

24 APPENDIX F: IMPACT TABLES

Table 21: Impact Assessment during Construction Phase

| CONSTRUCTION PHASE: SITE ACCESS AND SITE ESTABLISHMENT | | |
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| Potential impact and risk: Loss of topsoil, increased dust levels, and soil compaction | IMPACT 1: SOIL EROSION & SOIL COMPACTION: The clearing of additional areas for new waste dumps, tailings and extensions, including for logistics will result in the removal of existing vegetation and topsoil, which will disturb the soil increasing the potential for soil erosion by wind and loss of soil in the event of rainfall. Soil compaction will result from ongoing repeated use of access tracks. | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Negative | NO IMPACT |
| Extent and duration of impact: | Site and Short term | NO IMPACT |
| Consequence of impact or risk: | Loss | NO IMPACT |
| Probability of occurrence: | Probable | NO IMPACT |
| Degree to which the impact may cause irreplaceable loss of resources: | Low | NO IMPACT |
| Degree to which the impact can be reversed: | Reversible | NO IMPACT |
| Indirect impacts: | Dust impacting on adjacent vegetation and causing a nuisance to workers or residents. Compaction of topsoil where vehicles drive outside demarcated areas damages seed banks and habitat for invertebrates. | NO IMPACT |
| Cumulative impact prior to mitigation: | Medium-Low | NO IMPACT |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Medium-Low | NO IMPACT |
| Degree to which the impact can be avoided : | High | NO IMPACT |
| Degree to which the impact can be managed : | High | NO IMPACT |
| Degree to which the impact can be mitigated : | High | NO IMPACT |
| Proposed mitigation: | <ul style="list-style-type: none"> • After clearing, the affected area shall be stabilised to prevent any erosion or sediment runoff. Stabilized areas shall be demarcated accordingly. • Incremental clearing of ground cover should take place to avoid unnecessarily exposed surfaces. • Reasonable measures must be undertaken to ensure that any exposed areas are adequately protected against the wind and potential stormwater run-off. • Topsoil shall be removed separately and stockpiled separately from other soil base layers. • The stockpile areas for topsoil are temporary as they will be re-used on a cut and fill basis. • Stockpiles should ideally be located to create the least visual impact and must be maintained to avoid erosion of the material. • Topsoil storage areas must be convex and should not exceed 2m in height. | NO IMPACT |

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| | <ul style="list-style-type: none"> • Topsoil must be treated with care, must not be buried or in any other way be rendered unsuitable for further use (e.g., by mixing with spoil) and precautions must be taken to prevent unnecessary handling and compaction. • In particular, topsoil must not be subject to compaction greater than 1 500 kg/m² and must not be pushed by a bulldozer for more than 50 metres. Trucks may not be driven over the stockpiles. • Reduce drop height of material to a minimum. • Temporarily halt material handling in windy conditions. • A speed limit of 30km/hour will be displayed and enforced through a fining system. All vehicle drivers using the access road and entering the site will be informed of the speed limit. • Soil erosion on haul roads is to be regularly monitored and repaired. • Compacted areas that are not required for access shall be scarified after use during decommissioning and rehabilitation. • Tailings may only be located in the old, disturbed area to reduce impacts on undisturbed areas. | |
| Residual impacts: | Potential loss of invertebrates that live in the top layers of the soil. | NO IMPACT |
| Cumulative impact post mitigation: | Low | NO IMPACT |
| Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Low | NO IMPACT |
| Potential impact and risk: Potential Impacts on Water Resources | IMPACT 2: WATER RESOURCES (QUALITY & QUANTITY): Water is obtained from boreholes present in the mining area and stored in a 45 000-litre reservoir. Supply lines from the reservoir to the logistical facilities and plant needs to be upgraded and underground pipelines demarcated. This storage will also provide an emergency supply for the fire hydrants. The Buffels River and tributary are located on the southern border of the farm. | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Negative | NO IMPACT |
| Extent and duration of impact: | Local & Medium-term | NO IMPACT |
| Consequence of impact or risk: | Loss | NO IMPACT |
| Probability of occurrence: | Unlikely for water quality Definite for groundwater quantity | NO IMPACT |
| Degree to which the impact may cause irreplaceable loss of resources: | Low | NO IMPACT |
| Degree to which the impact can be reversed: | Reversible | NO IMPACT |
| Indirect impacts: | Rainfall is very seldom and the evaporation rate is very high. Indirect impacts on surface water are unlikely. | NO IMPACT |
| Cumulative impact prior to mitigation: | Medium-Low | NO IMPACT |

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| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Medium-Low | |
| Degree to which the impact can be avoided : | Low | NO IMPACT |
| Degree to which the impact can be managed : | High | NO IMPACT |
| Degree to which the impact can be mitigated : | High | NO IMPACT |
| Proposed mitigation: | <p><u>Implement and follow water-saving procedures and methodologies.</u></p> <ul style="list-style-type: none"> • Follow an 8 hour per day pumping schedule. • Place oil traps under stationary machinery, only re-fuel machines at fuelling station, construct structures to trap fuel spills at fuelling station, immediately clean oil and fuel spills and dispose of contaminated material (soil, etc.) at licensed sites only. • Take care that temporary onsite sanitation facilities are well maintained and serviced regularly. • Draw-up and strictly enforce procedures for the storage, handling and transport of different hazardous materials. • Ensure vehicles and equipment are in good working order and drivers and operators are properly trained. • Ensure that good housekeeping rules are applied. • Minimise storage of hazardous substances on-site during construction. • Service and refuel construction vehicles at a fit-for-purpose facility to minimise pollution risks. • Waste materials generated on-site must be stored in suitable lidded containers and removed off-site to a suitable disposal facility. • The waste separation must be undertaken if practical for recycling. • Provide all workers with environmental awareness training and comply with the requirements of the EMPr. • Provide mobile ablution facilities • Drinking water to be brought on-site as per existing practices. <p><u>Wastewater (i.e., including process water and grey water)</u></p> <ul style="list-style-type: none"> • A biozone system will be used to treat effluent (containerised). • By keeping contaminated and clean water separate and establishing controlled runoff washing bays, the flow and end destination of decontamination washing water will be controlled. • Although erosion and runoff are natural processes it should be managed by maintaining topsoil in any areas, not in use and maintaining maximum existing vegetation coverage. • Slow stormwater runoff with contoured, low-gradient drains and channels. • Stormwater diversion and erosion control contour berm separate clean and contaminated water systems around the excavations and infrastructure areas. | NO IMPACT |
| Residual impacts: | None | NO IMPACT |

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| Cumulative impact post mitigation: | Low | NO IMPACT |
| Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Low | NO IMPACT |
| Potential impact and risk: Potential Impacts on Biodiversity | IMPACT 3: LIMITED LOSS OF NATURAL VEGETATION AND ECOLOGICAL FUNCTIONING IN THE AREA The site is mostly classified as a Critical Biodiversity Area (CBA1 and CBA2) and a small section is classified as an Ecological Support Area (ESA). A section on the south eastern area of the farm is classified as a River FEPA. The entire site has minimal vegetation cover as it has been disturbed by previous prospecting and mining activities. | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Negative | NO IMPACT |
| Extent and duration of impact: | Site & Short term | NO IMPACT |
| Consequence of impact or risk: | Loss | NO IMPACT |
| Probability of occurrence: | Definite | NO IMPACT |
| Degree to which the impact may cause irreplaceable loss of resources: | Low | NO IMPACT |
| Degree to which the impact can be reversed: | Reversible | NO IMPACT |
| Indirect impacts: | <ul style="list-style-type: none"> • Soil disturbance caused by vegetation clearing will provide suitable conditions for the establishment and spreading of alien invasive vegetation. • Disturbance of river connectivity to underground water resources or other natural areas. • Removal of alien invasive vegetation if required, is a positive impact, and will benefit the ecological functioning. | NO IMPACT |
| Cumulative impact prior to mitigation: | Low | NO IMPACT |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Medium | NO IMPACT |
| Degree to which the impact can be avoided : | Medium | NO IMPACT |
| Degree to which the impact can be managed : | Medium | NO IMPACT |
| Degree to which the impact can be mitigated : | Medium | NO IMPACT |
| Proposed mitigation: | <ul style="list-style-type: none"> • Demarcate the excavation and resource target areas, and topsoil stockpiles using a sand colour shade cloth to contain the area of disturbance. • Leave a 50cm gap between the bottom of the shade cloth and the ground to allow for the movement of small fauna. • Demarcate the sections of existing tracks that may be used to access each resource area, including the area for turning circles of vehicles. • Conduct a “search and rescue” operation to identify any plants of conservation concern before clearing each resource area, and for the increased area required for inferred resources. • No indigenous plants outside of the demarcated work areas may be damaged or removed. | NO IMPACT |

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| | <ul style="list-style-type: none"> Remove alien invasive vegetation if required and ensure ongoing alien vegetation clearing in the resource target areas. The noise and vibration caused by the earthmoving equipment will disturb mobile fauna that should move away when activities commence. Should any animals be encountered, these should be relocated by a suitably trained nature conservation officer. Demarcate areas for the resource target areas and ensure that all other adjacent areas are regarded as no-go areas. A 10m buffer must be left between the river/tributary and target areas as well as inferred resource area, where no excavation may take place. The Final Rehabilitation, Decommissioning and Mine Closure Plan must be implemented. | |
| Residual impacts: | The local fauna is familiar with the existing prospecting and mining activities on site. | NO IMPACT |
| Cumulative impact post mitigation: | Low | NO IMPACT |
| Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Low | NO IMPACT |
| Potential impact and risk: Contamination & Pollution | IMPACT 4: POTENTIAL FOR SOIL CONTAMINATION, AND WASTE MANAGEMENT DURING CONSTRUCTION PHASE Spillage of oils, wastewater, refuse and other waste generated by construction activities | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Negative | NO IMPACT |
| Extent and duration of impact: | Site & Short term | NO IMPACT |
| Consequence of impact or risk: | Loss | NO IMPACT |
| Probability of occurrence: | Possible | NO IMPACT |
| Degree to which the impact may cause irreplaceable loss of resources: | Low | NO IMPACT |
| Degree to which the impact can be reversed: | Reversible | NO IMPACT |
| Indirect impacts: | Windblown litter will cause visual blight. Hydrocarbons are toxic and will cause vegetation die-back and soil poisoning. | NO IMPACT |
| Cumulative impact prior to mitigation: | Medium | NO IMPACT |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Medium | NO IMPACT |
| Degree to which the impact can be avoided : | High | NO IMPACT |
| Degree to which the impact can be managed : | High | NO IMPACT |
| Degree to which the impact can be mitigated : | High | NO IMPACT |
| Proposed mitigation: | <ul style="list-style-type: none"> Oils and lubricants must be stored within sealed containment structures. Any mechanical equipment maintenance must be undertaken on drip trays or UPVC sheets to prevent spills/ leaks onto the soil. | NO IMPACT |

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| | <ul style="list-style-type: none"> • When not in use, a drip tray must be placed beneath mechanical equipment and vehicles. • Machinery must be kept in good working order and regularly inspected for leaks. • A spill kit will be available on each site where mining activities are in progress. • Any spillages will be cleaned up immediately. • Waste materials generated on-site must be stored in suitable lidded containers and removed off-site to a suitable disposal facility. • The waste separation must be undertaken. • Provide all workers with environmental awareness training. • Provide a bin at the site. • Regularly dispose of any solid waste at a municipal waste disposal site. • Ensure all workers comply with the requirements of the EMPr. • Provide mobile ablution facilities. | |
| Residual impacts: | A lack of waste food management encourages vermin. | NO IMPACT |
| Cumulative impact post mitigation: | Low | NO IMPACT |
| Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Low | NO IMPACT |
| Potential impact and risk: Potential Impacts on Visual Landscape | IMPACT 5: VISUAL INTRUSION: Caused by machinery, topsoil stockpiles, cleared areas, and movement of trucks on-site during the preparation of site establishment. | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Negative | NO IMPACT |
| Extent and duration of impact: | Site & Short term | NO IMPACT |
| Consequence of impact or risk: | Loss | NO IMPACT |
| Probability of occurrence: | Definite | NO IMPACT |
| Degree to which the impact may cause irreplaceable loss of resources: | Low | NO IMPACT |
| Degree to which the impact can be reversed: | Reversible | NO IMPACT |
| Indirect impacts: | The site is flat, with minimal visual obstruction by low-level vegetation in some places, providing some screening for the mining area. | NO IMPACT |
| Cumulative impact prior to mitigation: | Low | NO IMPACT |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Low | NO IMPACT |
| Degree to which the impact can be avoided : | Medium | NO IMPACT |
| Degree to which the impact can be managed : | Medium | NO IMPACT |
| Degree to which the impact can be mitigated : | High | NO IMPACT |

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| Proposed mitigation: | <ul style="list-style-type: none"> The site shall be kept neat and tidy at all times. Equipment must be kept in designated areas and storing/stockpiling shall be kept orderly. Mitigation of the visual impact by the screening of open excavations with sand colour shade cloth. | NO IMPACT |
| Residual impacts: | Good housekeeping will ensure a neat and well-maintained construction area reducing visual impact. | NO IMPACT |
| Cumulative impact post mitigation: | Low | NO IMPACT |
| Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Low | NO IMPACT |
| Potential impact and risk: Potential Impacts on Social, and Biophysical Environments | IMPACT 6: EMISSIONS (DUST, VEHICLES & NOISE): Noise and dust will be created by mining equipment (e.g., front-end loaders) and vehicles, which will emit Greenhouse Gases. | |
| | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Negative | NO IMPACT |
| Extent and duration of impact: | Local & Short Term | NO IMPACT |
| Consequence of impact or risk: | Loss | NO IMPACT |
| Probability of occurrence: | Definite | NO IMPACT |
| Degree to which the impact may cause irreplaceable loss of resources: | Low | NO IMPACT |
| Degree to which the impact can be reversed: | Reversible | NO IMPACT |
| Indirect impacts: | <ul style="list-style-type: none"> Carbon emissions from vehicle exhausts have a negative impact on the ozone layer. Local residents along the access tracks and roads would be impacted by noise, dust and vehicle emissions during the construction activities. Increase in Greenhouse Gas Emissions from vehicles. | NO IMPACT |
| Cumulative impact prior to mitigation: | Low | NO IMPACT |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Low | NO IMPACT |
| Degree to which the impact can be avoided : | Medium | NO IMPACT |
| Degree to which the impact can be managed : | Medium | NO IMPACT |
| Degree to which the impact can be mitigated : | Medium | NO IMPACT |
| Proposed mitigation: | <ul style="list-style-type: none"> The Applicant shall adhere to the local by-laws and regulations regarding the noise and associated hours of operations. The Applicant shall limit noise levels (e.g., install and maintain silencers on machinery). The provisions of SANS 1200A Sub-clause 4.1 regarding “built-up” area shall apply to all areas within audible distance of residents whether in urban, peri-urban or rural areas. | NO IMPACT |

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| | <ul style="list-style-type: none"> • Construction and demolition activities generating output of 85dB or more, shall be limited to normal working hours and not allowed during weekends to limit the impact of noise of neighbours. No amplified music shall be allowed on site. • Hauling vehicles shall adhere to municipal and provincial traffic regulations including speed limits. • Vehicles used on-site for construction-related activities shall be maintained and in good working condition to reduce emissions. • Engines shall be turned off when the vehicle is temporarily parked or stationary for long periods. • Stockpiles must be maintained (covered where necessary) to avoid wind erosion of the material. • Incremental clearing of ground cover should take place to avoid unnecessarily exposed surfaces. • Health and safety equipment is required for workers. • The wetting of the roads helps reduce dust generation during transporting of processing materials. • No amplified music should be allowed on site. • Existing tracks will be used as haul roads and will only be upgraded to facilitate haul trucks by applying dust suppression and/or hardening compounds such as Macadamite. • On public roads, the vehicles shall adhere to municipal and provincial traffic regulations including speed limits. • Vehicles used on-site for construction-related activities shall be maintained and in good working condition to reduce emissions. • Engines shall be turned off when the vehicle is temporarily parked or stationary for long periods | |
| Residual impacts: | Carbon emissions have an impact on climate change. | NO IMPACT |
| Cumulative impact post mitigation: | Very Low | NO IMPACT |
| Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Very Low | NO IMPACT |
| Potential impact and risk: Potential Impacts on archaeological resources and graves | IMPACT 7: POTENTIAL FOR ARCHAEOLOGICAL RESOURCES AND GRAVES IMPACTS Refer to Appendix E1, page 176. Direct impacts to archaeological resources might occur during all phases of development, but especially during construction and topsoil removal (e.g., vehicles could drive over archaeological sites). | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Negative | NO IMPACT |
| Extent and duration of impact: | Local, permanent | NO IMPACT |

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| Consequence of impact or risk: | Loss of stone age sites and historical copper railway | NO IMPACT |
| Probability of occurrence: | Very likely | NO IMPACT |
| Degree to which the impact may cause irreplaceable loss of resources: | High | NO IMPACT |
| Degree to which the impact can be reversed: | Low | NO IMPACT |
| Indirect impacts: | Loss of archaeological resources | NO IMPACT |
| Cumulative impact prior to mitigation: | It is likely that similar archaeological sites occur in the surrounding landscape but remain undiscovered. Despite surveys and mitigation (although no mitigation is known to have occurred within 10 km of the study area), sites likely get lost to mining and the cumulative impacts are likely to be of medium to high significance. | NO IMPACT |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | High | NO IMPACT |
| Degree to which the impact can be avoided : | High | NO IMPACT |
| Degree to which the impact can be managed : | High | NO IMPACT |
| Degree to which the impact can be mitigated : | High | NO IMPACT |
| Proposed mitigation: | <p>The following recommendations are made:</p> <p>No further surveys are required within the study areas considered here. However, if any work is proposed outside of the surveyed areas, then these areas must be covered in the field to determine whether any archaeological sites are present. In addition to invasive activities like prospecting and mining, this includes uses such as stockpiling of excavated materials or construction of supporting infrastructure.</p> <p>Should any activity need to occur within the areas demarcated in Figure 50 (of the HIA) then an archaeologist should be commissioned to effect mitigation measures. These measures would entail conducting excavations to record and sample the archaeological materials. It is strongly recommended that the historical copper mining complex and grave site be avoided completely but mitigated can be carried if absolutely necessary.</p> <ul style="list-style-type: none"> • The fossil find procedures must be incorporated into the EMP and applied whenever fossil finds are made. This includes the reporting of all finds to a palaeontologist; • The identified significant archaeological sites and their buffers must be included on mine maps and if any are to be disturbed for any reason then archaeological mitigation must be affected (under a permit issued by SAHRA) and approved by SAHRA prior to commencement of mining work; • The historic copper mining complex and grave site should be avoided altogether (see Grade IIIA sites on Figure 50 of the HIA); and • If any archaeological material or human burials are uncovered during the course of development, then work in the immediate area should be halted. The find would need to | NO IMPACT |

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| | be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution. | |
| Residual impacts: | Regardless of mitigation measures, some sites and many isolated artefacts will be damaged or destroyed by the proposed mining but it is expected that the most significant sites have been found. Mitigation will, however, rescue a representative sample of these sites. Residual impacts would then be of low significance. | NO IMPACT |
| Cumulative impact post mitigation: | It is likely that similar archaeological sites occur in the surrounding landscape but remain undiscovered. Despite surveys and mitigation (although no mitigation is known to have occurred within 10 km of the study area), it is likely that sites get lost to mining and the cumulative impacts are likely to be of medium to high significance. | NO IMPACT |
| Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Low | NO IMPACT |
| Potential impact and risk: Potential Impacts on paleontological resources | IMPACT 8 PALAEOLOGICAL IMPACTS Refer to Appendix E2 - Destruction of or damage to fossil bones or resources by mining. | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Negative | NO IMPACT |
| Extent and duration of impact: | Local & Long term | NO IMPACT |
| Consequence of impact or risk: | Permanent loss of material palaeontological heritage (fossil specimens) and the scientific discovery and knowledge implicit in their origin and context | NO IMPACT |
| Probability of occurrence: | Possible | NO IMPACT |
| Degree to which the impact may cause irreplaceable loss of resources: | Yes, valuable fossils may be lost in spite of management actions to mitigate such loss. | NO IMPACT |
| Degree to which the impact can be reversed: | No, because palaeontological resources are unique and their loss is irreversible. | NO IMPACT |
| Indirect impacts: | The material fossil evidence of “deep time” is embedded in the creation of the sacred landscape and contributes to the “sense of place” cultural aesthetic of the region. The loss of fossils and concomitant interpreted knowledge impoverishes the tangible testimony of the prehistoric landscape and ecological context of ancient humans. | NO IMPACT |
| Cumulative impact prior to mitigation: | The cumulative impact of coastal developments and coastal mining is the inevitable and permanent loss of fossils and the associated scientific implications. As mentioned, the impact of both the finding and the loss of fossils is permanent. Diligent and successful mitigation contributes to a positive cumulative impact as the rescued fossils are preserved and accumulated for scientific study. Even though just a very minor portion of the bone fossils exposed in coastal excavations has been seen and saved, the rescued fossils have proved to be of fundamental scientific value. | NO IMPACT |

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| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Very low | NO IMPACT |
| Degree to which the impact can be avoided : | Although they cannot be avoided, impacts can be managed and/or mitigated during the mining. | NO IMPACT |
| Degree to which the impact can be managed : | | NO IMPACT |
| Degree to which the impact can be mitigated : | | NO IMPACT |
| Proposed mitigation: | <p>Mitigation measures to reduce residual risk or enhance opportunities:</p> <ul style="list-style-type: none"> Identify and appoint stand-by palaeontologist should paleontological finds be uncovered. Mine personnel to be alert for rare fossil bones and follow "Fossil Finds Procedure" (Appendix 2 of the PIA). On discovery of in situ fossil bones during sampling/mining, cease excavation and protect fossils from further damage. On discovery of potential fossils in ex-situ sandstones, remove to a safekeeping site. On discovery of fossils in rotary pan concentrate, collect to labelled bag. Contact appointed palaeontologist providing information and images. Palaeontologist will assess information and establish suitable response, such as the importance of the find and recommendations for preservation, collection and record keeping. | NO IMPACT |
| Residual impacts: | It will never be possible to spot and rescue all fossils which means that there will always be loss and therefore a cumulative negative impact. | NO IMPACT |
| Cumulative impact post mitigation: | For prospecting and mining excavations in coastal-plain formations the impact of both the finding and the loss of fossils is permanent. The loss of fossils would be of uncertain significance. Diligent and successful mitigation contributes to a positive cumulative impact as the rescued fossils are preserved and accumulated for scientific study. Positive impacts would continue to be felt with successful mitigation because of the scientific implications of the resulting research opportunities. Even though just a very minor portion of the bone fossils exposed in coastal-plain excavations has been seen and saved, the rescued fossils proved to be of fundamental scientific value | NO IMPACT |
| Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Very low | NO IMPACT |
| Potential impact and risk: Potential Impacts on Socio-Economic Environment | IMPACT 9: SOCIO-ECONOMIC IMPACTS Creation of employment & job security during the construction phase with local and regional economic spin-offs | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Positive | Negative |
| Extent and duration of impact: | Local, District and Short term | Local, District & Short Term |

| | | |
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| Consequence of impact or risk: | Gain | Loss |
| Probability of occurrence: | Definite | Definite |
| Degree to which the impact may cause irreplaceable loss of resources: | No Loss | Medium |
| Degree to which the impact can be reversed: | Irreversible (employment can be lost by an individual due to non-performance but the job provision is irreversible) | Reversible |
| Indirect impacts: | <ul style="list-style-type: none"> Upskilling Local economic spin-offs through increased income earned, and through purchasing of local materials Income generation for landowners in a time of severe drought where livestock farming is not sustainable. | <ul style="list-style-type: none"> No upskilling No local economic spin-offs due to lack of income earned, and no ongoing supply of diamonds to local and international markets. The opportunity cost for landowner and applicant. |
| Cumulative impact prior to mitigation: | Medium (-) | Medium (-) |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Low (-) | Medium (-) |
| Degree to which the impact can be avoided : | Very low | Medium |
| Degree to which the impact can be managed : | High | Medium |
| Degree to which the impact can be mitigated : | High | Medium |
| Proposed mitigation: | <ul style="list-style-type: none"> Employment of local previously disadvantaged labour wherever possible, with the provision of training (upskilling) | No mitigation is possible with the No-Go alternative. |
| Residual impacts: | The upliftment of unemployed people, with a positive impact on the standard of living for their families. Local and regional economic spin-offs from investment through Social Labour Plan. | No job creation or potential for upskilling of previously disadvantaged labour, and no ongoing supply of diamonds. |
| Cumulative impact post mitigation: | Medium (+) | Medium (-) |

Significance rating of impact after mitigation
(e.g., Low, Medium, Medium-High, High, or Very-High)

Medium (+)

Medium (-)

Table 22: Impact Assessment during Operational Phase

| OPERATIONAL PHASE | | |
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| Potential impact and risk: Change in Topography | IMPACT 1: CHANGE IN TOPOGRAPHY: The change in topography from mining activities would be slight depressions created in the landscape. These depressions would be minimal as only 1%-5% is taken for final recovery. The tailings are returned to the excavated areas for backfilling. | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Negative | NO IMPACT |
| Extent and duration of impact: | Site & Long term | NO IMPACT |
| Consequence of impact or risk: | Loss | NO IMPACT |
| Probability of occurrence: | Possible | NO IMPACT |
| Degree to which the impact may cause irreplaceable loss of resources: | Medium | NO IMPACT |
| Degree to which the impact can be reversed: | Reversible | NO IMPACT |
| Indirect impacts: | Inability to develop the site as a solar farm if rehabilitation is done poorly. | NO IMPACT |
| Cumulative impact prior to mitigation: | Medium | NO IMPACT |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Medium | NO IMPACT |
| Degree to which the impact can be avoided : | Low | NO IMPACT |
| Degree to which the impact can be managed : | High | NO IMPACT |
| Degree to which the impact can be mitigated : | High | NO IMPACT |
| Proposed mitigation: | <ul style="list-style-type: none"> Excavations will be backfilled immediately after processing for security and safety reasons before the project is moved to the next resource target. In case of the sudden closure of the project, there will only be one open excavation to be dealt with as part of final decommissioning and rehabilitation. At final closure, the floor of the excavations needs to be levelled and the sides sloped to create an even depression. | NO IMPACT |
| Residual impacts: | <ul style="list-style-type: none"> The very slight visual change in landscape and topography following rehabilitation. | NO IMPACT |
| Cumulative impact post mitigation: | Medium | NO IMPACT |
| Significance rating of impact after mitigation | Low | NO IMPACT |

| | | |
|---|--|--------------------------|
| (e.g., Low, Medium, Medium-High, High, or Very-High) | | |
| Potential impact and risk: Loss of soil, increased dust levels, and soil compaction | IMPACT 2: SOIL EROSION & SOIL COMPACTION: The potential for soil erosion by wind and stormwater run-off; soil compaction from repeated use of access tracks. | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Negative | NO IMPACT |
| Extent and duration of impact: | Site & Long term | NO IMPACT |
| Consequence of impact or risk: | Loss | NO IMPACT |
| Probability of occurrence: | Definite | NO IMPACT |
| Degree to which the impact may cause irreplaceable loss of resources: | Medium | NO IMPACT |
| Degree to which the impact can be reversed: | Reversible | NO IMPACT |
| Indirect impacts: | Dust impacting on adjacent vegetation and causing a nuisance to workers or residents. Compaction of topsoil where vehicles drive outside demarcated areas damages seed banks and habitat for invertebrates. | NO IMPACT |
| Cumulative impact prior to mitigation: | Medium | NO IMPACT |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Medium | NO IMPACT |
| Degree to which the impact can be avoided : | Medium | NO IMPACT |
| Degree to which the impact can be managed : | Medium | NO IMPACT |
| Degree to which the impact can be mitigated : | Medium | NO IMPACT |
| Proposed mitigation: | <ul style="list-style-type: none"> • After clearing, the affected area shall be stabilised to prevent any erosion or sediment runoff. Stabilised areas shall be demarcated accordingly. • Incremental clearing of vegetation should take place to avoid unnecessarily exposed surfaces. • Reasonable measures must be undertaken to ensure that any exposed areas are adequately protected against wind and stormwater run-off. • Reduce drop height of material to a minimum. • Temporarily halt material handling in windy conditions. • A speed limit of 30km/hour will be displayed and enforced through a fining system. All vehicle drivers using the access road and entering the site will be informed of the speed limit. | NO IMPACT |

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| | <ul style="list-style-type: none"> • Compacted areas that are not required for access shall be scarified after use during decommissioning and rehabilitation. • The basic rehabilitation methodology will therefore strive to replicate the pre-mining topography, wherever possible, or at least not to increase overall slope gradients without emplacement of adequately designed erosion control or runoff diversion structures. • Provision must also be made for efficient stormwater control to prevent erosion of roadways. • Soil erosion on haul roads is to be regularly monitored and repaired. • Topsoil shall be removed separately and stockpiled separately from other soil base layers. • The stockpile areas for topsoil are temporary as they will be re-used on a cut and fill basis. • Stockpiles should ideally be located to create the least visual impact and must be maintained to avoid erosion of the material. • Topsoil storage areas must be convex and should not exceed 2m in height. • Topsoil must be treated with care, must not be buried or in any other way be rendered unsuitable for further use (e.g., by mixing with spoil) and precautions must be taken to prevent unnecessary handling and compaction. • In particular, topsoil must not be subject to compaction greater than 1 500 kg/m² and must not be pushed by a bulldozer for more than 50 metres. Trucks may not be driven over the stockpiles. • Tailings may only be located on the open excavations to reduce impacts on undisturbed areas. | |
| Residual impacts: | <ul style="list-style-type: none"> • Unmanaged soil erosion will result in the loss of topsoil. • Unmanaged dust from unsurfaced roads will cause a nuisance and impact the health of the workers. • Dust impacting on adjacent vegetation decreasing palatability for livestock and fauna. • Potential loss of invertebrates that live in the top layers of the soil. | NO IMPACT |
| Cumulative impact post mitigation: | Low | NO IMPACT |
| Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Low | NO IMPACT |
| Potential impact and risk: Potential Impacts on Water Resources | IMPACT 3: WATER RESOURCES (QUALITY & QUANTITY): Water is obtained from boreholes present in the mining area and stored in a 45 000-litre reservoir. Supply lines from the reservoir to the logistical facilities and plant needs to be upgraded and underground pipelines demarcated. This storage will also provide an emergency supply for the fire hydrants. The Buffels River and tributary are located on the southern border of the farm. | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Negative | NO IMPACT |
| Extent and duration of impact: | Local & Medium-term | NO IMPACT |
| Consequence of impact or risk: | Loss | NO IMPACT |
| Probability of occurrence: | Unlikely for water quality | NO IMPACT |

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| | Definite for groundwater quantity | |
| Degree to which the impact may cause irreplaceable loss of resources: | Low | NO IMPACT |
| Degree to which the impact can be reversed: | Reversible | NO IMPACT |
| Indirect impacts: | Rainfall is very seldom and the evaporation rate is very high. Indirect impacts on surface water are unlikely. | NO IMPACT |
| Cumulative impact prior to mitigation: | Medium-Low | NO IMPACT |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Medium-Low | |
| Degree to which the impact can be avoided : | Low | NO IMPACT |
| Degree to which the impact can be managed : | High | NO IMPACT |
| Degree to which the impact can be mitigated : | High | NO IMPACT |
| Proposed mitigation: | <p><u>Implement and follow water-saving procedures and methodologies.</u></p> <ul style="list-style-type: none"> • Follow an 8 hour per day pumping schedule. • Place oil traps under stationary machinery, only re-fuel machines at fuelling station, construct structures to trap fuel spills at fuelling station, immediately clean oil and fuel spills and dispose of contaminated material (soil, etc.) at licensed sites only. • Take care that temporary onsite sanitation facilities are well maintained and serviced regularly. • Draw-up and strictly enforce procedures for the storage, handling and transport of different hazardous materials. • Ensure vehicles and equipment are in good working order and drivers and operators are properly trained. • Ensure that good housekeeping rules are applied. • Minimise storage of hazardous substances on-site during construction. • Service and refuel construction vehicles at a fit-for-purpose facility to minimise pollution risks. • Waste materials generated on-site must be stored in suitable lidded containers and removed off-site to a suitable disposal facility. • The waste separation must be undertaken if practical for recycling. • Provide all workers with environmental awareness training and comply with the requirements of the EMPr. • Provide mobile ablution facilities • Drinking water to be brought on-site as per existing practices. | NO IMPACT |

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| | <p><u>Wastewater (i.e., including process water and grey water)</u></p> <ul style="list-style-type: none"> • A biozone system will be used to treat effluent (containerised). • By keeping contaminated and clean water separate and establishing controlled runoff washing bays, the flow and end destination of decontamination washing water will be controlled. • Although erosion and runoff are natural processes it should be managed by maintaining topsoil in any areas, not in use and maintaining maximum existing vegetation coverage. • Slow stormwater runoff with contoured, low-gradient drains and channels. • Stormwater diversion and erosion control contour berm separate clean and contaminated water systems around the excavations and infrastructure areas. | |
| Residual impacts: | None | NO IMPACT |
| Cumulative impact post mitigation: | Low | NO IMPACT |
| Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Low | NO IMPACT |
| Potential impact and risk: Potential Impacts on Biodiversity | <p>IMPACT 4: LIMITED LOSS OF NATURAL VEGETATION AND ECOLOGICAL FUNCTIONING IN THE AREA The proposed mining area footprint will result in an impact on localised ecological functioning, although limited as bulk sampling, has already occurred in some places; the tailings storage facility will be situated in historically excavated areas, where possible; access and haul roads exist; and the site camp area will also be on a disturbed area. Transport of materials will be along existing access tracks resulting in little impact on ecological functioning at a local level during the operation phase. The machinery and trucks will continue to disturb local fauna, already accustomed to the existing mining activities. The site is mostly classified as a Critical Biodiversity Area (CBA1 and CBA2) and a small section is classified as an Ecological Support Area (ESA). A section on the south eastern area of the farm is classified as a River FEPA. The entire site has minimal vegetation cover as it has been disturbed by previous prospecting and mining activities.</p> | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Negative | NO IMPACT |
| Extent and duration of impact: | Site & Short term | NO IMPACT |
| Consequence of impact or risk: | Loss | NO IMPACT |
| Probability of occurrence: | Definite | NO IMPACT |
| Degree to which the impact may cause irreplaceable loss of resources: | Low | NO IMPACT |
| Degree to which the impact can be reversed: | Reversible | NO IMPACT |
| Indirect impacts: | <ul style="list-style-type: none"> • Soil disturbance caused by vegetation clearing will provide suitable conditions for the establishment and spreading of alien invasive vegetation. | NO IMPACT |

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| | <ul style="list-style-type: none"> • Disturbance of river connectivity to underground water resources or other natural areas. • Removal of alien invasive vegetation if required, is a positive impact, and will benefit the ecological functioning. | |
| Cumulative impact prior to mitigation: | Low | NO IMPACT |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Medium | NO IMPACT |
| Degree to which the impact can be avoided : | Medium | NO IMPACT |
| Degree to which the impact can be managed : | Medium | NO IMPACT |
| Degree to which the impact can be mitigated : | Medium | NO IMPACT |
| Proposed mitigation: | <ul style="list-style-type: none"> • Demarcate the excavation and resource target areas, and topsoil stockpiles using shade cloth to contain the area of disturbance. • Leave a 50cm gap between the bottom of the shade cloth and the ground to allow for the movement of small fauna. • Demarcate the sections of existing tracks that may be used to access each resource area, including the area for turning circles of vehicles. • Conduct a “search and rescue” operation to identify any plants of conservation concern before clearing each resource area, and for the increased area required for inferred resources. • No indigenous plants outside of the demarcated work areas may be damaged or removed. • Remove alien invasive vegetation if required and ensure ongoing alien vegetation clearing in the resource target areas. • The noise and vibration caused by the earthmoving equipment will disturb mobile fauna that should move away when activities commence. Should any animals be encountered, these should be relocated by a suitably trained nature conservation officer. • Demarcate areas for the resource target areas and ensure that all other adjacent areas are regarded as no-go areas. • A 10m buffer must be left between the river/tributary and target areas as well as inferred resource area, where no excavation may take place. • The Final Rehabilitation, Decommissioning and Mine Closure Plan must be implemented. | NO IMPACT |
| Residual impacts: | The local fauna is familiar with the existing prospecting and mining activities on site. | NO IMPACT |
| Cumulative impact post mitigation: | Low | NO IMPACT |
| Significance rating of impact after mitigation | Low | NO IMPACT |

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| (e.g., Low, Medium, Medium-High, High, or Very-High) | | |
| Potential impact and risk: Contamination & Pollution | IMPACT 5: POTENTIAL FOR SOIL CONTAMINATION, AND WASTE MANAGEMENT DURING OPERATIONAL PHASE: Tailings are to be collected in the tailings storage facility located in the existing excavations where possible; overburden; industrial waste (hazardous wastes, oil & grease); and domestic waste | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Negative | NO IMPACT |
| Extent and duration of impact: | Site & Short term | NO IMPACT |
| Consequence of impact or risk: | Loss | NO IMPACT |
| Probability of occurrence: | Possible | NO IMPACT |
| Degree to which the impact may cause irreplaceable loss of resources: | Medium | NO IMPACT |
| Degree to which the impact can be reversed: | Reversible | NO IMPACT |
| Indirect impacts: | Windblown litter will cause visual blight. The vast area downwind of the municipal dump is very polluted by unmanaged wind-blown waste. Hydrocarbons are toxic and will cause vegetation die-back and soil poisoning. A lack of waste food management encourages vermin. | NO IMPACT |
| Cumulative impact prior to mitigation: | High | NO IMPACT |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | High | NO IMPACT |
| Degree to which the impact can be avoided : | High | NO IMPACT |
| Degree to which the impact can be managed : | High | NO IMPACT |
| Degree to which the impact can be mitigated : | High | NO IMPACT |
| Proposed mitigation: | <ul style="list-style-type: none"> ○ Tailings collected within the tailings storage facility and dumped into open excavations as part of ongoing rehabilitation. - Water used as part of processing will be collected in the tailings storage facility from where the water will be re-used if possible. ● Overburden, cover, and/or "soft" material including topsoil ● Remove and stockpile 300mm topsoil in berms or heaps less than 1,5m high and turn soil or re-use every six months. | NO IMPACT |

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| | <ul style="list-style-type: none"> • Remove and stockpile topsoil building platforms and stockpile areas before construction for use to restore disturbed areas. To ensure long-term stability, the restored soil cover should attempt to mimic the pre-mining distribution of soil texture and thickness. • Contaminated soil must be treated by first removing the source of contamination - removing the source of contamination should allow the system to recover without further clean-up required. • Petrochemical spillages are to be collected in a drip tray and drum to store excavated spill affected soil for disposal at a registered facility or onsite treatment. • The most promising techniques for on-site treatment involve bioremediation. Bioremediation involves the use of microorganisms to destroy hazardous contaminants. • Other non-specification waste - Any product stockpiles left or oversize boulders must be removed and used to backfill excavations. - Waste or rock material used as refill or landscaping, crushed for other applications, or otherwise dealt with responsibly. • Industrial waste (i.e., including hazardous wastes and oils and greases) • Separation of wastes into classes will ensure that waste is disposed of safely and according to the correct procedure. To ensure that waste classes are kept in separate streams, people will be trained on the different waste classes. • Unwanted steel, sheet metal and equipment need to be stored in a demarcated salvage yard. • Recycling and reusing materials may reduce garbage haul fees or generate income through the sale of scrap metal and old equipment. • All steel structures and reinforcing will be discarded or sold as scrap. • All equipment and other items used during the mining operation need to be removed from the site. • Used oils/hydrocarbons fuels/liquids are to be collected in sealed containers (stored on concrete slabs) and removed from the site for recycling by a reputable company. • All waste in the temporary storage area for used lubrication products and other hazardous chemicals will be disposed of at a collection point from where it will be collected by a waste recycling company. • Mobile generators will supply electricity to the machinery. Generator bays will be constructed with the necessary pollution control measures (drip trays). • Clean out the content of oil traps and dispose of waste at registered and purpose-designed landfill sites. • Hydrocarbon contaminated sludge (collected in oil traps) - Removed from the oil traps and removed from the site for recycling (if possible) or disposal at a suitably permitted facility. • All temporary waste storage areas need to be cleaned out and waste removed. | |
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| | <ul style="list-style-type: none"> • Tyres to be return to the supplier or a company that uses old tyres for making doormats, shoes, swings, etc. • Batteries to be return to the supplier or dispose of at a permitted hazardous waste facility. • Fluorescent tubes to be collected in sealed containers (stored on concrete slabs) and removed from the site for disposal at a permitted hazardous waste facility. • Chemical containers to be returned to the supplier or disposed of at a legal, permitted facility that is capable of disposing of the waste. (DO NOT sell chemical containers to workers or communities). • Laboratory waste (chemicals) - Returned to the supplier or disposed of at a permitted facility that is capable of disposing of the waste. • Industrial chemicals (laboratory waste) - Returned to the supplier or disposed of at a permitted facility that is capable of disposing of the waste. These liquid wastes cannot be disposed of in the waste dumps. • Domestic waste (i.e., waste that is generated from the accommodation and offices) • Domestic waste - Separated at source into recyclable products. These must then be removed and recycled by recognised contractors. (Note that the mine is responsible for the waste from cradle to grave). • Disposal at a registered and officially permitted commercial or municipal landfill site is the most cost-effective option for materials that cannot be recycled. • Domestic waste generated by workers needs to be sorted and all biodegradable waste must be stored in separate drums provided for. • This biodegradable waste will be dumped in a landfill provided for onsite. | |
| Residual impacts: | Recycling waste material creates employment. | NO IMPACT |
| Cumulative impact post mitigation: | Low | NO IMPACT |
| Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Low | NO IMPACT |
| Potential impact and risk: Potential Impacts on Visual Landscape | IMPACT 6: VISUAL INTRUSION: Caused by the machinery, topsoil and overburden stockpiles, cleared areas, and movement of trucks on site. | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Negative | |
| Extent and duration of impact: | Site & short term | |
| Consequence of impact or risk: | Loss | |
| Probability of occurrence: | Definite | |
| Degree to which the impact may cause irreplaceable loss of resources: | Low | |

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| Degree to which the impact can be reversed: | Reversible | |
| Indirect impacts: | The site is flat, with views slightly obstructed by low-level vegetation in some places and screening the interspersed open excavations or trenches. | |
| Cumulative impact prior to mitigation: | Low | |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Low | |
| Degree to which the impact can be avoided : | Medium | |
| Degree to which the impact can be managed : | Medium | |
| Degree to which the impact can be mitigated : | High | |
| Proposed mitigation: | <ul style="list-style-type: none"> The site shall be kept neat and tidy at all times. Equipment must be kept in designated areas and storing/stockpiling shall be kept orderly. Mitigation of the visual impact by the screening of mining excavations with sand colour shade cloth. | |
| Residual impacts: | Good housekeeping will ensure a neat and well-maintained construction area reducing visual impact. | |
| Cumulative impact post mitigation: | Very Low | |
| Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Very Low | |
| Potential impact and risk: Potential Impacts on Social, and Biophysical Environments | IMPACT 7: EMISSIONS (DUST, VEHICLES & NOISE): Noise and dust will be created by the mining and processing activities; from the mining equipment (e.g., front-end loaders) and hauling vehicles that also emit Greenhouse Gases. | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Negative | NO IMPACT |
| Extent and duration of impact: | Site and Long Term | NO IMPACT |
| Consequence of impact or risk: | Loss | NO IMPACT |
| Probability of occurrence: | Definite | NO IMPACT |
| Degree to which the impact may cause irreplaceable loss of resources: | Low | NO IMPACT |
| Degree to which the impact can be reversed: | Low | NO IMPACT |

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| Indirect impacts: | <ul style="list-style-type: none"> Carbon emissions from vehicle exhausts have a negative impact on the ozone layer. Residents outside the project site that reside along the hauling roads would be impacted by noise, dust and vehicle emissions. | NO IMPACT |
| Cumulative impact prior to mitigation: | Medium | NO IMPACT |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Medium | NO IMPACT |
| Degree to which the impact can be avoided : | Medium | NO IMPACT |
| Degree to which the impact can be managed : | Medium | NO IMPACT |
| Degree to which the impact can be mitigated : | Medium | NO IMPACT |
| Proposed mitigation: | <ul style="list-style-type: none"> Health and safety equipment is required for workers. The wetting of the roads helps reduce dust generation during transporting of processing materials. No amplified music should be allowed on site. Existing tracks will be used as haul roads and will only be upgraded to facilitate haul trucks by applying dust suppression and/or hardening compounds such as Macadamite. On public roads, the vehicles shall adhere to municipal and provincial traffic regulations including speed limits. Vehicles used on-site for construction-related activities shall be maintained and in good working condition to reduce emissions. Engines shall be turned off when the vehicle is temporarily parked or stationary for long periods. Incremental clearing of ground cover should take place to minimise exposed surfaces. | NO IMPACT |
| Residual impacts: | Dust settling on adjacent vegetation can impact vegetative growth, which is a short-term impact until the rainfall season. | NO IMPACT |
| Cumulative impact post mitigation: | Low | NO IMPACT |
| Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Low | |
| Potential impact and risk: Potential Impacts on archaeological resources and graves | IMPACT 8: POTENTIAL FOR ARCHAEOLOGICAL RESOURCES AND GRAVES IMPACTS Refer to Appendix E1, page 176. Direct impacts to archaeological resources might occur during all phases of development (e.g., vehicles could drive over archaeological sites). | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |

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| Nature of impact: | Negative | NO IMPACT |
| Extent and duration of impact: | Local, permanent | NO IMPACT |
| Consequence of impact or risk: | Loss of stone age sites and historical copper railway | NO IMPACT |
| Probability of occurrence: | Very likely | NO IMPACT |
| Degree to which the impact may cause irreplaceable loss of resources: | High | NO IMPACT |
| Degree to which the impact can be reversed: | Low | NO IMPACT |
| Indirect impacts: | Loss of archaeological resources | NO IMPACT |
| Cumulative impact prior to mitigation: | It is likely that similar archaeological sites occur in the surrounding landscape but remain undiscovered. Despite surveys and mitigation (although no mitigation is known to have occurred within 10 km of the study area), sites likely get lost to mining and the cumulative impacts are likely to be of medium to high significance. | NO IMPACT |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | High | NO IMPACT |
| Degree to which the impact can be avoided : | High | NO IMPACT |
| Degree to which the impact can be managed : | High | NO IMPACT |
| Degree to which the impact can be mitigated : | High | NO IMPACT |
| Proposed mitigation: | <p>The following recommendations are made:</p> <p>No further surveys are required within the study areas considered here. However, if any work is proposed outside of the surveyed areas, then these areas must be covered in the field to determine whether any archaeological sites are present. In addition to invasive activities like prospecting and mining, this includes uses such as stockpiling of excavated materials or construction of supporting infrastructure.</p> <p>Should any activity need to occur within the areas demarcated in Figure 50 (of the HIA) then an archaeologist should be commissioned to effect mitigation measures. These measures would entail conducting excavations to record and sample the archaeological materials. It is strongly recommended that the historical copper mining complex and grave site be avoided completely but mitigated can be carried if absolutely necessary.</p> <ul style="list-style-type: none"> • The fossil find procedures must be incorporated into the EMPr and applied whenever fossil finds are made. This includes the reporting of all finds to a palaeontologist; • The identified significant archaeological sites and their buffers must be included on mine maps and if any are to be disturbed for any reason then archaeological mitigation must be | NO IMPACT |

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| | <p>affected (under a permit issued by SAHRA) and approved by SAHRA prior to commencement of mining work;</p> <ul style="list-style-type: none"> • The historic copper mining complex and grave site should be avoided altogether (see Grade IIIA sites on Figure 50 of the HIA); and • If any archaeological material or human burials are uncovered during the course of development, then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution. | |
| Residual impacts: | Regardless of mitigation measures, some sites and many isolated artefacts will be damaged or destroyed by the proposed mining but it is expected that the most significant sites have been found. Mitigation will, however, rescue a representative sample of these sites. Residual impacts would then be of low significance. | NO IMPACT |
| Cumulative impact post mitigation: | It is likely that similar archaeological sites occur in the surrounding landscape but remain undiscovered. Despite surveys and mitigation (although no mitigation is known to have occurred within 10 km of the study area), it is likely that sites get lost to mining and the cumulative impacts are likely to be of medium to high significance. | NO IMPACT |
| Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Low | NO IMPACT |
| Potential impact and risk: Potential Impacts on paleontological resources | IMPACT 9: PALAEOLOGICAL IMPACTS Refer to Appendix E2, page 227 ...Destruction of or damage to fossil bones or resources by sampling and mining. | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Negative | NO IMPACT |
| Extent and duration of impact: | Local & Long term | NO IMPACT |
| Consequence of impact or risk: | Permanent loss of material palaeontological heritage (fossil specimens) and the scientific discovery and knowledge implicit in their origin and context | NO IMPACT |
| Probability of occurrence: | Possible | NO IMPACT |
| Degree to which the impact may cause irreplaceable loss of resources: | Yes, valuable fossils may be lost in spite of management actions to mitigate such loss. | NO IMPACT |
| Degree to which the impact can be reversed: | No, because palaeontological resources are unique and their loss is irreversible. | NO IMPACT |
| Indirect impacts: | The material fossil evidence of “deep time” is embedded in the creation of the sacred landscape and contributes to the “sense of place” cultural aesthetic of the region. The loss of fossils and | NO IMPACT |

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| | concomitant interpreted knowledge impoverishes the tangible testimony of the prehistoric landscape and ecological context of ancient humans. | |
| Cumulative impact prior to mitigation: | The cumulative impact of coastal developments and coastal mining is the inevitable and permanent loss of fossils and the associated scientific implications. As mentioned, the impact of both the finding and the loss of fossils is permanent. Diligent and successful mitigation contributes to a positive cumulative impact as the rescued fossils are preserved and accumulated for scientific study. Even though just a very minor portion of the bone fossils exposed in coastal excavations has been seen and saved, the rescued fossils have proved to be of fundamental scientific value. | NO IMPACT |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Very low | NO IMPACT |
| Degree to which the impact can be avoided : | Although they cannot be avoided, impacts can be managed and/or mitigated during the mining. | NO IMPACT |
| Degree to which the impact can be managed : | | NO IMPACT |
| Degree to which the impact can be mitigated : | | NO IMPACT |
| Proposed mitigation: | <p>Mitigation measures to reduce residual risk or enhance opportunities:</p> <ul style="list-style-type: none"> • Identify and appoint stand-by palaeontologist should paleontological finds be uncovered. • Mine personnel to be alert for rare fossil bones and follow “Fossil Finds Procedure” (Appendix 2 of the PIA). • On discovery of in situ fossil bones during sampling/mining, cease excavation and protect fossils from further damage. • On discovery of potential fossils in ex-situ sandstones, remove to a safekeeping site. • On discovery of fossils in rotary pan concentrate, collect to labelled bag. • Contact appointed palaeontologist providing information and images. • Palaeontologist will assess information and establish suitable response, such as the importance of the find and recommendations for preservation, collection and record keeping. | NO IMPACT |
| Residual impacts: | It will never be possible to spot and rescue all fossils which means that there will always be loss and therefore a cumulative negative impact. | NO IMPACT |
| Cumulative impact post mitigation: | For prospecting and mining excavations in coastal-plain formations the impact of both the finding and the loss of fossils is permanent. The loss of fossils would be of uncertain significance. Diligent and successful mitigation contributes to a positive cumulative impact as the rescued fossils are preserved and accumulated for scientific study. Positive impacts would continue to be felt with successful mitigation because of the scientific implications of the resulting research opportunities. Even though just a very minor portion of the bone fossils exposed in coastal-plain excavations has been seen and saved, the rescued fossils proved to be of fundamental scientific value | NO IMPACT |

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| Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Very low | NO IMPACT |
| Potential impact and risk: Potential Impacts on Socio-Economic Environment | IMPACT 10: SOCIO-ECONOMIC IMPACTS Creation of employment & job security with local and regional economic spin-offs | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Positive | Negative |
| Extent and duration of impact: | Local, district and long term | Local, District & Long Term |
| Consequence of impact or risk: | Gain | Loss |
| Probability of occurrence: | Definite | Definite |
| Degree to which the impact may cause irreplaceable loss of resources: | No loss | Medium |
| Degree to which the impact can be reversed: | Irreversible (employment can be lost by an individual due to non-performance but the job provision is irreversible) | Reversible |
| Indirect impacts: | <ul style="list-style-type: none"> Upskilling Local economic spin-offs through increased income earned, and through purchasing of local materials required for operational activities. Income generation for landowners in a time of severe drought where livestock farming is not sustainable. | <ul style="list-style-type: none"> No upskilling No local economic spin-offs due to lack of income earned, and no ongoing supply of diamonds to local and international markets. The opportunity cost for landowner and applicant. |
| Cumulative impact prior to mitigation: | Medium (-) | Medium (-) |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Medium (-) | Medium (-) |
| Degree to which the impact can be avoided : | Very low | Medium |
| Degree to which the impact can be managed : | High | Medium |
| Degree to which the impact can be mitigated : | High | Medium |
| Proposed mitigation: | <ul style="list-style-type: none"> Employment of local previously disadvantaged labour wherever possible, with the provision of training (upskilling) | No mitigation is possible with the No-Go alternative. |

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| Residual impacts: | The upliftment of unemployed people, with a positive impact on the standard of living for their families. Local and regional economic spin-offs from investment through Social Labour Plan. | No job creation or potential for upskilling of previously disadvantaged labour. |
| Cumulative impact post mitigation: | Medium (+) | Medium (-) |
| Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Medium (+) | Medium (-) |

Table 23: Impact Assessment during Decommissioning and Closure Phase

| DECOMMISSIONING & CLOSURE PHASE | | |
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| Potential impact and risk: Potential Impacts on Biophysical Environment | IMPACT 1: REHABILITATION OF PROSPECTED AREAS: As per the Rehabilitation, Decommissioning and Mine Closure Plan (Appendix F) | |
| ALTERNATIVE | ALTERNATIVE 1 (PREFERRED) | NO-GO ALTERNATIVE |
| Nature of impact: | Positive | NO IMPACT |
| Extent and duration of impact: | <ul style="list-style-type: none"> Local and Long term | NO IMPACT |
| Consequence of impact or risk: | Gain | NO IMPACT |
| Probability of occurrence: | Definite | NO IMPACT |
| Degree to which the impact may cause irreplaceable loss of resources: | No loss | NO IMPACT |
| Degree to which the impact can be reversed: | Reversible | NO IMPACT |
| Indirect impacts: | <ul style="list-style-type: none"> Infilling of old prospecting pits and trenches. | NO IMPACT |
| Cumulative impact prior to mitigation: | Medium | NO IMPACT |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Medium | NO IMPACT |
| Degree to which the impact can be avoided : | Very low (rehabilitation is mandatory) | NO IMPACT |
| Degree to which the impact can be managed : | High | NO IMPACT |
| Degree to which the impact can be mitigated : | High | NO IMPACT |
| Proposed mitigation: | <ul style="list-style-type: none"> Implementation of Final Rehabilitation, Decommissioning and Mine Closure Plan. After processing, the excavation will be backfilled immediately for security and safety reasons before the project is moved to the next excavation area. In case of the sudden closure of the project, there will only be one excavation to be dealt with as part of final decommissioning and rehabilitation. At final closure, the floor of the excavation needs to be levelled and the sides sloped to create an even depression., The focus of topographic rehabilitation may not be obvious at the time of mine planning and must be addressed as the mine develops and the Final Rehabilitation, Decommissioning and Mine Closure Plan must be reviewed periodically for continued relevance in the light of changed mining path or long-term plans. | NO IMPACT |

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| | <ul style="list-style-type: none"> Regular inspections and audits will be used as a management system to ensure compliance. Compacted areas shall be scarified after use during decommissioning and rehabilitation. Any stored topsoil shall be spread over the scarified surface. Other mitigating concerning residual environmental impact Implementing screening as part of the cleaning activities before materials are moved from the mine. The infrastructure area will be screened for petrochemical spills and cleaned and waste from the temporary storage facility will be removed and the area cleaned. Any compacted movement areas will be screened for petrochemical spills and cleaned before it is ripped and levelled. Redundant structures will be removed for use elsewhere or demolished and discarded. Remove all power and water supply installations not to be retained by the landowner in terms of section 44 of the MPRDA. Final walkthrough of complete mining lease area to ensure no mining-related waste and re-usable infrastructure remain on site. As part of this phase training of personnel in the implementation of the Final Rehabilitation, Decommissioning and Mine Closure Plan will be done and the implementation of the Environmental Awareness Plan will be an ongoing process. | |
| Residual impacts: | Increase in natural habitat following rehabilitation processes. | NO IMPACT |
| Cumulative impact post mitigation: | Very Low | NO IMPACT |
| Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Very Low | NO IMPACT |
| Potential impact and risk: Potential Impacts on Socio-Economic Environment | IMPACT 2: CREATION OF EMPLOYMENT, JOB SECURITY WITH LOCAL AND REGIONAL ECONOMIC SPIN-OFFS DURING DECOMMISSIONING & CLOSURE PHASE | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Positive | Negative |
| Extent and duration of impact: | Local, district and short term | Local, District & Short Term |
| Consequence of impact or risk: | Gain | Loss |
| Probability of occurrence: | Definite | Definite |
| Degree to which the impact may cause irreplaceable loss of resources: | No loss | Medium |

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| Degree to which the impact can be reversed: | Irreversible (employment can be lost by an individual due to non-performance but the job provision is irreversible) | Reversible |
| Indirect impacts: | <ul style="list-style-type: none"> Upskilling. Local economic spin-offs through increased income earned. | <ul style="list-style-type: none"> No upskilling No local economic spin-offs due to lack of income earned. The opportunity cost for landowner and applicant. |
| Cumulative impact prior to mitigation: | Medium (-) | Medium (-) |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Low | Medium (-) |
| Degree to which the impact can be avoided: | Very low | Medium |
| Degree to which the impact can be managed: | High | Medium |
| Degree to which the impact can be mitigated: | High | Medium |
| Proposed mitigation: | <ul style="list-style-type: none"> Ongoing employment of local previously disadvantaged labour wherever possible, with the provision of training (upskilling) | No mitigation is possible with the No-Go alternative. |
| Residual impacts: | The upliftment of unemployed people, with a positive impact on the standard of living for their families. | No job creation or potential for upskilling of previously disadvantaged labour. |
| Cumulative impact post mitigation: | Medium (+) | Medium (-) |
| Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Medium (+) | Medium (-) |
| Potential impact and risk: Potential Impacts on archaeological resources and graves | IMPACT 3: POTENTIAL FOR ARCHAEOLOGICAL RESOURCES AND GRAVES IMPACTS Refer to Appendix E1, page 176. Direct impacts to archaeological resources might occur during all phases of development, but especially during rehabilitation and topsoil spreading (e.g., vehicles could drive over archaeological sites). | |
| ALTERNATIVE | PREFERRED AND ONLY ALTERNATIVE | NO-GO ALTERNATIVE |
| Nature of impact: | Negative | NO IMPACT |
| Extent and duration of impact: | Local, permanent | NO IMPACT |
| Consequence of impact or risk: | Loss of stone age sites and historical copper railway | NO IMPACT |
| Probability of occurrence: | Very likely | NO IMPACT |

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| Degree to which the impact may cause irreplaceable loss of resources: | High | NO IMPACT |
| Degree to which the impact can be reversed: | Low | NO IMPACT |
| Indirect impacts: | Loss of archaeological resources | NO IMPACT |
| Cumulative impact prior to mitigation: | It is likely that similar archaeological sites occur in the surrounding landscape but remain undiscovered. Despite surveys and mitigation (although no mitigation is known to have occurred within 10 km of the study area), it is likely that sites get lost to mining and the cumulative impacts are likely to be of medium to high significance. | NO IMPACT |
| Significance rating of impact prior to mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | High | NO IMPACT |
| Degree to which the impact can be avoided : | High | NO IMPACT |
| Degree to which the impact can be managed : | High | NO IMPACT |
| Degree to which the impact can be mitigated : | High | NO IMPACT |
| Proposed mitigation: | <p>The following recommendations are made:</p> <p>No further surveys are required within the study areas considered here. However, if any work is proposed outside of the surveyed areas, then these areas must be covered in the field to determine whether any archaeological sites are present. In addition to invasive activities like prospecting and mining, this includes uses such as stockpiling of excavated materials or construction of supporting infrastructure.</p> <p>Should any activity need to occur within the areas demarcated in Figure 50 (of the HIA) then an archaeologist should be commissioned to effect mitigation measures. These measures would entail conducting excavations to record and sample the archaeological materials. It is strongly recommended that the historical copper mining complex and grave site be avoided completely but mitigated can be carried if absolutely necessary.</p> <ul style="list-style-type: none"> • The fossil find procedures must be incorporated into the EMP and applied whenever fossil finds are made. This includes the reporting of all finds to a palaeontologist; • The identified significant archaeological sites and their buffers must be included on mine maps and if any are to be disturbed for any reason then archaeological mitigation must be affected (under a permit issued by SAHRA) and approved by SAHRA prior to commencement of mining work; | NO IMPACT |

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| | <ul style="list-style-type: none"> • The historic copper mining complex and grave site should be avoided altogether (see Grade IIIA sites on Figure 50 of the HIA); and • If any archaeological material or human burials are uncovered during the course of development, then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution. | |
| Residual impacts: | Regardless of mitigation measures, some sites and many isolated artefacts will be damaged or destroyed by the proposed mining but it is expected that the most significant sites have been found. Mitigation will, however, rescue a representative sample of these sites. Residual impacts would then be of low significance. | NO IMPACT |
| Cumulative impact post mitigation: | It is likely that similar archaeological sites occur in the surrounding landscape but remain undiscovered. Despite surveys and mitigation (although no mitigation is known to have occurred within 10 km of the study area), it is likely that sites get lost to mining and the cumulative impacts are likely to be of medium to high significance. | NO IMPACT |
| Significance rating of impact after mitigation (e.g., Low, Medium, Medium-High, High, or Very-High) | Low | NO IMPACT |