

PART B – ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

21. DETAILS OF THE EAP

(Confirm that the requirement for the provision of the details and expertise of the EAP are already included in PART A, section 1(a) herein as required).

The information can be found in Part A, Section 1. Also refer to Appendix 1 and Appendix 2.

22. DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

(Confirm that the requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section (1)(h) herein as required).

Please refer to Section 3 above.

22.1. COMPOSITE MAP

(Provide a map (Attached as an Appendix) at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers)

Please refer to Appendix 3

22.2. DETERMINATION OF CLOSURE OBJECTIVES

(ensure that the closure objectives are informed by the type of environment described in 2.4 herein)

This section provides details on the closure cost. The outlined assumptions and limitations also underpin the basis of this closure cost determination. It is important to note that the estimation is based on existing information. The closure cost calculation has been performed in accordance with NEMA GNR 1147 financial provision.

Two River platinum is an existing mine with existing financial provision. The annual review and update of the financial provisioning for the June 2020 – July 2021 period was undertaken by Knight Piésold (Pty) Ltd. This update is required in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), as amended and associated Financial Provisioning Regulations, 2015 (GN R1147 published in GG 39425 on 20 November 2015) (See Appendix 17).

An addendum report (See Appendix 17) was completed for the proposed development of the waste rock dumps. The risk associated with the development and closure of the WRD's and PCD's are included in the Knight Piésold report as the mine has existing WRD's and PCD's. All the mitigation, management and rehabilitation measures as provided in the Knight Piésold report should be implemented. The Closure Liability associated with the proposed development should be included into the mine financial provisioning report when the activities are approved.

EXPLAIN HOW THE AFORESAID AMOUNT WAS DERIVED

For the development, the final rehabilitation cost was calculated and no concurrent rehabilitation cost is included based on the mine schedule and how the waste rock dumps will be developed. Any concurrent annual environmental costs will be included into the operating budget of the mine. The closure costs of the aspects linked with the project have been determined using current contractor rates as provided in the Knight Piésold report.

Costing calculations refer to the specific rehabilitation actions, areas and type of disturbance that requires rehabilitation. The bill of quantities (BoQ) for each of the closure items have been developed based on information contained in the Design Report. The method employed is deemed acceptable for the level of accuracy required in terms of the regulations.

ASSUMPTIONS

The following qualifications and assumption were made for the closure assessment:

- The rates contained in the Knight Piésold report is correct and relevant
- The rehabilitation measures, mitigation and management measures as included in the Knight Piésold report are sufficient to ensure that the rehabilitation objectives are met.
- All the limitation and assumptions identified in the Knight Piésold report are relevant to the mining area.

CLOSURE COST

The quantum for closure-related financial provision for the proposed Waste Rock Dump project was undertaken by Elemental Sustainability (Pty) Ltd. The summary of the closure cost calculated for the mine is presented in Table 80.

The estimated financial provision required for the rehabilitation and closure of the Waste Rock Dump Project is R 1 311 855.12 (Final Closure) excl. VAT. A summary of the financial provision estimates associated with the Waste Rock Dump Project is included in Table 80.

22.3. THE PROCESS OF MANAGING ANY ENVIRONMENTAL DAMAGE, POLLUTION, PUMPING AND TREATMENT OF EXTRANEIOUS WATER OR ECOLOGICAL DEGRADATION AS A RESULT OF UNDERTAKING LISTED ACTIVITY

Refer to Table 81 for the mitigation measures.

Any activity that results in damage or pollution to the environment will be rated and assigned a value to determine the associated risk. An environmental emergency is defined as an unplanned situation or event resulting in potential pollution of the environment. A pollution incident means an incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring, or is likely to occur.

Two Rivers Platinum is required to conform with the Polluter Pays Principle. This principle provides for “the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing,

controlling or minimizing further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.” The Polluter Pays Principle must be rigorously applied throughout all phases of the waste rock dump project.

22.3.1. Roles and Responsibilities

In order to implement the Environmental Management Programme (EMPr) and monitoring protocol, the required human resources and operational budget for environmental management must be provided. The following resources are required:

- External Environmental Control Officer during construction
- Internal Environmental manager during operations and closure

The Environmental personnel will need to ensure the EMPr is implemented to manage environmental impacts. TRP should also ensure that these positions are filled by people with the necessary competence and experience to not only assist with the implementation of the EMPr but are also capable of interpreting environmental monitoring results to identify any impacts or incidents. The Environmental Manager must ensure that regular internal operational monitoring and inspections are conducted across TRP, so that environmental non-compliances and incidents are identified, addressed and managed. Any environmental damage or pollution needs to be recorded as an environmental incident and investigated. The investigation must focus on identifying the root cause of the incident and also consider how to ensure no-repeat of these incidents.

All employees and its contractors working for the mine are responsible for reporting any accident/emergency to their supervisor immediately, and if required notifying the emergency response teams. Personnel must be nominated as response team members and must receive appropriate training to manage emergencies. All other personnel must be made aware of potential emergencies and trained in emergency response. Management must be aware of their responsibilities in case of emergency.

The rehabilitation plan must be updated annually to allow and plan for concurrent rehabilitation (annual rehabilitation). The financial provision must also be updated annually to cater of rehabilitation of the mine's impacts.

22.3.2. Response to Environmental Emergencies

22.3.2.1. Emergency Plan

TRP must identify potential emergencies and develop procedures for preventing and responding to them. There are several options for dealing with high priority impacts and risks, as the paradigm has two components, probability and consequence. The design of control measures is a function of understanding the cause and effect. Best practise is to intervene with the ultimate factors where feasible, rather than treat the outcomes. Emergency response is therefore aimed at reducing the probability, or reducing the consequence, although reducing the probability of an emergency is the preferred option.

Residual impacts are those impacts that, despite reducing the probability and consequence, might still occur. In these cases, parties will have to be compensated, pollution cleaned up and damage to the environment remediated.

TRP shall be required to develop and implement an Emergency Preparedness and Response Plan prior to commencing work. The Emergency Preparedness and Response Plan should be based on a baseline Hazard and Risk Assessment and should provide for the following as a minimum:

- Risk assessment (identification of areas where accidents and emergency situations may occur, and the individuals and communities who may be impacted)
- Description of the different potential emergencies, based on the risk assessment
- Response procedures
- Reference to relevant Material Safety Data Sheets (MSDS)
- Provision of equipment and resources
- Designation of responsibilities
- Site Plan (where applicable)
- Communication and reporting (including communication and reporting with potentially Affected Communities)
- Periodic training to ensure effective response, and
- Periodic review and revision, as necessary, to reflect changing conditions.

TRP must ensure that the Emergency Preparedness and Response Plan makes provision for environmental emergencies, including, but not limited to:

- Fire prevention
- Fire Emergency Response
- Spill Prevention
- Spill Response
- Contamination of a water resources
- Accidents to employees, and
- Use of hazardous substances and materials, etc.

TRP must ensure that lists of all emergency telephone numbers/contact persons (including fire control) are kept up to date and that all numbers and names are posted at relevant locations throughout the lifespan of the mine.

22.3.2.2. Classification of Emergencies

The following incidents will be classified as an emergency:

- Natural Disasters
- Damage to radiological/nuclear sources equipment
- Strikes, protest or unrest
- Information Management System Failure (plc systems)
- Health and Disease Outbreaks
- Serious Incident or Fatality
- High Potential Risk Incidents (fatality, serious environmental pollution), and
- Other emergencies

22.3.2.3. Reporting Emergencies

TRP will establish procedures to be included in its current Standard Operating Procedures (SOPs), which will include the additional waste rock dumps and associated pollution control dams. These procedures will aim to identify the potential for, and response to, incidents and emergency situations and for preventing and mitigating the illness, injury or environmental hazard that may be associated with them. TRP will review its emergency preparedness and response plans and procedures, in particular, after the occurrence of incidents or emergency situations. The mine shall also periodically test such procedures where and when practicable.

In the event of a serious incident or fatality occurring it is of the utmost importance to not only ensure the health and safety of every person involved, but also to ensure that certain evidence is protected and gathered for use, with the aim of the prevention of a similar incident/accident occurring in the future.

A “No Blame Fixing” approach to incident investigation will be implemented and it must be stressed that the gathering of information must be seen as preventative action and not as blame fixing. In light of the above, and in addition to the emergency procedure that is relevant to the specific area where the incident/accident occurred, and in relation to the notifying of persons and first aid treatment/safety of any person involved, the following steps must be taken immediately after an incident/accident classified above has occurred.

In the event of a reportable/major environmental incident that could lead to danger to the public or the environment (death or sustaining impact on the environment) the appointee of that specific section, in consultation with Safety, Health, Environmental and Quality (SHEQ) Manager, is responsible for communicating with and drafting an external report (in terms of Section 30 of National Environmental Management Act, 1998 (Act No. 108 of 1998) and Sections 19 and 20 of the National Water Act, 1998 (Act No. 36 of 1998) to the national and provincial department and the municipality containing the:

- Nature of the incident
- Substances and quantities and accurate effect on persons and environment
- Initial measures to minimise impacts
- Causes of the incident
- Accordance measures
- When an environmental incident occurs, the following should be adhered to:
 - o Report incident as per Incident Reporting Flow Diagram
 - o Measures to clean up any spillage/pollution must be taken as per Emergency Procedure.
 - o It is important to ensure that no secondary pollution is caused by incorrect handling of an environmental incident, e.g. incorrect disposal of absorbent material use to clean up a spill, and
- For high potential risk incident (HPRI) / reportable environmental incidents, the SHEQ Manager will conduct a closeout investigation prior to closure of the incident. This will be done one month after all actions has been completed to verify the effectiveness of the actions.

22.3.2.4. Formalise Policies

As the additional waste rock dumps and associated pollution control dams will ultimately form part of TRPs operational procedures and measures, it should be aligned accordingly. The following layout is recommended:

Objectives

To formalise and sign off on company policies.

Actions

Compile Health and Safety Policy, and
Compile Environmental Policy.

When

Before construction of new activities, associated with additional waste rock dumps and associated pollution control dams, begins.

The notification process has six main steps in managing an emergency, from the identification of the situation to final close off. These are as follows:

- Find and identify
- Ensure human safety
- Reporting
- Containment and clean-up
- Corrective action, and
- Monitoring

22.3.2.5. Environmental Emergency Incidents

The SHEQ Manager must, within 14 days of the incident, report information on the incident to enable initial evaluation to the following:

- Director-General of Department of Forestry, Fisheries and the Environment (DFFE)
- Provincial Head of Department of the Department of Mineral Resources and Energy (DMRE)
- Provincial Head of Department of the Department of Human Settlements, Water and Sanitation (DHSWS),
and
- Local Municipality

The report must include:

- Nature of the incident
- Substance involved and an estimation of quantity released and their possible acute effects on persons and the environment
- Initial measures taken to minimise impacts
- Cause of incident, whether direct or indirect, and
- Measures taken to avoid recurrence of such incident

22.3.2.6. Water Pollution Emergency Incident

Water Pollution Emergency Incident is any accident /incident in which a substance pollutes or has the potential to pollute a water resource or a substance that has or is likely to have a detrimental effect on a water resource.

The responsible person who was in control of the substance involved in the incident at the time, or responsible for the section the incident occurred in, will immediately inform the supervisor of the area where the incident occurred.

The supervisor of the area will immediately communicate the information with regard to the incident to the Business Manager, SHEQ Manager and Security Personnel. The SHEQ Manager and the General Manager must, as soon as reasonably practicable after obtaining the knowledge of the incident, (i.e. within 14 days) report to:

- DHSWS (Regional Manager);
- South African Police Services or relevant fire department; and
- The Catchment Management Agency.
- The SHEQ Manager and crisis management team must
 - o Take all reasonable measures to contain and minimise the effects of the incident;
 - o Undertake clean-up procedures;
 - o Remedy the effects of the incidents; and
 - o Sample the water together with the responsible person of the area.

22.3.2.7. Fire

Fires represents a significant risk to mining operations and requires special attention in the Emergency Response Plan. Sparks generated during welding, spontaneous combustion, cutting of metal or gas cutting can result in fires. Every possible precaution shall therefore be taken when working with this equipment near potential sources of combustion. TRP must take all reasonable measures to ensure that fires are not started as a result of activities on site. No smoking is allowed near containers with flammable contents or in proximity of areas that are highly flammable. Smoking is only permitted at areas designated for smoking. No open fires are permitted on site and no burning of waste is to be allowed on site. TRP shall ensure that there is sufficient firefighting equipment available on site at all times. Such precautions include having an approved fire extinguisher immediately available at the site of any such activities. TRP is to ensure that the contact details of the nearest fire station is on hand in case of an emergency. Appropriate and correctly serviced equipment must be available for all activities that are likely to generate fire. It is further anticipated that firebreaks will be required around the site perimeter. It is recommended that such fire prevention measures are implemented in consultation with adjacent landowners and where necessary coordinate fire prevention efforts with local Fire Protection Agency (FPA).

22.3.2.8. Spill Response Procedure

All employees, staff and labourers must be instructed regarding implementation of spill prevention measures and spill response procedures. In the event of a spill, the following general requirements shall apply, and the detailed spill procedure must cater for these requirements:

- Immediately reporting of spills by all employees and/or visitors to the relevant supervisor and ECO (this requirement must be including in induction training)
- Take immediate action to contain or stop the spill where it is safe to do so
- Contain the spill and prevent its further spread (e.g. earth berm or oil absorbent materials for spill to land or by deploying booms and/or absorbent material for a spill to water)

- Dispose of any contaminated soil or materials according to appropriate waste disposal procedure (waste from spills of hazardous materials shall be disposed of as hazardous waste at a suitably licensed waste disposal facility)
- TRPs Environmental Officer shall record details of the spill in their respective incident registers, and
- Photographic evidence shall be obtained of the spill clean-up.

In the case of large spills, the services of a specialist spill response agency shall be required, who shall advise on appropriate clean-up procedures and follow-up monitoring (if required). In the event of any spills which are classified as medium or major incidents, the supervisor of the area in which the spill occurred shall immediately inform the ECO/Environmental Manager (EM). The ECO/EM shall record the incident in the non-conformance and incident register and advise on the appropriate measures and timeframes for corrective action. Environmental incident reports shall be completed and submitted to the Mine Manger and ECO/EM within 5 working days for all medium and major incidents. If there is a requirement to report the incident to the authorities, this shall be done in consultation with the ECO/EM. The Applicant must also, (as per Section 30 of the NEMA) notify the Director-General (DHSWS, DFFE and DMRE), South African Police Services and Local Municipality and any persons whose health may be affected of the nature of an incident including:

- Any risks posed to public health, safety and property,
- Toxicity of the substance or by products released by the incident; and
- Any step taken to avoid or minimise the effects of the incident on public health and the environment.

TRP must ensure that lists of all emergency telephone numbers/contact persons (including fire control) are kept up to date and that all numbers and names are posted at relevant locations throughout the mine.

22.3.2.9. Air Pollution Emergency Incidents (if relevant)

In the event of non-compliance with the air quality registration certificate conditions and requirements:

- Record of all non-compliances must be kept
- The non-compliance with conditions will be reported telephonically, by fax or by email to the Chief Air Pollution Control Officer as soon as possible but not later than 24 hours after violation will start to occur. The particulars of such violation, including details of measures put in place to prevent it happening in the future, will be included in the weekly or monthly report;
- If the utilization and/or efficiency of air pollution control fails to meet requirements as specified in the certificate, then the process is managed under emergency procedures until such time as it will be possible to operate in compliance with the conditions of this certificate; and
- Record is kept of periods of upset and abnormal emissions, and the Chief Air Pollution Control Officer must be notified immediately should this occur

22.3.2.10. Environmental Impact Register

All non-conformances pertaining to safety, health, environmental, quality of project activities and employees shall be documented, as identified according to documented procedures. The TRP mine will make provision for recording and reviewing the nature and extent of any non-conformance that may be encountered during the Project Execution phase.

22.3.2.11. Records

Records must be kept of all environmental emergencies and non-conformances

23. WASTE CLASSIFICATION

23.1. LEGAL FRAMEWORK

Waste quality determination is a mandatory requirement stipulated in the National Environmental Management Waste Amendment Act, 2014 (Act No. 26, 2014). According to Schedule 3 of the National Environmental Management: Waste Amendment Act, 2014 (Act No. 26 of 2014), residue deposits and residue stockpiles are categorised into Category A – Hazardous Waste, and therefore form part of the legal compliance obligations set on their generators.

Prior to release of the Amendment Act (2014), the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (hereafter referred to as NEM:WA) had enforced the Government Notice Regulation 635 providing the National Norms and Standards for the Assessment of Waste for Landfill Disposal (2013). This document was accompanied by the GNR 634 (Waste Classification and Management Regulations), as well as the National Norms and Standards for Disposal of Waste to Landfill, gazetted in GN 636 of 2013, which stipulates the applicable landfill classes for disposal of each waste type viz. Types 1 to 4.

23.2. WASTE CLASSIFICATION

The National Norms and Standards for the Assessment of Waste for Landfill Disposal, published in GN 635 of 2013, prescribe the requirements for the assessment of waste, prior to disposal to landfill. These regulations were promulgated in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) prior to its amendments.

Although these regulations may not specifically apply to residue stockpiles and residue deposits, the requirements thereof have been considered as a guideline when assessing leach potential. GN 635 requires that all wastes that are to be disposed of in landfills, be assessed in terms of composition and leaching properties. The total concentrations, and leachable concentrations, of specified analytes, are used to assess the waste. These values were then compared to leachable concentrations thresholds (LCT) and total concentration thresholds (TCT), to determine the waste "type".

There are five waste types, numerically ordered from Type 0 to Type 4. Type 0 waste being most hazardous in respect of landfilling risk, and Type 4 being the least hazardous.

A waste rock sample from the Main Decline (WRMD01) was collected from TRP and submitted to Aquatico Laboratory for assessment and classification in 2020, based on the conjecture that the sample is representative of its respective waste stream. The waste rock was assessed, in accordance with the leaching criteria in the National Norms and Standards for the Assessment of Waste for Landfill Disposal, published in GN 635 of 2013. The waste rock sample was leached, in accordance with the requirements for mono-disposal of nonputrescible waste.

Results from the leach test exceeded the relevant LCT0 values for Total Chrome (Cr), Manganese (Mn), and Nickel (Ni). All other analytes are below the LCT0 values (Section 10.6 and Appendix 8). In terms of the Total

Concentration Threshold Leach, Copper (Cu) exceeded the TCT0 limit. All other analytes are below the LCT0 values (Section 10.6 and Appendix 8).

Based on the GN 636 (National Norms and Standards for the Assessment of Waste for Landfill Disposal), the waste rock should be classified as Type 3, based on the leach results, implying that a Class C liner is applicable. However, based on the risk to the environment, an exemption application is made (Section 10.6) in terms of Regulations 3 and 4 of the National Exemption Regulations (No R.994) read with Section 24M(3) of National Environmental Management Act (Act No 107 of 1998) and Section 74 of the NEM: Waste Act (Act No 59 of 2008), and specifically requests exemption from complying with GNR. 636. The motivation for exemption and reclassification of the waste rock as Type 4 waste requiring a Class D Liner is outlined below:

a. TCT and LCT Values

- Very low TCT and LCT concentration tested in the waste with only Total Chrome (Cr), Manganese (Mn), and Nickel (Ni) exceeding the LCT0 value and Copper (Cu) exceeding the TCT0 value.

b. Environmental Conditions

- The waste will be a mono-disposal and no other waste will be disposed at the facility, possessing a very low risk to the environment.
- No acid generation will take place in the environment and the waste has a high pH of 9.29. As no acid will be generated by the environment or the waste no additional leaching is expected

c. Stormwater management

- A stormwater management system will be constructed to collect all the water generated through runoff from the WRD. The water will be contained in a pollution-controlled dam (PCD). The PCD will be lined with a Class D performance liner and will be designed to contain the 1:50 flood event.

d. Surface and groundwater

- The WRD's will be outside of the 1:100 flood line and more than 32m away from any water sources.
- Based on the geohydrological report the waste rock holds a very low risk to cause pollution.
- The waste will not cause acid formation and will not result in the formation of AMD. The waste has a very low leaching potential and is alkaline

e. Existing WRD

- An existing waste rock dump is present on the mining area. The monitoring results for the mine indicated that the WRD has a very low potential to cause pollution and no significant pollution has been observed that emits from the WRD.

The geohydrological specialist study (Aquatox_2021) concluded that: " The geological formations were considered in conjunction with the analysis. Waste rock classification to date indicates that the waste rock marginally classifies as a Type 3 waste based on total concentrations as well as the leachable concentrations. However, it is evident that the waste rock will not produce a significant leached contaminant stream, nor pose any risks to the receiving environment. It is our professional opinion that the environmental setting does not suggest that this material

presents any significant environmental risks, and therefore does not need an underliner.”

According to the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), GG36784, GNR 634 National Norms & Standards for the Assessment of Waste for Landfill Disposal (2013) (Chapter 4(9)): Motivation can be submitted to demonstrate that the waste management activity, including associated storage and handling, can be implemented and conducted consistently and repeatedly in a controlled manner without unacceptable impact on, or risk to, the environment or health.

Annexure1(2)(a)(viii) indicates that excavated earth material not containing hazardous waste or hazardous chemicals do not require classification in terms of Regulation 4(1), nor assessment in terms of Regulation 8(1)(a). As the waste rock is excavated earth material which were not exposed to the chemical beneficiation process this material does not contain hazardous chemicals, the specialist concludes that no synthetic liner is required for the additional Waste Rock Dumps.

24. ACID MINE DRAINAGE

(Indicate whether or not the mining can result in acid mine drainage)

Please refer to Section 10.6 and Appendix 8. It is noted that the no acid generation will take place in the environment and the waste rock has a high pH of 9.29. As no acid will be generated by the environment or the waste no additional leaching is expected.

A copy of the waste classification report, as well as the motivation for exemption are attached to this EIAR/EMPR as Appendix 8a and Appendix 8b, respectively.

25. WATER

25.1. Volumes and rate of water use required for the mining, trenching or bulk sampling operation

The water uses listed in terms of Section 21(c), (i) and (g) of the National Water Act, 36 of 1998, as amended (NWA) will be applied for, as triggered by the Two Rivers Platinum – Waste Rock Dump Project. No activity in terms of the NEMA and the regulations thereunder will commence until the issuance of the Water Use Licence (WUL).

25.2. Has a water use licence been applied for?

A Water Use Licence Application (WULA) will be undertaken for the Two Rivers Platinum – Waste Rock Dump Project. The project will only commence once the approved WUL has been received from the DHSWS. The following water uses will be applied for in terms of Section 21 of the NWA:

- (c) impeding or diverting the flow of water in a watercourse – for mining activities within 500m of wetlands
- (i) altering the bed, banks, course or characteristics of a watercourse – for mining activities within 500m of wetlands, and
- (g) disposing of waste in a manner which may detrimentally impact on a water resource;

26. IMPACTS TO BE MITIGATED IN THEIR RESPECTIVE PHASES

Table 81: Mitigation Measures to Rehabilitate the Environment

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
|----------------------------------|---|--|--|--------------------------------|
| Hydrology | | | | |
| Construction of waste rock dumps | Surface water quality - Sedimentation and pollution of surface water resources resulting in the deterioration of water quality | <ul style="list-style-type: none"> - Application of Section 21 water uses in terms of the National Water Act, 36 of 1998 (Water Use Licence) - Development of the storm water management structures to ensure that sediment generated during the construction phase is conveyed to the silt trap, and clean water is diverted away from dirty water areas. - Ensure that storm water management structures are in good working condition through regular inspection, especially after large storm events. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | - Continuous |
| Construction of waste rock dumps | Surface water quantity - changes in the runoff flow velocity and volume increasing erosion and sedimentation | <ul style="list-style-type: none"> - If excessive erosion is observed, soil management and erosion protection structures and measures should be implemented. - Soils compacted by heavy machinery in areas that are not utilised post construction can be ripped to allow infiltration. - Roads should be maintained regularly to ensure that surface water drains freely off the road preventing erosion. - Limit refuelling and maintenance of machinery and vehicles to specified locations and ensure the appropriate spill prevention and incident management measures are in place. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | - Continuous |
| Construction of waste rock dumps | Surface water quantity - Reduction of Catchment Yield as dirty water runoff within the mine will be contained in the PCD. | <ul style="list-style-type: none"> - Avoid encroaching on natural areas directly adjacent to proposed activities. - Proliferation of alien and invasive species is expected within any disturbed areas. AIP species should be eradicated and controlled to prevent their spread within or beyond the footprint. An AIP Control Plan should be compiled and implemented for the proposed project. - Where feasible, rehabilitate disturbed areas as soon as possible after construction. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | - Continuous |
| Operation of waste rock dumps | Surface water quality - Sedimentation and pollution of surface water resources resulting in the deterioration of water quality. | <ul style="list-style-type: none"> - Ensure that effective separation of clean and dirty water systems is implemented, as designed by an engineer. No contaminated (“dirty”) water should be allowed to enter the natural environment, clean water systems or water resources. - The dirty water collection trenches should be cleaned regularly to reduce the build-up of sediment and to ensure they are able to accommodate and convey the 1:50 year peak flows. - Stockpiling should be monitored so that the side slopes do not encourage erosion of the slopes resulting in silt transported into | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | - Continuous |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
|--|--|--|--|---|
| Operation of waste rock dumps | Surface water quantity - changes in the runoff flow velocity and volume increasing erosion and sedimentation | <ul style="list-style-type: none"> - the trenches from the stockpiles. - Stockpiling areas need to be licenced and constructed as per the requirements of the Competent Authority. - Water quality in the PCDs should be monitored. This ensures that pollution sources are monitored during the operational phase and in the unlikely event of any spillages the downstream impacts can be estimated. - Seepage or discharge of waste water from the waste water containment facilities should be prevented to reduce pollution of surface water resources as well as to improve water conservation. Dirty water containment facilities and residue stockpiles should be appropriately lined as per the recommendations of the Geohydrological and/or Waste Classification Study. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <ul style="list-style-type: none"> - Continuous |
| Operation of waste rock dumps | Surface water quantity - Reduction of Catchment Yield as dirty water runoff within the mine will be contained in the PCD. | <ul style="list-style-type: none"> - Corridor movement associated with water resources should not be hampered by the development. No sections of the rivers and streams should be cordoned off, i.e. hydrological connectivity should be maintained. - Ongoing implementation of the recommended monitoring plan to ensure that impacts to the surface water environment are detected timeously. - Implement erosion prevention measures and structures. - Avoid contamination of soils and implement appropriate remedial measures if incidents of spillage occur. - Concurrent rehabilitation to be implemented, specifically revegetation of disturbed areas. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <ul style="list-style-type: none"> - Continuous |
| Closure and rehabilitation of waste rock dumps | Surface water quality - Sedimentation and pollution of surface water resources resulting in the deterioration of water quality | <ul style="list-style-type: none"> - Leaving the storm water management structures in place during the decommissioning and post closure phase until the rehabilitation process is completed. This will ensure that sediment generated during this phase is captured. - Storm water management structures should be inspected after large storm events to ensure that there are no blockages or damage. Should blockages or damage occur, immediate action should be undertaken to remove debris or to repair damaged areas. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <ul style="list-style-type: none"> - Decommissioning and Closure Phase |
| Closure and rehabilitation of waste rock dumps | Surface water quantity - changes in the runoff flow velocity and volume increasing erosion and sedimentation | <ul style="list-style-type: none"> - Soils compacted by heavy machinery can be ripped to allow infiltration. - The Waste Rock Dumps should be shaped to allow for a free-draining topography, topsoiled and vegetated. - Rehabilitation processes such as restoring the topography to a pre-activity state, and re-vegetation of disturbed areas will assist in returning natural surface water drainage patterns. - Establish free-draining final landform. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <ul style="list-style-type: none"> - Decommissioning and Closure Phase |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
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| Closure and rehabilitation of waste rock dumps | Surface water quantity - Reinstatement of surface drainage patterns (Positive Impact) | | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <ul style="list-style-type: none"> - Decommissioning and Closure Phase |
| Aquatic Ecology | | | | |
| Construction and Operation of waste rock dumps | Construction impacts resulting in impacts to biodiversity and ecological function | <ul style="list-style-type: none"> - Corridor movement associated with water resources should not be hampered by the development. No sections of the river should be cordoned off and avoidance of these sensitive areas is recommended. - No waste will be disposed of in or around the project area, which can attract rodents or other types of fauna; waste will be managed correctly. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <ul style="list-style-type: none"> - Continuous |
| Construction and Operation of waste rock dumps | Loss of biodiversity and ecological function. Impacts to ecological corridor functioning due to prolonged activity in proximity to watercourses | | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <ul style="list-style-type: none"> - Continuous |
| Construction and Operation of waste rock dumps | Alteration of drainage patterns leading to decrease and changes in water quantity and availability | <ul style="list-style-type: none"> - Define the runoff/flood characteristics of the study site and floodline analysis accordingly. - Adherence to the Engineered Storm Water Management Plan as compiled by an accredited engineer is crucial. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <ul style="list-style-type: none"> - Continuous |
| Construction and Operation of waste rock dumps | Deterioration of water quality in the surrounding and downstream water resources due to polluted water runoff, affecting aquatic communities | <ul style="list-style-type: none"> - Erosion protection and appropriate energy dissipation structures should be implemented where crossings are proposed, thereby stabilising and protecting areas/banks. - Decreased Dissolved Oxygen will also result if nutrients increase and impacts reach water resources, leading to possible eutrophication and algae and a decline in PES, which will decrease the aquatic ecology integrity and thereby further affecting the streams. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines | <ul style="list-style-type: none"> - Continuous |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
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| | | <ul style="list-style-type: none"> Monitor Water Quality and Aquatic Health (Biomonitoring) regularly - every month and Aquatic Health bi-annually (wet and dry season). | <ul style="list-style-type: none"> Water Use Licence | |
| Construction and Operation of waste rock dumps | Nutrient enrichment due to sedimentation, leading to decline of Dissolved Oxygen (DO), thereby impacting aquatic invertebrate communities | <ul style="list-style-type: none"> Protect soil resource, beds and banks therefore preventing erosion and increased sedimentation in the resource. This will prevent increased sedimentation and smothering of aquatic ecosystems. | <ul style="list-style-type: none"> NWA GN704 NEMA Duty of Care NEMA Polluter Pays Principle DWS Best Practice Guidelines Water Use Licence | <ul style="list-style-type: none"> Continuous |
| Construction and Operation of waste rock dumps | Deterioration of surface water quality may lead to a deterioration of the Present Ecological Status (PES). | <ul style="list-style-type: none"> There will be no discharges of dirty water from the construction site and mobile chemical toilets to be provided for workers during construction. Avoid contamination of soils and implement appropriate remedial measures if incidents of spillage occur. Protect and prevent unnecessary impacts within the riparian and 32m zone (or otherwise delineated buffer as per surface water assessment) of the watercourse. Rehabilitate affected areas immediately to prevent sedimentation and protect against erosion. | <ul style="list-style-type: none"> NWA GN704 NEMA Duty of Care NEMA Polluter Pays Principle DWS Best Practice Guidelines Water Use Licence | <ul style="list-style-type: none"> Continuous |
| Construction and Operation of waste rock dumps | Surface water quantity reducing the capacity available to sustain aquatic diversity | <ul style="list-style-type: none"> Optimise water use by means of reuse and recycling. Implement diversions or impedances if these are applicable (crossings specifically) as per designs and formal management plans. | <ul style="list-style-type: none"> NWA GN704 NEMA Duty of Care NEMA Polluter Pays Principle DWS Best Practice Guidelines Water Use Licence | <ul style="list-style-type: none"> Continuous |
| Wetlands | | | | |
| Construction of Waste Rock Dumps | Alteration of the water flow regime of the watercourses with potential compaction of soil, the removal of vegetation, and surface water redirection during construction activities. | <ul style="list-style-type: none"> Construction affecting watercourses should be restricted to the dryer wintermonths. A temporary fence or demarcation must be erected around no-go areas outside the proposed works area prior to any construction taking place as part of the contractor planning phase when compiling work method statements to prevent access to the adjacent portions of the watercourse. Effective stormwater management should be a priority during all phases of the project. This should be monitored as part of the EMP. | <ul style="list-style-type: none"> NWA GN704 NEMA Duty of Care NEMA Polluter Pays Principle DWS Best Practice Guidelines Water Use Licence | <ul style="list-style-type: none"> Continuous |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
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| | | <ul style="list-style-type: none"> - Monitor for changes to the aquatic baseline of the downstream watercourses. - A 32m buffer area has been placed around the watercourses; all activities should take place outside of the buffer areas. - Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas. - Ensure that erosion management and sediment controls are strictly implemented from the beginning of site clearing activities. - All areas should be re-sloped and top-soiled where necessary and reseeded with indigenous grasses to stabilise the loose material. - Monitor the occurrence of erosion during the rainy season and take immediate corrective action where needed. - As far as possible the existing road network should be utilised, minimising the need to develop new access routes resulting in an increased impact on the local environment. | | |
| Construction of Waste Rock Dumps | Construction activities will result in earthworks and soil disturbance which could result in the loss of topsoil, sedimentation of the watercourse and increase the turbidity (increasing or decreasing the amount) of the water. | <ul style="list-style-type: none"> - It is possible that water will be contaminated within earthworks and should thus be cleaned or dissipated into a structure that allows for additional sediment input and slows down the velocity of the water thus reducing the risk of erosion. Effective sediment traps should be installed. - Construction in and around watercourses must be restricted to the dryer winter months where possible. - Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area (DWAF, 2005). - Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. - Buffer zones should be maintained, in order to minimise sedimentation of the downstream areas. - Ensure that erosion management and sediment controls are strictly implemented from the beginning of site clearing activities. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | - Continuous |
| Construction of Waste Rock Dumps | Soil and vegetation disturbance during construction activities may potentially result in opportunistic invasions of alien vegetation impacting hydrology by reducing the quantity of water entering a | <ul style="list-style-type: none"> - Relocate conservation-worthy species under the supervision of a vegetation or horticultural specialist. - Proliferation of alien and invasive species is expected within any disturbed areas particularly as there are some alien and invasive species present within the study site. These species should be eradicated and controlled to prevent further spread | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice | - Continuous |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
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| | watercourse, outcompete natural vegetation, and decreasing the natural biodiversity. | <ul style="list-style-type: none"> beyond. – An alien invasive vegetation management plan should be developed and implemented. – Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat. – Footprint areas should be kept as small as possible when removing alien plant species. – No vehicles should be allowed to drive through designated sensitive areas during the eradication of alien and weed species. – Rehabilitate or revegetate disturbed areas. | <ul style="list-style-type: none"> Guidelines – Water Use Licence | |
| Construction of Waste Rock Dumps | Permanent loss and disturbance of watercourse habitat and fringe vegetation due to direct development on the watercourse as well as changes in management, fire regime and habitat fragmentation. | <ul style="list-style-type: none"> – A 20 m buffer area has been placed around the watercourses; all activities should take place outside of the buffer areas. – Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas. – Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat. – Monitor the occurrence of erosion during the rainy season and take immediate corrective action where needed. | <ul style="list-style-type: none"> – NWA – GN704 – NEMA Duty of Care – NEMA Polluter Pays Principle – DWS Best Practice Guidelines – Water Use Licence | – Continuous |
| Construction of Waste Rock Dumps | Construction activities may result in the discharge of runoff from the waste rock dumps and leakage of fuel/oil from vehicles resulting in the loss of sensitive biota in the rivers and a reduction in watercourse function. | <ul style="list-style-type: none"> – Implementation of appropriate stormwater management around the waste rock dumps to prevent contaminated runoff into the watercourses. – The development footprint must be fenced off from the watercourses and no related impacts may be allowed into the watercourse e.g. water runoff from cleaning of equipment, vehicle access etc. – A 20 m buffer area has been placed around the watercourses; all activities should take place outside of the buffer areas. – Maintenance of construction vehicles / equipment should not take place within the watercourse or watercourse buffer. – All vehicles must be regularly inspected for leaks. – Re-fueling must take place on a sealed surface area to prevent hydrocarbon pollution. – All spills should be cleaned up immediately and disposed of. – Littering must be prevented by effective site management and the provision of bins. – Effective stormwater management should be implemented to avoid runoff to the wetland. – Maintenance of buffer zones to trap sediments with associated | <ul style="list-style-type: none"> – NWA – GN704 – NEMA Duty of Care – NEMA Polluter Pays Principle – DWS Best Practice Guidelines – Water Use Licence | – Continuous |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
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| | | <p>toxins.</p> <ul style="list-style-type: none"> - Control of waste discharges and do not allow dirty water from operational activities to enter the watercourse. - Treatment of pollution identified should be prioritised accordingly. | | |
| Operation of the waste rock dumps | Alteration of the water flow regime of the watercourses with potential compaction of soil, the removal of vegetation, and surface water redirection during operational activities. | <ul style="list-style-type: none"> - Construction affecting watercourses should be restricted to the dryer winter months. - A temporary fence or demarcation must be erected around no-go areas outside the proposed works area prior to any construction taking place as part of the contractor planning phase when compiling work method statements to prevent access to the adjacent portions of the watercourse. - Effective stormwater management should be a priority during all phases of the project. This should be monitored as part of the EMPr. - Monitor for changes to the aquatic baseline of the downstream watercourses. - A 20 m buffer area has been placed around the watercourses; all activities should take place outside of the buffer areas. - Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas. - Ensure that erosion management and sediment controls are strictly implemented from the beginning of site clearing activities. - All areas should be re-sloped and top-soiled where necessary and reseeded with indigenous grasses to stabilise the loose material. - Monitor the occurrence of erosion during the rainy season and take immediate corrective action where needed. - As far as possible the existing road network should be utilised, minimising the need to develop new access routes resulting in an increased impact on the local environment. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <ul style="list-style-type: none"> - Continuous |
| Operation of the waste rock dumps | Operational activities will result in earthworks and soil disturbance which could result in the loss of topsoil, sedimentation of the watercourse and increase the turbidity (increasing or decreasing the amount) of the water. | <ul style="list-style-type: none"> - It is possible that water will be contaminated within earthworks and should thus be cleaned or dissipated into a structure that allows for additional sediment input and slows down the velocity of the water thus reducing the risk of erosion. Effective sediment traps should be installed. - Construction in and around watercourses must be restricted to the dryer winter months where possible. - Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <ul style="list-style-type: none"> - Continuous |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
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| | | <p>that area (DWAF, 2005).</p> <ul style="list-style-type: none"> - Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. - Buffer zones should be maintained, in order to minimise sedimentation of the downstream areas. - Ensure that erosion management and sediment controls are strictly implemented from the beginning of site clearing activities. | | |
| Operation of the waste rock dumps | Operational activities may potentially result in opportunistic invasions of alien vegetation, thereby impacting hydrology by reducing the quantity of water entering a watercourse, outcompeting natural vegetation, and decreasing the natural biodiversity. | <ul style="list-style-type: none"> - Relocate conservation-worthy species under the supervision of a vegetation or horticultural specialist. - Proliferation of alien and invasive species is expected within any disturbed areas particularly as there are some alien and invasive species present within the study site. These species should be eradicated and controlled to prevent further spread beyond. - An alien invasive vegetation management plan should be developed and implemented. - Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat. - Footprint areas should be kept as small as possible when removing alien plant species. - No vehicles should be allowed to drive through designated sensitive areas during the eradication of alien and weed species. - Rehabilitate or revegetate disturbed areas. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | - Continuous |
| Operation of the waste rock dumps | Permanent loss and disturbance of watercourse habitat and fringe vegetation due to direct development on the watercourse as well as changes in management, fire regime and habitat fragmentation. | <ul style="list-style-type: none"> - A 20 m buffer area has been placed around the watercourses; all activities should take place outside of the buffer areas. - Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas. - Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat. - Monitor the occurrence of erosion during the rainy season and take immediate corrective action where needed. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | - Continuous |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
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| Operation of the waste rock dumps | Operational activities may result in the discharge of runoff from the waste rock dumps and leakage of fuel/oil from vehicles resulting in the loss of sensitive biota in the rivers and a reduction in watercourse function. | <ul style="list-style-type: none"> - Implementation of appropriate stormwater management around the waste rock dumps to prevent contaminated runoff into the watercourses. - The development footprint must be fenced off from the watercourses and no related impacts may be allowed into the watercourse e.g. water runoff from cleaning of equipment, vehicle access etc. - A 20 m buffer area has been placed around the watercourses; all activities should take place outside of the buffer areas. - Maintenance of construction vehicles / equipment should not take place within the watercourse or watercourse buffer. - All vehicles must be regularly inspected for leaks. - Re-fueling must take place on a sealed surface area to prevent hydrocarbon pollution. - All spills should be cleaned up immediately and disposed of. - Littering must be prevented by effective site management and the provision of bins. - Effective stormwater management should be implemented to avoid runoff to the wetland. - Maintenance of buffer zones to trap sediments with associated toxins. - Control of waste discharges and do not allow dirty water from operational activities to enter the watercourse. - Treatment of pollution identified should be prioritised accordingly. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <ul style="list-style-type: none"> - Continuous |
| Closure and rehabilitation of waste rock dumps | Alteration of the water flow regime of the watercourses with potential compaction of soil, the removal of vegetation, and surface water redirection during rehabilitation activities. | <ul style="list-style-type: none"> - Construction affecting watercourses should be restricted to the dryer wintermonths. - A temporary fence or demarcation must be erected around no-go areas outside the proposed works area prior to any construction taking place as part of the contractor planning phase when compiling work method statements to prevent access to the adjacent portions of the watercourse. - Effective stormwater management should be a priority during all phases of the project. This should be monitored as part of the EMPr. - Monitor for changes to the aquatic baseline of the downstream watercourses. - A 20 m buffer area has been placed around the watercourses; all activities should take place outside of the buffer areas. - Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <ul style="list-style-type: none"> - Decommissioning and Closure Phase |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
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| | | <ul style="list-style-type: none"> - Ensure that erosion management and sediment controls are strictly implemented from the beginning of site clearing activities. - All areas should be re-sloped and top-soiled where necessary and reseeded with indigenous grasses to stabilise the loose material. - Monitor the occurrence of erosion during the rainy season and take immediate corrective action where needed. - As far as possible the existing road network should be utilised, minimising the need to develop new access routes resulting in an increased impact on the local environment. | | |
| Closure and rehabilitation of waste rock dumps | Rehabilitation activities could result in sedimentation of the watercourse and increase the turbidity (increasing or decreasing the amount) of the water. | <ul style="list-style-type: none"> - It is possible that water will be contaminated within earthworks and should thus be cleaned or dissipated into a structure that allows for additional sediment input and slows down the velocity of the water thus reducing the risk of erosion. Effective sediment traps should be installed. - Construction in and around watercourses must be restricted to the dryer winter months where possible. - Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area (DWAF, 2005). - Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. - Buffer zones should be maintained, in order to minimise sedimentation of the downstream areas. - Ensure that erosion management and sediment controls are strictly implemented from the beginning of site clearing activities. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <ul style="list-style-type: none"> - Decommissioning and Closure Phase |
| Closure and rehabilitation of waste rock dumps | Rehabilitation activities may potentially result in opportunistic invasions of alien vegetation, thereby impacting hydrology by reducing the quantity of water entering a watercourse, outcompeting natural vegetation, and decreasing the natural biodiversity. | <ul style="list-style-type: none"> - Relocate conservation-worthy species under the supervision of a vegetation or horticultural specialist. - Proliferation of alien and invasive species is expected within any disturbed areas particularly as there are some alien and invasive species present within the study site. These species should be eradicated and controlled to prevent further spread beyond. - An alien invasive vegetation management plan should be developed and implemented. - Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat. - Footprint areas should be kept as small as possible when | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <ul style="list-style-type: none"> - Decommissioning and Closure Phase |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
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| | | <ul style="list-style-type: none"> removing alien plant species. – No vehicles should be allowed to drive through designated sensitive areas during the eradication of alien and weed species. – Rehabilitate or revegetate disturbed areas. | | |
| Closure and rehabilitation of waste rock dumps | Permanent loss and disturbance of watercourse habitat and fringe vegetation due to direct development on the watercourse as well as changes in management, fire regime and habitat fragmentation. | <ul style="list-style-type: none"> – A 32m buffer area has been placed around the watercourses; all activities should take place outside of the buffer areas. – Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas. – Alien and invasive vegetation control should take place throughout all phases to prevent loss of floral habitat. – Monitor the occurrence of erosion during the rainy season and take immediate corrective action where needed. | <ul style="list-style-type: none"> – NWA – GN704 – NEMA Duty of Care – NEMA Polluter Pays Principle – DWS Best Practice Guidelines – Water Use Licence | <ul style="list-style-type: none"> – Decommissioning and Closure Phase |
| Closure and rehabilitation of waste rock dumps | Construction activities may result in the discharge of runoff from the waste rock dumps and leakage of fuel/oil from vehicles resulting in the loss of sensitive biota in the rivers and a reduction in watercourse function. | <ul style="list-style-type: none"> – Implementation of appropriate stormwater management around the waste rock dumps to prevent contaminated runoff into the watercourses. – The development footprint must be fenced off from the watercourses and no related impacts may be allowed into the watercourse e.g. water runoff from cleaning of equipment, vehicle access etc. – A 32m buffer area has been placed around the watercourses; all activities should take place outside of the buffer areas. – Maintenance of construction vehicles / equipment should not take place within the watercourse or watercourse buffer. – All vehicles must be regularly inspected for leaks. – Re-fueling must take place on a sealed surface area to prevent hydrocarbon pollution. – All spills should be cleaned up immediately and disposed of. – Littering must be prevented by effective site management and the provision of bins. – Effective stormwater management should be implemented to avoid runoff to the wetland. – Maintenance of buffer zones to trap sediments with associated toxins. – Control of waste discharges and do not allow dirty water from operational activities to enter the watercourse. – Treatment of pollution identified should be prioritised accordingly. | <ul style="list-style-type: none"> – NWA – GN704 – NEMA Duty of Care – NEMA Polluter Pays Principle – DWS Best Practice Guidelines – Water Use Licence | <ul style="list-style-type: none"> – Decommissioning and Closure Phase |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
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| Terrestrial Ecology (Flora and Fauna) | | | | |
| Construction of waste rock dumps | Construction of the additional waste rock dumps might result in impacts to the natural environment due to increased movement, traffic and large machinery use in the area, and specifically on the flora when removal of plant communities will take place on site. | <ul style="list-style-type: none"> - Demarcate specific areas to be developed and remain clear of other areas where activities are not necessary. - Adhere to all management and mitigation measures as prescribed within other specialist reports and Environmental Management Programme (EMPr). - To minimize potential impacts to animal species, animals (wildlife and domestic animals) may under no circumstances be handled, removed, killed or interfered with by the Contractor, his employees, his Sub-Contractors or his Sub-Contractors' employees. - Prevent impacts from reaching downstream water resources by ensuring installation and proper functioning of stormwater systems and drains to prevent contaminated water entering the natural environment. | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - Animal Protection Act 1962 (Act 71 of 1962) - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of Species | - Continuous |
| Construction of waste rock dumps | <p>Endemic, protected and/or SCC species within the area of activity could potentially be destroyed. Two SCC are considered to have a moderate likelihood occurrence within the project footprint. One tree species protected in terms of the NFA was confirmed to occur on the project footprint.</p> <p>Development and related activities will impact on sensitive habitats, such as the CA1 areas of VU1 and VU2.</p> <p>Sensitive (VU1 & VU2) habitats situated adjacent or in close proximity to the development footprint could be impacted on, specifically sections of WRD1 and WRD 3 which will require sensitive natural habitat and vegetation to be</p> | <ul style="list-style-type: none"> - All footprint areas should remain as small as possible. This can be achieved by fencing footprint areas to contain all activities within designated areas. - A survey for SCC species on the project footprint area should be undertaken by a suitably qualified specialist prior to the start of construction. - If any SCC are encountered within the subject property in the future, the following should be ensured: <ul style="list-style-type: none"> o If any threatened species will be disturbed, ensure effective relocation of individuals to suitable offset areas or within designated open space on the subject property. o All rescue and relocation plans should be overseen by a suitably qualified specialist. o Obtain relevant permits/consent, if applicable, for each protected or endangered floral species identified within the proposed development area that will be destroyed. o Human and vehicle movement should be restricted from taking place in sensitive habitats. Areas to be fenced if necessary | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - Animal Protection Act 1962 (Act 71 of 1962) - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of Species | - Continuous |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
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| | removed (VU1). | | | |
| Construction of waste rock dumps | Fragmentation of habitat areas due to possible fencing or the placement of boundary structures, leading to increased edge effects. | <ul style="list-style-type: none"> - Demarcate specific areas to be developed and remain clear of other areas where activities are not necessary. - Adhere to all management and mitigation measures as prescribed within other specialist reports and Environmental Management Programme (EMPr). - Keep the footprints as small as possible and clear only the designated approved areas. - During the construction phase control of access should be implemented for all remaining natural areas to prevent unnecessary destruction of habitats or disturbance of species. It is also important that no additional fragmentation occurs and that all roads are clearly demarcated and kept to. No vehicles or personnel should be permitted outside of these demarcated roads | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - Animal Protection Act 1962 (Act 71 of 1962) - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of Species | - Continuous |
| Construction of waste rock dumps | Increase of invasive species from the surrounding areas, leading to further change to the vegetation structure and composition. Potential for the spread of existing invaders already on-site, to other surrounding areas. | <ul style="list-style-type: none"> - Implement an Alien and Invasive Management Programme, which will aim to remove and manage the plants recorded during the field survey, since most of these species are already listed on the Alien and Invasive Species list as published in 2020. - Ensure awareness amongst all staff, contractors and visitors to site to not needlessly damage flora. - To minimize potential impacts to animal species, animals (wildlife and domestic animals) may under no circumstances be handled, removed, killed or interfered with by the Contractor, his employees, his Sub-Contractors or his Sub-Contractors' employees. | <ul style="list-style-type: none"> - NEMBA - LEMA | - Continuous |
| Construction of waste rock dumps | Anthropogenic influence stemming from employees, visitors and contractors that infiltrate the natural veld areas will damage and impact on species communities within certain areas | <ul style="list-style-type: none"> - Demarcate specific areas to be developed and remain clear of other areas where activities are not necessary. - Prevent impacts from reaching downstream water resources by ensuring installation and proper functioning of stormwater management systems. | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - Animal Protection Act 1962 (Act 71 of 1962) - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of Species | - Continuous |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
|---|--|--|---|--|
| Operation of waste rock dumps | <p>Endemic, protected and/or SCC species within the area of activity could potentially be destroyed. Two SCC are considered to have a moderate likelihood occurrence within the project footprint. One tree species protected in terms of the NFA was confirmed to occur on the project footprint. Development and related activities will impact on sensitive habitats, such as the CA1 areas of VU1 and VU2.</p> <p>Sensitive (VU1 & VU2) habitats situated adjacent or in close proximity to the development footprint could be impacted on, specifically sections of WRD1 and WRD 3 which will require sensitive natural habitat and vegetation to be removed (VU1).</p> | <ul style="list-style-type: none"> - All footprint areas should remain as small as possible. This can be achieved by fencing footprint areas to contain all activities within designated areas. - A survey for SCC species on the project footprint area should be undertaken by a suitably qualified specialist prior to the start of construction. - If any SCC are encountered within the subject property in the future, the following should be ensured: <ul style="list-style-type: none"> o If any threatened species will be disturbed, ensure effective relocation of individuals to suitable offset areas or within designated open space on the subject property. o All rescue and relocation plans should be overseen by a suitably qualified specialist. o Obtain relevant permits/consent, if applicable, for each protected or endangered floral species identified within the proposed development area that will be destroyed. - Human and vehicle movement should be restricted from taking place in sensitive habitats. Areas to be fenced if necessary | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - Animal Protection Act 1962 (Act 71 of 1962) - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of Species | <ul style="list-style-type: none"> - Continuous |
| Operation of waste rock dumps | <p>Increase of invasive species from the surrounding areas, leading to further change to the vegetation structure and composition. Potential for the spread of existing invaders already on-site, to other surrounding areas.</p> | <ul style="list-style-type: none"> - Implement an Alien and Invasive Management Programme, which will aim to remove and manage the plants recorded during the field survey, since most of these species are already listed on the Alien and Invasive Species list as published in 2020. - Ensure awareness amongst all staff, contractors and visitors to site to not needlessly damage flora. - To minimize potential impacts to animal species, animals (wildlife and domestic animals) may under no circumstances be handled, removed, killed or interfered with by the Contractor, his employees, his Sub-Contractors or his Sub-Contractors' employees. | <ul style="list-style-type: none"> - NEMBA - LEMA | <ul style="list-style-type: none"> - Continuous |
| Construction and rehabilitation of waste rock dumps | <p>Without the necessary mitigation measures, rehabilitation will be unsuccessful, and the environment will not be self-sustaining; the alien invasive species will increase and result in a degraded veld condition making the property less viable for post-closure land use activities such as wilderness, grazing and</p> | <ul style="list-style-type: none"> - A management plan for control of invasive/exotic plant species needs to be implemented for all footprint and surrounding areas. This will be ongoing until the end of the mining closure phase. - Rehabilitation plans should be planned long before the closure phase is due. Continuous rehabilitation should also take place during the operational phase. - Rehabilitation plan should be implemented. This includes the process of replanting the vegetation. Rehabilitation plans | <ul style="list-style-type: none"> - NEMBA - LEMA | <ul style="list-style-type: none"> - Continuous |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
|---------------------------------------|--|---|---|--------------------------------|
| | agriculture. | <p>should be compiled with the use of a specialist and the correct seeding techniques and mixtures should be applied.</p> <ul style="list-style-type: none"> – Close monitoring of plant communities to ensure that ecology is restored and self-sustaining. The monitoring of the flora should be conducted annually by the environmental practitioner, until a suitably qualified specialist deems the monitoring to no longer be necessary. A report should be written and stored and should be available at all times. | | |
| Soil, Land and Land Capability | | | | |
| Construction of waste rock dumps | Potential soil erosion from areas where vegetation is removed from the soil surface in preparation for the construction of the additional waste rock dump risk of erosion. | <ul style="list-style-type: none"> – Minimise vegetation removal to just the areas to be prepared for construction. – Avoid disturbance on natural areas directly adjacent to proposed activities. | – CARA | – Continuous |
| Construction of waste rock dumps | All areas where vehicles and equipment will traverse during the construction phase to deliver materials, prepare the terrain and construct the waste rock dump facilities, will be at risk of soil compaction. | <ul style="list-style-type: none"> – Visual inspection/confirmation that no surface impacts are occurring. Management and rehabilitation (if required) – Material must be delivered to a laydown area | – CARA | – Continuous |
| Construction of waste rock dumps | All areas where vehicles and equipment will traverse during the construction phase to deliver materials, prepare the terrain and construct the waste rock dump facilities, will be at risk of soil pollution. | <ul style="list-style-type: none"> – Remedy through visual monitoring, rehabilitation, proper removal and disposal if soils have become contaminated – Material must be delivered to a laydown area | – CARA | – Continuous |
| Construction of waste rock dumps | Contamination of soils through accidental release / spillage of hydrocarbon-based fuels and oils or lubricants spilled from construction vehicles | <ul style="list-style-type: none"> – Remedy through visual monitoring rehabilitation, proper removal and disposal if soils have become contaminated – Vehicle maintenance | <ul style="list-style-type: none"> – Hazardous Substances Act – NWA – NEMA Duty of Care – NEMWA – Incident Reporting | – Continuous |
| Operation of waste rock dumps | Dumps trucks travelling to the waste rock dumps to stockpile the waste rock material, will increase the existing compaction. | <ul style="list-style-type: none"> – Visual inspection/confirmation that no surface impacts are occurring. Management and rehabilitation (if required) | – CARA | – Continuous |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
|--|---|--|--|---|
| Operation of waste rock dumps | Dump trucks traveling to the waste rock dumps to stockpile the waste rock material, may increase existing soil pollution. | <ul style="list-style-type: none"> Remedy through visual monitoring, rehabilitation, proper removal and disposal if soils have become contaminated | <ul style="list-style-type: none"> CARA | <ul style="list-style-type: none"> Continuous |
| Operation of waste rock dumps | Contamination of soils through accidental release / spillage of hydrocarbon-based fuels and oils or lubricants spilled from haul vehicles. | <ul style="list-style-type: none"> Remedy through visual monitoring rehabilitation, proper removal and disposal if soils have become contaminated Vehicle maintenance | <ul style="list-style-type: none"> Hazardous Substances Act NWA NEMA Duty of Care NEMWA Incident Reporting | <ul style="list-style-type: none"> Continuous |
| Closure and rehabilitation of waste rock dumps | During the decommissioning phase, the movement of vehicles and equipment will again result in soil compaction. | <ul style="list-style-type: none"> Visual inspection/confirmation that no surface impacts are occurring. Management and rehabilitation (if required) | <ul style="list-style-type: none"> CARA | <ul style="list-style-type: none"> Decommissioning and Closure Phase |
| Closure and rehabilitation of waste rock dumps | Contamination of soils through accidental release / spillage of hydrocarbon-based fuels and oils or lubricants spilled from vehicles. | <ul style="list-style-type: none"> Remedy through visual monitoring rehabilitation, proper removal and disposal if soils have become contaminated | <ul style="list-style-type: none"> Hazardous Substances Act NWA NEMA Duty of Care NEMWA Incident Reporting | <ul style="list-style-type: none"> Decommissioning and Closure Phase |
| Air Quality | | | | |
| Construction of waste rock dumps | Nuisance dust will result from the construction of the additional waste rock dumps increasing risk to health | <ul style="list-style-type: none"> Regular dust suppression Personal protective equipment to be provided and worn correctly at all times, as per the health and safety risk assessment Fallout dust monitoring Adhere to Dust regulations already implemented on TRP | <ul style="list-style-type: none"> NEMAQA National Dust Control Regulations MHSA | <ul style="list-style-type: none"> Continuous |
| Construction of waste rock dumps | Fallout dust from construction activities may impact light transmission, with the potential to decrease plant growth by impacting on the process of photosynthesis. | <ul style="list-style-type: none"> Regular dust suppression Vegetation monitoring | <ul style="list-style-type: none"> NEMBA LEMA TOPS National List of Threatened Terrestrial Ecosystems (2011) IUCN Red List of Threatened Species South African Red List of Species | <ul style="list-style-type: none"> Continuous |
| Construction of waste | Fallout dust can also collect in watercourses, resulting in | <ul style="list-style-type: none"> Regular dust suppression Biomonitoring | <ul style="list-style-type: none"> NEMBA LEMA | <ul style="list-style-type: none"> Continuous |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
|----------------------------------|---|--|--|--------------------------------|
| rock dumps | sedimentation and reduced water quality, potentially affecting aquatic life by the smothering of riverine habitat and fish gill clogging. | | <ul style="list-style-type: none"> - TOPS - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of Species - Water Use Licence | |
| Construction of waste rock dumps | Increased windborne dust (waste rock) and vehicle fumes, altering air quality through dust pollution. | <ul style="list-style-type: none"> - Regular dust suppression - Personal protective equipment to be provided and worn correctly at all times, as per the health and safety risk assessment - Fallout dust monitoring - Adhere to Dust regulations already implemented on TRP | <ul style="list-style-type: none"> - NEMAQA - National Dust Control Regulations - MHSA | - Continuous |
| Operation of waste rock dumps | Increased windborne dust (waste rock) and vehicle fumes, altering air quality through dust pollution, increasing risk to health. | <ul style="list-style-type: none"> - Regular dust suppression - Personal protective equipment to be provided and worn correctly at all times, as per the health and safety risk assessment - Fallout dust monitoring - Adhere to Dust regulations already implemented on TRP | <ul style="list-style-type: none"> - NEMAQA - National Dust Control Regulations - MHSA | - Continuous |
| Operation of waste rock dumps | Fallout dust from waste rock stockpiling activities may impact light transmission, with the potential to decrease plant growth by impacting on the process of photosynthesis. | <ul style="list-style-type: none"> - Regular dust suppression - Vegetation monitoring | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of Species | - Continuous |
| Operation of waste rock dumps | Fallout dust can also collect in watercourses, resulting in sedimentation and reduced water quality, potentially affecting aquatic life by the smothering of riverine habitat and fish gill clogging. | <ul style="list-style-type: none"> - Regular dust suppression - Biomonitoring | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of | - Continuous |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
|--|--|---|--|-------------------------------------|
| | | | Species | |
| Closure and rehabilitation of waste rock dumps | Windborne dust (waste rock) from the waste rock dumps altering air quality through dust pollution, increasing risk to health. | <ul style="list-style-type: none"> - Regular dust suppression - Personal protective equipment to be provided and worn correctly at all times, as per the health and safety risk assessment - Fallout dust monitoring - Adhere to Dust regulations already implemented on TRP | <ul style="list-style-type: none"> - NEMAQA - National Dust Control Regulations - MHSA | - Decommissioning and Closure Phase |
| Closure and rehabilitation of waste rock dumps | Fallout dust from waste rock closure activities may impact light transmission, with the potential to decrease plant growth by impacting on the process of photosynthesis. | <ul style="list-style-type: none"> - Regular dust suppression - Vegetation monitoring | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of Species | - Decommissioning and Closure Phase |
| Closure and rehabilitation of waste rock dumps | Fallout dust from waste rock dump closure activities can collect in watercourses, resulting in sedimentation and reduced water quality, potentially affecting aquatic life by the smothering of riverine habitat and fish gill clogging. | <ul style="list-style-type: none"> - Regular dust suppression - Biomonitoring | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of Species | - Decommissioning and Closure Phase |
| Noise | | | | |
| Construction of waste rock dumps | Construction of the additional waste rock dumps may result in an increase of the ambient environment noise levels, with the associated potential to displace faunal species. | <ul style="list-style-type: none"> - A survey for SCC species on the project footprint area should be undertaken by a suitably qualified specialist prior to the start of construction. - If any SCC are encountered within the subject property in the future, the following should be ensured: <ul style="list-style-type: none"> o If any threatened species will be disturbed, ensure effective relocation of individuals to suitable offset areas or within designated open space on the subject property. o All rescue and relocation plans should be overseen by a suitably qualified specialist. o Obtain relevant permits/consent, if applicable, for each | <ul style="list-style-type: none"> - ECA Noise Regulations - SANS 10103 - MHSA - Noise Management Plan | - Continuous |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
|--|--|---|---|---|
| | | protected or endangered floral species identified within the proposed development area that will be destroyed. | | |
| Operation of waste rock dumps | Stockpiling of waste rock during the operational phase may result in increased ambient environment noise levels, with the associated potential to displace faunal species. | <ul style="list-style-type: none"> - Visual monitoring - If any SCC are encountered within the subject property in the future, the following should be ensured: <ul style="list-style-type: none"> o If any threatened species will be disturbed, ensure effective relocation of individuals to suitable offset areas or within designated open space on the subject property. o All rescue and relocation plans should be overseen by a suitably qualified specialist. o Obtain relevant permits/consent, if applicable, for each protected or endangered floral species identified within the proposed development area that will be destroyed. | <ul style="list-style-type: none"> - ECA Noise Regulations - SANS 10103 - MHSA - Noise Management Plan - NEMBA - LEMA - TOPS | <ul style="list-style-type: none"> - Continuous |
| Closure and rehabilitation of waste rock dumps | Removal of waste rock during the closure phase may result in an increase in the ambient environment noise levels, with the associated potential to displace faunal species. | <ul style="list-style-type: none"> - Visual monitoring - If any SCC are encountered within the subject property in the future, the following should be ensured: <ul style="list-style-type: none"> o If any threatened species will be disturbed, ensure effective relocation of individuals to suitable offset areas or within designated open space on the subject property. o All rescue and relocation plans should be overseen by a suitably qualified specialist. o Obtain relevant permits/consent, if applicable, for each protected or endangered floral species identified within the proposed development area that will be destroyed. | <ul style="list-style-type: none"> - ECA Noise Regulations - SANS 10103 - MHSA - Noise Management Plan - NEMBA - LEMA - TOPS | <ul style="list-style-type: none"> - Decommissioning and Closure Phase |
| Visual | | | | |
| Construction of waste rock dumps | Visibility from sensitive receptors / visual scarring of the landscape and impact on 'Sense of Place' as a result of the visibility of the waste rock dumps construction activities. | <ul style="list-style-type: none"> - Reduce the construction period through careful planning and productive implementation of resources. Clearly define areas to be cleared. Do not clear past designated areas. Retain natural vegetation outside of clearance zone. - Plan the placement of lay-down areas and any potential temporary construction camps to minimise vegetation clearing. - Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads. - Ensure that all infrastructure and the site and general surrounds are maintained in a neat and appealing way.. - Reduce and control construction dust using approved dust suppression techniques. Implement daily dust suppression and pave roads where possible to avoid transport related dust pollution. - Restrict construction activities to daylight hours to negate, or | <ul style="list-style-type: none"> - NEMA Duty of Care | <ul style="list-style-type: none"> - Continuous |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
|--|---|---|--|-------------------------------------|
| | | reduce, the visual impacts associated with lighting. Direct light downwards to avoid illumination to the sky. Use motion light sensors to avoid lighting unused places. | | |
| Operation of waste rock dumps | Visibility from sensitive receptors / visual scarring of the landscape and impact on 'Sense of Place' as a result of the visibility of the waste rock dumps | <ul style="list-style-type: none"> - Plan the site layout in accordance with the topography to limit visual impact on surrounding communities and land users. - Ensure that all infrastructure and the site and general surroundings are maintained in a neat and appealing way.. - Maintain stockpiles to the recommended minimum height. - Rehabilitation of disturbed areas and re-establishment of vegetation. | - NEMA Duty of Care | - Continuous |
| Closure and rehabilitation of waste rock dumps | Visibility from sensitive receptors / visual scarring of the landscape and impact on 'Sense of Place' as a result of the visibility of the waste rock dumps closure activities. | <ul style="list-style-type: none"> - Planting / avoid removal of indigenous trees to create a visual barrier for the surrounding areas. - Backfill and reshape with a surveyor. Reshape to create a gentle slope of free-draining topography. - Dust suppression measures must be implemented on roads and in stockpile areas to prevent excessive dust. - Institute a rehabilitation monitoring program with a rehabilitation specialist. | - NEMA Duty of Care | - Decommissioning and Closure Phase |
| Heritage and Palaeontological | | | | |
| Construction of waste rock dumps | Impacts on sites of archaeological and cultural interest is not expected during construction of the waste rock dumps | <ul style="list-style-type: none"> - Monitor subsurface material for culturally significant material. - If culturally significant material is exposed during the development phase, suspend all activities pending further archaeological investigations by a qualified archaeologist. - In the event of skeletal remains being exposed during the course of the project, all activities must be suspended and the relevant heritage resources authority contacted (See National Heritage Resources Act, 25 of 1999 section 36 (6)). | - HRA | - Continuous |
| Socio- Economic | | | | |
| Construction and operation of waste rock dumps | Socio-economic impact on farmers, labourers and surrounding landowners and residents due to negative impacts on surface water, dust pollution, noise pollution etc. | <ul style="list-style-type: none"> - Dust suppression - Fallout dust monitoring - Biomonitoring and ecotoxicology assessments - Vegetation monitoring - Surface water monitoring - Noise monitoring | <ul style="list-style-type: none"> - NEMAQA - National Dust Control Regulations - MHSA - NWA - NEMBA - LEMA - TOPS - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of | - Continuous |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
|--|--|---|--|-------------------------------------|
| | | | Threatened Species – South African Red List of Species – ECA Noise Regulations – SANS 10103 – MHTSA – Noise Management Plan | |
| Construction and operation of waste rock dumps | Positive impact: – Continued employment for local communities – Continued contribution to growth of the local and national economy – Continued maintenance and growth of the current community social structures – Continued and improved quality of life and health related issues, and – Continued livelihoods of businesses | – Continued operations for scheduled Life of Mine – Implementation of Social and Labour Plan | – Not Applicable | – Continuous |
| Operation of waste rock dumps | Continued sourcing of supplies from local businesses, thereby continuing to contribute to the local economy. | – Continued operations for scheduled Life of Mine – Implementation of Social and Labour Plan | – SLP | – Continuous |
| Closure and rehabilitation of waste rock dumps | Loss of employment | – Continued operations for scheduled Life of Mine – Implementation of Social and Labour Plan | – SLP | – Decommissioning and Closure Phase |
| No – go option | Operations will cease with concomitant impact on employment, local business, livelihoods and socio-economic development. | – Not Applicable | – Not Applicable | – Not Applicable |
| No – go option | Positive: No additional negative impacts on I&APs or surrounding land users | – Not Applicable | – Not Applicable | – Not Applicable |

| Activity | Potential Impact | Management and Mitigation Measures | Standard to be Achieved | Time Period For Implementation |
|----------------------------|--|------------------------------------|-------------------------|--------------------------------|
| Natural Environment | | | | |
| No – Go Option | Positive No additional negative impacts on the environment | – Not Applicable | – Not Applicable | – Not Applicable |

27. FINANCIAL PROVISION

27.1. DETERMINATION OF THE AMOUNT OF FINANCIAL PROVISION

27.1.1. Describe the Closure Objectives and the Extent to Which They Have Been Aligned To the Baseline Environment Described Under Regulation 22 (2) (D) As Described In 2.4 Herein

Refer to comments made within Section 17 and Appendix 17

27.1.2. Confirm Specifically That the Environmental Objectives In Relation To Closure Have Been Consulted With Landowner and Interested and Affected Parties

Refer to comments made within Section 17 and Appendix 17

27.1.3. Provide A Rehabilitation Plan That Describes And Shows The Scale And Aerial Extent Of The Main Mining Activities, Including The Anticipated Mining Area At The Time Of Closure

Refer to comments made within Section 17 and Appendix 17

27.1.3.1. Explain Why It Can Be Confirmed That The Rehabilitation Plan Is Compatible With The Closure Objectives

Refer to comments made within Section 17 and Appendix 17

27.2. CONFIRM THAT THIS AMOUNT CAN BE PROVIDED FOR FROM OPERATING EXPENDITURE

Financial provisioning reports are updated annually, and the same submitted to the Department of Mineral Resources and Energy. Financial provision is made and updated as required. Two Rivers Platinum will make the said amount available to the DMRE as required.

28. MECHANISMS FOR MONITORING COMPLIANCE WITH AND PERFORMANCE ASSESSMENT AGAINST THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND REPORTING THEREON

Including:

- a) Monitoring of Impact Management Actions*
- b) Monitoring and reporting frequency*
- c) Responsible persons*
- d) Time period for implementing impact management action*
- e) Mechanisms for monitoring compliance*

Table 82: Mechanisms for monitoring (Including Time period, Functional requirements, Roles and responsibilities and Frequency)

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|----------------------------------|--|--|--|--|--|--|--------------------------------|
| Hydrology | | | | | | | |
| Construction of waste rock dumps | Surface water quality - Sedimentation and pollution of surface water resources resulting in the deterioration of water quality | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | Water quality in line with the specific Resource Quality Standards for environmental water resources and water quality objectives as per the WUL | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |
| Construction of waste rock dumps | Surface water quantity - changes in the runoff flow velocity and volume increasing erosion and sedimentation | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | Water quality in line with the specific Resource Quality Standards for environmental water resources and water quality objectives as per the WUL | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |
| Construction of waste rock dumps | Surface water quantity - Reduction of Catchment Yield as dirty water runoff within the mine will be contained in the PCD. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | Water quality in line with the specific Resource Quality Standards for environmental water resources and water quality objectives as per the WUL | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |
| Operation of waste rock dumps | Surface water quality - Sedimentation and pollution of surface water resources resulting in the deterioration | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care | Water quality in line with the specific Resource Quality Standards for environmental water | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual aquatic ecology and quarterly | Continuous |

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|--|--|--|--|--|--|--|--------------------------------|
| | of water quality. | <ul style="list-style-type: none"> - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | resources and water quality objectives as per the WUL | <ul style="list-style-type: none"> - Monitoring prescribed | | groundwater quality and quantity monitoring | |
| Operation of waste rock dumps | Surface water quantity - changes in the runoff flow velocity and volume increasing erosion and sedimentation | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | Water quality in line with the specific Resource Quality Standards for environmental water resources and water quality objectives as per the WUL | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |
| Operation of waste rock dumps | Surface water quantity - Reduction of Catchment Yield as dirty water runoff within the mine will be contained in the PCD. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | Water quality in line with the specific Resource Quality Standards for environmental water resources and water quality objectives as per the WUL | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |
| Closure and rehabilitation of waste rock dumps | Surface water quality - Sedimentation and pollution of surface water resources resulting in the deterioration of water quality | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | Water quality in line with the specific Resource Quality Standards for environmental water resources and water quality objectives as per the WUL | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual aquatic ecology and quarterly groundwater quality and quantity monitoring | Closure Phase |

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|--|---|--|--|--|--|--|--------------------------------|
| Closure and rehabilitation of waste rock dumps | Surface water quantity - changes in the runoff flow velocity and volume increasing erosion and sedimentation | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | Water quality in line with the specific Resource Quality Standards for environmental water resources and water quality objectives as per the WUL | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual aquatic ecology and quarterly groundwater quality and quantity monitoring | Closure Phase |
| Closure and rehabilitation of waste rock dumps | Surface water quantity - Reinstatement of surface drainage patterns (Positive Impact) | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | Water quality in line with the specific Resource Quality Standards for environmental water resources and water quality objectives as per the WUL | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual aquatic ecology and quarterly groundwater quality and quantity monitoring | Closure Phase |
| Aquatic Ecology | | | | | | | |
| Construction and Operation of waste rock dumps | Construction impacts resulting in impacts to biodiversity and ecological function | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | Water Use Licence | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |
| Construction and Operation of waste rock dumps | Loss of biodiversity and ecological function. Impacts to ecological corridor functioning due to prolonged activity in proximity to watercourses | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best | Water Use Licence | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality | Continuous |

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|--|--|--|-------------------------|--|--|--|--------------------------------|
| | | <ul style="list-style-type: none"> - Practice Guidelines - Water Use Licence | | | | and quantity monitoring | |
| Construction and Operation of waste rock dumps | Alteration of drainage patterns leading to decrease and changes in water quantity and availability | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | Water Use Licence | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |
| Construction and Operation of waste rock dumps | Deterioration of water quality in the surrounding and downstream water resources due to polluted water runoff, affecting aquatic communities | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | Water Use Licence | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |
| Construction and Operation of waste rock dumps | Nutrient enrichment due to sedimentation, leading to decline of Dissolved Oxygen (DO), impacting aquatic invertebrate communities | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | Water Use Licence | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|--|---|--|---|--|--|--|--------------------------------|
| Construction and Operation of waste rock dumps | Deterioration of surface water quality may lead to a deterioration of the Present Ecological Status (PES). | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | Water Use Licence | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |
| Construction and Operation of waste rock dumps | Surface water quantity reducing the capacity available to sustain aquatic diversity | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | Water Use Licence | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |
| Wetlands | | | | | | | |
| Construction of Waste Rock Dumps | Alteration of the water flow regime of the watercourses with potential compaction of soil, the removal of vegetation, and surface water redirection during construction activities. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | Water quality as per the WUL for process related water GN704: Capturing and containing dirty water | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|----------------------------------|--|--|--|--|--|--|--------------------------------|
| Construction of Waste Rock Dumps | Construction activities will result in earthworks and soil disturbance which could result in the loss of topsoil, sedimentation of the watercourse and increase the turbidity (increasing or decreasing the amount) of the water. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <p>Water quality as per the WUL for process related water</p> <p>GN704: Capturing and containing dirty water</p> | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |
| Construction of Waste Rock Dumps | Soil and vegetation disturbance during construction activities may potentially result in opportunistic invasions of alien vegetation impacting hydrology by reducing the quantity of water entering a watercourse, outcompete natural vegetation, and decreasing the natural biodiversity. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <p>Water quality as per the WUL for process related water</p> <p>GN704: Capturing and containing dirty water</p> | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |
| Construction of Waste Rock Dumps | Permanent loss and disturbance of watercourse habitat and fringe vegetation due to direct development on the watercourse as well as changes in management, fire regime and habitat fragmentation. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <p>Water quality as per the WUL for process related water</p> <p>GN704: Capturing and containing dirty water</p> | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |
| Construction of Waste Rock Dumps | Construction activities may result in the discharge of runoff from the waste rock dumps and leakage of fuel/oil from vehicles resulting in the loss of | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle | <p>Water quality as per the WUL for process related water</p> <p>GN704: Capturing and containing dirty water</p> | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly | Continuous |

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|-----------------------------------|---|--|--|--|--|--|--------------------------------|
| | sensitive biota in the rivers and a reduction in watercourse function. | <ul style="list-style-type: none"> - DWS Best Practice Guidelines - Water Use Licence | | | | groundwater quality and quantity monitoring | |
| Operation of the waste rock dumps | Alteration of the water flow regime of the watercourses with potential compaction of soil, the removal of vegetation, and surface water redirection during operational activities. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <p>Water quality as per the WUL for process related water</p> <p>GN704: Capturing and containing dirty water</p> | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |
| Operation of the waste rock dumps | Operational activities will result in earthworks and soil disturbance which could result in the loss of topsoil, sedimentation of the watercourse and increase the turbidity (increasing or decreasing the amount) of the water. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <p>Water quality as per the WUL for process related water</p> <p>GN704: Capturing and containing dirty water</p> | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |
| Operation of the waste rock dumps | Operational activities may potentially result in opportunistic invasions of alien vegetation, thereby impacting hydrology by reducing the quantity of water entering a watercourse, outcompeting natural vegetation, and decreasing the natural biodiversity. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <p>Water quality as per the WUL for process related water</p> <p>GN704: Capturing and containing dirty water</p> | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|--|--|--|--|--|--|--|--------------------------------|
| Operation of the waste rock dumps | Permanent loss and disturbance of watercourse habitat and fringe vegetation due to direct development on the watercourse as well as changes in management, fire regime and habitat fragmentation. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <p>Water quality as per the WUL for process related water</p> <p>GN704: Capturing and containing dirty water</p> | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |
| Operation of the waste rock dumps | Operational activities may result in the discharge of runoff from the waste rock dumps and leakage of fuel/oil from vehicles resulting in the loss of sensitive biota in the rivers and a reduction in watercourse function. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <p>Water quality as per the WUL for process related water</p> <p>GN704: Capturing and containing dirty water</p> | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality and quantity monitoring | Continuous |
| Closure and rehabilitation of waste rock dumps | Alteration of the water flow regime of the watercourses with potential compaction of soil, the removal of vegetation, and surface water redirection during rehabilitation activities. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best Practice Guidelines - Water Use Licence | <p>Water quality as per the WUL for process related water</p> <p>GN704: Capturing and containing dirty water</p> | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality and quantity monitoring | Closure |
| Closure and rehabilitation of waste rock dumps | Rehabilitation activities could result in sedimentation of the watercourse and increase the turbidity (increasing or decreasing the amount) of the water. | <ul style="list-style-type: none"> - NWA - GN704 - NEMA Duty of Care - NEMA Polluter Pays Principle - DWS Best | <p>Water quality as per the WUL for process related water</p> <p>GN704: Capturing and containing dirty water</p> | <ul style="list-style-type: none"> - Implement IWWMP - Implement SWMP - Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality | closure |

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|--|--|--|--|--|--|--|--------------------------------|
| | | <ul style="list-style-type: none"> Practice Guidelines – Water Use Licence | | | | and quantity monitoring | |
| Closure and rehabilitation of waste rock dumps | Rehabilitation activities may potentially result in opportunistic invasions of alien vegetation, thereby impacting hydrology by reducing the quantity of water entering a watercourse, outcompeting natural vegetation, and decreasing the natural biodiversity. | <ul style="list-style-type: none"> – NWA – GN704 – NEMA Duty of Care – NEMA Polluter Pays Principle – DWS Best Practice Guidelines – Water Use Licence | <p>Water quality as per the WUL for process related water</p> <p>GN704: Capturing and containing dirty water</p> | <ul style="list-style-type: none"> – Implement IWWMP – Implement SWMP – Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality and quantity monitoring | Closure |
| Closure and rehabilitation of waste rock dumps | Permanent loss and disturbance of watercourse habitat and fringe vegetation due to direct development on the watercourse as well as changes in management, fire regime and habitat fragmentation. | <ul style="list-style-type: none"> – NWA – GN704 – NEMA Duty of Care – NEMA Polluter Pays Principle – DWS Best Practice Guidelines – Water Use Licence | <p>Water quality as per the WUL for process related water</p> <p>GN704: Capturing and containing dirty water</p> | <ul style="list-style-type: none"> – Implement IWWMP – Implement SWMP – Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality and quantity monitoring | Closure |
| Closure and rehabilitation of waste rock dumps | Construction activities may result in the discharge of runoff from the waste rock dumps and leakage of fuel/oil from vehicles resulting in the loss of sensitive biota in the rivers and a reduction in watercourse function. | <ul style="list-style-type: none"> – NWA – GN704 – NEMA Duty of Care – NEMA Polluter Pays Principle – DWS Best Practice Guidelines – Water Use Licence | <p>Water quality as per the WUL for process related water</p> <p>GN704: Capturing and containing dirty water</p> | <ul style="list-style-type: none"> – Implement IWWMP – Implement SWMP – Monitoring prescribed | Environmental Manager / Specialist Consultant(s) | Monthly surface water monitoring, biannual biomonitoring and aquatic ecology and quarterly groundwater quality and quantity monitoring | Closure |

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|--|--|---|---|--|--|------------------------------------|--------------------------------|
| Terrestrial Ecology (Flora and Fauna) | | | | | | | |
| Construction of waste rock dumps | Construction of the additional waste rock dumps might result in impacts to the natural environment due to increased movement, traffic and large machinery use in the area, and specifically on the flora when removal of plant communities will take place on site. | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - Animal Protection Act 1962 (Act 71 of 1962) - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of Species | <p>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), as amended</p> <p>Limpopo Environmental Management Act, 2003 (Act No 7 Of 2003) Protected Species List</p> | Ecological monitoring and compliance | Environmental Manager / Specialist Consultant(s) | Annually | Continuous |
| Construction of waste rock dumps | <p>Endemic, protected and/or SCC species within the area of activity could potentially be destroyed. Two SCC are considered to have a moderate likelihood occurrence within the project footprint. One tree species protected in terms of the NFA was confirmed to occur on the project footprint.</p> <p>Development and related activities will impact on sensitive habitats, such as the CA1 areas of VU1 and VU2.</p> <p>Sensitive (VU1 & VU2) habitats situated adjacent or in close proximity to the development footprint could</p> | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - Animal Protection Act 1962 (Act 71 of 1962) - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of Species | <p>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), as amended</p> <p>Limpopo Environmental Management Act, 2003 (Act No 7 Of 2003) Protected Species List</p> | Ecological monitoring and compliance | Environmental Manager / Specialist Consultant(s) | Annually | Continuous |

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|----------------------------------|--|---|---|--|--|------------------------------------|--------------------------------|
| | be impacted on, specifically sections of WRD1 and WRD 3 which will require sensitive natural habitat and vegetation to be removed (VU1). | | | | | | |
| Construction of waste rock dumps | Fragmentation of habitat areas due to possible fencing or the placement of boundary structures, leading to increased edge effects. | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - Animal Protection Act 1962 (Act 71 of 1962) - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of Species | <p>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), as amended</p> <p>Limpopo Environmental Management Act, 2003 (Act No 7 Of 2003) Protected Species List</p> | Ecological monitoring and compliance | Environmental Manager / Specialist Consultant(s) | Annually | Continuous |
| Construction of waste rock dumps | Increase of invasive species from the surrounding areas, leading to further change to the vegetation structure and composition. Potential for the spread of existing invaders already on-site, to other surrounding areas. | <ul style="list-style-type: none"> - NEMBA - LEMA | <p>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), as amended</p> <p>Limpopo Environmental Management Act, 2003 (Act No 7 Of 2003) Protected Species List</p> | Ecological monitoring and compliance | Environmental Manager / Specialist Consultant(s) | Annually | Continuous |
| Construction of waste rock dumps | Anthropogenic influence stemming from employees, visitors and contractors that infiltrate the natural veld areas will damage and impact on species | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - Animal Protection Act 1962 (Act 71 of 1962) | <p>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), as amended</p> | Ecological monitoring and compliance | Environmental Manager / Specialist Consultant(s) | Annually | Continuous |

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|-------------------------------|--|---|---|--|---|------------------------------------|--------------------------------|
| | communities within certain areas | <ul style="list-style-type: none"> - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of Species | Limpopo Environmental Management Act, 2003 (Act No 7 Of 2003) Protected Species List | | | | |
| Operation of waste rock dumps | <p>Endemic, protected and/or SCC species within the area of activity could potentially be destroyed. Two SCC are considered to have a moderate likelihood occurrence within the project footprint. One tree species protected in terms of the NFA was confirmed to occur on the project footprint. Development and related activities will impact on sensitive habitats, such as the CA1 areas of VU1 and VU2.</p> <p>Sensitive (VU1 & VU2) habitats situated adjacent or in close proximity to the development footprint could be impacted on, specifically sections of WRD1 and WRD 3 which will require sensitive natural habitat and vegetation to be removed (VU1).</p> | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - Animal Protection Act 1962 (Act 71 of 1962) - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of Species | <p>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), as amended</p> <p>Limpopo Environmental Management Act, 2003 (Act No 7 Of 2003) Protected Species List</p> | Ecological monitoring and compliance | Environmental Manager/ Specialist Consultant(s) | Annually | Continuous |

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|---|---|---|---|--|---|------------------------------------|--------------------------------|
| Operation of waste rock dumps | Increase of invasive species from the surrounding areas, leading to further change to the vegetation structure and composition. Potential for the spread of existing invaders already on-site, to other surrounding areas. | <ul style="list-style-type: none"> - NEMBA - LEMA | <p>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), as amended</p> <p>Limpopo Environmental Management Act, 2003 (Act No 7 Of 2003) Protected Species List</p> | Ecological monitoring and compliance | Environmental Manager/ Specialist Consultant(s) | Annually | Continuous |
| Construction and rehabilitation of waste rock dumps | Without the necessary mitigation measures, rehabilitation will be unsuccessful, and the environment will not be self-sustaining; the alien invasive species will increase and result in a degraded veld condition making the property less viable for post-closure land use activities such as wilderness, grazing and agriculture. | <ul style="list-style-type: none"> - NEMBA - LEMA | <p>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), as amended</p> <p>Limpopo Environmental Management Act, 2003 (Act No 7 Of 2003) Protected Species List</p> | Ecological monitoring and compliance | Environmental Manager/ Specialist Consultant(s) | Annually | Continuous |
| Soil, Land Use and Land Capability | | | | | | | |
| Construction of waste rock dumps | Potential soil erosion from areas where vegetation is removed from the soil surface in preparation for the construction of the additional waste rock dump risk of erosion. | <ul style="list-style-type: none"> - CARA | CARA Principles | Regular inspections around construction areas to monitor for any signs of soil erosion developing. When signs of erosion are present, the area must be rehabilitated using indigenous vegetation and other ecologically innocuous methods to prevent expansion of the eroded areas | Environment Control Officer / Environmental Manager | As needed | Continuous |

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|----------------------------------|--|---|---|--|---|------------------------------------|--------------------------------|
| Construction of waste rock dumps | All areas where vehicles and equipment will traverse during the construction phase to deliver materials, prepare the terrain and construct the waste rock dump facilities, will be at risk of soil compaction. | <ul style="list-style-type: none"> - CARA | Pre-mining conditions post closure | Visual inspection and monitoring of the condition of the surface areas and where activities are taking place | Environmental Control Officer / Environmental Manager | Monthly visual assessments | Continuous |
| Construction of waste rock dumps | All areas where vehicles and equipment will traverse during the construction phase to deliver materials, prepare the terrain and construct the waste rock dump facilities, will be at risk of soil pollution. | <ul style="list-style-type: none"> - CARA - Hazardous Substances Act - NWA - NEMA Duty of Care - NEMWA - Incident Reporting | CARA Principles Pre-mining conditions post closure | Vehicle maintenance / service plan Monitor areas for spills that need to be cleaned. Ensure spills are adequately cleaned and contaminated material correctly disposed of. | Environmental Control Officer / Environmental Manager | As needed | Continuous |
| Construction of waste rock dumps | Contamination of soils through accidental release / spillage of hydrocarbon-based fuels and oils or lubricants spilled from construction vehicles | <ul style="list-style-type: none"> - CARA - Hazardous Substances Act - NWA - NEMA Duty of Care - NEMWA - Incident Reporting | CARA Principles Pre-mining conditions post closure | Vehicle maintenance / service plan Monitor areas for spills that need to be cleaned. Ensure spills are adequately cleaned and contaminated material correctly disposed of. | Environmental Control Officer / Environmental Manager | As needed | Continuous |
| Operation of waste rock dumps | Dumps trucks travelling to the waste rock dumps to stockpile the waste rock material, will increase the existing compaction. | <ul style="list-style-type: none"> - CARA | CARA Principles Pre-mining conditions post closure | Visual inspection and monitoring of the condition of the surface areas and where activities are taking place | Environmental Control Officer / Environmental Manager | As needed | Continuous |

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|--|--|---|---|---|---|------------------------------------|--------------------------------|
| Operation of waste rock dumps | Dump trucks traveling to the waste rock dumps to stockpile the waste rock material, may increase existing soil pollution. | <ul style="list-style-type: none"> - CARA - Hazardous Substances Act - NWA - NEMA Duty of Care - NEMWA - Incident Reporting | <p>CARA Principles</p> <p>Pre-mining conditions post closure</p> | <p>Vehicle maintenance / service plan</p> <p>Monitor areas for spills that need to be cleaned.</p> <p>Ensure spills are adequately cleaned and contaminated material correctly disposed of.</p> | Environmental Control Officer / Environmental Manager | As needed | Continuous |
| Operation of waste rock dumps | Contamination of soils through accidental release / spillage of hydrocarbon-based fuels and oils or lubricants spilled from haul vehicles. | <ul style="list-style-type: none"> - CARA - Hazardous Substances Act - NWA - NEMA Duty of Care - NEMWA - Incident Reporting | <p>CARA Principles</p> <p>Pre-mining conditions post closure</p> | <p>Vehicle maintenance / service plan</p> <p>Monitor areas for spills that need to be cleaned.</p> <p>Ensure spills are adequately cleaned and contaminated material correctly disposed of.</p> | Environmental Control Officer / Environmental Manager | As needed | Continuous |
| Closure and rehabilitation of waste rock dumps | During the decommissioning phase, the movement of vehicles and equipment will again result in soil compaction. | <ul style="list-style-type: none"> - CARA | <p>CARA Principles</p> <p>Pre-mining conditions post closure</p> <p>Rehabilitation and Closure Plan</p> | <p>Vehicle maintenance / service plan</p> <p>Monitor areas for spills that need to be cleaned.</p> <p>Ensure spills are adequately cleaned and contaminated material correctly disposed of.</p> | Environmental Control Officer / Environmental Manager | As needed | Closure Phase |
| Closure and rehabilitation of waste rock dumps | Contamination of soils through accidental release / spillage of hydrocarbon-based fuels and oils or | <ul style="list-style-type: none"> - CARA - Hazardous Substances Act - NWA | <p>CARA Principles</p> <p>Pre-mining conditions post closure</p> | <p>Vehicle maintenance / service plan</p> <p>Monitor areas for</p> | Environmental Control Officer / Environmental Manager | As needed | Closure Phase |

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|----------------------------------|---|--|--|---|--|--|--------------------------------|
| | lubricants spilled from vehicles. | <ul style="list-style-type: none"> - NEMA Duty of Care - NEMWA - Incident Reporting | Rehabilitation and Closure Plan | <p>spills that need to be cleaned.</p> <p>Ensure spills are adequately cleaned and contaminated material correctly disposed of.</p> | | | |
| Air Quality | | | | | | | |
| Construction of waste rock dumps | Nuisance dust will result from the construction of the additional waste rock dumps increasing risk to health | <ul style="list-style-type: none"> - NEMAQA - National Dust Control Regulations - MHSA | MHSA: Occupational Hygiene Regulations | Conduct Occupational air quality monitoring. Adhere to current Dust Management Programme | SHEQ Manager / Specialist Consultant | As per Occupational Hygiene Survey Risk Assessment | Continuous |
| Construction of waste rock dumps | Fallout dust from construction activities may impact light transmission, with the potential to decrease plant growth by impacting on the process of photosynthesis. | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of Species | NEMBA | Dust Management Programme, Fallout Dust Monitoring | Environmental Manager / Specialist Consultant(s) | Monthly | Continuous |
| Construction of waste rock dumps | Fallout dust can also collect in watercourses, resulting in sedimentation and reduced water quality, potentially affecting aquatic life by the smothering of riverine habitat and fish gill clogging. | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of | NEMBA | Dust Management Programme, Fallout Dust Monitoring | Environmental Manager / Specialist Consultant(s) | Monthly | Continuous |

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|----------------------------------|---|--|--|--|--|--|--------------------------------|
| | | <ul style="list-style-type: none"> - Threatened Species - South African Red List of Species - Water Use Licence | | | | | |
| Construction of waste rock dumps | Increased windborne dust (waste rock) and vehicle fumes, altering air quality through dust pollution. | <ul style="list-style-type: none"> - NEMAQA - National Dust Control Regulations - MHSA | MHSA: Occupational Hygiene Regulations | Conduct Occupational air quality monitoring. Adhere to current Dust management programme | SHEQ Manager / Specialist Consultant | As per Occupational Hygiene Survey Risk Assessment | Continuous |
| Operation of waste rock dumps | Increased windborne dust (waste rock) and vehicle fumes, altering air quality through dust pollution, increasing risk to health. | <ul style="list-style-type: none"> - NEMAQA - National Dust Control Regulations - MHSA | MHSA: Occupational Hygiene Regulations | Conduct Occupational air quality monitoring. Adhere to current Dust management programme | SHEQ Manager / Specialist Consultant | As per Occupational Hygiene Survey Risk Assessment | Continuous |
| Operation of waste rock dumps | Fallout dust from waste rock stockpiling activities may impact light transmission, with the potential to decrease plant growth by impacting on the process of photosynthesis. | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of Species | NEMBA | Dust Management Programme, Fallout Dust Monitoring | Environmental Manager / Specialist Consultant(s) | Monthly | Continuous |
| Operation of waste rock dumps | Fallout dust can also collect in watercourses, resulting in sedimentation and reduced water quality, potentially affecting aquatic life by the smothering of riverine | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - National List of Threatened Terrestrial | NEMBA | Dust Management Programme, Fallout Dust Monitoring | Environmental Manager / Specialist Consultant(s) | Monthly | Continuous |

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|--|--|--|--|--|--|--|--------------------------------|
| | habitat and fish gill clogging. | <ul style="list-style-type: none"> - Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of Species | | | | | |
| Closure and rehabilitation of waste rock dumps | Windborne dust (waste rock) from the waste rock dumps altering air quality through dust pollution, increasing risk to health. | <ul style="list-style-type: none"> - NEMAQA - National Dust Control Regulations - MHSA | MHSA: Occupational Hygiene Regulations | Conduct Occupational air quality monitoring. Adhere to current Dust management programme | SHEQ Manager / Specialist Consultant | As per Occupational Hygiene Survey Risk Assessment | Closure Phase |
| Closure and rehabilitation of waste rock dumps | Fallout dust from waste rock closure activities may impact light transmission, with the potential to decrease plant growth by impacting on the process of photosynthesis. | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of Species | NEMBA | Dust Management Programme, Fallout Dust Monitoring | Environmental Manager / Specialist Consultant(s) | Monthly | Closure Phase |
| Closure and rehabilitation of waste rock dumps | Fallout dust from waste rock dump closure activities can collect in watercourses, resulting in sedimentation and reduced water quality, potentially affecting aquatic life by the smothering of riverine habitat and fish gill clogging. | <ul style="list-style-type: none"> - NEMBA - LEMA - TOPS - National List of Threatened Terrestrial Ecosystems (2011) - IUCN Red List of Threatened Species - South African Red List of | NEMBA | Dust Management Programme, Fallout Dust Monitoring | Environmental Manager / Specialist Consultant(s) | Monthly | Closure Phase |

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|--|--|--|---|--|------------------------------------|--|--------------------------------|
| | | Species | | | | | |
| Noise | | | | | | | |
| Construction of waste rock dumps | Construction of the additional waste rock dumps may result in an increase of the ambient environment noise levels, with the associated potential to displace faunal species. | NEMBA | NEMBA Rescue and Relocation Plan | Environmental Noise monitoring | Environmental Manager / Specialist | As per Environmental Noise Risk Assessment | Continuous |
| Operation of waste rock dumps | Stockpiling of waste rock during the operational phase may result in increased ambient environment noise levels, with the associated potential to displace faunal species. | NEMBA | NEMBA Rescue and Relocation Plan | Environmental Noise monitoring | Environmental Manager / Specialist | As per Environmental Noise Risk Assessment | Continuous |
| Closure and rehabilitation of waste rock dumps | Removal of waste rock during the closure phase may result in an increase in the ambient environment noise levels, with the associated potential to displace faunal species. | NEMBA | NEMBA Rescue and Relocation Plan | Environmental Noise monitoring | Environmental Manager / Specialist | As per Environmental Noise Risk Assessment | Closure Phase |
| Visual | | | | | | | |
| Construction of waste rock dumps | Visibility from sensitive receptors / visual scarring of the landscape and impact on 'Sense of Place' as a result of the visibility of the waste rock dumps | NEMA Duty of Care | NEMA Pre-mining conditions, post closure | Not Applicable | Environmental Manager / Specialist | Not Applicable | Continuous |

| Activity | Potential Impact | Compliance with Standards to be Achieved | Standard to be Achieved | Functional Requirements for Monitoring | Roles and Responsibility | Monitoring and Reporting Frequency | Time Period For Implementation |
|--|---|---|---|---|---------------------------------------|--|--------------------------------|
| | construction activities. | | | | | | |
| Operation of waste rock dumps | Visibility from sensitive receptors / visual scarring of the landscape and impact on 'Sense of Place' as a result of the visibility of the waste rock dumps | NEMA Duty of Care | NEMA Pre-mining conditions, post closure | Not Applicable | Environmental Manager / Specialist | Not Applicable | Continuous |
| Closure and rehabilitation of waste rock dumps | Visibility from sensitive receptors / visual scarring of the landscape and impact on 'Sense of Place' as a result of the visibility of the waste rock dumps closure activities. | NEMA Duty of Care | NEMA Pre-mining conditions, post closure | Not Applicable | Environmental Manager / Specialist | As per Rehabilitation and Closure Plan | Closure Phase |
| Heritage and Palaeontology | | | | | | | |
| Construction of waste rock dumps | Impacts on sites of archaeological and cultural interest is not expected during construction of the waste rock dumps | National Heritage Resources Act, 1999 (Act No 25 of 1999) | NEMA MPRDA NHRA SAHRA | Record occurrences of heritage sites and artefacts if and when discovered. Immediately contact a heritage specialist if any discoveries are made. | Environmental Manager / Specialist | As per Heritage Impact Assessment and Heritage Management Plan | - Continuous |
| Socio - Economic | | | | | | | |
| Construction and operation of waste rock dumps | Socio-economic impact on farmers, labourers and surrounding landowners and residents due to negative impacts on surface water, dust pollution, noise pollution etc. | <ul style="list-style-type: none"> - NEMAQA - National Dust Control Regulations - MHSA - NWA - NEMBA - LEMA - TOPS - National List of Threatened Terrestrial Ecosystems | NEMA: Duty of Care MPRDA | Environmental monitoring (surface water, groundwater, fallout dust, noise, biomonitoring and ecotoxicology) | Environmental Manager / Specialist(s) | Monthly surface monitoring, quarterly groundwater monitoring, biannual biomonitoring and ecotoxicology, and ongoing fallout out dust monitoring. | Continuous |

28.1. DETAILED MONITORING PROGRAMMES AS DESCRIBED FOR ACTIVITIES

28.1.1. *Geology, Soil and Erosion Monitoring Programme*

Soil monitoring will involve the inspection of soil which has been disturbed, compacted, contaminated or eroded. Soil monitoring will assist in determining where soils have not been sufficiently rehabilitated.

Where soils have contaminated by the spillage of hydrocarbon, monitoring must take place on a weekly basis for at least four (4) weeks or until the soil is considered sufficiently rehabilitated. Soils samples should be taken and submitted to a laboratory to test for contaminant content if it is considered necessary.

Soil monitoring should be undertaken during the following periods:

- Areas which have been rehabilitated following construction
- After remediation, soils which have been contaminated by spillages during the operational phase, and
- After the closure and decommissioning phase.

Monitor and Manage soil contamination in accordance with Standard Operational Programmes and Consolidated EIA (Approved 2015) for the existing operations.

All watercourses or riparian areas requiring re-vegetation should be monitored for signs of erosion. In addition, all of the following areas should also be monitored:

- All stormwater discharge points
- All clean water diversion discharge points, and
- All road crossings.

Monitoring activities should consist of fixed-point photography as well as a walk-through surveys to observe for signs of erosion in the field. Monitoring should be done annually at the end of the rainy season. Any erosion damage observed should be repaired immediately.

28.1.2. *Surface and Ground Water Monitoring Programme*

28.1.2.1. *Surface Water Monitoring*

The objective of water quality monitoring is to obtain quantitative information on the physical, chemical, and biological characteristics of water via statistical sampling. The type of information sought depends on the objectives of the monitoring programme. Objectives and purposes range from detection of drinking water standard violations (non-compliance) to determination of the environmental state and analysis of temporal water quality trends. The specific goals these monitoring programs may have, are listed below:

- Determine the fitness of water for various uses
- Identify the causes of pollution (toxics, nutrients, sedimentation)
- Identify sources (point or diffuse) of pollution
- Determine the overall effectiveness of any source directed measures
- Identify long term resource quality trends,
- Define the state of a water resource
- Allow for compliance monitoring, and

- Allow for the assessment of the effectiveness of changes in policy, regulation and implementation of integrated water resource management.

The parameters for water analysis should be those which are currently being tested for at TRP in compliance with the approved EMP and WUL as well as any additional parameters which may be required by the authorities (Department of Water Affairs and/or the Limpopo's Department of Economic Development, Environment and Tourism). Monthly surface water monitoring should continue in the Klein-Dwars River and the Dwars River, at the monitoring points described in Table 83 below (Appendix 9).

Table 83: Additional Water Quality Monitoring Points

| Monitoring Point | Coordinates | Description |
|------------------|------------------------------|--|
| TRP US1 | 24°59'8.46"S, 30°04'52.90"E | Upstream of operations – Klein-Dwars River |
| TRP DS1 | 24°54'10.46"S, 30°06'36.08"E | Downstream of operations – Dwars River |

The following parameters should be analysed as part of the surface water quality monitoring:

- pH @ 25°C
- Electrical Conductivity
- Dissolved Oxygen
- Total Dissolved Solids
- Nitrate (N)
- Aluminium (Al)
- Arsenic (As)
- Total Chromium (Cr)
- Hexavalent Chromium (Cr)
- Manganese (Mn)




| | | |
|---|--|---|
| <p>Sampling Points</p> <p>Two Rivers Platinum Mine: Waste Rock Dump Project</p> | <p>Legend</p> <p> New Waste Rock Dumps</p> <p> 100 m extended project footprint</p> <p> NFEPA_Rivers</p> |  |
| | <p>Sampling points</p> <p>▲ Downstream (TRP DS1)</p> <p>▲ Upstream (TRP US1)</p> |  <p>Red Kite Environmental Solutions Nicole Upton 079 555 2433 nicole@redkiteconsulting.co.za</p> |

Figure 76: Surface Water Sampling Locations

28.1.2.2. Groundwater monitoring

28.1.2.2.1. *Groundwater Monitoring Network*

A groundwater monitoring system has to adhere to the criteria mentioned below. As a result, the system should be developed accordingly.

28.1.2.2.2. *Source, Plume, Impact and Background Monitoring*

A groundwater monitoring network should contain monitoring positions which can assess the groundwater status at certain areas. The boreholes can be grouped classification according to the following purposes:

- Source monitoring: Monitoring boreholes are placed close to or in the source of contamination to evaluate the impact thereof on the groundwater chemistry.
- Plume monitoring: Monitoring boreholes are placed in the primary groundwater plume's migration path to evaluate the migration rates and chemical changes along the pathway.
- Impact monitoring: Monitoring of possible impacts of contaminated groundwater on sensitive ecosystems or other receptors. These monitoring points are also installed as early warning systems for contamination break-through at areas of concern.
- Background monitoring: Background groundwater quality is essential to evaluate the impact of a specific action/pollution source on the groundwater chemistry.

28.1.2.2.3. *System Response Monitoring Network*

Groundwater levels: The response of water levels to abstraction is monitored. Static water levels are also used to determine the flow direction and hydraulic gradient within an aquifer. Where possible all of the abovementioned borehole's water levels need to be recorded during each monitoring event.

28.1.2.2.4. *Monitoring Frequency*

In the operational phase and closure phase, monthly monitoring of groundwater quality and groundwater levels is recommended. It is important to note that a groundwater-monitoring network should also be dynamic. This means that the network should be extended over time to accommodate the migration of contaminants through the aquifer as well as the expansion of infrastructure and/or addition of possible pollution sources. An audit on the monitoring network should be conducted annually.

28.1.2.2.5. *Monitoring Parameters*

The identification of the monitoring parameters is crucial and depends on the chemistry of possible pollution sources. They comprise a set of physical and/or chemical parameters (e.g. groundwater levels and predetermined organic and inorganic chemical constituents). Once a pollution indicator has been identified it can be used as a substitute to full analysis and therefore save costs. The use of pollution indicators should be validated on a regular basis in the different sampling positions. The parameters should be revised after each sampling event; some metals may be added to the analyses during the operational phase, especially if the pH drops.

28.1.2.2.6. *Abbreviated Analysis (Pollution Indicators)*

Abbreviated Analysis

Physical Parameters:

- Groundwater levels

Chemical Parameters:

- Field measurements:
 - o pH, EC
- Laboratory analyses:
 - o Major anions and cations (Ca, Na, Cl, Cr, SO₄)
 - o Other parameters (EC)

Full Analysis

Physical Parameters:

- Groundwater levels

Chemical Parameters:

- Field measurements:
 - o pH, EC
- Laboratory analyses:
 - o Anions and cations (Ca, Mg, Na, K, NO₃, Cl, SO₄, F, Fe, Mn, Al, Cr & Alkalinity).
 - o Other parameters (pH, EC, TDS).
 - o Petroleum hydrocarbon contaminants (where applicable, near workshops and petroleum handling facilities)
 - o Sewage related contaminants (E. coli, faecal coliforms) in borehole in proximity to septic tanks or sewage plants.

28.1.2.2.7. Monitoring Boreholes

DWAF (1998) states that "A monitoring hole must be such that the section of the groundwater most likely to be polluted first, is suitably penetrated to ensure the most realistic monitoring result."

Currently a monitoring network does exist at the mine that monitors the project area. It is further recommended that during operations this monitoring be continued, as well as groundwater quality and level monitoring after decommissioning of the site.

However, a monitoring network should be dynamic. This means that the network should be extended over time to accommodate the migration of contaminants through the aquifer as well as the expansion of infrastructure and/or addition of possible pollution sources. An audit on the monitoring network should be conducted annually.

28.1.2.3. Wetland Monitoring

28.1.2.3.1. Construction Phase Monitoring

- Compliance monitoring will be the responsibility of a suitably qualified/trained ECO (Environmental Control Officer) with any additional support from the Environmental Officer/Environmental Manager, having the

required competency skills and experience to ensure that monitoring is undertaken effectively and appropriately.

- A photographic record of the state of the watercourse prior to the commencement of clearing/construction must be kept for reference and rehabilitation monitoring purposes.
- The ECO must undertake bi-monthly compliance monitoring audits. Freshwater ecosystem aspects that must be monitored, related to monitoring freshwater ecosystem impacts include:
 - o Condition of demarcation fence
 - o Evidence of no-go area incursions
 - o Condition of temporary runoff, erosion and sediment control measures and evidence of any failures
 - o Evidence of elevated river / stream turbidity levels
 - o Evidence of bed/bank erosion
 - o Visual assessment of stormwater quality and instream water quality
 - o Waste management and presence of litter within the working area
 - o Evidence of hazardous waste material spillage and soil contamination
 - o Presence of alien invasive species
 - o Once construction and rehabilitation has been completed, the ECO should conduct a close-out project audit, one (1) month after completion of rehabilitation.

28.1.2.3.2. Operational Phase Monitoring

- It is important that the location and extent of the wetlands and rivers in the vicinity of project activities be incorporated into all formal monitoring plans for the current mining operation and activities.
- In terms of management, alien invasive plant control must be practiced on an on-going basis in line with the requirements of Section 2(2) and Section 3 (2) the National Environmental Management: Biodiversity Act (NEM:BA), which obligates the landowner/developer to control invasive alien species on their property.

It will be important that long-term monitoring of the potential freshwater ecosystem impacts be undertaken to proactively to identify any environmental issues and impacts that may arise as a result of the project. This should be one as part of the monitoring programme. The following key aspects should be monitored:

- Erosion in the wetland downslope waste rock dumps
- Presence of alien invasive plants.

28.1.2.4. Ecological and Vegetation Establishment

28.1.2.4.1. Vegetation Re-Establishment

Areas re-vegetated following construction activities, decommissioning activities or any activities leading to vegetation removal and disturbance should be monitored following seeding to ensure successful establishment of vegetation. The following broad guidelines should apply, though the site-specific details should be determined by a suitably qualified expert:

- Monthly monitoring for the first six (6) months, then annual monitoring during the growing season;

- Monitoring for the first six (6) months should focus on cover;
- 70% cover should be achieved after 3 months;
- Annual monitoring (representative sample of re-vegetated sites only) should be undertaken until the appointed independent specialist is satisfied that a sustainable vegetation cover has been established.

28.1.2.4.2. Alien Vegetation

An ongoing alien vegetation removal programme should be implemented during and after construction, and continually during the operational phase. Alien vegetation removal should consider water quality concerns associated with removal of invasive alien vegetation within a water course (i.e. only approved herbicides or mechanical measures may be used). Biannual monitoring inspections should identify target areas for clearing.

28.1.3. Noise Monitoring Programme

It is recommended that the current noise management programme continue, and that environmental management programme be expanded to include the project area.

28.1.4. Aquatic Biodiversity Monitoring

Table 84: Aquatic Biodiversity Monitoring

| Location | Aspect | Parameters | Frequency |
|--|------------------------------------|---|-------------|
| Upstream in watercourse | Aquatic Health – Biomonitoring | As per Water Quality measured to determine baseline quality – refer to surface water assessment report (Appendix 9) | Bi-annually |
| | Surface water quality and quantity | | Monthly |
| Downstream in watercourse | Aquatic Health – Biomonitoring | | Bi-annually |
| | Surface water quality and quantity | | Monthly |
| Footprints within buffer zones which includes crossings or other within 100m (rivers/drainage lines) | Monitor regularly (status quo) | Monitor for impacts within sensitive zones | Monthly |

28.1.5. Biodiversity Monitoring

A monitoring framework should be instigated and managed by their responsible body and the following system may enforce good practice:

- Implement an “observe and report” approach which will enable employees to report any disturbance of flora/fauna or degradation that they encounter.
- Alien invasive awareness, eradication and control programme on an annual basis.

28.1.6. Heritage Monitoring Programme, including Palaeontological Features

No specific heritage monitoring program was described within the specialist report. However, should any heritage remains be discovered during any phase of the development, all work shall stop and a specialist should be consulted.

28.1.7. Air / Dust Monitoring Programme

Dust deposition measurements should be carried out by method ASTM 1739- 98 recommended in SANS 1929-2004. This involves exposure of a standard bucket for a month, with weighing (and chemical analysis, if necessary) of the dust collected. The changing of dust buckets should be undertaken by trained TRP personnel on a monthly basis and the weighing should be carried out at a suitable off-site or on-site laboratory.

The proposed additional waste rock dumps will therefore be included in the existing TRP air quality monitoring programme.

29. ENVIRONMENTAL MONITORING AND AUDITING

The Department of Environmental Affairs (now Department of Forestry, Fisheries and the Environmental) defines environmental auditing as “*a process whereby an organisation’s environmental performance is tested against its environmental policies and objectives*” Monitoring and auditing is an essential environmental management tool which is used to assess, evaluate and manage environmental and sustainability issues.

In order to ensure that the objectives of sustainable development and integrated environmental management are met, and in order to obtain data which can inform continuous improvement of environmental practices at the site (adaptive management), ongoing monitoring and reporting will be an essential component of the operations.

Monitoring and management actions associated with the project are contained in Section 29 of this report as well as in the various specialist reports associated with this project. This section provides a summary of the critical monitoring aspects per specific environmental field.

29.1. GENERAL MONITORING AND MANAGEMENT

The appointment of a suitably qualified on-site Environmental Control Officer (ECO) is essential to the successful implementation and management of this project, although this role can be fulfilled by the SHE Representative. The ECO will be responsible for the implementation of the EMP, applicable environmental legislation and any stipulations/conditions set by the relevant competent authorities (including but not limited to the DMRE and DHSWS). The ECO will conduct formal monthly site inspections and conduct an internal annual audit during all phases of the development.

29.1.1. Specific Monitoring Requirements

Monitoring of the development (both on site and where appropriate in the surrounding environments) should be considered a high priority and should be conducted in accordance with the relevant specialist recommendations as summarized below:

29.1.2. Monitoring Protocol

It is essential that during the implementation and operational phase of the proposed development that the monitoring of certain elements are carried out to ensure compliance with regulatory bodies. A monitoring protocol will be required. The monitoring only includes those activities identified in the EMP and excludes any monitoring that should take place according to the water use license. Compliance in terms of the existing WUL is essential.

29.1.3. *Monitoring Requirements and Record Keeping*

To ensure that the procedures outlined throughout the EMP are implemented effectively, it will be necessary to monitor the implementation of the EMP and evaluate the success of achieving the objectives listed in the EMP. To ensure that all personnel on site are aware of their obligation to protect the environment, induction training will also include environmental awareness.

The audit procedure will include a compliance audit, conducted by the ECO. Where the objectives of the EMP are not being met, the reasons will be determined and remedial action or variation to the tasks will be recommended. Major residual effects shall be documented in a Non-Conformance Report, during the remaining phases of the project. Follow-up audits will be conducted as per the audit protocol in the EMP.

29.1.3.1. *Implementation Phase*

The following monitoring needs to be conducted:

- The TRP existing mine has a current monitoring plan which will provide enough baseline data for comparison against future monitoring of the proposed waste rock dump, especially since no significant change in monitoring is prescribed.
- All required monitoring, as prescribed in specialist studies, must continue.

29.1.3.2. *Operational Phase*

The monitoring detailed in Section 28 must be conducted (Table 81) regarding mitigation outcomes and Table 82 for mechanisms for monitoring. Adherence to all conditions and monitoring frameworks as prescribed by the waste use licence.

29.1.3.3. *Audit Protocol*

It is essential that during the current and future phases of the development, the monitoring and auditing of certain elements are carried out to ensure compliance with regulatory bodies. An Audit Protocol for all phases will be required. The auditing only includes those activities identified in the EIA/EMP and excludes any auditing that should take place according to the water use license or any other legislative authorisation process if and when they will be authorised.

29.1.3.3.1. *Construction, Operational and Decommissioning Phase*

The following audits must be completed:

- EMP compliance (continuously), to be checked by an on-site ECO, SHE representative or Environmental manager (EM).
- External environmental compliance audits (EIA/EMP annually during operations).

29.1.3.4. *Environmental Incidents*

An environmental incident is defined as any unplanned event that results in actual or potential damage to the environment, whether of a serious or non-serious nature. An incident may involve non-conformance with

environmental legal requirements, the requirements of the EMP, or contravention of written or verbal orders given by the ECO or relevant authority.

All details regarding Environmental Incidents and procedures have been described within Section 22.3.2 above and should be handled accordingly.

29.1.3.5. Penalties and Fines for Non-Compliance or Misconduct

This EMP forms part of the contract agreement between the Client and the Principal Contractor. As such, non-compliance with conditions of the EMP will amount to a breach of contract. Penalties will be issued directly to the contractor by the applicant in the event of non-compliance to the EMP specifications. The issuing of a penalty will be preceded by a verbal warning by the applicant, as well as strict instruction in at least one monthly ECO report to rectify the situation. The ECO and applicant will communicate with regards to realistic timeframes for possible rectification of the contravention, and possible consequences of continued non-compliance to the EMP.

Penalties incurred do not preclude prosecution under any other law. Cost of rehabilitation and/or repair of environmental resources that were harmed by the actions of the contractor if such actions were in contravention of the specifications of the EMP will be borne by the contractor himself. Penalties may be issued over and above such costs. The repair or rehabilitation of any environmental damage caused by non-compliance with the EMP cannot be claimed in the Contract Bill, nor can any extension of time be claimed for such works. Penalty amounts shall be deducted from Certificate payments made to the Contractor.

The following categories of non-compliance are an indication of the severity of the contravention, and the fine or penalty amounts may be adjusted depending on the seriousness of the infringement.

- **Category One**
Acts of non-compliance that are unsightly, a nuisance or disruptive to adjacent landowners, existing communities, tourists or persons passing through the area.
- **Category Two**
Acts of non-compliance that cause minor environmental impact or localized disturbance.
- **Category Three**
Acts of non-compliance that affect significant environmental impact extending beyond point source.
- **Category Four**
Acts of non-compliance that result in major environmental impact affecting large areas, site character, protected species or conservation areas.

29.1.4. Environmental Awareness Plan

Environmental awareness training is important for two primary reasons:

- a) The workforce must understand how they can play a role in achieving the objectives specified in the EMP, and
- b) The workforce must understand their obligations in terms of the implementation of the EMP and adherence to environmental-legislative requirements.

The environmental awareness plan is aimed at ensuring that employees, contractors, subcontractors and other relevant parties are aware of and able to meet their environmental commitments. This plan is to be updated on a yearly basis during the phases of the project in light of operational changes, learning experiences and identified training needs.

All full-time staff and contractors are required to attend an induction session when they start, which should include environmental aspects. It is, therefore, recommended that the ECO/Environmental Manager be involved in induction training. As the induction and entry will be located on the existing premises, the induction sessions may be modified/adapted based on the audience attending the specific session, but it should ensure that all employees gain a suitable understanding of:

- Environmental requirements of the project, and how these will be implemented and monitored
- Including each employee's responsibilities with respect to environmental issues
- Contents and commitments of the EMP, including no-go areas, employee conduct, pollution prevention (prohibitions against littering, unauthorized fires, loud music, entry to adjacent properties, road conduct etc.)
- Environmentally sensitive areas on and around the development sites, including why these are deemed important and how these are to be managed. Employees will also be made aware of protected species found on the existing and surrounding site and how these are to be conserved, as well as alien invasive species potentially found on the site and how these should be managed, and
- Incident identification, remediation and reporting requirements: what constitutes an environmental incident (spillages, fire, etc.) and how to react when such an incident occurs.

Environmental training will not be restricted to induction training sessions alone, but will be conducted on an on-going basis throughout the lifecycle of the project as and when required. Records of the type of training given (matters discussed and by whom) are to be kept, as well as the date on which training was given and the attendees of each training session.

Two Rivers Platinum currently has a general environmental awareness programme, as well as job-specific training programmes in place.

29.1.4.1. Environmental Risk Identification

The environmental risks associated with each management area are to be identified by the manager and supervisors together with the technical services manager. The risks are to be documented and actions to reduce these risks should be developed. The actions are to ensure overall compliance with the commitments of the EMP.

29.1.4.2. Training

All members of the workforce (mining, plant workers, administration etc.) are to be subject to job specific training. This may include but not be limited to:

- Preventing pollution
- Spill prevention and clean-up procedures

- The location and purpose of material safety data sheets (MSDSs)
- Managing waste
- No-go areas
- Incident reporting

The aspects to be covered, however, are dependent on the findings of the individual risk assessments. This is to be undertaken for each management area initially. Thereafter all new members of the workforce are to undergo environmental training as part of the training required to do their particular job.

29.1.4.3. Social Management Plan

TRPs approved Social and Labour Plan should continue to be reviewed, revised as per the MPRDA and implemented. The following are the objectives of the HDSA / Gender/ Skill Development Plan:

- Include previously disadvantaged individuals and groups in the employment, SMME, skills development and community projects.
- Identification of real community-based needs for community projects and income generating projects.
- Local residents in the FGTLM and in the site-specific study area are the primary recipients of economic advantages of the Project, training programmes, etc.
- Contribute to the 'Skills Development Plan'.

29.1.4.4. Awareness / Community Engagement Plan

The objectives of the community engagement plan are:

- Promotion of transparency and implementation of public participation for the duration of the project.
- Eliminate conflict and address potential conflict in a pro-active manner.
- To establish a structure (EMC) that can be accessed by stakeholders for communication and engagement purposes.
- Address potential negative impacts on farming and livelihoods proactively

29.1.4.4.1. Complaints / Grievance Register

A complaints/grievance register must be kept at the office of the community liaison or environmental manager. The complaints form must also be electronically available and the environmental manager's contact details provided should a complaint submission be required or if minor problems are raised that can be easily rectified. The complaints register must provide the means for any environmentally related complaint to be registered. A registered complaint needs to be investigated and resolved through formal complaints system where the complainant can enquire on the status of the complaint. Complaints should be investigated with one month of being lodged or communication on reasons for extension be submitted to the complainant. Should complaints not be resolved to the satisfaction of the complainant, it needs to be escalated to the Department of Mineral Resources and Energy for mediation.

29.1.4.5. Responsible Persons

Compliance with the emergency response plan and ensuring individual safety will be responsibility of all employees and contractors on the mine. Record keeping, investigation and management of emergencies will be the responsibility of the following persons:

- Mine Manager
- Environmental Management Representative- this includes the Safety, Health and Environmental (SHE) managers and officers;
- Mine Engineer, and
- Plant Manager.

The mine's Environmental Officer and Project Manager for the construction phase, as well as the relevant contractor will be responsible for ensuring that all employees (temporary and permanent) are made aware of their responsibilities, i.e. implementation of the Environmental Awareness Plan.

29.1.4.6. Defining an Environmental Response Plan

Environmental emergencies occur over the short term and require an immediate response. A mine, as part of its management tools, especially if it is ISO 9000 and ISO 14001 compliant, should have an Environmental Emergency Response Plan. The plan should be disseminated to all employees and contractors and in the event of an emergency, it should be consulted.

This Environmental Emergency Response Plan should be used together with the Emergency Preparedness Plan placed on the mine where it will be easily viewed. The Emergency Response Plan should contain a list of procedures, evacuation routes and a list of emergency contact numbers.

If the environmental emergency has the potential to affect surrounding communities, they should be alerted via alarm signals or contacted in person. The surrounding community will be informed, prior to mining taking place, of the potential dangers and emergencies that exist, and the actions to be taken in such emergencies.

Communication is vital in an emergency and thus communication devices, such as mobile phones, two-way radios, pagers or telephones, must be placed on the mine. A checklist of emergency response units must be consulted and the relevant units notified. The checklist includes:

- Fire department
- Police
- Emergency health services such as ambulances, paramedic teams, poisons centres
- Hospitals, both local and further afield, for specialist care
- Public health authorities
- Environmental agencies, especially those responsible for air, water and waste issues
- Other industrial facilities in the vicinity with emergency response facilities
- Public works and highways departments, port and airport authorities, and
- Public information authorities and media organisations.

29.1.4.7. Process for Identifying Environmental Emergency Procedures

The process that will be used to identify emergency situations at the TRP mining operations will be conducted in terms of the Aspects Registers and may include the following emergencies:

- Pollution Control Dam Overflow
- Pollution Control Dam Breach (on-site)
- Hydrocarbon Spill (diesel, oil, grease, etc.),and
- Veld Fires

The necessary actions required, as well as the responsible person for ensuring that the actions are followed through and the reporting requirements are adhered to, to ensure effective and efficient response to each of the environmental emergency situations listed above are set out in this procedure.

29.1.4.8. Most Likely Potential Environmental Emergencies

The following define the most likely potential environmental emergencies:

- Accidents
- Fires
- A major hydrocarbon spill or leak
- A major spill or leak of process water
- Flooding
- Subsidence, and
- Explosions

29.1.4.9. Accidents

In the case of a medical accident or problem, refer to the TRP Emergency Preparedness Plan (Mine Reference TRP-COP-MAN-013).

29.1.5. Indicate the Frequency of the Submission of the Performance Assessment Report

Yearly performance assessment reports are recommended. Refer to details on Auditing procedures (Section 29.1.3.3).

29.1.6. Manner In Which Risks Will Be Dealt With In Order To Avoid Pollution Or The Degradation Of The Environment

Refer to Table 139 for the recommended mitigation measures to limit environmental impacts. A suitable risk matrix may be used to evaluate operational risks during any stage of the development. Ensure compilation and compliance with all Standard Operational Procedures (SOPs) and that they be updated annually/bi-annually to ensure validity. Also create a system or platform for I&APs to submit any grievances to the mine and communication with internal and external stakeholder i.e. an Environmental and Social Management System (ESMS) system.

30. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

(among others, confirm that the financial provision will be reviewed annually).

The Immediate Closure Provision as calculated will be updated yearly as part of the annual liability assessment required by the MPRDA and GNR 1147 in terms of the NEMA, once operations commence. The Final Rehabilitation Plan will need to be formalised as soon as closure planning commences.

31. UNDERTAKINGS

The EAP,, Elemental Sustainability (Pty) Ltd hereby confirms:

- a) The correctness of the information provided in the reports
- b) The inclusion of comments and inputs from stakeholders and I&APs
- c) The inclusion of inputs and recommendations from the specialist reports where relevant, and
- d) The acceptability of the project in relation to the finding of the assessment and level of mitigation proposed.

Signed at on this day

Signature of Applicant

Designation of Applicant

COMMITMENT / UNDERTAKING BY THE APPLICANT

I,, the undersigned and duly authorised thereto by Two Rivers Platinum (Pty) Ltd undertake to adhere to the requirements and to the conditions as set out in the EMPR submitted to the Director: Mineral Development and approved on

Signed at on this day

Signature of Applicant

Designation of Applicant

32. REFERENCES