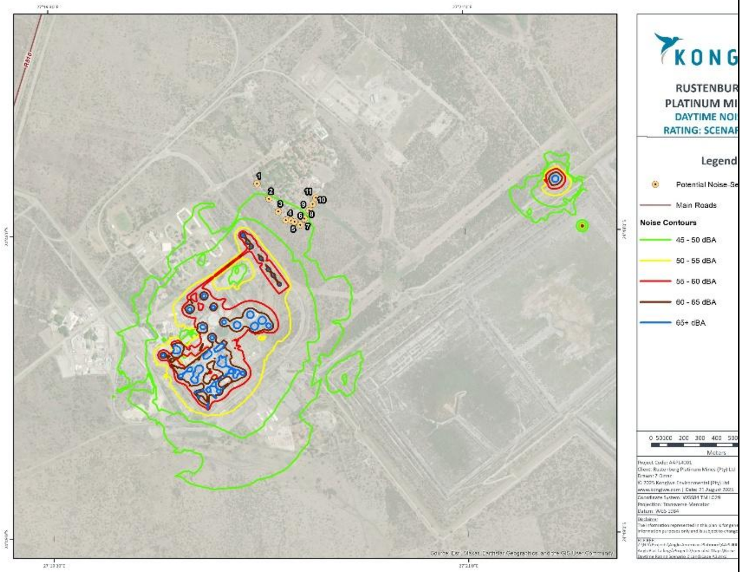

Figure 20: Projected cumulative daytime noise rating levels conceptual operational activities (scenario 2)

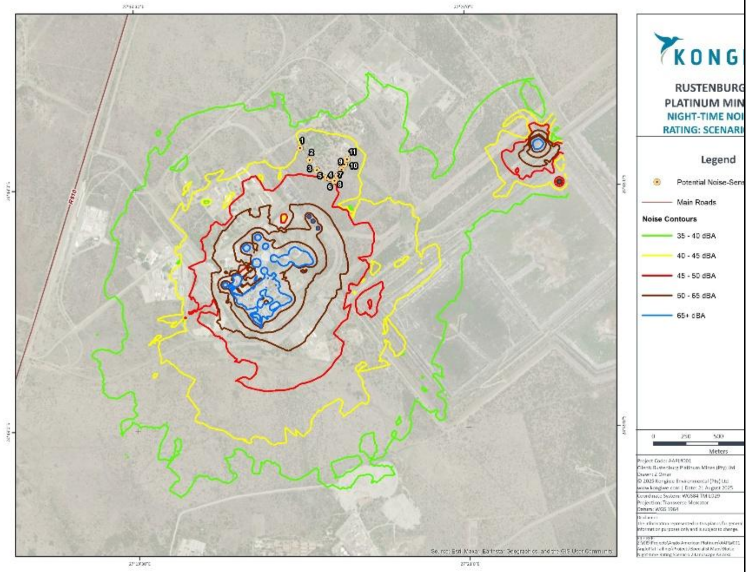

Figure 21: Projected cumulative night-time noise rating levels conceptual operational activities (scenario 2)

4.11 Cultural and Heritage Aspects

As no heritage features of cultural significance were identified within the development plan the impact significance during the construction phase is rated as **MEDIUM NEGATIVE** before and **LOW NEGATIVE** after mitigation if a chance finds procedure is followed.

Based on the SAHRIS Palaeontological Sensitivity Legend depicted in Figure 22, the approximate location of the study area—outlined in red—falls within the grey zone, indicating an insignificant or zero level of palaeontological sensitivity. According to the Palaeontological Sensitivity of study area is **Low**. No further studies will be needed.

Colour	Sensitivity	Required Action
RED	VERY HIGH	field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	desktop study is required
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required
WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

Figure 22: SAHRIS Palaeontological Sensitivity Legend

4.12 Socio-economic

The project will have positive impacts on local employment during the construction and operational phases. Post-closure the project is also expected to have the positive impact of regaining land for re-development, opening additional airspace for possible further tailings deposition in the future, without extensions onto greenfield areas.

Do to the Potential negative impacts on the local community are largely considered low and medium and mainly relate to social risks during the operational phase of 18 years. These risks include nuisance factors (increased noise and dust) as well as potential impacts on community safety. The social risks of the project can be effectively reduced after mitigation measures (

Table 8).

Table 8: Summary of Socio-Economic Impacts

Impact Description	Before Mitigation Significance	After Mitigation Significance	Cumulative Impact
Construction Phase			
Employment and Income	Low+	Medium +	No
Informal influx of job-seekers	Low-	Low -	Yes
Nuisance factors	Low -	Low -	Yes
Operational Phase			
Employment and Income	Medium +	Medium +	No
Informal influx of job-seekers	Medium -	Medium -	Yes
Nuisance factors	Medium -	Medium -	Yes
Community health and safety	Medium-	Medium -	Yes
Impact on adjacent farmers	Low -	Low -	Yes
Post- Closure			
Unlocking of land	Medium +	Medium +	No
Cessation of employment	Medium -	Medium -	No

Employment opportunities created by the Project during the construction and operational Phase period include:

- Direct employment provided on the Project itself,
    - AMB plans to use its existing personnel on the project. This means that the project will create limited additional employment for the local community but will provide job security for the current personnel.

- Indirect employment through the procurement of inputs/supplies
    - AMB to source where possible from local suppliers, HDSAs and Small, Medium and Micro sized Enterprises (SMMEs).

- ○ Preference should be given to capable subcontractors who are based within the local municipal area.
- ○ Communicate the local employment strategy clearly to the local communities adjacent to the mine.

Induced employment generated through an overall increase in income due to higher income levels of direct employees and suppliers.

5. Specialist Studies and Impact Assessment

The Table 9 below outlines all the specialist studies triggered and undertaken for the Amandelbult Tailings Storage Facility Reclamation and Processing Project, each of which assessed potential impacts across the Construction, Operational, and Decommissioning phases, and proposed corresponding mitigation measures detailed in the section that follows.

Table 9 : Specialist Studies undertaken for EIA Phase

Specialist Studies Undertaken	
Terrestrial Biodiversity Impact Assessment	Surface water Impact Assessment
Wetland Impact Assessment	Groundwater Impact Assessment
Soil and Agricultural Compliance Impact Assessment	Air Quality Impact Assessment
Heritage & Palaeontological Impact Assessment	Noise Impact Assessment
Social Impact Assessment	

6. Impact Rating

Table 10 below represents a summary of the significance of impacts identified during the project lifetime for each environmental aspect. Impacts are expected to occur predominantly during the construction and operation phases, and to a lesser extent during decommissioning and closure.

Table 10: Risk Matrix of Assessed Project Impacts

Impact	Rating Pre-Mitigation	Construction	Operation	Decommissioning	Rating Post-Mitigation	Construction	Operation	Decommissioning
Positive (+)	Major (high)				Major (high)			
Positive (+)	Moderate (medium)	• Wetlands	• Socio-economic (Employment and income). • Wetlands	• Socio-Economic (Unlocking of land).	Moderate (medium)	• Socio-economic (Employment and income). • Wetlands	• Wetlands	• Socio-Economic (Unlocking of land)

Impact	Rating Pre-Mitigation	Construction	Operation	Decommissioning	Rating Post-Mitigation	Construction	Operation	Decommissioning
				• Wetlands				• Wetlands
Positive (+)	**Minor (low) +**	• Socio-economic (Employment and income).		• Soil and Agriculture.	**Minor (low) +**	• Soil and Agriculture. • Surface water. • Groundwater.	• Soil and Agriculture • Noise (Worst-case night-time operational activities). • Groundwater.	• Soil and Agriculture • Terrestrial biodiversity is anticipated to be "low". • Heritage. • Surface water. • Groundwater.
No Impact	**No Impact**				**No Impact**			
Negative (-)	**Minor (low) -**	• Terrestrial biodiversity is anticipated to be "low". • Socio-Economic (Informal influx of Job-seekers & Nuisance Factors). • Groundwater.	• Terrestrial biodiversity is anticipated to be "low". • Socio-Economic (Impact on adjacent farmers). • Noise (Future daytime & Night-time Activities). • Noise Worst-case daytime operational activities).	• Terrestrial biodiversity is anticipated to be "low".	**Minor (low) -**	• Socio-Economic (Informal influx of Job-seekers & Nuisance Factors) • Terrestrial biodiversity is anticipated to be "low". •	• Socio-Economic (Impact on adjacent farmers). • Terrestrial biodiversity is anticipated to be "low". • Noise (Future daytime & Night-time Activities). • Noise Worst-case daytime operational activities).	•

Impact	Rating Pre-Mitigation	Construction	Operation	Decommissioning	Rating Post-Mitigation	Construction	Operation	Decommissioning
			• Groundwater.					
Negative (-)	**Moderate (medium)**	• Air Quality. • Soil and Agriculture. • Heritage. • Surface water.	• Air Quality. • Soil and Agriculture. • Socio-Economic (Informal influx of Job-seekers, Community health and safety & Nuisance Factors). • Noise (Worst-case night-time operational activities).	• Socio- Economic (Cessation of employment). • Groundwater. • Air Quality	**Moderate (medium)**	• Air Quality	• • Socio-Economic (Informal influx of Job-seekers, Community health and safety & Nuisance Factors). • Surface water. • Air Quality	• Socio- Economic (Cessation of employment). • Air Quality • Groundwater.
Negative (-)	**Major (high)**		• Surface water. • Groundwater.		**Major (high)**			

7. Mitigation Summary

The focus of mitigation measures is to reduce the significance of the likely impacts associated with the entire process from construction to rehab/closure. Refer to Table 11.

Table 11: Mitigation Measures

Field	Main Impacts	Mitigation Measure
Terrestrial Biodiversity	• Environmental and Groundwater Pollution	• Keep the surface & subsurface water and storm water that may run off from the dumps away from the low laying areas, such as wetlands, as well as the surrounding

Field	Main Impacts	Mitigation Measure
	• Introduction of alien and invasive species, especially plants • Displacement of faunal community due to habitat loss, direct mortalities and disturbance (road collisions, noise, dust, vibration and poaching)	areas, from leaving the project area in an uncontrolled manner. • Leaking equipment and vehicles must be repaired immediately or be removed from the project area to facilitate repair. • Storm Water run off & Discharge Water Quality monitoring needs to be implemented. • No cleaning of vehicles, machines and equipment near water resources. • No servicing of machines, vehicles and equipment outside of designated laydown areas. • All contractors must have spill kits available and be trained in the correct use thereof. • Clean and dirty water must be separated. This water should be looked at for treatment and then reintroduced, to mitigate losses to the catchment water hydrodynamics. • Provide all personnel and contractors to undergo Environmental Awareness Training to all personnel and contractors. A signed register of attendance must be kept for proof. The training must include. All personnel should undergo environmental induction with regards to avifauna and in particular awareness about not harming, collecting, or hunting terrestrial species, and owls, which are often persecuted out of superstition. Signs must be put up to enforce this.
Wetlands	• Hydrological alterations changing the natural water flow patterns; • Habitat disturbance and fragmentation can disrupt and fragment wetland habitats; and • Oil and water pollution can lead to erosion and a change in water quality.	• Follow best practices for installation, dismantling and removing equipment to prevent spills. • Implement temporary drainage and stormwater systems to manage surface runoff effectively in a manner that reduces the erosion potential and subsequent sedimentation. • Ensure that all disturbed areas are stabilised before the onset of rainy seasons. • Conduct regular monitoring and removal of invasive species.
Surface water	• Erosion and wash off of exposed soils leading to siltation in downgradient	• Clearance of vegetation must be limited as far as possible; • Temporary erosion measures such as sediment nets should be employed around

Field	Main Impacts	Mitigation Measure
	watercourses.	exposed working areas; and • The SWMP must be implemented as a first step during the construction phase.
Groundwater	• Quantity impacts are not expected during Construction. • Disturbance of the mine dump or exposure of the ground surface may enable water and air to infiltrate the tailings material, particularly following rainfall. • Deterioration in groundwater quality due to the increased suspended solids seeping in from exposed surfaces. • Additional quality impacts are suspected to be low during Construction.	• Continue with the groundwater monitoring program at AMB before reclamation starts to monitor changes in the local water table, over time. • Continue with the groundwater monitoring program at AMB before reclamation starts. • Develop sound surface runoff management plans to ensure that all dirty runoff is contained and diverted to the PCD. No pooling of water on surface allowed. The groundwater table is near surface and contaminated seepage will quickly enter the underlying aquifers if not managed effectively. • Ensure that PCDs are designed to contain all dirty water generated during the reclamation process, to prevent overflows and spillages.
Air Quality	• Haul trucks on unpaved roads, materials handling operations, stripping of vegetation from the surface of a TSF and wind erosion from exposed areas causes the emission of particulate matter into the air, thus increasing existing ambient air concentrations of criteria pollutants (both PM10 and PM2.5) at receptors.	• Spray-on surface treatments on the haul roads to reduce dust generation. • Reduction in materials handling. Keeping a speed limit of 40km/h on the haul road. • Restriction of the stripped band to the minimum width practical. • Removing all tailings material down to ‘red earth’ as the area of work progresses and not leaving remnants of tailings material behind which could be exposed to wind erosion. • Keeping the area of mechanical reclamation to a minimum.
Social	• Impact on employment and income;	• Consider formal training of unskilled workers mobilised during the construction

Field	Main Impacts	Mitigation Measure
	• Positive contribution to social funds; • Impact on community health and safety; • Potential influx of people to the project area; and • Increase in nuisance factors.	phase; • Develop a database of potential suppliers of construction materials within the local area and earmark a percentage of potential intermediary inputs that it could source from local suppliers, HDSAs and SMMEs. Preference should be given to capable subcontractors who based within the local municipal area; • Communicate the local employment strategy clearly to the local communities adjacent to the mine via the existing stakeholder engagement channels. • As first priority mobilise AMB workers that are ear-marked for further down-scaling at the mine for deployment during the construction phase and communicate clearly to the local community that the recruitment process is an internal (mine) process; • Engage with local representatives to communicate the recruitment strategy of the Project and to register complaints related to increase level of influx into informal settlements; • Solutions to address service delivery require interventions from the local authorities. However, the applicant can address potential issues that could lead to unrest by ensuring that an effective grievance mechanism is put in place to ensure that stakeholders are provided with a platform to raise their concerns/complaints. • Strict adherence to the mitigation measures of the traffic and air quality impact reports. • A grievance management mechanism should be in place to receive incident related queries.
Heritage	• Destruction of cultural heritage resources • Undiscovered cultural heritage resources	• During the construction phase, it is important to recognize any significant material being unearthed, making the correct judgment on which actions should be taken. It is recommended that the AMB chance find procedure should be utilised and implemented, this is appended as Appendix D8 on the EIA report. The following is important to follow in this procedure:

Field	Main Impacts	Mitigation Measure
		• A heritage practitioner / archaeologist should be appointed to develop a heritage induction program and conduct training for the ECO as well as team leaders in the identification of heritage resources and artefacts during the implementation of the EMPr. • An appropriately qualified heritage practitioner / archaeologist must be identified to be called upon in the event that any possible heritage resources or artefacts are identified. • Should an archaeological site or cultural material be discovered during construction (or operation), the area should be demarcated, and construction activities halted. • The qualified heritage practitioner / archaeologist will then need to come out to the site and evaluate the extent and importance of the heritage resources and make the necessary recommendations for mitigating the find and the impact on the heritage resource.
Noise	• Noise associated with the reclamation project mainly originates from construction activities of required infrastructure as well as noises from motors and pumps during the operational phase	• AMB must investigate any reasonable and valid noise complaint if registered by a receptor staying within 2,000 m from the plant or active mining area. • AMB could investigates the use of white noise alarms instead of tonal reverse alarms on heavy vehicles operating on roads, within the mining area and at stockpile areas.
Soil and Agriculture	• Loss of Land Capability, Soil Degradation, Soil Erosion, Loss of soil Fertility	• Cleared areas must be rehabilitated and stabilized to avoid impacts to adjacent areas. • Ensure successful rehabilitation of areas disturbed during construction and these areas are stabilised to avoid impacts on adjacent areas

8. Overall Conclusions

An impact assessment has been undertaken using qualified specialists, which has incorporated extensive consultation with and participation of interested and affected parties. Applying the hierarchical approach to impact management, alternatives were firstly considered to avoid negative impacts, but where avoidance was not possible, to better mitigate and manage negative impacts. Where impacts were found to be potentially significant, various mitigation measures to manage and monitor the impacts of the project have been proposed. As a final option, offset strategies should be investigated, if feasible. The preferred alternative avoided multiple sensitive areas such as wetlands, and reduced the level of waste management off the TSF to insignificant. In addition, these is no need for the construction of Pollution Control Dams, as current infrastructure is to be used and no additional storage and ore management facilities will be constructed.

The findings of the impact assessment have shown that the Project would conclusively result in certain negative impacts during the operational phase to the environment, however, none of the specialist studies objected to the project. It must also be noted that all impacts identified can be mitigated and minimised by making use of the suggested mitigation measures.

Moreover, the scientific specialist mitigations measures have been included into this EIA and EMP report to reduce the significance of all the identified negative impacts. Most of the negative impacts from the Proposed Project can be reduced through the implementation of mitigation measures. Based on the information contained in this report, it is the opinion of the EAP that the negative environmental impacts resulting from the Project can be mitigated to within acceptable limits and that the project should be authorised. This opinion holds provided all the recommendations proposed in the specialist studies and the EIA and EMP report as well as legislative requirements are implemented and adhered to.

9. Glossary of Certain Terms

Environmental Assessment Practitioner (EAP): An EAP is someone who co-ordinates, manages and integrates the various components of environmental assessment throughout the planning process; has received an appropriate interdisciplinary training covering both the natural and human environment; has experience in environmental management, environmental assessment and related studies; and demonstrates core competencies that are considered essential to the environmental assessment profession.

Environmental Impact Assessment (EIA): EIA is a tool used to assess the significant effects of a project or development proposal on the environment. EIAs make sure that project decision makers think about the likely effects on the environment at the earliest possible time and aim to avoid, reduce or offset those effects. This ensures that proposals are understood properly before decisions are made.

Environmental Management Programme (EMPr): The EMPr is a detailed plan for the implementation of the mitigation measures to minimise negative environmental impacts during the project life-cycle.

Scoping Report: The SR describes the proposed project and identifies the possible impacts of the proposed development.

Tailings Storage Facility (TSF): A TSF is typically an earth-fill embankment dam used to store byproducts of mining operations after separating the ore from the rock. Tailings can be liquid, solid, or a slurry of fine particles.