

## 8. FULL DESCRIPTION OF THE PROCESS UNDERTAKEN TO IDENTIFY, ASSESS AND RANK THE IMPACTS AND RISKS THE ACTIVITY WILL IMPOSE ON THE PREFERRED SITE THROUGH THE LIFE OF THE ACTIVITY

This chapter provides a description of the process that was followed in order to identify the potential biophysical, cultural/heritage and socio-economic impacts that are assessed as part of the proposed project.

### 8.1 DESCRIPTION OF THE PROCESS UNDERTAKEN TO IDENTIFY IMPACTS

Biophysical, cultural/heritage and socio-economic impacts associated with the proposed project were identified through site visits undertaken by SLR, as well as specialists and the associated specialist studies.

As part of the PPP, I&APs are being provided with opportunities to provide input into the BA process and comment on the proposed project, including the identification of biophysical, cultural/heritage and socio-economic impacts (refer to section 7.2).

### 8.2 DESCRIPTION OF THE PROCESS UNDERTAKEN TO ASSESS AND RANK THE IMPACTS AND RISKS

A description of SLR’s assessment methodology used to assess the severity of identified impacts (including the nature of impacts and the degree to which impacts may cause irreplaceable loss of resources), the extent of the impacts, the duration and reversibility of impacts, the probability of the impact occurring, and the degree to which the impacts can be mitigated, is provided in section 7.6.

### 8.3 A DESCRIPTION OF THE ENVIRONMENTAL IMPACTS AND RISKS IDENTIFIED DURING THE ENVIRONMENTAL ASSESSMENT PROCESS

Descriptions of the biophysical, cultural/heritage and socio-economic impacts in respect of each of the main project activities and phases are provided in Table 8-1. The detailed assessment of these impacts is provided in Appendix C. Impacts that have been deemed insignificant, but only due to the implementation of mitigation, are also included. Impacts that are deemed insignificant without mitigation are included for completeness and will not be associated with any activities or project phase.

**Table 8-1: List of Potential Impacts in respect of each Project Activity and Phase**

| Potential Impact  | Activity   | Phase  |
|---|--|--|
| Loss and sterilisation of mineral resources   | N/A  | N/A  |
| Altering topography   | <ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> <li>• Rehabilitation</li> <li>• Maintenance and aftercare</li> </ul> | <ul style="list-style-type: none"> <li>• Construction</li> <li>• Decommissioning</li> <li>• Closure</li> </ul> |
| Hazardous excavations and infrastructure resulting in safety risks to third parties and animals | <ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> </ul>  | <ul style="list-style-type: none"> <li>• Construction</li> </ul>   |

| Potential Impact                                       | Activity  | Phase   |
|--|---|---|
| Soil erosion   | <ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> <li>• Transport systems</li> <li>• General site management</li> <li>• Demolition</li> <li>• Rehabilitation</li> <li>• Maintenance and aftercare</li> </ul>  | <ul style="list-style-type: none"> <li>• Construction</li> <li>• Operation</li> <li>• Decommissioning</li> <li>• Closure</li> </ul> |
| Disturbance of original soil profiles                  | <ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> <li>• Transport systems</li> <li>• General site management</li> <li>• Demolition</li> <li>• Rehabilitation</li> <li>• Maintenance and aftercare</li> </ul>  | <ul style="list-style-type: none"> <li>• Construction</li> <li>• Operation</li> <li>• Decommissioning</li> <li>• Closure</li> </ul> |
| Chemical pollution of soil                             | <ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> <li>• Transport systems</li> <li>• General site management</li> <li>• Demolition</li> <li>• Rehabilitation</li> <li>• Maintenance and aftercare</li> </ul>  | <ul style="list-style-type: none"> <li>• Construction</li> <li>• Operation</li> <li>• Decommissioning</li> <li>• Closure</li> </ul> |
| Physical destruction and disturbance of floral species | <ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> <li>• Transport systems</li> <li>• General site maintenance</li> <li>• Demolition</li> <li>• Rehabilitation</li> <li>• Maintenance and aftercare</li> </ul> | <ul style="list-style-type: none"> <li>• Construction</li> <li>• Decommissioning</li> <li>• Closure</li> </ul>                      |
| Physical destruction and disturbance of faunal species | <ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> </ul>   | <ul style="list-style-type: none"> <li>• Construction</li> <li>• Decommissioning</li> </ul>   |

| Potential Impact   | Activity  | Phase   |
|--|---|---|
|  | <ul style="list-style-type: none"> <li>• Earthworks</li> <li>• Transport systems</li> <li>• General site maintenance</li> <li>• Demolition</li> <li>• Rehabilitation</li> <li>• Maintenance and aftercare</li> </ul>  | <ul style="list-style-type: none"> <li>• Closure</li> </ul>   |
| Alteration of natural drainage patterns                  | N/A   | N/A   |
| Contamination of surface water resources                 | N/A   | N/A   |
| Contamination of groundwater resources                   | <ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> <li>• Transport systems</li> <li>• General site maintenance</li> <li>• Demolition</li> <li>• Rehabilitation</li> <li>• Maintenance and aftercare</li> </ul> | <ul style="list-style-type: none"> <li>• Construction</li> <li>• Operation</li> <li>• Decommissioning</li> <li>• Closure</li> </ul> |
| Air pollution  | <ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> <li>• Transport systems</li> <li>• General site maintenance</li> <li>• Demolition</li> <li>• Rehabilitation</li> <li>• Maintenance and aftercare</li> </ul> | <ul style="list-style-type: none"> <li>• Construction</li> <li>• Operation</li> <li>• Decommissioning</li> <li>• Closure</li> </ul> |
| Increase in disturbing noise levels                      | N/A   | N/A   |
| Negative visual views                                    | N/A   | N/A   |
| Road disturbance and traffic safety                      | N/A   | N/A   |
| Loss of cultural/heritage and palaeontological resources | <ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> </ul>   | <ul style="list-style-type: none"> <li>• Construction</li> </ul>  |
| Inward migration and economic impact                     | N/A   | N/A   |
| Change in land use                                       | N/A   | N/A   |

## 8.4 ASSESSMENT OF THE SIGNIFICANCE OF EACH IMPACT AND RISK AND AN INDICATION OF THE EXTENT OF WHICH THE ISSUE AND RISK CAN BE AVOIDED OR ADDRESSED BY THE ADOPTION OF MANAGEMENT ACTIONS

The assessment of the significance of potential biophysical, cultural/heritage and socio-economic impacts, including the extent to which impacts can be avoided or mitigated, is included in chapter 9 and Appendix C.

## 9. ASSESSMENT OF EACH IDENTIFIED POTENTIALLY SIGNIFICANT IMPACT AND RISK

This chapter provides a summary of the assessment results of the identified potentially significant biophysical, cultural/heritage and socio-economic impacts identified for the proposed project.

A summary of the assessment of the identified potentially significant biophysical, cultural/heritage and socio-economic impacts associated with the proposed project is provided in Table 9-1. A full description of the assessment is included in Appendix C.

**Table 9-1: Assessment of Significant Impacts and Risks**

| Activity   | Potential impact  | Aspects affected         | Phase   | Significance (Unmitigated) | Management actions type  | Significance (Mitigated) | Extent to which the impact can be reversed, avoided or cause irreplaceable loss and the degree to which the impact and risk can be mitigated   |
|--|---|--------------------------|---|----------------------------|--|--------------------------|--|
| N/A  | Loss and sterilisation of mineral resources   | Geology                  | N/A   | <b>INSIGNIFICANT</b>       |  |                          |  |
| <ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>   | Altering topography   | Topography               | <ul style="list-style-type: none"> <li>Construction</li> <li>Decommissioning</li> <li>Closure</li> </ul>                    | <b>Insignificant</b>       | <ul style="list-style-type: none"> <li>Minimise the area of disturbance by designing and constructing the most compact infrastructure practically possible; and</li> <li>Rehabilitate in accordance with the approved mine closure plan that ensure a suitable post-closure land use is achieved.</li> </ul>   | <b>INSIGNIFICANT</b>     |  |
| <ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> </ul>  | Hazardous excavations and infrastructure resulting in safety risks to third parties and animals |                          | <ul style="list-style-type: none"> <li>Construction</li> </ul>  | <b>Medium</b>              | <ul style="list-style-type: none"> <li>The project area will be fenced off to prevent inadvertent access by third parties and animals;</li> <li>Access control will be implemented to ensure access is only granted to those who have authorisation;</li> <li>Barriers will be erected around all hazardous excavations;</li> <li>Warning signage will be erected at all hazardous excavations; and</li> <li>Where the proposed project has caused injury to third parties or animals, appropriate compensation will be provided;</li> <li><u>Care must be taken to ensure that third-party infrastructure, such as telephone lines, etc. are not damaged during the construction phase; and</u></li> <li><u>Notification of the commencement of the construction phase must be provided to Mvelaphande Trading two weeks in advance.</u></li> </ul> | <b>INSIGNIFICANT</b>     | <ul style="list-style-type: none"> <li>Highly likely to be mitigated.</li> <li>Highly unlikely to be reversed in the case of injury or death.</li> <li>Highly likely to be avoided with mitigation.</li> <li>Highly likely to cause irreplaceable loss in the case of injury or death.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul> | Soil erosion  | Soil and Land Capability | <ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul> | <b>High</b>                | <ul style="list-style-type: none"> <li>Implement the soil conservation procedure as set out in Table 26-3;</li> <li>Establish short term perennial vegetation that will stabilise the site but allow the indigenous vegetation to establish over the site;</li> <li>Use existing established roads;</li> <li>Ensure vegetation clearing is undertaken in phases;</li> <li>Limit vegetation clearance to only the areas where the infrastructure will be constructed;</li> <li>Avoid parking of vehicles and equipment outside of designated parking areas;</li> <li>Plan vegetation clearance for dry seasons (late autumn, winter and early spring); and</li> <li>Re-establish vegetation along the railway infrastructure to reduce the impact of run-off from the compacted surface of the railway area.</li> </ul>                               | <b>MEDIUM</b>            | <ul style="list-style-type: none"> <li>Highly likely to be mitigated.</li> <li>Unlikely to be reversed where vegetation has been removed, highly likely to be reversed beyond the project footprint.</li> <li>Unlikely to be avoided where vegetation has been removed, highly likely to be avoided beyond the project footprint.</li> <li>Highly unlikely to result in irreplaceable loss.</li> </ul> |
| <ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> </ul>  | Disturbance of original soil profiles   |                          | <ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul> | <b>Medium</b>              | <ul style="list-style-type: none"> <li>Land clearance must only be undertaken immediately prior to construction activities within the development footprint; and</li> <li>Level any remaining topsoil that was removed from the railway area and that remained on the surface instead of allowing small stockpiled of soil to remain on the surface.</li> </ul>  | <b>VERY LOW</b>          | <ul style="list-style-type: none"> <li>Highly likely to be mitigated.</li> <li>Unlikely to be reversed where vegetation has been removed, highly likely to be reversed beyond the project footprint.</li> </ul>  |

| Activity   | Potential impact                                       | Aspects affected | Phase   | Significance (Unmitigated) | Management actions type   | Significance (Mitigated) | Extent to which the impact can be reversed, avoided or cause irreplaceable loss and the degree to which the impact and risk can be mitigated   |
|--|--|------------------|---|----------------------------|---|--------------------------|--|
| <ul style="list-style-type: none"> <li>• Transport systems</li> <li>• General site management</li> <li>• Demolition</li> <li>• Rehabilitation</li> <li>• Maintenance and aftercare</li> </ul>  |  |                  |   |                            |   |                          | <ul style="list-style-type: none"> <li>• Unlikely to be avoided where vegetation has been removed, highly likely to be avoided beyond the project footprint.</li> <li>• Highly unlikely to result in irreplaceable loss.</li> </ul>                          |
| <ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> <li>• Transport systems</li> <li>• General site management</li> <li>• Demolition</li> <li>• Rehabilitation</li> <li>• Maintenance and aftercare</li> </ul> | Chemical pollution of soil                             |                  | <ul style="list-style-type: none"> <li>• Construction</li> <li>• Operation</li> <li>• Decommissioning</li> <li>• Closure</li> </ul> | <b>Medium</b>              | <ul style="list-style-type: none"> <li>• Conduct potentially polluting activities (i.e., loading, hauling, tipping, transportation, handling and storage) in a manner that pollutants are contained at source and do not pollute soils. In this regard: <ul style="list-style-type: none"> <li>○ Service all vehicles and mobile equipment regularly in workshops, service bays and wash bays with contained impermeable, floors, dirty water collection facilities and oil traps;</li> <li>○ Design and operate all new and used chemical, fuel and oil storage and handling facilities in a manner that all spillages are contained in impermeable areas and cannot be released into the environment;</li> <li>○ Report ad hoc spills of potentially polluting substances (whether in dirty areas or in the environment) to the environmental manager immediately and clean up and/or remediate immediately;</li> <li>○ Implement and maintain a dirty water management system;</li> <li>○ Implement the waste management practices, as set out in Table 26-2;</li> <li>○ Educate and train all employees (temporary and permanent) and contractors in pollution prevention; and</li> <li>○ Implement formalised action plans to enable fast and efficient reaction to contain and remediate pollution incidents.</li> </ul> </li> <li>• Take into account the requirements for long term soil pollution prevention, land function and confirmatory monitoring in the design of any permanent and potentially polluting structures; and</li> <li>• Implement the emergency response procedure in Table 29-1 in the event any major spillage incident.</li> </ul>  | <b>VERY LOW</b>          | <ul style="list-style-type: none"> <li>• Highly likely to be mitigated.</li> <li>• Highly likely to be reversed with remediation.</li> <li>• Highly likely to be avoided with mitigation.</li> <li>• Highly unlikely to cause irreplaceable loss.</li> </ul> |
| <ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> <li>• Transport systems</li> <li>• General site management</li> <li>• Demolition</li> <li>• Rehabilitation</li> <li>• Maintenance and aftercare</li> </ul> | Physical destruction and disturbance of floral species | Biodiversity     | <ul style="list-style-type: none"> <li>• Construction</li> <li>• Operation</li> <li>• Decommissioning</li> <li>• Closure</li> </ul> | <b>Medium</b>              | <ul style="list-style-type: none"> <li>• A biodiversity specialist shall do a walkdown of the project footprint prior to land clearing activities to identify protected floral species and floral SCC that may have been lying dormant during initial field observations;</li> <li>• Should any protected floral species and floral SCC be located on site, the necessary permits need to be obtained from DENC and/or DFFE prior to removal. They are to be relocated and the relocation success of such species should be monitored for three years post-construction. Immediate actions are to be taken if it becomes evident that relocation is not successful;</li> <li>• Ensure the removal of indigenous vegetation is restricted to what is absolutely necessary;</li> <li>• No collection of floral species and floral SCC is allowed;</li> <li>• Limit edge effects to the surrounding environment by: <ul style="list-style-type: none"> <li>○ Demarcating all footprint areas during construction;</li> <li>○ Preventing construction rubble or cleared alien vegetation and invasive species to be disposed outside of demarcated areas;</li> <li>○ Ensuring that construction rubble and cleared alien and invasive species are taken to a registered waste disposal facility; and</li> <li>○ Managing the spread of alien and invasive species.</li> </ul> </li> <li>• Provide appropriate sanitary facilities and ensure the disposal thereof at a registered licenced facility;</li> <li>• Ensure no temporary dump sites are created on site;</li> <li>• No fires are allowed on site;</li> <li>• Compile an alien invasive species management or control plan for implementation with the following recommendations: <ul style="list-style-type: none"> <li>○ A buffer area of 30 m surrounding the railway balloon should be regularly checked for alien invasive species;</li> </ul> </li> </ul> | <b>LOW</b>               | <ul style="list-style-type: none"> <li>• Very highly likely to be mitigated.</li> <li>• Medium likeliness to be reversed.</li> <li>• Medium likeliness to be avoided with mitigation.</li> <li>• Unlikely to cause irreplaceable loss.</li> </ul>            |

| Activity   | Potential impact                                       | Aspects affected        | Phase   | Significance (Unmitigated) | Management actions type   | Significance (Mitigated) | Extent to which the impact can be reversed, avoided or cause irreparable loss and the degree to which the impact and risk can be mitigated  |
|--|--|-------------------------|---|----------------------------|---|--------------------------|---|
|  |  |                         |   |                            | <ul style="list-style-type: none"> <li>Remove alien invasive species throughout the construction, operation and maintenance phases;</li> <li>Ensure alien vegetation is removed prior to the removal of indigenous vegetation;</li> <li>Ensure only trained personnel are involved in the chemical control of alien invasive species;</li> <li>Edge effects arising from the proposed project which may affect adjacent areas must be strictly managed;</li> <li>Ongoing alien invasive species monitoring must be undertaken throughout all phases; and</li> <li>Removed alien invasive species must not be placed on unprotected ground as seeds may disperse upon it. All cleared alien invasive species must be disposed of at a licenced waste facility.</li> </ul>  |                          |   |
| <ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul> | Physical destruction and disturbance of faunal species | Biodiversity            | <ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul> | <b>Medium</b>              | <ul style="list-style-type: none"> <li>A biodiversity specialist shall do a walkdown of the project footprint prior to land clearing activities to identify faunal species on site and to assist with the relocation thereof;</li> <li>It is recommended that culverts of sufficient size be placed beneath the railway line so as to allow for the movement of small faunal species between the remaining habitat inside the railway loop and that of the larger habitat outside. Culverts must be regularly inspected for infilling and blockages, ensuring they are kept clear of debris;</li> <li>No collection, trapping and harming of faunal species and faunal SCC is allowed;</li> <li>Construction personnel are to undergo environmental awareness training pertaining to the potential faunal species located on site;</li> <li>While no protected faunal species were identified on site, if any species are encountered on site, the necessary permits need to be obtained from DENC and/or DFFE prior to removal/relocation;</li> <li>Perimeter fencing installed as part of the proposed project must allow for the movement of small animals (e.g., palisade fencing or cattle fencing). Should impermeable fencing be installed, small openings must be created to allow for the continuous movement of small animals. Such openings must be continuously monitored and cleared of debris; and</li> <li>Smaller species that are not readily able to move out of an area ahead of vegetation and ground clearing activities (such as scorpions and reptiles), will be less mobile during rainfall events and cold days. As such, care must be taken to look for these species prior to these activities and should these species be encountered, they are to be carefully and safely moved to an area of similar habitat outside of the project footprint. A suitably trained specialist shall be instructed to carry out the removal of venomous snake species.</li> </ul> | <b>LOW</b>               | <ul style="list-style-type: none"> <li>Very highly likely to be mitigated.</li> <li>Medium likelihood to be reversed.</li> <li>Medium likelihood to be avoided with mitigation.</li> <li>Unlikely to cause irreparable loss.</li> </ul> |
| N/A  | Alteration of natural drainage patterns                | Surface water resources | N/A   | <b>INSIGNIFICANT</b>       |   |                          |   |
| N/A  | Contamination of surface water resources               |                         | N/A   | <b>INSIGNIFICANT</b>       |   |                          |   |
| <ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul> | Contamination of groundwater resources                 | Groundwater resources   | <ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul> | <b>Insignificant</b>       | <ul style="list-style-type: none"> <li>Implement approved management actions pertaining to the containment of dirty water in accordance with Regulation 704 (June 1999);</li> <li>Any sheet runoff from compacted areas must be slowed down by the strategic placement of berms; and</li> <li>Control stormwater through the implementation of HMM's existing Stormwater Management Plan.</li> </ul>  | <b>INSIGNIFICANT</b>     |   |
| <ul style="list-style-type: none"> <li>Site preparation</li> </ul>   | Air pollution  | Air Quality             | <ul style="list-style-type: none"> <li>Construction</li> </ul>  | <b>Insignificant</b>       | <ul style="list-style-type: none"> <li>Continue the implementation of HMM's dust fallout monitoring programme;</li> </ul>   | <b>INSIGNIFICANT</b>     |   |

| Activity   | Potential impact  | Aspects affected                                | Phase   | Significance (Unmitigated) | Management actions type  | Significance (Mitigated) | Extent to which the impact can be reversed, avoided or cause irreplaceable loss and the degree to which the impact and risk can be mitigated |
|--|---|---|---|----------------------------|--|--------------------------|--|
| <ul style="list-style-type: none"> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul> |   |   | <ul style="list-style-type: none"> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul> |                            | <ul style="list-style-type: none"> <li>Reduce vehicle exhaust emissions through the use of better-quality diesel;</li> <li>Implement inspection and maintenance programmes; and</li> <li>Implement dust suppression measures (wet and dry) to limit dust impacts.</li> </ul> |                          |  |
| N/A  | Increase in disturbing noise levels                     | Noise   | N/A   | <b>INSIGNIFICANT</b>       |  |                          |  |
| N/A  | Negative visual views                                   | Visual  | N/A   | <b>INSIGNIFICANT</b>       |  |                          |  |
| NA   | Road disturbance and traffic safety                     | Traffic   | N/A   | <b>INSIGNIFICANT</b>       |  |                          |  |
| <ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> </ul>  | Loss of cultural/heritage and paleontological resources | Cultural/heritage and paleontological resources | <ul style="list-style-type: none"> <li>Construction</li> </ul>  | <b>Insignificant</b>       | <ul style="list-style-type: none"> <li>Implement the chance find procedure (see Table 10-1) in the event of the discovery of cultural/heritage and/or palaeontological resources on site.</li> </ul>   | <b>INSIGNIFICANT</b>     |  |
| N/A  | Inward migration and economic impact                    | Socio-economic                                  | N/A   | <b>INSIGNIFICANT</b>       |  |                          |  |
| N/A  | Change in land use                                      |   | N/A   | <b>INSIGNIFICANT</b>       |  |                          |  |



## 10. SUMMARY OF SPECIALIST REPORTING FINDINGS

The aim of this chapter is to list the various specialist studies undertaken for the proposed project, including the main findings of their reports, which are used to inform the compilation of this BAR.

The relevant specialist studies that were undertaken as part of the proposed project including the recommendations made by the specialists are provided in Table 10-1. All relevant specialist reports have been attached as Appendix E.

**Table 10-1: A List of Specialist Studies and Recommendations**

| Specialist Study   | Recommendation of Specialist   | Specialist Recommendations that have been included in the BAR (Mark with X) | Reference to Applicable Section in this Report |
|--|--|---|--|
| Biodiversity Study (inclusive of Plant, Animal and Aquatic Biodiversity Compliance Statements) | <ul style="list-style-type: none"> <li>• Prior to any vegetation clearance activities taking place a walkdown of the final railway footprint must be undertaken and all floral and faunal SCC encountered must be GPS marked and the necessary permits applied for with the relevant national and provincial departments. The site walkdown is to be conducted prior to clearance activities and ideally post good rains between November and February when the smaller bulbous plants are growing and visible;</li> <li>• The construction footprint must be kept as small as possible to minimise impact on the surrounding environment (edge effect management);</li> <li>• Removal of vegetation must be restricted to what is absolutely necessary and should remain within the approved footprint;</li> <li>• Clearing of vegetation should take place in a phased manner from north to south or vice versa. This will allow for any faunal species within the proposed railway loop alternatives to flee and avoid harm;</li> <li>• It is recommended that culverts of sufficient size be placed under the railway line so as to allow for movement of small faunal species between the remaining habitat inside the railway loop and that of the larger habitat outside. Culverts should be regularly inspected for infilling and blockages, ensuring that they are kept clear and open;</li> <li>• Smaller species such as scorpions and reptiles will not as readily be able to move out of an area ahead of ground clearing. As such should any be observed in the construction site during clearing and construction activities, they are to be carefully and safely moved to an area of similar habitat outside of the disturbance footprint. Construction personnel are to be educated about these species and instructed not to kill them. Smaller scorpion species and harmless reptiles (that are likely present within the proposed railway loop alternatives) should be carefully relocated by a suitably nominated construction person. For larger venomous snakes, a suitably trained specialist, or on-site personnel, should be contacted to carry out the relocation of the species, should it not move off on its own;</li> <li>• Vehicles should be restricted to travelling only on designated roadways to limit the ecological footprint of the construction activities. Additional road construction should be limited to what is absolutely necessary, and the footprint thereof kept to a minimal;</li> <li>• No hunting or trapping of faunal species is to be allowed by construction personnel;</li> <li>• It is recommended that should a perimeter fence be erected, this fence must allow for the movement of small mammals, such as palisade fencing or cattle fencing, as opposed to solid constructions such as walls. Should the perimeter be walled in with an impermeable fence, it is recommended that small openings be left to allow for continuous movement of small terrestrial faunal species. Such openings must be continuously monitored and cleared of debris to ensure continued movement is possible;</li> <li>• Informal fires by construction personnel should be prohibited, and no uncontrolled fires whatsoever should be allowed;</li> <li>• Care should be taken during the construction of the proposed development to limit edge effects to surrounding natural habitat. This can be achieved by: <ul style="list-style-type: none"> <li>○ Demarcating all footprint areas during construction activities;</li> <li>○ No dumping of litter, rubble or cleared vegetation on site should be allowed. Rubble/waste should be disposed of at an appropriate registered dump site away from the development footprint. No temporary dump sites should be allowed in areas with natural vegetation. It is advised that waste disposal containers and bins be provided during the construction phase for all construction rubble and general waste;</li> <li>○ All soils compacted as a result of construction activities should be ripped and profiled and reseeded; and</li> <li>○ Manage the spread of alien invasive species, which may affect remaining natural habitat within surrounding areas.</li> </ul> </li> <li>• Appropriate sanitary facilities must be provided during the construction of the development and must be removed to an appropriate waste disposal site;</li> <li>• If any spills occur, they should be immediately cleaned up to avoid soil contamination that can hinder floral rehabilitation later down the line. Spill kits should be kept on-site at all times. In the event of a breakdown, maintenance of vehicles must take place with care, and the recollection of spillage should be practised, preventing the ingress of hydrocarbons into the topsoil;</li> <li>• Upon completion of construction activities, it must be ensured that no bare areas remain, and that indigenous species be used to revegetate the disturbed area;</li> <li>• Edge effects arising from the proposed development, such as erosion and alien plant species proliferation, which may affect adjacent natural areas, need to be strictly managed. Specific mention in this regard is made of Category 1b alien invasive species (as listed in the NEM: BA Alien species lists, 2020), in line with the NEM: BA Alien and Invasive Species Regulations (2020);</li> <li>• Alien invasive species monitoring and clearing/control should take place throughout the construction phase of the development, and a 30 m buffer surrounding the proposed railway loop should be regularly checked for alien invasive species proliferation and to prevent inward and or/outward spread of alien invasive species, notably into non infested areas outside of the proposed railway loop or into newly rehabilitated areas;</li> </ul> | X   | Chapter 9 and Table 9-1                        |

| Specialist Study                        | Recommendation of Specialist  | Specialist Recommendations that have been included in the BAR (Mark with X) | Reference to Applicable Section in this Report |
|---|---|---|--|
|   | <ul style="list-style-type: none"> <li>• Alien vegetation that is removed must not be allowed to lay on unprotected ground as seeds might disperse upon it. All cleared plant material to be disposed of at a licensed waste facility which complies with legal standards;</li> <li>• Should any floral SCC be observed and relocated, the relocation success of such species should be monitored during the construction phase to ensure immediate actions can be taken if it becomes evident that relocation is not successful;</li> <li>• No collection of floral SCC must be allowed by construction personnel;</li> <li>• Edge effect control needs to be implemented to prevent further degradation and potential loss of floral and faunal SCC outside of the proposed development footprint area;</li> <li>• Should the presence of any faunal or floral SCC be noted within the development footprint post walkdown and during vegetation clearance/construction activities, a suitably qualified specialist should be consulted on the best way to proceed; and</li> <li>• If any relocation of SCC took place, monitoring of relocation success should continue for at least three years after the completion of the construction phase, or until it is evident that the species have established self-sustaining populations.</li> </ul>  |   |  |
| HIA and PIA                             | <ul style="list-style-type: none"> <li>• Workmen and foremen need to be trained in the following procedure in instances of accidental discovery of fossil material, in a similar way to the Health and Safety (H&amp;S) protocol. A brief introduction to the process to follow in the event of possible accidental discovery of fossils should be conducted by the designated ECO for the project, or the foreman or site agent in the absence of the ECO;</li> <li>• It is recommended that copies of the preliminary recording form (see Appendix E) and procedure are printed out and displayed at the site office so that workmen may familiarise themselves with them and are thereby prepared in the event that accidental discovery of fossil material takes place;</li> <li>• One person in the staff must be identified and appointed as responsible for the implementation of the following protocol in instances of accidental fossil discovery and must report to the ECO or site agent. If the ECO or site agent is not present on site, then the responsible person on site should follow the protocol correctly in order to not jeopardize the conservation and well-being of the fossil material;</li> <li>• Once a workman notices possible fossil material, he/she should report this to the ECO or site agent. Procedure to follow if it is likely that the material identified is a fossil: <ul style="list-style-type: none"> <li>○ The ECO or site agent must ensure that all work ceases immediately in the vicinity of the area where the fossil or fossils have been found;</li> <li>○ The ECO or site agent must inform the SAHRA APM Unit (Natasha Higgitt/Philip Hine 021 462 5402) of the find immediately. This information must include photographs of the findings and co-ordinates; and</li> <li>○ The ECO or site agent must compile a Preliminary Report and fill in the Fossil Discoveries: Preliminary Record Form (see Appendix E) within 24 hours without removing the fossil from its original position. The Preliminary Report records basic information about the find including: <ul style="list-style-type: none"> <li>– The date;</li> <li>– A description of the discovery;</li> <li>– A description of the fossil and its context (e.g., position and depth of find);</li> <li>– Where and how the find has been stored; and</li> <li>– Photographs to accompany the preliminary report (the more the better): <ul style="list-style-type: none"> <li>▪ A scale must be used;</li> <li>▪ Photos of location from several angles;</li> <li>▪ Photos of vertical section should be provided;</li> <li>▪ Digital images of hole showing vertical section (side); and</li> <li>▪ Digital images of fossil or fossils.</li> </ul> </li> </ul> </li> </ul> </li> <li>• Upon receipt of the Preliminary Report, SAHRA will inform the ECO or site agent whether or not a rescue excavation or rescue collection by a palaeontologist is necessary;</li> <li>• Exposed finds must be stabilised where they are unstable and the site capped, e.g., with a plastic sheet or sandbags. This protection should allow for the later excavation of the finds with due scientific care and diligence. SAHRA can advise on the most appropriate method for stabilisation;</li> <li>• If the find cannot be stabilised, the fossil may be collected with extreme care by the ECO or the site agent and put aside and protected until SAHRA advises on further action. Finds collected in this way must be safely and securely stored in tissue paper and an appropriate box. Care must be taken to remove all fossil material and any breakage of fossil material must be avoided at all costs;</li> <li>• No work may continue in the vicinity of the find until SAHRA has indicated, in writing, that it is appropriate to proceed;</li> <li>• <u>If unmarked human burials are uncovered, the SAHRA BGG Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490) must be alerted immediately; and</u></li> <li>• <u>If newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 operation may be required subject to permits issued by SAHRA.</u></li> </ul> | X   | Chapter 9 and Table 9-1                        |
| Soils, Land Capability and Agricultural | <ul style="list-style-type: none"> <li>• Limit vegetation clearance to only the areas where the surface infrastructure will be constructed;</li> <li>• Avoid parking of vehicles and equipment outside of designated parking areas;</li> <li>• Plan vegetation clearance activities for dry seasons (late autumn, winter and early spring);</li> <li>• Design and implement a Stormwater Management System where run-off from surfaced areas is expected;</li> </ul>  | X   | Chapter 9 and Table 9-1                        |

| Specialist Study     | Recommendation of Specialist   | Specialist Recommendations that have been included in the BAR (Mark with X) | Reference to Applicable Section in this Report |
|----------------------|--|---|--|
| Compliance Statement | <ul style="list-style-type: none"> <li>• Re-establish vegetation along the railway infrastructure to reduce the impact of run-off from the compacted surface of the railway area;</li> <li>• Land clearance must only be undertaken immediately prior to construction activities and only within the development footprint;</li> <li>• Unnecessary land clearance must be avoided;</li> <li>• Level any remaining topsoil that were removed from the railway area and that remained on the surface instead of allowing small stockpiles of soil to remain on the surface;</li> <li>• Losses of fuel and lubricants from the oil sumps and steering racks of vehicles and equipment should be contained using a drip tray with plastic sheeting filled with absorbent material;</li> <li>• Using biodegradable hydraulic fluids, using lined sumps for collection of hydraulic fluids, recovering contaminated soils and treating them off-site, and securely storing dried waste mud by burying it in a purpose-built containment area;</li> <li>• Avoiding waste disposal at the site wherever possible, by segregating, trucking out, and recycling waste;</li> <li>• Containing potentially contaminating fluids and other wastes; and</li> <li>• Cleaning up areas of spillage of potentially contaminating liquids and solids.</li> </ul> |   |  |

## 11. ENVIRONMENTAL IMPACT STATEMENT

The aim of this chapter is to provide a summary of the potential biophysical, cultural/heritage and socio-economic impacts identified as part of the proposed project, as well as their significance.

### 11.1 SUMMARY OF KEY FINDINGS

This section provides a summary of the findings as part of the proposed project and assessed potential impacts on the receiving environment in both the unmitigated and mitigated scenarios, including cumulative impacts. A summary of the potential impacts (as per chapter 9), associated with the preferred alternative (as per chapter 6), in the unmitigated and mitigated scenarios for all project phases is included in Table 11-1.

The assessment of the proposed project presents the potential for negative impacts to occur (in an unmitigated scenario) on the biophysical environments both on the project footprint and in the surrounding area. With the implementation of management actions, these potential impacts can be prevented or reduced to acceptable levels.

It follows that provided the EMPR is effectively implemented, there is no biophysical, cultural/heritage or socio-economic reason why the proposed project should not proceed.

**Table 11-1: Summary of Potential Impacts**

| Aspect   | Potential impact  | Cumulative impact significance of the impact (the ratings are negative unless otherwise specified) |                      |
|--|---|--|----------------------|
|  |   | Unmitigated  | Mitigated            |
| Geology  | Loss and sterilisation of mineral resources   | <b>INSIGNIFICANT</b>   |                      |
| Topography                                       | Altering topography   | <b>INSIGNIFICANT</b>   |                      |
|  | Hazardous excavations and infrastructure resulting in safety risks to third parties and animals | <b>Medium</b>  | <b>INSIGNIFICANT</b> |
| Soil and land capability                         | Soil erosion  | <b>High</b>  | <b>MEDIUM</b>        |
|  | Disturbance of original soil profiles   | <b>Medium</b>  | <b>VERY LOW</b>      |
|  | Chemical pollution of soils   | <b>Medium</b>  | <b>VERY LOW</b>      |
| Biodiversity                                     | Physical destruction and disturbance of floral species  | <b>Medium</b>  | <b>LOW</b>           |
|  | Physical destruction and disturbance of faunal species  | <b>Medium</b>  | <b>LOW</b>           |
| Surface water resources                          | Alteration of natural drainage patterns   | <b>INSIGNIFICANT</b>   |                      |
|  | Contamination of surface water resources  | <b>INSIGNIFICANT</b>   |                      |
| Groundwater                                      | Contamination of groundwater resources  | <b>INSIGNIFICANT</b>   |                      |
| Air quality                                      | Air pollution   | <b>INSIGNIFICANT</b>   |                      |
| Noise  | Increase in disturbing noise levels   | <b>INSIGNIFICANT</b>   |                      |
| Visual   | Negative visual views   | <b>INSIGNIFICANT</b>   |                      |
| Traffic  | Road disturbance and traffic safety   | <b>INSIGNIFICANT</b>   |                      |
| Cultural/heritage and palaeontological resources | Loss of cultural/heritage and palaeontological resources  | <b>INSIGNIFICANT</b>   |                      |
| Socio-economic                                   | Inward migration and economic impact  | <b>INSIGNIFICANT</b>   |                      |

| Aspect | Potential impact   | Cumulative impact significance of the impact (the ratings are negative unless otherwise specified) |           |
|--------|--------------------|--|-----------|
|        |                    | Unmitigated  | Mitigated |
|        | Change in land use | <b>INSIGNIFICANT</b>   |           |

## 11.2 FINAL SITE MAP

The final preferred alternative site layout map is included in Figure 3-1.

## 11.3 SUMMARY OF THE POSITIVE AND NEGATIVE IMPACTS AND RISKS OF THE PROPOSED ACTIVITY AND IDENTIFIED ALTERNATIVES

The positive and negative impacts and risks of the proposed activity are summarised above in Section 11.1.

As noted in chapter 6, the proposed project entails the extension of the existing railway infrastructure and therefore it is most effective if it is adjacent to the existing railway line. It follows that no site alternatives were considered due to this fixed position.

## 12. IMPACT MANAGEMENT OBJECTIVES AND OUTCOMES FOR INCLUSION IN THE EMPR

Based on the outcome of the impact assessment (refer to chapter 9 and see Appendix C), and where applicable the recommendations from specialists (refer to chapter 10), the proposed management objectives and outcomes are provided in this chapter.

### 12.1 PROPOSED MANAGEMENT OBJECTIVES AND OUTCOMES FOR ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS

Specific environmental objectives and outcomes to control, remedy or prevent potential impacts from the proposed project are provided in Table 12-1.

**Table 12-1: Environmental Objectives and Outcomes**

| Aspect                           | Environmental Objective  | Environmental Outcome   |
|----------------------------------|--|---|
| <b>Topography</b>                | The objective is to minimise changes to natural topography.  | The outcome is to limit the alteration of topography during the proposed project and through rehabilitation.  |
|                                  | The objective is to prevent physical harm to third parties and animals resulting from potentially hazardous excavations and infrastructure.  | The outcome is to ensure no third parties or animals are harmed during the proposed project.  |
| <b>Soils and Land Capability</b> | The objective is to minimise the loss of soil resources and related land capability from erosion.  | The outcome is to handle, manage and conserve soil resources to be used as part of rehabilitation and re-establishment of the pre-mining land capability. |
|                                  | The objective is to minimise the loss of soil resources and related land capability from physical disturbance and compaction and soil pollution.   |   |
|                                  | The objective is to minimise the loss of soil resources and related land capability from soil pollution.   |   |
| <b>Biodiversity</b>              | The objective is to prevent the unacceptable loss and disturbance to floral species, and to prevent the proliferation of alien invasive species within and surrounding the project area. | The outcome is to prevent the spread of alien species in the project area, as well to limit disturbance as far as practically possible.                   |
|                                  | The objective is to prevent the unacceptable destruction and disturbance to faunal species.  | The outcome is to ensure that no faunal species are harmed or disturbed in the project area.  |
| <b>Groundwater Resources</b>     | The objective is to prevent pollution of groundwater resources.  | The outcome is to ensure that groundwater quality remains within acceptable limits for both domestic and agricultural purposes.                           |
| <b>Air Quality</b>               | The objective is to prevent air pollution health impacts.  | The outcome is to ensure that any pollutants emitted as a result of the proposed project  |

| Aspect                                     | Environmental Objective  | Environmental Outcome  |
|--|--|--|
|  |  | remains within acceptable limits so as to prevent health related impacts.  |
| <b>Cultural/Heritage and Palaeontology</b> | The objective is to minimise the disturbance of cultural/heritage and paleontological resources. | The outcome is to protect heritage resources where possible. If disturbance is unavoidable, then mitigate impact in consultation with a specialist and the SAHRA and in line with regulatory requirements. |

### 12.1.1 Impacts That Require Monitoring Programmes

Impacts that require monitoring include:

- Hazardous excavations and infrastructure resulting in safety risks to third parties and animals;
- Physical destruction and disturbance of biodiversity; and
- Air quality.

Environmental impacts requiring monitoring are discussed further in chapter 28.

### 12.1.2 Activities and Infrastructure

The source activities of potential impacts which require management include:

- Site preparation;
- Earthworks;
- Civil works;
- Transport systems;
- General site management;
- Demolition;
- Rehabilitation; and
- Maintenance and aftercare.

The phases of development associated with the above-mentioned source activities are provided in Table 3-2.

### 12.1.3 Management Actions

Management actions which will be implemented to control the proposed project activities or processes which have the potential to pollute or result in environmental degradation are provided in chapter 9 and Table 9-1.

### 12.1.4 Roles and Responsibilities

The key personnel to ensure compliance with this BAR and EMPR are the operations executive and the Environmental Department Manager and officers. As a minimum, their roles as they relate to the implementation of monitoring programmes and management activities, include:

- Ensuring that monitoring programmes and audits are scoped to be fit for purpose and included in the annual mine budget;

- 
- Identifying and appointing appropriately qualified specialists/engineers to undertake the monitoring programmes;
  - Appointing specialists in a timeous manner to ensure work can be carried out to acceptable standards;
  - Liaising with the relevant company, municipal and community structures in terms of the commitments in the Social and Labour Plan (SLP);
  - Ensuring that commitments in the SLP are developed and implemented timeously;
  - Establishing and maintaining good working relations with surrounding communities and landowners; and
  - Facilitating stakeholder communication, information sharing and a grievance mechanism.



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### **13. ASPECTS FOR INCLUSION AS CONDITIONS OF THE AUTHORISATION**

Management actions (refer to chapter 9 and Table 9-1) including monitoring requirements (see chapter 28), should form part of the conditions of the EA. With reference to Regulation 26 of Government Notice Regulation (GNR) 982 of NEMA, additional conditions that should form part of the EA that are not specifically included in the EMPR report, include compliance with all applicable environmental legislation, whether specifically mentioned in this document or not, and which may be amended from time to time.

## 14. ASSUMPTIONS, UNCERTAINTIES, LIMITATIONS AND GAPS IN KNOWLEDGE

This chapter outlines the assumptions, uncertainties, limitations and gaps in knowledge associated with the BA process and the proposed project.

### 14.1 ENVIRONMENTAL ASSESSMENT LIMIT

The BA process focuses on third parties only and does not assess H&S impacts on employees and contractors because the assumption is made that these aspects are separately regulated by H&S legislation, policies and standards, and that HMM will adhere to these.

### 14.2 BIODIVERSITY

The following assumptions and limitations apply to the Biodiversity Study (inclusive of Plant, Animal and Aquatic Biodiversity Compliance Statements) compiled for the proposed project:

- The biodiversity assessment was confined to the assessment zone and did not include the neighbouring and adjacent properties. These were considered as part of the desktop assessment;
- With ecology being dynamic and complex, some aspects (some of which may be important) may have been overlooked. It is; however, expected that most floral and faunal communities have been accurately assessed and considered. Relevant online sources and background information were further accessed to improve on the overall understanding of the assessment zone's ecology;
- Due to most faunal taxa's nature and habits, it is unlikely that all species would have been observed during a field assessment of limited duration. Due to the locality of the proposed railway loop alternatives (adjacent to current mining activities), the cyclical nature of many species' life stages, as well as the season of the assessment, few faunal species were observed during the site visit. As such, background data (desktop) and literature studies (previous studies undertaken in the immediate area) were used to further infer faunal species composition and sensitivities in relation to the available habitat;
- Due to the season of assessment (winter), many of the geophytes had died back and were not observable or identifiable. Similarly, many of the smaller herbaceous species, without the distinctive flowers, inflorescences or seeds made identification difficult. As such some species were only identifiable to species levels whilst other species that only show in summer were likely missed during this assessment. However, the data presented within the report is deemed suitable and accurate in order to make the necessary decisions pertaining to the project;
- Sampling, by its nature, means that not all individuals are assessed and identified. Some species and taxa associated with the assessment zone may therefore have been missed during the assessment; and
- The data presented in the report are based on one site visit, undertaken on the 10 June 2021 (winter). A more comprehensive assessment would require that assessments take place in all seasons of the year. However, on-site data were augmented with all available desktop data. Together with project experience in the area, the findings of this assessment are considered an accurate reflection of the ecological characteristics of the assessment zone.

### 14.3 CULTURAL/HERITAGE AND PALAEOLOGY

The following assumptions and limitations apply to the HIA and PIA compiled for the proposed project:

- The significance of heritage resources is determined by means of their historical, social, aesthetic, technological and scientific value in relation to their uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these;
- It should be noted that archaeological and palaeontological deposits often occur below ground level. Should artefacts or skeletal material be revealed on site during construction, such activities should be halted, and it would be required that the heritage consultants be notified for an investigation and evaluation of the finds to take place;
- It is further assumed that the fossil potential of a formation in the project area will be typical of that found in the region and more specifically, similar to that already observed in the surrounds of the project area. In many cases the information on fossil content is limited to the basics, such as in the case of geological mapping when the fossils are not the immediate focus. Scientifically important fossil shell and bone material are expected to be sparsely scattered in these coastal-plain deposits, but unless large and obvious, is not generally seen, under-estimating the fossil prevalence. Much depends on careful scrutiny of exposures and on spotting fossils as they are uncovered during digging i.e., by monitoring excavations. A limitation on predictive capacity exists in that it is not possible to predict the buried fossil content of an area or formation other than in general terms; and
- Based on the geology of the area and the palaeontological record as we know it, it can be assumed that the formation and layout of the banded iron formation, jaspilite and crocidolite, sandstones and aeolian sands are typical for the country and do not contain fossil plant, insect, invertebrate and vertebrate material. The aeolian sands of the Quaternary period would not preserve fossils.

### 14.4 SOILS AND LAND CAPABILITY

The following assumptions and limitations apply to the Soils and Land Capability Compliance Statement compiled for the proposed project:

- The assessment of the anticipated impacts assumes that the proposed surface footprint of the project will stay within the confines as depicted in the layout maps in the report;
- It was assumed that the layout will consist of the components stipulated in the final project layout and description that was provided by the applicant; and
- Assumptions regarding the impacts of the proposed railway extension were made and based on the author's knowledge of the nature and extent of the planned infrastructure.

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## **15. REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORISED**

The aim of this chapter is to provide a reasoned independent opinion, whether or not the proposed project should proceed or not. This opinion is informed by the outcome of the impact assessment and recommendations made by specialists and I&APs.

### **15.1 REASONS WHY THE ACTIVITY SHOULD BE AUTHORISED OR NOT**

The assessment of the proposed project presents the potential for negative impacts to occur (in the unmitigated scenario in particular) on the biophysical, cultural/heritage and socio-economic environments, both on the project footprint and in the surrounding area. With the implementation of management actions, these potential impacts can be prevented or reduced to acceptable levels. It follows that provided the EMPR is effectively implemented, there is no reason from a biophysical, cultural/heritage or socio-economic standpoint why the proposed project should not proceed.

### **15.2 CONDITIONS THAT MUST BE INCLUDED IN THE AUTHORISATION**

#### **15.2.1 Specific Conditions for Inclusion in the EMPR**

Refer to chapter 13.

#### **15.2.2 Rehabilitation Requirements**

Refer to chapter 9.

## **16. PERIOD FOR WHICH AUTHORISATION IS REQUIRED**

With specific reference to Table 3-2, the identified project activities relate to all phases of development (construction, operation, decommissioning and closure). Given that the proposed project will supplement mining operations at Wessels Mine, it follows that authorisation is required for the remaining life of mine, until 2035.

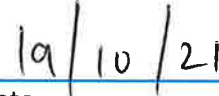
## 17. UNDERTAKING

We, Sharon Meyer and Rizqah Baker, undertake that:

- The information provided herein is correct;
- Comments and inputs from I&APs have been included and correctly recorded in this report;
- Inputs and recommendations from the specialist reports have been included, where relevant; and
- Any information provided to I&APs and any responses to comments or inputs made is correct or was correct at that time.



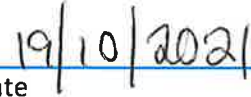
Signature of Report Author



Date



Signature of EAP



Date



Signature of Commissioner of Oaths



Date

**OREN JAN VAN VREDE  
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## 18. FINANCIAL PROVISION

The aim of this chapter is to provide information pertaining to the methodology considered as part of the closure liability calculation determination.

### 18.1 CLOSURE LIABILITY ESTIMATION PROCEDURE

#### 18.1.1 Closure Activities

The closure liability was calculated as per the current closure activities identified by Wessels Mine for the existing railway infrastructure on site, namely:

- Lift and remove railway channels;
- Remove ballast and concrete sleepers, and dispose on discard dump;
- Deep rip the compacted footprint area associated with the railway line;
- Spread 250 mm topsoil (and apply fertiliser) to ripped railway footprint area;
- Revegetate railway footprint area; and
- Maintain and monitor revegetated area until vegetation is suitably established.

Only the newly disturbed areas associated with the proposed railway extension project were considered for deep ripping, topsoiling, fertilising, revegetation, maintenance and monitoring. Current disturbed areas (where the proposed railway extension project will traverse) have not been considered for these specific closure activities since they are already included for, and costed, in the current closure liability estimate for Wessels Mine.

Furthermore, the proposed upgrade to the existing line is not expected to influence the current liability estimate for Wessels Mine and has therefore not been included here.

#### 18.1.2 Quantities

The quantities associated with the proposed railway extension were measured off the infrastructure layout provided (refer to Figure 3-1).

#### 18.1.3 Unit Rates

The unit rates for each closure activity were taken from the current closure liability estimate for Wessels Mine. These unit rates are considered to be independent third-party rates and are applicable as of 1 July 2021. No allowance for salvage and/or recycling scrap material has been considered in the closure liability estimate.

#### 18.1.4 Time, Fee and Contingency Costs

The time, fee and contingency costs were taken from the current closure liability estimate for Wessels Mine, namely:

- Preliminary and General (P&G), 15%; and
- Contingency, 30%.

## 18.2 CONFIRM THAT THE AMOUNT CAN BE PROVIDED FROM OPERATING EXPENDITURE

Wessels Mine's financial provision will be funded by South32 SA Holdings (Pty) Ltd: Hotazel Manganese Operations (Pty) Ltd.



## 19. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

### 19.1 IMPACT ON THE SOCIO-ECONOMIC CONDITIONS OF ANY DIRECTLY AFFECTED PERSON

The impacts associated with socio-economic conditions are discussed in Appendix C. Management actions identified to address any socio-economic impacts are provided in chapter 9 and Table 9-1.

No person will be directly affected by the project given that no I&APs currently reside within the project footprint area and no I&APs undertake any activities (i.e., farming, etc.) activities within the project footprint. However, other impacts include:

- Road disturbance and traffic safety (**INSIGNIFICANT**);
- Inward migration which in turn increases pressure on existing communities, housing, basic service delivery and raises concerns around safety and security (**INSIGNIFICANT**); and
- Employment and procurement of goods and services (**INSIGNIFICANT**).

Indirect socio-economic impacts include:

- Hazardous excavations and infrastructure resulting in safety risks to third parties and animals (**INSIGNIFICANT**);
- Alteration of drainage patterns by reducing the volume of runoff into the downstream catchments (**INSIGNIFICANT**);
- Contamination of surface water resources (**INSIGNIFICANT**);
- Contamination of groundwater resources (**INSIGNIFICANT**);
- Air pollution sources that can have a negative impact on ambient air quality (**INSIGNIFICANT**);
- Increase in disturbing noise levels (**INSIGNIFICANT**); and
- Visual impacts on this receiving environment may be caused by activities and infrastructure (**INSIGNIFICANT**).

### 19.2 IMPACT ON ANY NATIONAL ESTATE REFERRED TO IN SECTION 3(2) OF THE NHRA

No national estate will be affected by the proposed project.

### 19.3 SCREENING TOOL

DFFE developed an online screening tool which identifies environmental sensitivities within the project area. The screening tool report for the proposed project was generated using the DFFE online screening tool and was attached to the NEMA application form as supporting documentation. The screening tool report recommended specialist studies to be undertaken as part of the BA process. The specialist studies that were identified in the screening tool report are included in Table 19-1, as well as explanations for why or why not they were undertaken as part of the BA process.

**Table 19-1: Specialist Studies and Environmental Sensitivities Identified by the Screening Tool**

| Theme       | Sensitivity | Specialist Study     | Reason for in/exclusion  |
|-------------|-------------|----------------------|--|
| Agriculture | Medium      | Compliance Statement | The proposed project entails the clearance of approximately 20 ha of vegetation and the removal of |

| Theme                                | Sensitivity | Specialist Study            | Reason for in/exclusion  |
|--------------------------------------|-------------|-----------------------------|--|
|                                      |             |                             | topsoil. Given the medium sensitivity, the homogenous nature of the soils within the region and the requirements as per the assessment protocols, a Compliance Statement was deemed sufficient.                                    |
| Animal Species                       | Low         | Compliance Statement        | The proposed project entails the clearance of approximately 10 ha of indigenous vegetation that may provide a habitat for protected fauna and fauna SCC. Due to the low sensitivity, a Compliance Statement was deemed sufficient. |
| Aquatic Biodiversity                 | Very High   | Compliance Statement        | No aquatic resources were identified within the project area and thus a Compliance Statement was deemed sufficient.  |
| Archaeological and Cultural Heritage | Low         | HIA                         | In accordance with the NHRA, a full HIA was deemed appropriate.  |
| Geotechnical                         | Unspecified | Geotechnical Study          | A geotechnical study was undertaken as part of the engineering team's investigations.  |
| Landscape/Visual                     | Unspecified | SSVR                        | The proposed project is located adjacent to an existing mining complex. A SSVR was deemed sufficient.  |
| Palaeontology                        | Medium      | Palaeontology Desktop Study | The proposed project, according to the SAHRIS, is located within an area of moderate sensitivity. In this regard, a desktop palaeontology study was deemed appropriate.  |
| Plant Species                        | Low         | Compliance Statement        | The proposed project entails the clearance of approximately 10 ha of indigenous vegetation that may contain protected floral species or floral SCC. Due to the low sensitivity, a Compliance Statement was deemed sufficient.      |
| Terrestrial Biodiversity             | Very High   | Biodiversity Study          | The proposed project entails the clearance of approximately 10 ha of indigenous vegetation. Due to the very high sensitivity, a full biodiversity study was deemed appropriate.  |

## **20. OTHER MATTERS REQUIRED IN TERMS OF SECTION 24(4)(A) AND (B) OF THE ACT**

No other matters are required.

# PART B – ENVIRONMENTAL MANAGEMENT PROGRAMME

## 21. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

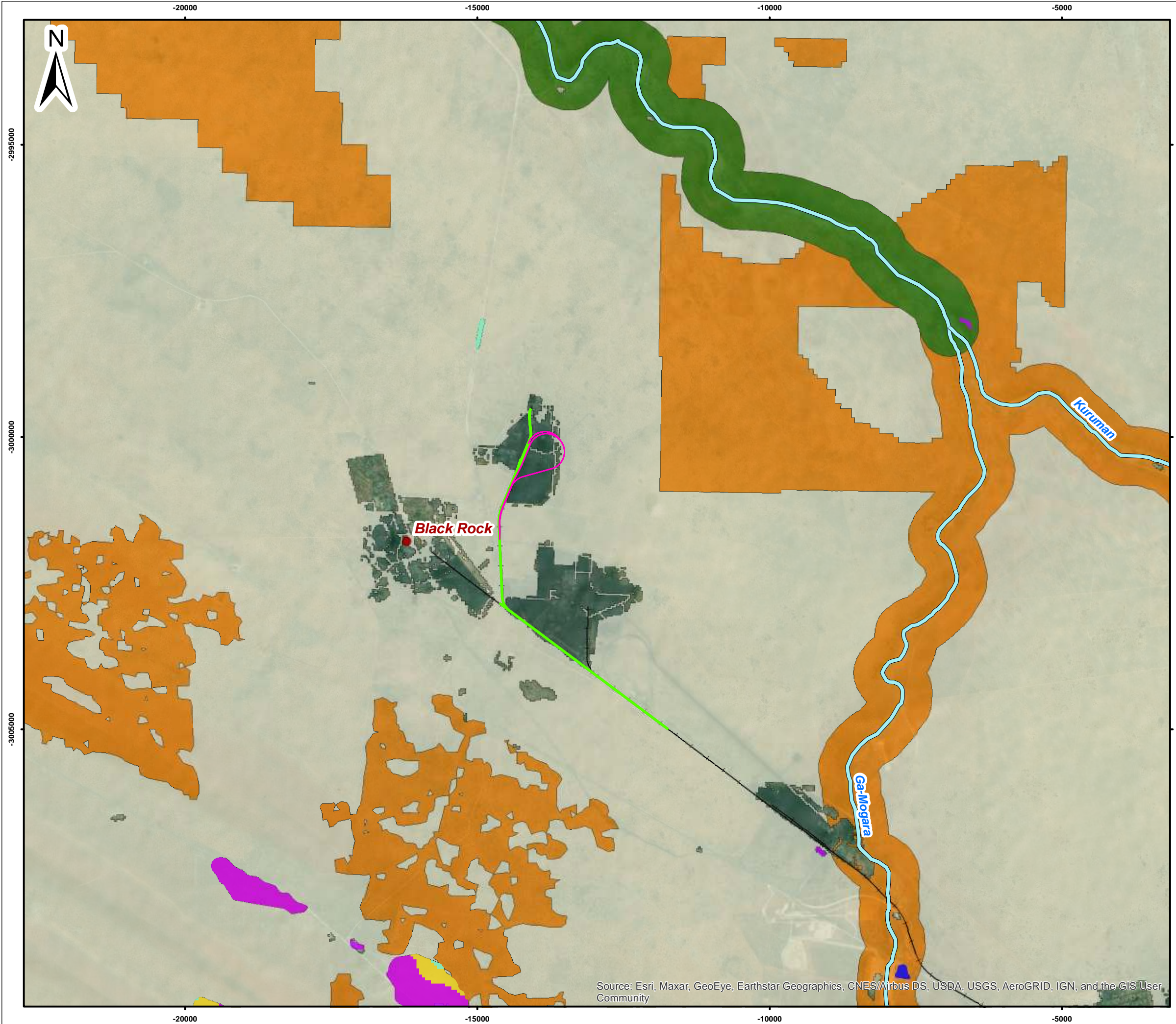
The details of the EAPs who undertook the BA process and prepared this BAR are provided in chapter 1.

## 22. DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

The activities associated with the proposed project that are covered in the EMPR are included in chapter 3 and Table 3-2.

## 23. COMPOSITE MAP

A composite map of the environmental sensitivities of the project area superimposed on the project footprint is provided in Figure 23-1.



- Legend**
- Towns
  - +— Railway
  - Proposed Railway Extension Layout
  - Upgrade to Existing Line
  - Northern Cape Critical Biodiversity Areas**
  - Critical Biodiversity Area (CBA1)
  - Ecological Support Area (ESA)
  - Other Natural Areas (ONA)
  - NFEPA Rivers**
  - CLASS B: LARGELY NATURAL
  - NFEPA Wetlands**
  - Flat
  - Valleyhead seep
  - Channelled valley-bottom wetland
  - Unchannelled valley-bottom wetland

0 1 2 Kilometers  
 Scale: 1:63 360 @ A3  
 Projection: Transverse Mercator  
 Datum: Hartebeeshoek, Lo 23

South32 Limited

**Figure 23-1**  
**Composite Map of Environmental Sensitivities**

**SLR**  
 SLR Consulting (Africa) (Pty) Ltd  
 P O Box 1596, Cramerview, 2060, South Africa  
 Tel: +27 (11) 467-0945 Fax: +27 (11) 467-0978

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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## 24. DESCRIPTION OF THE IMPACT MANAGEMENT OBJECTIVES, INCLUDING THE MANAGEMENT STATEMENT

This chapter outlines the determination of the closure objectives and provides a list of the management measures specifically identified to mitigate impacts associated with the project activities.

### 24.1 DETERMINATION OF CLOSURE OBJECTIVES

The closure objectives for the project were determined taking into account the existing type of environment as described in section 7.4.1, in order to ensure that the closure objectives strive to achieve a condition approximating its natural state as far as possible. Further information pertaining to the closure objectives identified for the proposed project is provided in section 27.1.1.

### 24.2 VOLUMES AND RATE OF WATER USED FOR MINING

The proposed project will require minimal volumes of water as part of the construction phase.

### 24.3 HAS A WATER USE LICENCE BEEN APPLIED FOR?

The proposed project does not trigger any activities in the NWA. It follows that a Water Use Licence (WUL) is not required.

### 24.4 IMPACTS TO BE MITIGATED IN THEIR RESPECTIVE PHASES

The assessment of potential impacts associated with the proposed project is provided in chapter 9 and Appendix C. Management actions which will be implemented to avoid, reduce and minimise negative impacts to acceptable levels, as well as those to enhance positive impacts, are detailed in chapter 9 and Table 9-1. Table 24-1 outlines the management actions that are specific to the Listed Activities triggered by the proposed project in terms of NEMA.

**Table 24-1: Measures to Rehabilitate the Environment Affected by the Undertaking of a Listed Activity**

| Activity (Listed in terms of NEMA)                  |  | Phase   | Size and Scale of Disturbance | Mitigation Measures  | Compliance with Standards  | Time Period for Implementation   |
|---|--|---|-------------------------------|--|--|--|
| Number  | Description  |   |                               |  |  |  |
| Listing Notice 1, GN No. R983, Listing Activity 27: | The expansion of railway lines, stations or shunting yards where there will be an increased development footprint, excluding -<br>(i) railway lines, shunting yards and railway stations in industrial complexes or zones;<br>(ii) underground railway lines in mines; or<br>(iii) additional railway lines within the railway line reserve. | <ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul> | Approximately 10 ha           | <ul style="list-style-type: none"> <li>The project area will be fenced off to prevent inadvertent access by third parties and animals;</li> <li>Access control will be implemented to ensure access is only granted to those who have authorisation;</li> <li>Barriers will be erected around all hazardous excavations;</li> <li>Warning signage will be erected at all hazardous excavations;</li> <li>Where the proposed project has caused injury to third parties or animals, appropriate compensation will be provided;</li> <li><u>Care must be taken to ensure that third-party infrastructure, such as telephone lines, etc. are not damaged during the construction phase;</u></li> <li><u>Notification of the commencement of the construction phase must be provided to Mvelaphande Trading two weeks in advance;</u></li> <li>Minimise the area of disturbance by designing and constructing the most compact infrastructure practically possible;</li> <li>Implement the soil conservation procedure as set out in Table 26-3;</li> <li>Rehabilitate in accordance with the approved mine closure plan that ensures a suitable post-closure land use is achieved;</li> <li>Establish short term perennial vegetation that will stabilise the site but allow the indigenous vegetation to establish over the site;</li> <li>Use existing established roads;</li> <li>Conduct potentially polluting activities (i.e., loading, hauling, tipping, transportation, handling and storage) in a manner that pollutants are contained at source and do not pollute soils. In this regard: <ul style="list-style-type: none"> <li>Service all vehicles and mobile equipment regularly in workshops, service bays and wash bays with contained impermeable, floors, dirty water collection facilities and oil traps;</li> <li>Design and operate all new and used chemical, fuel and oil storage and handling facilities in a manner that all spillages are contained in impermeable areas and cannot be released into the environment;</li> <li>Report ad hoc spills of potentially polluting substances (whether in dirty areas or in the environment) to the environmental manager immediately and clean up and/or remediate immediately;</li> <li>Implement and maintain a dirty water management system;</li> <li>Implement the waste management practices, as set out in Table 26-2;</li> <li>Educate and train all employees (temporary and permanent) and contractors in pollution prevention; and</li> <li>Implement formalised action plans to enable fast and efficient reaction to contain and remediate pollution incidents.</li> </ul> </li> <li>Consider the requirements for long term soil pollution prevention, land function and confirmatory monitoring in the design of any permanent and potentially polluting structures;</li> <li>Implement the emergency response procedure in section Table 29-1 in the event any major spillage incident;</li> <li>A biodiversity specialist will do a walkdown of the project footprint prior to land clearing activities to identify protected floral and faunal species and floral and fauna SCC that may have been lying dormant during initial field observations;</li> </ul> | <ul style="list-style-type: none"> <li>Implementation of an alien invasive species management or control plan is in accordance with the NEM: BA Alien and Invasive Species List (2020) that require the control of alien invasive species.</li> <li>Obtaining permits to remove protected flora and faunal species is in accordance with the NFA, NCNCA and NEM: BA.</li> <li>Construction, operation and maintenance of storm water management facilities is in a manner that ensures compliance with Regulation 704 of 1999 in terms of the NWA.</li> <li>Dust fallout monitoring will comply with the NDCR.</li> <li>Implementation of a Chance Find Procedure is in accordance with the NHRA.</li> </ul> | <ul style="list-style-type: none"> <li>Prior to construction</li> <li>Prior to construction</li> <li>Construction</li> <li>Construction</li> <li>As necessary</li> <li>Prior to construction</li> <li>Construction, Decommissioning and Closure</li> <li>Construction, Decommissioning and Closure</li> <li>Construction</li> <li>Construction</li> <li>Construction, Decommissioning and Closure</li> <li>Construction</li> <li>Construction</li> <li>Construction</li> </ul> |

| Activity (Listed in terms of NEMA) |             | Phase | Size and Scale of Disturbance | Mitigation Measures  | Compliance with Standards | Time Period for Implementation  |
|------------------------------------|-------------|-------|-------------------------------|--|---------------------------|---|
| Number                             | Description |       |                               |  |                           |   |
|                                    |             |       |                               | <ul style="list-style-type: none"> <li>• Should any protected floral and fauna species and floral and fauna SCC be located on site, the necessary permits need to be obtained from DENC and/or DFFE prior to removal, they are to be relocated and the relocation success of such species should be monitored for three years post-construction. Immediate actions are to be taken if it becomes evident that relocation is not successful;</li> <li>• Ensure the removal of indigenous vegetation is restricted to what is absolutely necessary;</li> <li>• Additional road construction is to be limited to what is absolutely necessary and the footprint thereof kept to a minimum;</li> <li>• Ensure vegetation clearing is undertaken in phases, so as to limit the potential for erosion;</li> <li>• No collection, trapping and harming of floral and fauna species and floral and fauna SCC is allowed;</li> <li>• No fires are allowed on site;</li> <li>• Limit edge effects to the surrounding environment by: <ul style="list-style-type: none"> <li>○ Demarcating all footprint areas during construction</li> <li>○ Preventing construction rubble or cleared alien and invasive species to be disposed outside of demarcated areas;</li> <li>○ Ensuring that construction rubble and cleared alien and invasive species are taken to a registered waste disposal facility; and</li> <li>○ Managing the spread of alien and invasive species.</li> </ul> </li> <li>• Provide appropriate sanitary facilities and ensure the disposal thereof at a registered licenced facility;</li> <li>• Ensure no temporary dump sites are created on site;</li> <li>• Compile an alien invasive species management or control plan for implementation with the following recommendations: <ul style="list-style-type: none"> <li>○ A buffer area of 30 m surrounding the railway loop must be monitored continuously for alien invasive species;</li> <li>○ Remove alien invasive species throughout the construction, operation and maintenance phases;</li> <li>○ Ensure alien vegetation is removed prior to the removal of indigenous vegetation;</li> <li>○ Ensure only trained personnel are involved in the chemical control of alien invasive species;</li> <li>○ Edge effects arising from the proposed project which may affect adjacent areas must be strictly managed;</li> <li>○ Ongoing alien invasive species monitoring must be undertaken throughout all phases; and</li> <li>○ Removed alien invasive species must not be placed on unprotected ground as seeds may disperse upon it. All cleared alien invasive species must be disposed of at a licenced waste facility.</li> </ul> </li> <li>• It is recommended that culverts of sufficient size be placed beneath the railway line so as to allow for the movement of small faunal species between the remaining habitat inside the railway loop and that of the larger habitat outside. Culverts must be regularly inspected for infilling and blockages, ensuring they are kept clear and open;</li> <li>• Smaller species that are not readily able to move out of an area ahead of vegetation and ground clearing activities (such as scorpions and reptiles), will be less mobile during rainfall events and cold days. As such, care must be taken to look for these species prior to these activities and should these species be encountered, they are to be carefully and safely moved to an area of</li> </ul> |                           | <ul style="list-style-type: none"> <li>• Construction</li> <li>• Construction</li> <li>• Construction</li> <li>• All phases</li> <li>• All phases</li> <li>• Construction, Decommissioning and Closure</li> <li>• Construction</li> <li>• Construction</li> <li>• All phases</li> <li>• Construction</li> <li>• Construction</li> <li>• Construction</li> </ul> |

| Activity (Listed in terms of NEMA) |             | Phase | Size and Scale of Disturbance | Mitigation Measures  | Compliance with Standards | Time Period for Implementation  |
|------------------------------------|-------------|-------|-------------------------------|--|---------------------------|---|
| Number                             | Description |       |                               |  |                           |   |
|                                    |             |       |                               | <p>similar habitat outside of the project footprint. A suitably trained specialist shall be instructed to carry out the removal of venomous snake species;</p> <ul style="list-style-type: none"> <li>• Perimeter fencing installed as part of the project must allow for the movement of small animals (e.g., palisade fencing or cattle fencing). Should impermeable fencing be installed, small openings must be created to allow for the continuous movement of small animals. Such openings must be continuously monitored and cleared of debris;</li> <li>• Construction personnel are to undergo environmental awareness training pertaining to the potential faunal species located on site;</li> <li>• Implement approved management actions pertaining to the containment of dirty water in accordance with Regulation 704 (June 1999);</li> <li>• Any sheet runoff from compacted areas must be slowed down by the strategic placement of berms;</li> <li>• Control stormwater through the implementation of HMM’s existing Stormwater Management Plan;</li> <li>• Continue the implementation of HMM’s dust fallout monitoring programme;</li> <li>• Reduce vehicle exhaust emissions through the use of better-quality diesel;</li> <li>• Implement inspection and maintenance programmes;</li> <li>• Implement dust suppression measures (wet and dry) to limit dust impacts.</li> <li>• Implement dust suppression measures (wet and dry) to limit dust impacts; and</li> <li>• Implement the chance find procedure (see Table 10-1) in the event of the discovery of cultural/heritage and/or palaeontological resources on site.</li> </ul> |                           | <ul style="list-style-type: none"> <li>• Prior to construction</li> <li>• Construction</li> <li>• Construction</li> <li>• Construction</li> <li>• All phases</li> <li>• Construction</li> <li>• All phases</li> <li>• Construction</li> <li>• Construction</li> <li>• Construction</li> </ul> |

## 25. IMPACT MANAGEMENT OUTCOMES AND OBJECTIVES

The purpose of this chapter is to outline the impact management objectives and outcomes for the potential biophysical, cultural/heritage and socio-economic impacts identified for the proposed project.

Table 25-1 provides a description of the outcomes and objectives of the management actions recommended to manage, remedy, control or modify potential impacts associated with the proposed project. The management actions identified to achieve these outcomes and objectives are also provided.

**Table 25-1: Description of Impact Management Outcomes and Objectives**

| Activity   | Potential Impact  | Affected Aspect           | Phase   | Management Action   | Standard to be Achieved (Impact Management Objective and Outcomes)   |
|--|---|---------------------------|---|---|--|
| N/A  | Loss and sterilisation of mineral resources   | Geology                   | N/A   | <b>INSIGNIFICANT</b>  |  |
| <ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>   | Altering topography   | Topography                | <ul style="list-style-type: none"> <li>Construction</li> <li>Decommissioning</li> <li>Closure</li> </ul>                    | <ul style="list-style-type: none"> <li>Minimise the area of disturbance by designing and constructing the most compact infrastructure practically possible; and</li> <li>Rehabilitate in accordance with the approved mine closure plan that ensure a suitable post-closure land use is achieved.</li> </ul>  | <ul style="list-style-type: none"> <li>The objective is to minimise changes to natural topography.</li> <li>The outcome is to limit the alteration of topography during the proposed project and through rehabilitation.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> </ul>  | Hazardous excavations and infrastructure resulting in safety risks to third parties and animals |                           | <ul style="list-style-type: none"> <li>Construction</li> </ul>  | <ul style="list-style-type: none"> <li>The project area will be fenced off to prevent inadvertent access by third parties and animals;</li> <li>Access control will be implemented to ensure access is only granted to those who have authorisation;</li> <li>Barriers will be erected around all hazardous excavations;</li> <li>Warning signage will be erected at all hazardous excavations;</li> <li>Where the proposed project has caused injury to third parties or animals, appropriate compensations will be provided;</li> <li><u>Care must be taken to ensure that third-party infrastructure, such as telephone lines, etc. are not damaged during the construction phase; and</u></li> <li><u>Notification of the commencement of the construction phase must be provided to Mvelaphande Trading two weeks in advance.</u></li> </ul> | <ul style="list-style-type: none"> <li>The objective is to prevent physical harm to third parties and animals resulting from potentially hazardous excavations and infrastructure.</li> <li>The outcome is to ensure no third parties' animals are harmed during the proposed project.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul> | Soil erosion  | Soils and Land Capability | <ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul> | <ul style="list-style-type: none"> <li>Implement the soil conservation procedure as set out in Table 26-3;</li> <li>Establish short-term perennial vegetation that will stabilise the site but will allow the indigenous vegetation to establish over the site;</li> <li>Ensure vegetation clearance is undertaken in phases;</li> <li>Limit vegetation clearance to only areas where the infrastructure will be constructed;</li> <li>Avoid parking of vehicles and equipment outside of designated parking areas;</li> <li>Plan vegetation clearance for dry seasons (late autumn, winter and early spring); and</li> <li>Re-establish vegetation along the railway infrastructure to reduce the impact of run-off from the compacted surface of the railway area.</li> </ul>   | <ul style="list-style-type: none"> <li>The objective is to minimise the loss of soil resources and related land capability from erosion.</li> <li>The outcome is to handle, manage and conserve soil resources to be used as part of rehabilitation and re-establishment of the pre-mining land capability.</li> </ul>                             |
| <ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> </ul>  | Disturbance of original soil profiles   |                           | <ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul> | <ul style="list-style-type: none"> <li>Land clearance must only be undertaken immediately prior to construction activities within the development footprint; and</li> <li>Level any remaining topsoil that was removed from the railway area and that remained on the surface instead of allowing small stockpiled of soil to remain on the surface.</li> </ul>   | <ul style="list-style-type: none"> <li>The objective is to minimise the loss of soil resources and related land capability from physical disturbance and compaction.</li> <li>The outcome is to handle, manage and conserve soil resources to be used as part of rehabilitation and re-establishment of the pre-mining land capability.</li> </ul> |

| Activity   | Potential Impact                                       | Affected Aspect | Phase   | Management Action   | Standard to be Achieved (Impact Management Objective and Outcomes)  |
|--|--|-----------------|---|---|---|
| <ul style="list-style-type: none"> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>  |  |                 |   |   |   |
| <ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul> | Chemical pollution of soil                             |                 | <ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul> | <ul style="list-style-type: none"> <li>Conduct potentially polluting activities (i.e., loading, hauling, tipping, transportation, handling and storage) in a manner that pollutants are contained at source and do not pollute soils. In this regard:                             <ul style="list-style-type: none"> <li>Service all vehicles and mobile equipment regularly in workshops, service bays and wash bays with contained impermeable, floors, dirty water collection facilities and oil traps;</li> <li>Design and operate all new and used chemical, fuel and oil storage and handling facilities in a manner that all spillages are contained in impermeable areas and cannot be released into the environment;</li> <li>Report ad hoc spills of potentially polluting substances (whether in dirty areas or in the environment) to the environmental manager immediately and clean up and/or remediate immediately;</li> <li>Implement and maintain a dirty water management system;</li> <li>Implement the waste management practices, as set out in Table 26-2;</li> <li>Educate and train all employees (temporary and permanent) and contractors in pollution prevention; and implement formalised action plans to enable fast and efficient reaction to contain and remediate pollution incidents.</li> </ul> </li> <li>Take into account the requirements for long term soil pollution prevention, land function and confirmatory monitoring in the design of any permanent and potentially polluting structures; and</li> <li>Implement the emergency response procedure in section Table 29-1 in the event any major spillage incident.</li> </ul>   | <ul style="list-style-type: none"> <li>The objective is to minimise the loss of soil resources and related land capability from soil pollution.</li> <li>The outcome is to handle, manage and conserve soil resources to be used as part of rehabilitation and re-establishment of the pre-mining land capability.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul> | Physical destruction and disturbance of floral species | Biodiversity    | <ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul> | <ul style="list-style-type: none"> <li>A biodiversity specialist shall do a walkdown of the project footprint prior to land clearing activities to identify protected floral species and floral SCC that may have been lying dormant during initial field observations;</li> <li>Should any protected floral species and floral SCC be located on site, the necessary permits need to be obtained from DENC and/or DFFE prior to removal. They are to be relocated and the relocation success of such species should be monitored for three years post-construction. Immediate actions are to be taken if it becomes evident that relocation is not successful;</li> <li>Ensure the removal of indigenous vegetation is restricted to what is absolutely necessary;</li> <li>No collection of floral species and floral SCC is allowed;</li> <li>Limit edge effects to the surrounding environment by:                             <ul style="list-style-type: none"> <li>Demarcating all footprint areas during construction;</li> <li>Preventing construction rubble or cleared alien vegetation and invasive species to be disposed outside of demarcated areas;</li> <li>Ensuring that construction rubble and cleared alien and invasive species are taken to a registered waste disposal facility; and</li> <li>Managing the spread of alien and invasive species.</li> </ul> </li> <li>Provide appropriate sanitary facilities and ensure the disposal thereof at a registered licenced facility;</li> <li>Ensure no temporary dump sites are created on site;</li> <li>No fires are allowed on site;</li> <li>Compile an alien invasive species management or control plan for implementation with the following recommendations:                             <ul style="list-style-type: none"> <li>A buffer area of 30 m surrounding the railway balloon should be regularly checked for alien invasive species;</li> <li>Remove alien invasive species throughout the construction, operation and maintenance phases;</li> <li>Ensure alien vegetation is removed prior to the removal of indigenous vegetation;</li> <li>Ensure only trained personnel are involved in the chemical control of alien invasive species;</li> <li>Edge effects arising from the proposed project which may affect adjacent areas must be strictly managed;</li> <li>Ongoing alien invasive species monitoring must be undertaken throughout all phases; and</li> <li>Removed alien invasive species must not be placed on unprotected ground as seeds may disperse upon it. All cleared alien invasive species must be disposed of at a licenced waste facility.</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>The objective is to prevent the unacceptable loss and disturbance to floral species, and to prevent the proliferation of alien invasive species within and surrounding the project area.</li> <li>The outcome is to prevent the spread of alien species in the project area, as well to limit disturbance as far as practically possible.</li> </ul> |
| <ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> </ul>   | Physical destruction and disturbance of faunal species |                 | <ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul> | <ul style="list-style-type: none"> <li>A biodiversity specialist shall do a walkdown of the project footprint prior to land clearing activities to identify faunal species on site and to assist with the relocation thereof;</li> <li>It is recommended that culverts of sufficient size be placed beneath the railway line so as to allow for the movement of small faunal species between the remaining habitat inside the railway loop and that of the larger habitat outside. Culverts must be regularly inspected for infilling and blockages, ensuring they are kept clear of debris;</li> </ul>   | <ul style="list-style-type: none"> <li>The objective is to prevent the unacceptable destruction and disturbance to faunal species.</li> <li>The outcome is to ensure that no faunal species are harmed or disturbed in the project area.</li> </ul>   |

| Activity   | Potential Impact                         | Affected Aspect         | Phase   | Management Action  | Standard to be Achieved (Impact Management Objective and Outcomes)   |
|--|--|-------------------------|---|--|--|
| <ul style="list-style-type: none"> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul>   |  |                         |   | <ul style="list-style-type: none"> <li>No collection, trapping and harming of faunal species and faunal SCC is allowed;</li> <li>Construction personnel are to undergo environmental awareness training pertaining to the potential faunal species located on site;</li> <li>While no protected faunal species were identified on site, if any species are encountered on site, the necessary permits need to be obtained from DENC and/or DFFE prior to removal/relocation;</li> <li>Perimeter fencing installed as part of the proposed project must allow for the movement of small animals (e.g., palisade fencing or cattle fencing). Should impermeable fencing be installed, small openings must be created to allow for the continuous movement of small animals. Such openings must be continuously monitored and cleared of debris; and</li> <li>Smaller species that are not readily able to move out of an area ahead of vegetation and ground clearing activities (such as scorpions and reptiles), will be less mobile during rainfall events and cold days. As such, care must be taken to look for these species prior to these activities and should these species be encountered, they are to be carefully and safely moved to an area of similar habitat outside of the project footprint. A suitably trained specialist shall be instructed to carry out the removal of venomous snake species.</li> </ul> |  |
| N/A  | Alteration of natural drainage patterns  | Surface Water Resources | N/A   | <b>INSIGNIFICANT</b>   |  |
| N/A  | Contamination of surface water resources |                         | <ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul> | <b>INSIGNIFICANT</b>   |  |
| <ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul> | Contamination of groundwater resources   | Groundwater Resources   | <ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul> | <ul style="list-style-type: none"> <li>Implement approved management actions pertaining to the containment of dirty water in accordance with Regulation 704 (June 1999);</li> <li>Any sheet runoff from compacted areas must be slowed down by the strategic placement of berms;</li> <li>Implement the emergency response procedure in Table 29-1 in the event any major spillage incident; and</li> <li>Control stormwater through the implementation of HMM's existing Stormwater Management Plan;</li> </ul>   | <ul style="list-style-type: none"> <li>The objective is to prevent pollution of groundwater resources.</li> <li>The outcome is to ensure that groundwater quality remains within acceptable limits for both domestic and agricultural purposes.</li> </ul>                     |
| <ul style="list-style-type: none"> <li>Site preparation</li> <li>Civil works</li> <li>Earthworks</li> <li>Transport systems</li> <li>General site management</li> <li>Demolition</li> <li>Rehabilitation</li> <li>Maintenance and aftercare</li> </ul> | Air pollution                            | Air Quality             | <ul style="list-style-type: none"> <li>Construction</li> <li>Operation</li> <li>Decommissioning</li> <li>Closure</li> </ul> | <ul style="list-style-type: none"> <li>Continue the implementation of HMM's dust fallout monitoring programme;</li> <li>Reduce vehicle exhaust emissions through the use of better-quality diesel;</li> <li>Implement dust suppression measures (wet and dry) to limit dust impacts; and</li> <li>Implement inspection and maintenance programmes.</li> </ul>  | <ul style="list-style-type: none"> <li>The objective is to prevent air pollution health impacts.</li> <li>The outcome is to ensure that any pollutants emitted as a result of the project remains within acceptable limits so as to prevent health related impacts.</li> </ul> |
| N/A  | Negative visual views                    | Visual                  | N/A   | <b>INSIGNIFICANT</b>   |  |
| N/A  | Road disturbance and traffic safety      | Traffic                 | N/A   | <b>INSIGNIFICANT</b>   |  |

| Activity  | Potential Impact  | Affected Aspect                                 | Phase  | Management Action   | Standard to be Achieved (Impact Management Objective and Outcomes)   |
|---|---|---|--|---|--|
| <ul style="list-style-type: none"> <li>• Site preparation</li> <li>• Civil works</li> <li>• Earthworks</li> </ul> | Loss of cultural/heritage and paleontological resources | Cultural/Heritage and Paleontological Resources | <ul style="list-style-type: none"> <li>• Construction</li> </ul> | <ul style="list-style-type: none"> <li>• Implement the chance find procedure (refer to Table 10-1) in the event of the discovery of cultural/heritage and/or palaeontological resources on site.</li> </ul> | <ul style="list-style-type: none"> <li>• The objective is to minimise the disturbance of cultural/heritage and paleontological resources.</li> <li>• The outcome is to protect heritage resources where possible. If disturbance is unavoidable, then mitigate impact in consultation with a specialist and the SAHRA and in line with regulatory requirements.</li> </ul> |
| N/A   | Inward migration and economic impact                    | Socio-Economic                                  | N/A  | <b>INSIGNIFICANT</b>  |  |
| N/A   | Change in land use                                      |   | N/A  | <b>INSIGNIFICANT</b>  |  |



## 26. IMPACT MANAGEMENT ACTIONS

**Table 26-1: Description of Impact Management Actions**

| Activity            | Potential Impact  | Management Action    | Time Period for Implementation | Compliance with Standards |
|---------------------|---|----------------------|--------------------------------|---------------------------|
| N/A                 | Loss and sterilisation of mineral resources   | <b>INSIGNIFICANT</b> |                                |                           |
| Refer to Table 25-1 | Altering topography   | Refer to Table 25-1  | Refer to Table 24-1            | N/A                       |
| Refer to Table 25-1 | Hazardous excavations and infrastructure resulting in safety risks to third parties and animals | Refer to Table 25-1  | Refer to Table 24-1            | N/A                       |
| Refer to Table 25-1 | Soil erosion  | Refer to Table 25-1  | Refer to Table 24-1            | Refer to Table 24-1       |
| Refer to Table 25-1 | Disturbance of original soil profiles   | Refer to Table 25-1  | Refer to Table 24-1            | Refer to Table 24-1       |
| Refer to Table 25-1 | Chemical pollution of soil  | Refer to Table 25-1  | Refer to Table 24-1            | Refer to Table 24-1       |
| Refer to Table 25-1 | Physical destruction and disturbance of floral species  | Refer to Table 25-1  | Refer to Table 24-1            | Refer to Table 24-1       |
| Refer to Table 25-1 | Physical destruction and disturbance of faunal species  | Refer to Table 25-1  | Refer to Table 24-1            | Refer to Table 24-1       |
| N/A                 | Alteration of natural drainage patterns   | <b>INSIGNIFICANT</b> |                                |                           |
| N/A                 | Contamination of surface water resources  | <b>INSIGNIFICANT</b> |                                |                           |
| Refer to Table 25-1 | Contamination of groundwater resources  | Refer to Table 25-1  | Refer to Table 24-1            | Refer to Table 24-1       |
| Refer to Table 25-1 | Air pollution   | Refer to Table 25-1  | Refer to Table 24-1            | N/A                       |
| N/A                 | Negative visual views   | <b>INSIGNIFICANT</b> |                                |                           |
| N/A                 | Road disturbance and traffic safety   | <b>INSIGNIFICANT</b> |                                |                           |
| Refer to Table 25-1 | Loss of cultural/heritage and paleontological resources   | Refer to Table 25-1  | Refer to Table 24-1            | Refer to Table 24-1       |
| N/A                 | Inward migration and economic impact  | <b>INSIGNIFICANT</b> |                                |                           |
| N/A                 | Change in land use  | <b>INSIGNIFICANT</b> |                                |                           |

Additional procedures to manage waste and conserve soil resources are provided in Table 26-2 and Table 26-3, respectively. These measures must be implemented in the relevant phases, in addition to those already mentioned in afore-mentioned sections.

**Table 26-2: Waste Management Procedures for General Waste**

| Items to be considered            |   | Intentions   |
|-----------------------------------|---|--|
| General                           | Specific  |  |
| Classification and record keeping | General   | HMM’s general and hazardous waste management procedure will cover the collection, storage, handling, transportation and disposal of waste to and from the mine. HMM will ensure that the responsible contractor(s) are made aware of these procedures.   |
|                                   | Waste opportunity analysis                              | In line with the DWS’ strategy to eliminate waste streams in the longer term, HMM will assess each waste type to see whether there are alternative uses for the material. This will be done as a priority before the disposal option.  |
|                                   | Safety data sheets                                      | HMM will maintain, where required in terms of the regulations, the safety data sheets for hazardous waste (prepared in accordance with SANS 10234).  |
|                                   | Inventory of wastes produced                            | HMM will keep an accurate and up to date record of the waste that is generated, which records must reflect: <ul style="list-style-type: none"> <li>• The classification of the wastes;</li> <li>• The quantity of each waste generated, expressed in tons or cubic metres per month;</li> <li>• The quantities of each waste that has either been re-used, recycled, recovered, treated or disposed of; and</li> <li>• By whom the waste was managed.</li> </ul>   |
|                                   | Disposal record   | Written evidence of safe disposal of waste will be kept.   |
|                                   | Record keeping  | Records will be retained for a period of at least five years and will be made available to the DWS on request.   |
| Waste management                  | Collection points                                       | Designated waste collection points will be established on site. Care will be taken to ensure that there will be sufficient collection points with adequate capacity and that these are serviced frequently.  |
|                                   | Laydown/ salvage areas                                  | During construction, operations, decommissioning and closure, lay down areas for re-usable non-hazardous materials will be established.  |
|                                   | General (Non-hazardous) waste                           | Will be stored in designated skips and removed by an approved contractor for disposal at a licenced facility.  |
|                                   | Hazardous wastes  | Medical waste, laboratory chemicals and related packaging, used chemicals and chemical containers will be temporarily stored in sealed containers in a bunded store before removal by an approved waste contractor and disposed of in a licenced facility.   |
|                                   | Used and/or spilled hydrocarbons such as oil and grease | Used and/or spilt oil and grease will be collected in suitable containers at designated collection points. The designated collection points will be bunded and underlain by impervious materials to ensure that any spills are contained. In general areas used and/or spilt oil and grease will be collected in suitable containers and deposited in a designated storage area. Notices will be erected at each waste oil point giving instructions on the procedure for waste oil discharge and collection. An approved subcontractor will remove oil from site. |

| Items to be considered |                                   | Intentions   |
|------------------------|-----------------------------------|--|
| General                | Specific                          |  |
|                        | Any soil polluted by a spill      | <p>If soil (whether stockpiled or in its undisturbed natural state) is polluted, the first management priority is to treat the pollution by means of in-situ bioremediation at the designated site. In situ remediation is generally considered to be the preferred option because with successful in situ remediation the soil resource will be retained in the correct place. The in-situ options include bio-remediation at the point of pollution, or removal of soils for washing and/or bioremediation at a designated area after which the soils are returned.</p> <p>If remediation of the soil in-situ is not possible, the soils will be classified as a waste in terms of the Waste Regulations and will be disposed of at an appropriate permitted waste facility.</p> |
|                        | Mixing of wastes                  | Waste will not be mixed or treated where this would reduce the potential for re-use, recycling or recovery; or result in treatment that is not controlled and not permanent.   |
| Disposal               | Offsite waste disposal facilities | <p>Waste will be disposed of at appropriate licenced waste disposal facilities.</p> <p>Unless collected by the municipality, the mine must ensure that the disposal of their waste to landfill is in accordance with the Norms and Standards for Disposal of Waste to Landfill set in terms of Section 7(1) of the NEM: WA.</p>  |
| Waste transport        | Contractor                        | A qualified, reputable waste management subcontractor will undertake the waste transport. The contractor will provide an inventory of each load collected and of proof of disposal at a licenced facility.   |
| Banned practices       | Long-term stockpiling of waste    | Stockpiling of waste is a temporary measure. Waste stockpiling sites must have an impervious floor, be bunded and have a drainage system for collection and containment of water on the site.  |
|                        | Burying of waste                  | No wastes will be placed on site.  |

**Table 26-3: Soil Conservation Procedures**

| Steps   | Factors to consider                          | Detail  |
|---|--|---|
| Delineation of areas to be stripped                                 |  | Stripping will only occur where soils are to be disturbed by activities that are described in the EMPR, and where a clearly defined end rehabilitation use for the stripped soil has been identified.   |
| Stripping   | Planning                                     | Wherever possible, stripping and replacing of soils will be done in a single action. This is both to reduce compaction and to increase the viability of the seed bank contained in the stripped surface soil horizons.<br><br>All machines will be in efficient and safe working condition and only operated when ground conditions enable their maximum operating efficiency.  |
|   | Topsoil                                      | A thickness of 150 cm of topsoil will be stripped.  |
|   | Soft and hardpan carbonate horizons          | Soft and hardpan carbonate horizons (deeper than 150cm) will be stripped separately and not mixed with the A and B horizons.  |
| Delineation of stockpiling areas                                    | Designation of the areas                     | All topsoil will be stockpiled in areas clearly demarcated on the infrastructure layout and should be defined as no-go areas.   |
| Stockpile management  | Vegetation establishment and erosion control | The upper material of topsoil does not have high nutrient values, and their primary value is due to the presence of seed bank.<br><br>Stockpiles will be examined after a reasonable rainy period/season, and then annually to determine whether vegetation has naturally established itself on the stockpiles. In the case of no or sparse vegetation establishment, geo-textiles or other methods will be used on the topsoil stockpiles to prevent wind erosion. |
|   | Slope  | The stockpile side slopes should be flat enough to promote vegetation growth and reduce runoff related erosion. In addition to this, the topsoil stockpiles need to be established on a gradual slope if possible. Should erosion be noted, the slopes should be stabilised with geotextiles or other appropriate methods.  |
|   | Waste  | No waste material will be placed on the soil stockpiles.  |
|   | Vehicles                                     | Equipment movement on top of the soil stockpiles will be limited to avoid topsoil compaction and subsequent damage to the soils and seedbank.   |
| Management of disturbed land  | Erosion control                              | To prevent the erosion of topsoil, management actions may include one or more of the following; vegetation, berms, soil traps, hessians and storm water diversions away from areas susceptible to erosion.  |
| Rehabilitation of disturbed land:<br>restoration of land capability | Placement of soil                            | Areas to be rehabilitated should be ripped in order to reduce soil compaction. As a general rule, a minimum layer of 50 cm of topsoil must be replaced unless a soils expert advises otherwise.   |
|   | Restore land function and capability         | Apply landscape function analysis and restoration interventions to areas where soil has been replaced as part of rehabilitation, but the land function and capability has not been effectively restored.  |

## 27. FINANCIAL PROVISION

The aim of this chapter is to outline the closure objectives, the rehabilitation plan and the financial liability determined for the proposed project.

### 27.1 DETERMINATION OF THE AMOUNT OF FINANCIAL PROVISION

#### 27.1.1 Closure Objectives Description and the Alignment with the Baseline Environment

The closure objectives for the Wessels Mine were determined based on the principles for Mine Closure, as specified in the MPRDA, as well as based on the outcomes of previous specialist investigations. High-level closure objectives for Wessels Mine are as follows:

- To leave the site in a safe condition for post-closure land users;
- To create stable, non-polluting and functioning landforms that are, as far as practically achievable, consistent with the surrounding landscape and other environmental values; and
- Rehabilitation should seek to minimise environmental impacts and disturbance to the eco-system resulting from mining activities.

Integration of surrounding land use with the established baseline conditions on-site has also informed the final land use option for the Wessels Mine. Therefore, the outcomes of these objectives are aligned to baseline conditions. The final land use indicated for Wessels Mine is that of grazing.

#### 27.1.2 Confirmation that Closure Objectives Have Been Consulted with I&APs

The closure objectives are outlined in this report and is made available to I&APs for review and comment (refer to section 7.2).

To date, no comments regarding the closure objectives have been received from I&APs (refer to Table 7-2).

#### 27.1.3 Rehabilitation Plan

The proposed project does not require the development of an annual rehabilitation plan as outlined in the Financial Provisioning Regulations, 2015 (GNR 1147 of 20 November 2015) that focusses on rehabilitation for the forthcoming 12 months. The Wessels Mine, inclusive of the proposed railway balloon, will be operational for many years to come and the rehabilitation of this area would only be considered nearer to the end of life of mine, in approximately 14 years (life of mine 2035).

#### 27.1.4 Compatibility of the Rehabilitation Plan with the Closure Objectives

It is confirmed that HMM's rehabilitation plan is compatible with the closure objectives given that the closure objectives were taken into account during the determination of the financial provision. The rehabilitation plan is in line with the minimum requirement of the EMPR.

#### 27.1.5 Calculate and State the Quantum of the Financial Provision

The closure liability for the proposed project (the extension of the railway) has been calculated at **R 2 552 016.90 (excl. VAT)**. This figure includes P&Gs (15%) and Contingencies (30%). The calculation is at Current Value as of 1 July 2021.

### **27.1.6 Confirmation that the Financial Provision will be Provided**

The financial provision is provided in the form of a bank guarantee, a top up bank guarantee and a trust fund.

## 28. MECHANISMS FOR MONITORING COMPLIANCE AND PERFORMANCE AGAINST THE EMPR

The aim of this section is to outline the monitoring programmes that will need to be implemented during the proposed project.

There are no environmental impacts specifically associated with the proposed project that require monitoring. HMM currently has monitoring programmes in place for its existing mining operations at Wessels Mine. It is recommended that the implementation of those monitoring programmes be continued.

As a general approach, HMM will ensure that existing monitoring programmes comprise the following:

- Adherence to a formal monitoring procedure;
- Use of appropriately calibrated equipment by personnel trained to use the equipment;
- The preservation of samples according to laboratory specifications, where samples require analysis;
- The identification of monitoring parameters in consultation with a specialist in the relevant field and/or the relevant authority;
- The amendment or removal of monitoring parameters, where necessary, following the initial monitoring results and in consultation with a specialist and/or the relevant authority; and
- The interpretation of data and reporting of trends will be undertaken by an appropriately qualified person.

### 28.1 FREQUENCY OF PERFORMANCE ASSESSMENT REPORT

HMM will, for the period during which the EA and the EMPR is valid, submit environmental audit reports to the DMRE. These audits will focus on the mine's compliance with the conditions of the EA and the commitments in the EMPR. These audits will be undertaken by a qualified independent person and will comply with the relevant EIA Regulations, 2014 (as amended).

The Environmental Manager will conduct internal management audits against the commitments in the EMPR in accordance with an annual audit plan. During the operation phase, these audits will be conducted on a quarterly basis. The audit findings will be documented for both record keeping purposes and for informing continual improvement.

### 28.2 CLOSURE COST REPORTING

The financial provision for the mine (inclusive of the railway extension) will be updated on an annual basis and be submitted to the DMRE for the duration of the operation in accordance with the relevant legislation.

## 29. ENVIRONMENTAL AWARENESS PLAN

This chapter outlines the environmental awareness plan that has been developed for the proposed project.

### 29.1 MANNER IN WHICH THE APPLICANT INTENDS TO INFORM EMPLOYEES OF THE ENVIRONMENTAL RISKS

Wessels Mine has a well-established internal and external communication strategy that was developed and successfully implemented as part of the integrated management system of the mine. Wessels Mine has implemented OHAS 18001 in August 2005. The Environmental Awareness Plan forms a major part of the communication strategy, together with other issues such as health, safety, operations, productions, etc. The communication strategy is reviewed on a regular basis (at least annually) and revised if necessary. In addition, the following is implemented:

- Internal Communication and Awareness Campaign: The mine has a newsletter, as well as various Communication Meetings; and
- External Communication and Awareness Campaign: The mine holds meetings with I&APs and issues an annual Health, Safety, Environment and Community Report.

### 29.2 MANNER IN WHICH RISKS WILL BE DEALT WITH TO AVOID POLLUTION OR DEGRADATION

#### 29.2.1 Ongoing Monitoring and Management Actions

Implementation of HMM's existing monitoring programmes, as mentioned in chapter 28, will be continued to provide early warning systems necessary to avoid environmental emergencies.

#### 29.2.2 Procedures in Case of Environmental Emergencies

Emergency procedures apply to incidents that are unexpected and may be sudden, and which may lead to serious danger to employees/contractors, the public and/or potentially serious pollution of, or detriment to the environment (immediate and delayed). Procedures to be followed in case of environmental emergencies are described in the sections below.

##### 29.2.2.1 General Emergency Procedure

The general procedure that should be followed in the event of all emergency situations is as follows.

- Applicable incident controller, defined in HMM's existing emergency plans, must be notified of an incident upon discovery;
- Area to be cordoned off to prevent unauthorised access and tampering of evidence;
- Undertake actions defined in HMM's existing emergency plans to limit/contain the impact of the emergency;
- If residue facilities/dams, stormwater diversions, etc., are partially or totally failing and this cannot be prevented, the emergency siren is to be sounded (nearest one available). After hours the Operations Engineer on shift must be notified;
- Take photographs and samples as necessary to assist in investigation;
- Report the incident immediately to the Environmental Department for emergencies involving environmental impacts or to the safety department in the case of injury;



- The Environmental Department must comply with Section 30 of the NEMA such that:
  - The Environmental Department must immediately notify the relevant departments of:
    - The nature of the incident;
    - Any risks posed to public health, safety and property;
    - The toxicity of the substances or by-products released by the incident; and
    - Any steps taken to avoid or minimise the effects of the incident on public health and the environment.
- The Environmental Department must, as soon as is practically possible, after the incident:
  - Take all reasonable measures to contain and minimise the effects of the incident including its effects on the environment and any risks posed by the incident to the health, safety and property of persons;
  - Undertake clean up procedures;
  - Remedy the effects of the incident;
  - Assess the immediate and long-term effects of the incident (environment and public health); and
  - Within 14 days, the Environmental Department must report to the Director-General DWS and DFFE, the provincial head of DFFE, the regional manager of the DMRE, the head of the district and local municipalities and the head of the regional DWS office such information as is available to enable an initial evaluation of the incident, including:
    - The nature of the incident;
    - The substances involved and an estimation of the quantity released;
    - The possible acute effects of the substances on the persons and the environment (including the data needed to assess these effects);
    - Initial measures taken to minimise the impacts;
    - Causes of the incident, whether direct or indirect, including equipment, technology, system or management failure; and
    - Measures taken to avoid a recurrence of the incident.

#### Identification of Emergency Situations

The project-specific emergency situations that have been identified together with specific emergency response procedures are outlined in Table 29-1.

**Table 29-1: Emergency Response Procedures**

| Item | Emergency situation                                     | Response in addition to general procedures   |
|------|---|--|
| 1    | Spillage of chemicals, engineering substances and waste | <ul style="list-style-type: none"> <li>• Where there is a risk that contamination will contaminate the land (leading to a loss of resource), surface water and/or groundwater, HMM will: <ul style="list-style-type: none"> <li>○ Notify residents/users downstream of the pollution incident;</li> <li>○ Identify and provide alternative resources should contamination impact adversely on the existing environment;</li> <li>○ Cut off the source if the spill is originating from a pump, pipeline or valve (e.g., refuelling bays) and the infrastructure 'made safe';</li> <li>○ Contain the spill (e.g., construct temporary earth bund around source such as road tanker);</li> <li>○ Pump excess hazardous liquids on the surface to temporary containers (e.g., 210 litre drums, mobile tanker, etc.) for appropriate disposal; and</li> <li>○ Remove hazardous substances from damaged infrastructure to an appropriate storage area before it is removed/repaired.</li> </ul> </li> </ul> |
| 2    | Discharge of dirty water to the environment             | <ul style="list-style-type: none"> <li>• Apply the principals listed for Item 1 above.</li> <li>• To stop spillage from the dirty water system, HMM will: <ul style="list-style-type: none"> <li>○ Redirect excess water to other dirty water facilities where possible;</li> <li>○ Pump dirty water to available containment in the clean water system, where there is no capacity in the dirty water system;</li> <li>○ Carry out an emergency discharge of clean water and redirect the spillage to the emptied facility; and</li> <li>○ Apply for emergency discharge as a last resort.</li> </ul> </li> </ul>   |
| 3    | Pollution of surface water (where relevant)             | <ul style="list-style-type: none"> <li>• Apply the principals listed for Item 1 above;</li> <li>• Absorbent booms will be used to absorb surface plumes of hydrocarbon contaminants;</li> <li>• Contamination entering the surface water drainage system will be redirected into the dirty water system; and</li> <li>• The Environmental Department will collect in-stream water samples downstream of the incident to assess the immediate risk posed by contamination.</li> </ul>   |
| 4    | Groundwater contamination                               | <ul style="list-style-type: none"> <li>• Apply the principals listed for Item 1 above; and</li> <li>• Investigate the source of contamination and implement control/management actions.</li> </ul>   |
| 5    | Falling into hazardous excavations                      | <ul style="list-style-type: none"> <li>• Personnel discovering the fallen individual or animal must mobilise the emergency response team to the location of the incident and provide a general appraisal of the situation (e.g., human or animal, conscious or unconscious, etc.);</li> <li>• The injured party should be recovered by trained professionals such as the Wessels Mine emergency response team; and</li> <li>• A doctor (or appropriate medical practitioner)/ambulance should be present at the scene to provide first aid and transport individual to hospital.</li> </ul>  |
| 6    | Uncovering of graves and sites and fossils              | <ul style="list-style-type: none"> <li>• Refer to the Chance Find Procedure provided in Table 10-1.</li> </ul>   |

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### 29.3 TECHNICAL, MANAGEMENT AND FINANCIAL OPTIONS

Technical, management and financial options that will be put into place to deal with the remediation of impacts in cases of environmental emergencies are described below:

- HMM will appoint a competent management team with the appropriate skills to develop and manage the proposed project of this scale and nature;
- To prevent the occurrence of emergency situations, the HMM will implement, as a minimum, the mine plan and mitigation measures as included in this BAR and EMPR;
- HMM has an environmental management system in place where to identify, report, investigate, address and close out environmental incidents;
- As part of its annual budget, HMM will allow a contingency for handling of any risks identified and/or emergency situations; and
- Where required, HMM will seek input from appropriately qualified people.

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### **30. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY**

As mentioned in chapter 28, HMM will, for the period during which the EA and the EMPR is valid, submit environmental audit reports to the DMRE. These audits will focus on the mine's compliance with the conditions of the EA and the commitments in the EMPR. These audits will be undertaken by a qualified independent person and will comply with the relevant EIA Regulations, 2014 (as amended).

The Environmental Manager will conduct internal management audits against the commitments in the EMPR in accordance with an annual audit plan. During the operation phase, these audits will be conducted on a quarterly basis. The audit findings will be documented for both record keeping purposes and for informing continual improvement.

Furthermore, the financial provision for the mine will be updated on an annual basis and be submitted to the DMRE for the duration of the operation in accordance with the relevant legislation.

## 31. UNDERTAKING

We, Sharon Meyer and Rizqah Baker, undertake that:

- The information provided herein is correct;
- Comments and inputs from I&APs have been included and correctly recorded in this report;
- Inputs and recommendations from the specialist reports have been included, where relevant; and
- Any information provided to I&APs and any responses to comments or inputs made is correct or was correct at that time.



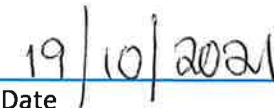
Signature of Report Author



Date



Signature of EAP



Date



Signature of Commissioner of Oaths



Date

**OREN JAN VAN VREDE  
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