



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT
And
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED).

NAME OF APPLICANT: Makhado Local Municipality

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FILE REFERENCE NUMBER SAMRAD:

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1. IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting or mining right if among others the mining “will not result in unacceptable pollution, ecological degradation or damage to the environment”.

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme report in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of section 16(3)(b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17 (1) (c) the competent Authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the competent authority to the submission of applications.

It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

It is furthermore an instruction that the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with uninterpreted information and that it unambiguously represents the interpretation of the applicant.

2. Objective of the basic assessment process

The objective of the basic assessment process is to, through a consultative process—

- (a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- (b) identify the alternatives considered, including the activity, location, and technology alternatives;
- (c) describe the need and desirability of the proposed alternatives,
- (d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage , and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on the these aspects to determine:
 - (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
 - (ii) the degree to which these impacts—
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources; and
 - (cc) can be managed, avoided or mitigated;
- (e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—
 - (i) identify and motivate a preferred site, activity and technology alternative;
 - (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and
 - (iii) identify residual risks that need to be managed and monitored.

PART A
SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

3. Contact Person and correspondence address

a) Details of

i) Details of the EAP

Name of The Practitioner: Virginia Ramakuwela

Tel No.: 011 532 8659

Fax No. : 011 532 8400

e-mail address: virginia@mamadi.co.za

ii) Expertise of the EAP.

(1) The qualifications of the EAP

(with evidence).

- BSc (Hons): Environmental Analysis and Management, University of Pretoria, 2009
- BSc Environmental Sciences, University of Pretoria, 2008

Refer to Appendix A for the EAP's CV.

(2) Summary of the EAP's past experience.

(In carrying out the Environmental Impact Assessment Procedure)

Virginia Ramakuwela is an Environmental Consultant at Mamadi and Company SA (Pty) Ltd (Mamadi). She is highly knowledgeable in Environmental Impact Assessment (EIA) Processes as well as the associated Legislative Requirements, Air Quality Baseline Assessment, Atmospheric Emission Licence (AEL) Application, Water Use Licence Application (WULA), Public Participation Process, Map Reading, Analysis, Quality Assurance of GIS Datasets, Image Interpretation, 3D Terrain/Environmental Modelling and Analysis, Map Projections & Datum Transformations, Research work experience and Report Writing.

Refer to Appendix A for the EAP's CV.

b) Location of the overall Activity.

| | |
|---|---|
| Farm Name: | Msekwa 194 MT, Portion 0 |
| Application area (Ha) | Approximately 5 Ha |
| Magisterial district: | Vhembe District Municipality |
| Distance and direction from nearest town | The site is located ~42km north east of Makhado (Louis Trichardt) town. |

| | |
|---|----------------------|
| 21 digit Surveyor General Code for each farm portion | T0MT0000000001940000 |
|---|----------------------|

c) Locality map

(show nearest town, scale not smaller than 1:250000). Please refer to Appendix B for the locality map.

d) Description of the scope of the proposed overall activity.

Provide a plan drawn to a scale acceptable to the competent authority but not less than 1: 10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site

Please refer to the site layout map attached in Appendix B.

(i) Listed and specified activities

| NAME OF ACTIVITY <i>(E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc</i> <i>E.g. for mining,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)</i> | Aerial extent of the Activity Ha or m² | LISTED ACTIVITY Mark with an X where applicable or affected. | APPLICABLE LISTING NOTICE <i>(GNR 544, GNR 545 or GNR 546)</i> |
|---|--|--|--|
| Clearance of vegetation | 5 ha | X | Activities 21 and 27 of GNR 327 (Listing Notice 1) |
| Topsoil removal | 5 ha | N/A | N/A |
| Excavation | 5 ha | X | Activities 21 and 27 of GNR 327 (Listing Notice 1) |
| Loading | | N/A | N/A |
| Hauling and Transport | | N/A | N/A |
| Stockpiles | | N/A | N/A |

(ii) Description of the activities to be undertaken

(Describe Methodology or technology to be employed, including the type of commodity to be prospected/mined and for a linear activity, a description of the route of the activity)

Background

Makhado Local Municipality intends to design and construct the proposed bridge between Sane and Natalie villages located in Makhado Local Municipality. The proposed bridge comes as a replacement of an old bridge which was built in the same area over the past years but has, however, collapsed. Due to the collapsed bridge, the community including school children and workers cannot cross over Mufungude river during rainy days as the river gets flooded and hence, they cannot go to schools, health facilities, workplaces, shops, police stations, funerals, etc.

The proposed bridge construction will require G5 gravel material for the in-filling of the process. Hence, this application is being submitted for the approval of the proposed borrow-pit. The proposed borrow-pit sites have been identified in the surrounding area in Sane Village. The sites earmarked for the proposed borrow-pit have been previously mined (excavated for borrow-pits for other projects in the area). The Borrow-pit mining permit is required for the contractor to excavate and provide the required fill materials.

Permits/Authorisations

The proposed borrow-pit for the construction of the proposed bridge triggers the following listed activities which require authorisations:

| Listed Activity | Required Authorisation |
|---|---|
| Activity 21 of NEMA, GN. R.327, 07 April 2017, Listing Notice 1 of the 2014, EIA Regulations | Environmental Authorisation and Mining Permit |
| Activity 27 of NEMA, GN. R.327, 07 April 2017, Listing Notice 1 of the 2014, EIA Regulations | Environmental Authorisation and Mining Permit |
| Section 21 (a), (c) and (i) of the National Water Act (Act 36 of 1998) | Water Use Licence |

Accordingly, Makhado Local Municipality is applying for a mining permit and/or Environmental Authorisations, in terms of Section 27 of the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) (MPRDA) and NEMA respectively, for the proposed open cast operation where borrow-pit will take place from the existing borrow-pit sites located around Sane Village. Water Use Licence/General Authorisation will be applied for in consultation with the Department of Water and Sanitation (DWS) accordingly.

Services

The following services are required:

- **Access:** The proposed project sites are accessible from the existing gravel road to Sane Village through Maranikwe Village.
- **Ablution facilities:** Chemical toilets will be provided for the contractors/employees stationed at the Borrow-Pit site.
- **Water:** Potable water will be supplied by containers to the employees/contractors stationed at the Borrow-Pit site. A water cart will be used for dust suppression. Water will be sourced from the nearby tributary of Mufungude river, when required. Necessary consultation with the Department of Water and Sanitation (DWS) to confirm the requirements of Water Use Licence/General Authorisation.
- **Waste Management:** All general waste generated on site will be collected and disposed of a registered landfill site.

Mining / Operational Method

The mining method to be implemented in the proposed borrow-pit for the gravel material to be used in the construction of the proposed bridge between Natalie and Sane villages will be open cast. The site establishment and operation of the borrow-pit mining will take place through the following steps:

Site Preparation/Establishment

- Demarcation of the mining area with danger tape to ensure that the mining is implemented correctly and as per the approved extent or extent applied for the borrow pit (*i.e.* approximately 5ha);
- Installation of the fence around the approved borrow-pit area to be mined to prevent mining in an unapproved and/or sensitive area;
- Placement of temporary ablution facilities (*i.e.* potable chemical toilets);
- Upgrading of the existing access road when necessary;
- Clearance of vegetation by means of a dozer/ scraper;
- Topsoil removal/stripping and stockpiling for use during rehabilitation; and
 - The stripping and stockpiling of topsoil is the most important step in any rehabilitation program and must begin before any minerals are extracted from the intended area of disturbance. Prior to the commencement of minerals extraction, the site must be cleared and grubbed. All topsoil located in the area of disturbance should be stripped from the site, avoiding mixing with trees, boulders and other discard materials, and should be stockpiled in berms located outside the boundaries of the proposed operations for use at later mining phases. Ideally, topsoil should not be worked when wet and prolonged storage should be avoided. In this way the valuable topsoil, an ideal medium for plant growth, will become available for rehabilitation purposes at the site as mining advances.
- Stripping and stockpiling of subsoil and overburden prior to mining.
 - Subsoil and overburden should be stockpiled in berms located outside the boundaries of the proposed operations for use at later mining phases.

Operation

- Excavation or ripping of gravel materials with an excavator;
- Loading of excavated materials by front end loaders to trucks; and
- Transportation of gravel material directly to the site of use.

Rehabilitation and Closure

- Rehabilitation by filling the excavated area and spread of topsoil and allow revegetation naturally; and
 - As mining advances, topsoil, subsoil and overburden will initially be shifted and stockpiled outside the boundaries of the pit and will then subsequently be shifted to mined-out areas. No stockpiling of material should be present on the site after rehabilitation.
 - Sustainable development applied to mining works necessarily includes rehabilitation with the aim of either restoring the land to its original use or eliminating or reducing adverse environmental impacts to a long-term acceptable condition. The process is driven primarily by legislation which ensures that the mine owner must

comply with the intention of achieving those end conditions, which are defined in broad terms by guidelines. The MPRDA, 2002 and the Regulations (GN R7949) set out a process whereby a mine requires a closure certificate, the application for which must be accompanied by an environmental risk report. The closure objectives which form part of the required environmental management plan must inter alia identify key objectives, define future land use objectives and provide proposed closure costs. The following basic principles of rehabilitation will be followed:

- Prepare a rehabilitation plan prior to the commencement of mining.
 - Agree on the long-term post mining land use objective for the area. The land use must be compatible with the climate, soil, topography of the final landform and the degree of the management available after rehabilitation.
 - Progressively rehabilitate the site, where possible, so that the rate of rehabilitation is similar to the rate of mining.
 - Prevent the introduction of noxious weeds and pests.
 - Minimise the area cleared for mining and associated facilities to that necessary for the safe operation of the mine.
 - Reshape the land disturbed by mining so that it is stable, adequately drained and suitable for the desired long-term land use.
 - Minimise the long-term visual impact by creating landforms which are compatible with the surrounding landscape.
 - Reinstate natural drainage patterns disrupted by mining wherever possible.
 - Minimise the potential for erosion by wind and water both during and following mining.
 - Characterise the topsoil and retain it for use in rehabilitation. It is preferable to reuse the topsoil immediately rather than storing it in stockpiles. Only discard if it is physically or chemically undesirable, or if it contains high levels of weed seeds or plant pathogens.
 - Consider spreading the cleared vegetation on disturbed areas.
 - Deep rip compacted surfaces to encourage infiltration, allow plant root growth and key the topsoil to the subsoil, unless subsurface conditions dictate otherwise.
 - Ensure that the surface one or two metres of soil is capable of supporting plant growth.
 - If topsoil is unsuitable or absent, identify and test alternatives substrates, e.g. overburden that may be suitable substitute after addition of soil improving substances.
 - Revegetate the area with plant species consistent with the post mining land use.
 - Monitor and manage rehabilitation areas until the vegetation is self-sustaining.
- Alien vegetation control on the rehabilitated disturbed area and after care for approximately six (6) months thereafter.

Please refer to **Figure 1** for Mining method process flow.

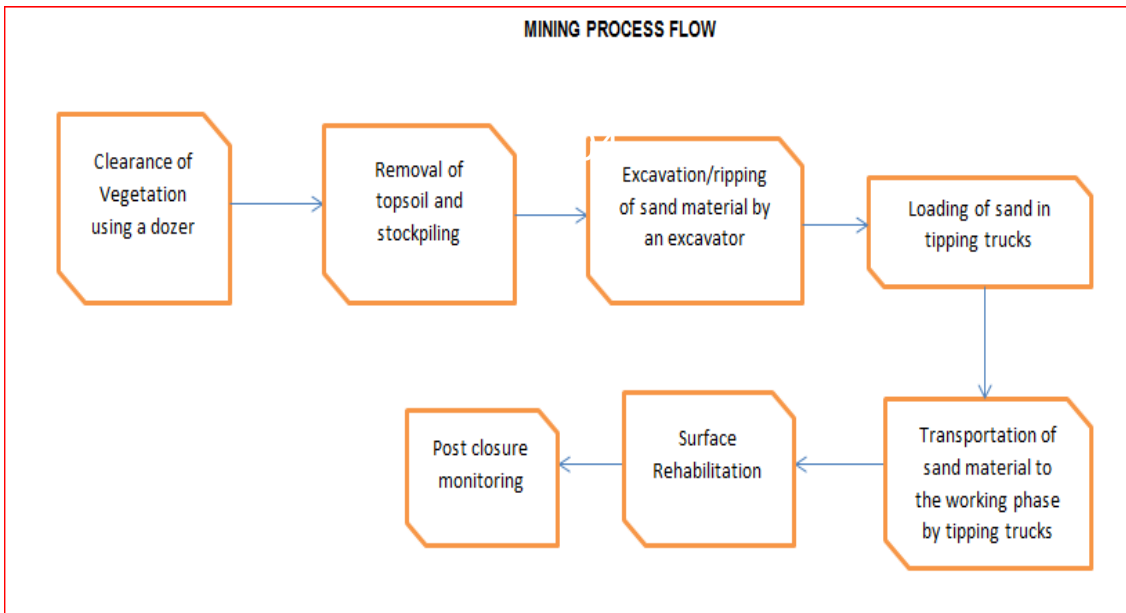


Figure 1: Mining Process Flow Diagram

The current projected life (operations) of the proposed borrow-pit mining ranges between three (3) months to 10 months. There are currently no activities taking place at the proposed sites.

e) Policy and Legislative Context

The applicable policies and/or legislations are outlined in **Table 1**.

Table 1: Policy and Legislative Context

| Legislation | Applicable Requirements | Relevant Authority | Compliance Requirements |
|--|--|---|--|
| National Environmental Management Act (Act No 107 of 1998) | <p>The EIA Regulations have been promulgated in terms of Chapter 5 of the Act. Listed activities which may not commence without an environmental authorisation are identified within these Regulations.</p> <p>In terms of S24(1) of NEMA, the potential impact on the environment associated with these listed activities must be assessed and reported on to the competent authority charged by NEMA with granting of the relevant environmental authorisation.</p> <p>In terms of GNR 326 and GNR 327 of 2014 a Basic Assessment Process is required to be undertaken for the proposed project.</p> | <p>Department of Mineral Resources (DMR) – competent authority</p> <p>Limpopo Economic Development, Environment and Tourism (LEDET)</p> | <p>The listed activities triggered by the proposed borrow-pit mining activities have been identified and assessed in the EIA process being undertaken (i.e. Basic Assessment).</p> <p>This Basic Assessment Report is being submitted to the competent and commenting authority in support of the application for authorisation.</p> |
| National Environmental Management Act (Act No 107 of 1998) | <p>In terms of the Duty of Care Provision in S28(1) the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to ensure that any pollution or degradation of the environment associated with this project is avoided, stopped or minimised.</p> | <p>DMR</p> <p>LEDET</p> | <p>While no permitting or licensing requirements arise directly by virtue of the proposed project, this section has found application during the Basic Assessment process through the consideration of potential impacts (cumulative, direct, and indirect). It will continue</p> |

| Legislation | Applicable Requirements | Relevant Authority | Compliance Requirements |
|--|--|---|--|
| | In terms of NEMA, it has become the legal duty of a project proponent to consider a project holistically, and to consider the cumulative effect of a variety of impacts. | | to apply throughout the life cycle of the project. |
| National Water Act (Act No 36 of 1998) | In terms of S19, the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to prevent and remedy the effects of pollution to water resources from occurring, continuing, or recurring. | Department of Water and Sanitation (DWS) | Section 19 of the Act will apply with respect to the potential impact on drainage lines and ephemeral streams which will potentially occur primarily during the construction phase (i.e. pollution from construction vehicles). |
| Minerals and Petroleum Resources Development Act (Act No 28 of 2002) | The Department of Mineral Resources (DMR) is responsible for regulating the mining and minerals industry to achieve equitable access to the country's resources and contribute to sustainable development. The Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) (MPRDA) requires that an EIA be conducted and that the EMP be drafted for the mitigation of impacts identified during the environmental impact assessment for a mining project. During December 2014, the "One Environmental System" was implemented by Government which initiated the streamlining of the licensing processes for mining, environmental authorisations and water use. Under the One Environmental System, The Minister of Mineral Resources, will issue environmental authorisations and waste management licences in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), and the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEMWA), respectively, for mining and related activities. The Minister of Environmental Affairs will be the appeal authority for these authorisations. | DMR | In view of the above the application for the environmental authorisation for the proposed project was submitted to the DMR as the competent authority. |
| National Environmental Management: Air Quality Act (Act No 39 of 2004) | S18, S19, and S20 of the Act allow certain areas to be declared and managed as "priority areas." Declaration of controlled emitters (Part 3 of Act) and controlled fuels (Part 4 of Act) with relevant emission standards. GN R 827 – National Dust Control Regulations prescribes general measures for the control of dust in all areas | LEDET | No permitting or licensing requirements arise from this legislation. Dust Control Regulations describe the measures for control and monitoring of dust, including penalties. These regulations will be applicable during the construction phase of the project. |
| National Heritage Resources Act (Act No 25 of 1999) | » S38 states that Heritage Impact Assessments (HIAs) are required for certain kinds of development including | South African Heritage Resources Agency (SAHRA) | The total area to be 'disturbed' is approximately 5000m ² , which trigger an HIA. |

| Legislation | Applicable Requirements | Relevant Authority | Compliance Requirements |
|---|---|---|---|
| | <ul style="list-style-type: none"> » Any development or other activity which will change the character of a site exceeding 5 000 m² in extent » The relevant Heritage Authority must be notified of developments such as linear developments (<i>i.e.</i> roads and power lines), bridges exceeding 50 m, or any development or other activity which will change the character of a site exceeding 5 000 m²; or the re-zoning of a site exceeding 10 000 m² in extent. This notification must be provided in the early stages of initiating that development, and details regarding the location, nature and extent of the proposed development must be provided. » Stand-alone HIAs are not required where an EIA is carried out as long as the EIA contains an adequate HIA component that fulfils the provisions of S38. In such cases only those components not addressed by the EIA should be covered by the heritage component. | Limpopo Provincial Heritage Resources Authority (LIHRA) | An HIA study has been conducted by a qualified specialist and is included in Appendix 4. |
| National Environmental Management: Biodiversity Act (Act No 10 of 2004) | <p>In terms of S57, the Minister of Environmental Affairs has published a list of critically endangered, endangered, vulnerable, and protected species in GNR 151 in Government Gazette 29657 of 23 February 2007 and the regulations associated therewith in GNR 152 in GG29657 of 23 February 2007, which came into effect on 1 June 2007.</p> <p>In terms of GNR 152 of 23 February 2007: Regulations relating to listed threatened and protected species, the relevant specialists must be employed during the EIA Phase of the project to incorporate the legal provisions as well as the regulations associated with listed threatened and protected species (GNR 152) into specialist reports in order to identify permitting requirements at an early stage of the EIA Phase.</p> <p>The Act provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The first national list of threatened terrestrial ecosystems has been gazetted,</p> | DMR LEDET | <p>As the applicant will not carry out any restricted activity, as is defined in S1 of the Act, no permit is required to be obtained in this regard.</p> <p>An ecological walkthrough of the site must be undertaken to ensure that no species listed as a protected species within the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004): Publication of Lists of Critically Endangered, Endangered, Vulnerable and Protected Species are identified within the development area. A permit will be required to be obtained should this species be impacted by the borrow pit footprint.</p> |

| Legislation | Applicable Requirements | Relevant Authority | Compliance Requirements |
|--|---|--|---|
| | together with supporting information on the listing process including the purpose and rationale for listing ecosystems, the criteria used to identify listed ecosystems, the implications of listing ecosystems, and summary statistics and national maps of listed ecosystems (National Environmental Management: Biodiversity Act: National list of ecosystems that are threatened and in need of protection, (GG 34809, GN 1002), 9 December 2011). | | |
| National Environmental Management: Biodiversity Act 10 of 2004 | GNR 598: The Alien and Invasive Species (AIS) Regulations provides for the declaration of weeds and invader plants. | DMR Department of Agriculture, Forestry and Fisheries (DAFF) LEDET | This Act will find application throughout the life cycle of the project. In this regard, soil erosion prevention and soil conservation strategies must be developed and implemented. In addition, a weed control and management plan must be implemented. |
| National Forests Act (Act No. 84 of 1998) | In terms of S5(1) no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a license granted by the Minister to an (applicant and subject to such period and conditions as may be stipulated". GN 908 provides a list of protected tree species. | DAFF | A permit would need to be obtained for any protected trees that are affected by Mining activities. |
| National Veld and Forest Fire Act (Act 101 of 1998) | In terms of S13 the landowner would be required to burn firebreaks to ensure that should a veldfire occur on the property, that it does not spread to adjoining land. In terms of S13 the landowner must ensure that the firebreak is wide and long enough to have a reasonable chance of preventing the fire from spreading, not causing erosion, and is reasonably free of inflammable material. In terms of S17, the applicant must have such equipment, protective clothing, and trained personnel for extinguishing fires. | DAFF | While no permitting or licensing requirements arise from this legislation, and this Act will find application during the construction and operational phase of the proposed Mining activities. |
| Hazardous Substances Act (Act No 15 of 1973) | This Act regulates the control of substances that may cause injury, or ill health, or death due to their toxic, corrosive, irritant, strongly sensitising or inflammable nature or the generation of pressure thereby in certain instances and for the control of certain electronic products. To provide for the rating of such substances or products in relation to the degree of danger; to provide for the | Department of Health | It is necessary to identify and list all the Group I, II, III, and IV hazardous substances that may be on the site and in what operational context they are used, stored or handled. If applicable, a license is required to be obtained from the Department of Health. |

| Legislation | Applicable Requirements | Relevant Authority | Compliance Requirements |
|---|---|---|---|
| | <p>prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products.</p> <ul style="list-style-type: none"> » Group I and II: Any substance or mixture of a substance that might by reason of its toxic, corrosive etc, nature or because it generates pressure through decomposition, heat or other means, cause extreme risk of injury etc., can be declared as Group I or Group II substance » Group IV: any electronic product; and » Group V: any radioactive material. <p>The use, conveyance, or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force.</p> | | |
| <p>National Environmental Management Waste Act, 2008 (Act No. 59 of 2008)</p> | <p>The Minister may by notice in the <i>Gazette</i> publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment.</p> <p>The Minister may amend the list by –</p> <ul style="list-style-type: none"> * Adding other waste management activities to the list. * Removing waste management activities from the list. * Making other changes to the particulars on the list. <p>In terms of the Regulations published in terms of this Act (GN 921), A Basic Assessment or Environmental Impact Assessment is required to be undertaken for identified listed activities (Category A and B) while Category C Activities (such as storage of waste) must be undertaken in accordance with the National norms and standards for storage of waste.</p> <p>Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that:</p> <ul style="list-style-type: none"> » The containers in which any waste is stored, are intact and not corroded or in » any other way rendered unfit for the safe storage of waste. » Adequate measures are taken to prevent accidental spillage or leaking. » The waste cannot be blown away. | <p>DEA: Waste Management</p> <p>LEDET: Waste Management</p> | <p>As no waste disposal site is to be associated with the proposed project, no permit is required in this regard.</p> <p>Waste handling, storage and disposal during construction and operation is required to be undertaken in accordance with the requirements of the Act, as detailed in the EMPr.</p> |

| Legislation | Applicable Requirements | Relevant Authority | Compliance Requirements |
|---|--|------------------------------------|--|
| | <ul style="list-style-type: none"> » Nuisances such as odour, visual impacts and breeding of vectors do not arise; and » Pollution of the environment and harm to health are prevented. | | |
| National Road Traffic Act (Act No 93 of 1996) | <ul style="list-style-type: none"> » Legal axle load limits and the restrictions imposed on abnormally heavy loads are discussed in relation to the damaging effect on road pavements, bridges, and culverts. » The general conditions, limitations, and escort requirements for abnormally dimensioned loads and vehicles are also discussed and reference is made to speed restrictions, power/mass ratio, mass distribution, and general operating conditions for abnormal loads and vehicles. Provision is also made for the granting of permits for all other exemptions from the requirements of the National Road Traffic Act and the relevant Regulations. | Provincial Department of Transport | An abnormal load/vehicle permit may be required for the drill rig to be taken to the site. These include route clearances and permits will be required for vehicles carrying abnormally heavy or abnormally dimensioned loads. |
| The Occupational Health and Safety Act (No 9 of 1997) | The Occupational Health and Safety Act, 1993 (No.85 of 1993) provides for the health and safety of people at work as well as the health and safety of persons using plant and machinery. | Department of Labour | The applicant will be required to meet the requirements of the OHS Act during the construction and operational phases of the proposed project. |

f) Need and desirability of the proposed activities.

(Motivate the need and desirability of the proposed development including the need and desirability of the activity in the context of the preferred location).

The communities of Sane and Natalie are separated by the Mufungude River. Mufungude is a perennial river, flowing fast during seasonal rains in summer and slowing down to nominal flow during the drier winter months. In addition, the river gets flooded during rainy periods. Further, there is an existing makeshift timber footbridge over Mufungude river, but it is not sustainable, since the fragile bridge experience partial collapse during every flood event and needs to be continually repaired. As a result, the Natalie community including school children and workers cannot cross over Mufungude river during rainy days as the river gets flooded and hence, they cannot go to schools, health facilities, workplaces, shops, police stations, funerals, *etc.* Natalie community are totally cut off from the basic service facilities which are all concentrated south of the river, on average for a period of four (4) weeks per seasonal rain event.

It is therefore proposed that a new bridge be constructed to replace an old bridge which was built in the same area over the past years but has, however, collapsed. As a result, the proposed bridge will ensure access for Natalie community to the basic service facilities during the rainy periods. This bridge will form an integral part of the community as it will be a safe, accessible connection point for the communities especially during peak rainfall

periods. Natalie community including school children and workers will be able to access schools, health facilities, workplaces, shops, police stations, funerals, *etc*; during rainy periods.

The construction of the proposed bridge requires gravel/fill materials. Hence the need for a Borrow-Pit to source the required gravel/fill material. The preferred Borrow-Pit Site is located within Sane village in the area which was previously mined for a Borrow-Pit. Therefore, the environmental impacts will be minimal given the history of the site's activities and the extent of the required Borrow-Pit footprint as well as the required rehabilitation measures to be undertaken. In addition, cost due to sourcing of the gravel/fill materials elsewhere and transportation will be reduced considering the distance between the preferred Borrow-Pit site and the proposed bridge site.

g) Motivation for the overall preferred site, activities and technology alternative.

The preferred Borrow-Pit site is located within Sane village, in Makhado Local Municipality. The preferred site only considered the site location alternative for the proposed Borrow-Pit. The determination of the preferred site and the layout for the site has taken into consideration the minimisation of environmental and socio-economic impacts, i.e. avoidance of site within 500m of the wetlands, avoidance of graves, access to the site (use of existing roads as possible to avoid vegetation clearance), distance from the residential areas, distance to the site of use, current or past activities on site as well as availability of the required gravel/fill material. In addition, the proposed site has only been considered within Sane village where consultation regarding the development footprint has been initiated with the affected landowner.

The possible Borrow-Pit mining methods or technology to be used in the proposed project is open cast based on its cost effectiveness and simple implementation with minimal impacts to the environment.

In summary, the preferred site location was determined based on the following aspects:

- Availability of the required gravel material;
- Distance to the proposed site of use;
- Consultation with the affected landowner;
- The site is already impacted by similar Borrow-Pit mining activities in the past;
- The site is further away from the residential area;
- The anticipated environmental impacts are minimal provided mitigation measures are implemented;
- The Heritage Impact Assessment (HIA) report findings concludes that there are no signs of Heritage/archaeological features identified on site.

h) Full description of the process followed to reach the proposed preferred alternatives within the site.

NB!! – This section is about the determination of the specific site layout and the location of infrastructure and activities on site, having taken into consideration the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout.

i) Details of the development footprint alternatives considered.

With reference to the site plan provided as Appendix 4 and the location of the individual activities on site, provide details of the alternatives considered with respect to:

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and

- (f) the option of not implementing the activity.

(a) The property on which or location where it is proposed to undertake the activity

No property alternatives have been considered as the envisaged Borrow-Pit mining operations will occur in the property where consultation with the affected landowner has taken place and also in close proximity to the existing access road. The proposed site is the only land that is within reasonable reach to the applicant. In addition, similar activities have taken place on site previously but currently there is no activities or developments within the proposed project area.

(b) The type of activity to be undertaken

No alternatives to the Borrow-Pit mining have been considered as sourcing the required gravel/fill material from a Borrow-Pit located near the proposed site of use has been considered viable and cost effective by the applicant. It has been concluded from the Geotechnical Investigation Study undertaken that the site possesses the required type of material and material quantities.

(c) The design or layout of the activity

Based on the simplicity of the proposed project and associated surface infrastructure, no design and layout alternatives were deemed necessary. The proposed Borrow-Pit mining activity will be implemented with the aim to reduce substantial impacts on the area.

(d) The technology to be used in the activity

No alternative technology has been considered for the proposed Borrow-Pit mining activity. The Borrow-Pit mining method to be implemented is open cast. Extraction of the required gravel/fill material will be facilitated through the use of an excavator and/or front-end loader.

(e) The operational aspects of the activity

The optimal operational activities have been proposed, inclusive of the site layout and mobile infrastructure, in consideration of spatial aspects, post mining appearance as well as reducing costs and impacts to the environment.

(f) The option of not implementing the activity

The option of not implementing the activity has been considered and assumes that should the proposed activity not proceed then the environmental status quo would remain. This includes no clearing of any vegetation, no excavations for the Borrow-Pit, no further Borrow-Pit mining operations on site and no decommissioning and rehabilitation at the end of the project life cycle. The material could be sourced outside Sane village which will not be cost-effective and will cause a delay in the construction of the proposed bridge in Sane and Natalie villages. It also assumes that the high possibility of this activity to lead to socio-economic gains through employment opportunities to the local communities will not be realised. Therefore, the option of not implementing the activity will not be pursued at this stage.

ii) Details of the Public Participation Process Followed

Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings. (Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.

A Basic Assessment is required to obtain an Environmental Authorisation for the Makhado Local Municipality's proposed Borrow-Pit. A Public Participation Process (PPP) is being undertaken as part of the Basic Assessment process and is being conducted in the following manner:

- Placing newspaper advertisements in the Mirror and Daily Sun newspapers, which allows potential Interested and Affected Parties (I&APs) to register and to submit comments within a 30-day period regarding the Basic Assessment of the proposed project;
- Placing a Site Notice in and around the proposed project area;

- Meetings and Emailing written notice and Background Information Document (BID) regarding the proposed activities to I&APS, including neighbours, Ward Councillor, competent authority and other relevant Government departments/organ of state;
- Distribution of BID and comment sheets in the nearby I&APs via hand delivery;
- Placement of the Draft Basic Assessment Report at the Royal House for public review and comments within a 30-day period;
- Circulation of letters notifying I&APs of the release of the Draft Basic Assessment Report for a 30-day review period; and
- Conduct Public Meetings and Focus Group Meetings during the 30-day review period.

iii) Summary of issues raised by I&Aps
 (Complete the table summarising comments and issues raised, and reaction to those responses)

This section will be updated in the final Basic Assessment Reporting. No comments have been received to date.

| Interested and Affected Parties | | Date | Issues raised | EAPs response to issues as mandated by the applicant | Section and paragraph reference in this report where the issues and or response were incorporated. |
|--|----------|-------------------|---------------|--|--|
| List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted. | | Comments Received | | | |
| <u>AFFECTED PARTIES</u> | | | | | |
| Landowner/s | X | | | | |
| | | | | | |
| Lawful occupier/s of the land | | | | | |
| | | | | | |
| Landowners or lawful occupiers on adjacent properties | X | | | | |
| | | | | | |
| | | | | | |
| Municipal councillor | X | | | | |
| Municipality | X | | | | |
| Organs of state (Responsible for infrastructure that may be affected Roads Department, | | | | | |

| | | | | | |
|---|--|--|--|--|--|
| Eskom, Telkom, DWA e | | | | | |
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| Communities | | | | | |
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| Dept. Land Affairs | | | | | |
| | | | | | |
| Traditional Leaders | | | | | |
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| | | | | | |
| Dept. Environmental Affairs | | | | | |
| | | | | | |
| Other Competent Authorities affected | | | | | |
| | | | | | |
| | | | | | |
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| <u>OTHER AFFECTED PARTIES</u> | | | | | |
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| | | | | | |
| <u>INTERESTED PARTIES</u> | | | | | |
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- iv) **The Environmental attributes associated with the alternatives.**(The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)

(1) Baseline Environment

(a) Type of environment affected by the proposed activity.

(its current geographical, physical, biological, socio- economic, and cultural character).

Site Description

The proposed project is located in Msekwa 194 MT, Portion 0, within Sane village, in Makhado Local Municipality, Limpopo Province (Refer to **Appendix B** for Locality Map). The sites are situated approximately 42 north east of Makhado town (Louis Trichardt). The property falls outside an urban area. The current land use of the area comprises an open space, agricultural activities as well as the tributaries of Mufungude river. Residential areas exist within 5km of the proposed Borrow-Pit sites.

The three (3) proposed borrow pits are located along an unnamed gravel road that forms the access route between the villages of Maranikwe and Sane. The road runs parallel to the Mufungude River that flows from east to west into the Nzhelele Dam. **Table 2** below outlines the coordinates for each borrow pit:

Table 2: Summary of Borrow Pit Locations

| Borrow Pit Name | South | East |
|-------------------------|--------------|--------------|
| Site 1 – Preferred Site | 22°45'40.9"S | 30°08'26.9"E |
| Site 2 | 22°46'24.6"S | 30°10'27.9"E |
| Site 3 | 22°46'27.8"S | 30°10'40.1"E |

Climate

The region is generally hot and humid with a summer rainfall. The average summer temperature is 23°C, and the average winter temperature is 17°C. The mean annual precipitation follows the same pattern as the topography ranging from 2000mm/annum in the mountainous areas of the northwest to 440mm/annum at the Limpopo River confluence, with a catchment average of 800mm/annum. The prevailing wind direction is east to southeast in both the summer and the winter months. The average wind speed is 11km/h in the summer and 15km/hr in the winter.

Topography

The topography of the area is characterised by a mountainous makeup. It should also be noted that although settlements are mostly located on slopes less than 9% (1:10), many of the urbanized areas (settlements) are located between the mountainous areas with slopes between 9%-25%, i.e. slopes between 1:10 to 1:4. Please refer to Appendix B for the Topographical Map.

Geology

The 1:250 000 scale geological map, titled “2230 Messina” (CGS, 1986) indicates that the borrow pits are underlain by quartzitic sandstone, shale, conglomerate, lava, and tuff of the Nzhelele Formation. Fieldwork undertaken by the GCS (2020) indicated that the borrow pits are underlain by hillwash which is underlain by either a dolerite intrusion and sandstone (borrow pit site 1), or interbedded sandstone and shale (borrow-pit sites 2 and 3). Please refer to **Appendix B** for the Geology Map.

Water Resource

The study area falls within the rivers and streams of the Limpopo Water Management Area (WMA), more specifically in the A80C quaternary catchment area. Major rivers within this WMA include the Limpopo, Matlabas, Mokolo, Lephala, Mogalakwena Sand and Nzhelele. The study area is however located within the close proximity of Mufungude River which feeds to the Nzhelele Dam, located approximately 9 km North West of the Study area. No other waterbodies are located in close proximity to the proposed sites. Increasing population levels and a variety of land uses have placed an increasing demand on water availability and thus impose pressure on water resources and the future need for alternative resources (Makhado Local Municipality Integrated Development Plan, 2019/2020). Please refer to Appendix B for the Surface Water Map.

Biodiversity

Naledzani Environmental Services (NES) was appointed by Mamadi & Company SA (Pty) Ltd to conduct the Biodiversity/Ecological Impact Assessment Study (Refer to Appendix C for the Biodiversity/Ecological Specialist Study) for the proposed Borrow-pit sites in Sane village. According to the Limpopo Conservation Plan (NES, 2020), the proposed borrow-pit preferred site falls within Critical Biodiversity Area 1 due to possibilities of providing habitat for protected plants. The proposed project area falls within the Soutpansberg Mountain Bushveld vegetation, which is classified as Vulnerable. Please refer to **Appendix B** for the Vegetation Map.

The Biodiversity/Ecological Impact Assessment study made the following conclusions and recommendations:

- The removal of natural vegetation is unavoidable, but the area should be rehabilitated with indigenous plant located in and around the proposed project area;
- All licenses must be obtained prior to mining (including the licences to remove protected plants if required);
- All ablution facilities must be provided (1 toilet per 15 employees);
- Where possible, mining should proceed during the dry winter months (low or zero flow periods) in order to limit the potential for erosion linked to high runoff rates;
- Ensure active re-vegetation of cleared/mined areas as being important in-order to limit erosion potential.

Socio-Economic

The Census Data for South Africa (Statistics South Africa, 2011) revealed that in the total population of 516 031 people in Makhado Local Municipality, 36.7% population is unemployed.

According to Makhado Local Municipality IDP, 2019/2020, the formal economy of the Makhado Local Municipality can be considered as a “dual economy”, as it comprises two (2) distinct elements, namely; the sophisticated economy of the Makhado “Louis Trichardt” town and the surrounding farms and the informal economies of surrounding townships and rural areas. Louis Trichardt town provides a regional function to the surrounding areas (e.g. trade services, banking, manufacturing, storage, transport, etc), because of its size and level of sophistication. The economy is also able to generate

a significant number of direct employment opportunities for the local communities. The economies of surrounding townships and rural areas comprise mostly of informal activities and largely serve the immediate consumption needs of local people. The main labour-absorbing sectors are the agriculture sector; community services sector; and the trade sector of the municipality. Community service and trade sectors are the predominant employers within the study area, responsible for just over 27.45% and 19.30% of the active work force respectively. Agriculture is the third largest employer absorbing around 17.40% followed by the construction sector (8.34%) and finance (5.30%).

According to the Statistics South Africa (Census, 2011), the level of education in Makhado Local Municipality was as follows:

- Higher education: 9.1%
- Matric: 21.8%
- No schooling: 18.9%

Cultural and Heritage

Vhufa Hashu Heritage Consultants was appointed by Mamadi & Company SA (Pty) Ltd to conduct the Heritage Impact Assessment (HIA) Study (Refer to **Appendix C** for the Heritage Specialist Study) for the proposed borrow-pit Sane villages. The findings and recommendations for the study are as follows:

- There are no archaeological or any other cultural heritage resources located within the direct path of the proposed borrow-pit site.
- Given the spatial extent of the project activities, this study recommends that a cultural heritage resources – monitoring program be designed to deal with potential archaeological or historical finds, including unmarked human burials that may accidentally be found during development. This is particularly more important during earth moving activities.
- Should any archaeological or any other physical cultural resources be discovered subsurface during gravel extraction, heritage authorities should be informed.
- From an archaeological and cultural heritage resources perspective, there are no objections to the proposed project, and we recommend to the Provincial Heritage Resource Agency, South African Heritage Resource Agency to approve the project as planned.

(b) Description of the current land uses.

The three (3) proposed sites are all located close to the existing access road/entrance to Sane Village. The proposed borrow-pit sites are currently vacant (no structure/infrastructure within the site) and all three (3) have previously been used as borrow pit sites. The area next to proposed borrow pit site 1 (preferred site) is used as an agricultural area while borrow-pit site 2 is located on a more natural area, with grave sites within 100m of the site. Borrow-pit site 3 is located within a stream and in close proximity of school and residential area/settlements. Please refer to **Appendix B** for the land use map.

(c) Description of specific environmental features and infrastructure on the site.

The proposed borrow-pit sites are currently vacant with vegetation and trees (no structure/infrastructure within the site) and all three (3) have previously been used as borrow pit sites. The area next to proposed borrow pit site 1 (preferred site) is used as an agricultural area while borrow-pit site 2 is located on a more natural area, with grave sites within 100m of the site. Borrow-pit site 3 is located within a stream and in close proximity of school and residential area/settlements. protected plant species, *Sclerocarya birrea subsp birrea* (Marula) and *Boscia albitrunca* (Shepherd tree) were noticed within borrow-pit site 1 and according to the National Forest Act, 1998 (Act No. 84 of 1998), these species are listed as protected. Only one tree (1) of Shepherd tree was recorded on site whereas Marula trees were only three (3). It is not anticipated that the trees will be affected by the borrow-pit activities. However, if at a later stage it is required that the trees be removed, then the necessary permit will be acquired. Previously part of the borrow-pit site 1 has been mined (borrow pit) and section of the site is being used for cultivation and both these have led to the removal of natural vegetation.

Please refer to **Appendix B** for the land use map.

(d) Environmental and current land use map.
(Show all environmental, and current land use features)

Refer to **Appendix B** for the map showing all the environmental and current land cover features.

v) Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts

(Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultations with affected parties together with the significance, probability, and duration of the impacts. Please indicate the extent to which they can be reversed, the extent to which they may cause irreplaceable loss of resources, and can be avoided, managed or mitigated).

Table 3: Potential impacts associated with the mining activities

| Potential Impacts | Phase | Reversible (Yes / No) | Irreplaceable Damage (Yes / No) | Can Impact Be Avoided? (Yes / No) |
|--|--|-----------------------|---------------------------------|-----------------------------------|
| Land degradation The removal of topsoil and vegetation with heavy machines deprives the land its nutrients and render the land infertile for agricultural purpose. | Site Establishment | No | Yes | No |
| Loss of indigenous vegetation Natural plant communities are dynamic ecosystems that provide habitats that support all forms of life. Different types of plant communities (and habitats) exist in the study area, and these occur within and around the study area. The current condition of the vegetation communities of the study area can be described as transformed/ degraded due to agriculture and previous mining | Site Establishment | No | Yes | No |
| Fragmentation of vegetation and edge effects Fragmentation is one of the most important impacts on vegetation, especially when this creates breaks in previously continuous vegetation, causing a reduction in the gene pool and a decrease in species richness and diversity. This impact occurs when areas are cleared for developments or an area is invaded by alien invasive plant species. Fragmentation results in the isolation of functional ecosystems, and results in reduced biodiversity and reduced movement due to the absence of ecological corridors. | Site Establishment | Yes | No | Yes |
| Invasion of alien plant species As with mining activities, the introduction of alien and invader plant species is inevitable; with disturbance comes the influx of aliens. The life of mine (i.e. all phases) could result in the area being invaded by alien invasive species. Alien invader species need to be consistently managed over the entire Life of Mine of the project. | Site Establishment, Operation and Rehabilitation, Decoms & Closure | Yes | No | Yes |
| Soil disturbance Land clearing and Mining activities on site could lead to physical disturbance of the soils on site which has a potential of causing soil erosion and dust. | Site clearing and Operation | Yes | Yes | Yes |

| Potential Impacts | Phase | Reversible (Yes / No) | Irreplaceable Damage (Yes / No) | Can Impact Be Avoided? (Yes / No) |
|--|--|-----------------------|---------------------------------|-----------------------------------|
| <p>Disturbance to animal life in the vicinity The site establishment and operational phase activities are associated with an increase in noise levels, vehicular movements and dust levels. Noise pollution can depress local populations of sensitive faunal groups and increased dust levels can smother natural environments. Animals differ in the degree to which they tolerate such disturbance, and can be expected to have potentially negative and positive impacts on various faunal groups.</p> <p>Dust may be generated as a result of mining activities and, in particular, where there is exposed ground. Specific activities that may contribute to release of fugitive dust include offloading and stockpiling of materials such as sand, excavation, storage of excavated materials and movement of heavy vehicles. The generation of dust may be higher during windy, dry periods. The increase in dust levels may negatively impact the plants and animal species which utilise the area. An increase in vehicular traffic may also result in road fatalities of faunal species</p> | Site Establishment & Operation | Yes | Yes | Yes |
| <p>Noise Pollution Excavation, and vehicles movement to and from the site hauling and transporting Gravel materials, and the voices of the excavation crew.</p> | Site Establishment & Operation | No | No | Yes |
| <p>Air Pollution Dust emission during excavation, clearing of vegetation and loading and haulage of materials by trucks. Dust pollution may cause Cardiovascular diseases.</p> | Site Establishment & Operation | No | No | Yes |
| <p>Disruption of sensitive ecological ecosystems The area will be bare excavated ground after mining activities. Without vegetation cover, these areas are sensitive to erosion and invasion by alien plant species</p> | Rehabilitation, Decoms & Closure | Yes | Yes | No |
| <p>Disturbance to wildlife in the surrounding area Activities associated with the decommissioning phase are similar to those associated with the site establishment and operation. Increased vehicular movement, increased noise levels and increased dust may result in the disturbance of sensitive faunal populations but this will be a short-term impact.</p> | Rehabilitation, Decoms & Closure | Yes | No | Yes |
| <p>Social Impact Employment Opportunities and skills development for local residence.</p> | Site Establishment, Operation and Rehabilitation, Decoms & Closure | Yes | No | Yes |
| <p>Cultural-historical resources Potential impact on heritage resources identified</p> | Site Establishment, Operation | Yes | Yes | Yes |

It is not anticipated that the mining activities associated with the borrow pit will have any lasting material effects on existing land uses on the areas or any other areas in their vicinity as the site will be rehabilitated.

vi) Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;

(Describe how the significance, probability, and duration of the aforesaid identified impacts that were identified through the consultation process was determined in order to decide the extent to which the initial site layout needs revision).

This section provides the detailed methodology used for the assessment of the significance of potential environmental impacts in the EIA. This methodology allows for the identified potential impacts to be analysed in a systematic manner, with significance rating (from low to high) assigned to each potential impact. The criteria used to determine impact consequence include nature, extent, duration and magnitude of the impact and are presented below.

Assessment of the significance of the potential impacts: Criteria of assigning significance to potential impacts

Table 4: Scoring of Potential Impacts

| SEVERITY | | | OCCURRENCE |
|--------------------------------|---|------------------|---------------------------|
| MAGNITUDE (SEVERITY) OF IMPACT | DURATION OF IMPACT | EXTENT OF IMPACT | PROBABILITY OF OCCURRENCE |
| Magnitude (M) | Duration (D) | Scale (S) | Probability (P) |
| 10 Very high/ don't know | 5 Permanent | 5 International | 5 Definite/don't know |
| 8 High | 4 Long-term (impact ceases after closure of activity) | 4 National | 4 High probable |
| 6 Moderate | 3 Medium-term (5 to 15 years) | 3 Regional | 3 Medium probability |
| 4 Low | 2 Short-term (0 to 5 years) | 2 Local | 2 Low probability |
| 2 Minor | 1 Transient | 1 Site only | 1 Improbable |
| 1 None/insignificant | | | |

After ranking these factors for each impact, the significance of the aspects, occurrence and severity, was assessed using the following formula:

$$\text{Significance Points (SP)} = (M + D + S) \times P$$

The maximum SP value is up to 100. The environmental effects were then rated based on the system provided in Table 5 below.

Table 5: Significant Point System

| SP | SIGNIFICANCE RANKING | DESCRIPTION |
|-------|----------------------|--|
| SP>70 | Indicates High (H) | Where it would influence the decision regardless of any possible mitigation. An impact that could influence the decision about whether or not to proceed with the project. |

| SP | SIGNIFICANCE RANKING | DESCRIPTION |
|--------------|---|--|
| | environmental significance | |
| SP = 40 - 70 | Indicates Moderate (Mod) environmental significance | Where it could have an influence on the decision unless it is mitigated. An impact or benefit which is sufficiently important to require management. Of moderate significance could influence the decisions about the project if left unmanaged. |
| SP<40 | Indicates Low (L) environmental significance | Where it will not have an influence on the decision. Impacts with little real effect and which should not have an influence on or require modification of the project design or alternative mitigation |
| + | Positive impact | An impact that is likely to result in positive consequences / effects. |

vii) The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected.

(Provide a discussion in terms of advantages and disadvantages of the initial site layout compared to alternative layout options to accommodate concerns raised by affected parties)

No site layout plan alternatives were considered. Concerns raised during the 30-day public review period regarding the layout will be incorporated into the Final BAR and EMPr.

viii) The possible mitigation measures that could be applied and the level of risk.

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/ discussion of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered).

No issues were raised that required an assessment/ discussion of mitigation measures.

ix) Motivation where no alternative sites were considered.

Not applicable. Three (3) alternative sites were considered for the proposed borrow-pit mining.

x) Statement motivating the alternative development location within the overall site. (Provide a statement motivating the final site layout that is proposed)

The following factors contributed to the motivation of the preferred site: The site is located close to the proposed construction site which will minimise the distance of transporting the material. There is an existing access road which links the borrow-pit site 1 (preferred) to the proposed bridge construction site (where gravel/fill materials are required). Noise and dust impacts are not deemed to be significant, seeing that the proposed Borrow-Pit site 1 (preferred site) is located few distance away from the nearest residential area when compared to other alternatives. The proposed borrow-pit site 1 is located outside 100m of the watercourse. There are no signs of Heritage/archaeological features identified within the proposed area. In addition, the site provides sufficient area for the required materials.

- i) **Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity. (Including (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.)**

Please refer to **Section 3. (h) (vi) (1)(vi)** above for the methodology used and **Section 3. (j)** below for the impact assessment.

j) Assessment of each identified potentially significant impact and risk

(This section of the report must consider all the known typical impacts of each of the activities (including those that could or should have been identified by knowledgeable persons) and not only those that were raised by registered interested and affected parties).

Potential impact of each main activity in each phase, and corresponding significance assessment

The significance of each activity in each phase of the proposed mining activity associated with the borrow pit is discussed in the tables below.

Assessment of potential impacts associated with the Site Establishment and Operational Phases

| ENVIRONMENTAL IMPACT | ENVIRONMENTAL SIGNIFICANCE | | | | | | | | | | | |
|--|----------------------------|---|---|---|-------|-----|------------------|---|---|---|-------|----|
| | Before Mitigation | | | | | | After Mitigation | | | | | |
| | M | D | S | P | Total | SP | M | D | S | P | Total | SP |
| 1. Ecology | | | | | | | | | | | | |
| Destruction / loss of indigenous natural vegetation during site preparation | 1 | 3 | 6 | 5 | 50 | Mod | 1 | 2 | 2 | 3 | 15 | L |
| Proposed mitigation measures: <ul style="list-style-type: none"> Avoid unnecessary impacts on natural vegetation, especially outside the development footprint. Vegetation clearance should be contained, within the footprint of the mining area. Ensure the project site is fenced off (e.g. using construction mesh) to prohibit activities outside of the area being applied for. Areas to be cleared must be clearly marked in the field to eliminate unnecessary clearing. A field survey must be undertaken before mining commences at to confirm that no ecologically sensitive areas or conservation areas are present in sections to be cleared. Limit unnecessary impacts on surrounding natural vegetation, e.g. driving around in the veld, use access roads only | | | | | | | | | | | | |
| Fragmentation of vegetation and edge effects during site preparation. | 1 | 5 | 6 | 3 | 36 | Mod | 1 | 2 | 2 | 3 | 15 | L |
| Proposed mitigation measures: <ul style="list-style-type: none"> Ecologist/ ECO with an Ecology background to undertake ecological walkthrough to identify all species of conservation concern prior to site establishment. A permit / permission to be obtained from the relevant Department for the removal/relocation of species where applicable. | | | | | | | | | | | | |
| Establishment and spread of declared weeds and alien invader plants during site preparation and Operational Phase. | 2 | 5 | 6 | 4 | 36 | 52 | 1 | 1 | 2 | 2 | 8 | L |

Proposed mitigation measures:

- Keep disturbance of vegetation surrounding borrow-pit area to a minimum.
- Rehabilitate disturbed areas as quickly as possible following completion of mining activities in an area.
- Do not translocate soil stockpiles from areas with alien plants.
- Establish an on-going monitoring programme to monitor the establishment of alien invasive species.

2. Soils

| | | | | | | | | | | | | |
|--|---|---|---|---|----|-----|---|---|---|---|----|---|
| Physical disturbance of soils during land clearing and operation of the mining area. | 2 | 5 | 2 | 4 | 36 | Mod | 1 | 2 | 2 | 3 | 15 | L |
|--|---|---|---|---|----|-----|---|---|---|---|----|---|

Proposed mitigation measures:

- Limit clearance to the footprint to the immediate development area.
- Rehabilitate disturbed areas as quickly as possible following completion of the mining phase activities in an area

3. Dust

| | | | | | | | | | | | | |
|---|---|---|---|---|----|---|---|---|---|---|---|---|
| Dust emissions during site preparation and operational phase. | | | | | | | | | | | | |
| Dust emissions within the site due to movement of vehicles and operation equipment during site preparation and operational phase. Exhaust emissions, noise and traffic are anticipated from haulage trucks and operation machinery to and from site, as well as on-site.. | 2 | 2 | 2 | 4 | 24 | L | 1 | 1 | 1 | 2 | 6 | L |

Proposed mitigation measures:

- Implement a practical speed limit on site (e.g. 20km/hr).
- Vehicles transporting equipment must ensure that they are maintained in good order. Vehicles which are emitting volumes of smoke should be taken for maintenance immediately.
- All vehicles must be road-worthy and all drivers must have a valid license.
- If abnormal loads will be transported to site the relevant permits or clearances must be in place.
- Transporting of goods through the use of abnormal loads needs to take place during off-peak hours.
- An appropriate dust suppressant must be applied on all exposed areas as required to minimise/control airborne dust.
- Ensure that a complaints register is kept at the construction site from the first day of construction.
- The construction activities should be kept to the mining footprint being applied for.

4. Land capability and use

| | | | | | | | | | | | | |
|---|---|---|---|---|----|-----|---|---|---|---|----|---|
| Land degradation during site preparation and operation of the site. The removal of topsoil and vegetation with heavy machines deprives the land its nutrients and render the land infertile for agricultural purpose. | 1 | 2 | 1 | 1 | 4 | L | 2 | 3 | 6 | 5 | 55 | - |
| Proposed mitigation measures: | | | | | | | | | | | | |
| <ul style="list-style-type: none"> Avoid unnecessary impacts on natural vegetation, especially outside the development footprint. Excavations should be contained, within the footprint of the mining area. Ensure the project site is fenced off (e.g. using construction mesh) to prohibit activities outside of the area being applied for. Rehabilitate disturbed areas as quickly as possible following completion of the mining phase activities in an area | | | | | | | | | | | | |
| 5. Ground and Surface water | | | | | | | | | | | | |
| Spillages or leaks could impact on stormwater and groundwater | 3 | 1 | 1 | 3 | 15 | L | 1 | 1 | 1 | 2 | 6 | L |
| Proposed mitigation measures: | | | | | | | | | | | | |
| <ul style="list-style-type: none"> Contractor must ensure that spill kit and drip drays are available on site Spill kits must be put in convenient areas to ensure that minor spillages are cleaned as soon as they occur Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-site. This could involve the application of soil absorbent materials or oil-digestive powders to the contaminated soil. Daily inspections for minor spills must be conducted to ensure that the site is free of spillages | | | | | | | | | | | | |
| 6. Health and Safety | | | | | | | | | | | | |
| Potential for accidents and injuries to workers. Unhygienic environment for workers which can cause nuisance to employees. | 4 | 3 | 1 | 4 | 32 | L | 2 | 2 | 1 | 3 | 15 | L |
| Proposed mitigation measures: | | | | | | | | | | | | |
| <ul style="list-style-type: none"> All employees should be given adequate Personal Protective Equipment (PPE) including dust masks No burning of refuse is permitted on site. When operation machinery and vehicles are noticed to release black soot in their tailpipes they should be taken for maintenance. When dust occurs on site mostly during dry weather when soils are loose, appropriate dust suppression measures must be implemented, including surface area watering. | | | | | | | | | | | | |
| 7. Noise | | | | | | | | | | | | |
| Noise Pollution during site preparation and operation | 2 | 2 | 6 | 3 | 30 | Mod | 1 | 2 | 2 | 4 | 14 | L |

| | | | | | | | | | | | | | |
|--|---|---|---|---|----|-----|---|---|---|---|----|-----|--|
| Excavation, and vehicles movement to and from the site hauling and transporting Gravel materials, and the voices of the excavation crew. | | | | | | | | | | | | | |
| Proposed mitigation measures: <ul style="list-style-type: none"> Local people should be informed of the project before commencement A speed limit of 20km/h should be maintained on site and outside the site Construction vehicles should be serviced on regular basis Restrict unnecessary movement of heavy vehicles through residential areas. | | | | | | | | | | | | | |
| 8. Cultural heritage | | | | | | | | | | | | | |
| Cultural-historical resources during site preparation and operational Potential impact on heritage resources identified. | 1 | 3 | 1 | 3 | 15 | L | 1 | 2 | 1 | 1 | 4 | L | |
| Proposed mitigation measures: <ul style="list-style-type: none"> Workers should be workshopped about the importance of heritage resources. Despite that no archaeological objects were observed during the survey of the proposed site and that the area is disturbed, the client is reminded that unavailability of archaeological material does not mean absentee, archaeological material might be hidden underground. It is thus the responsibility of the developer to notify contractors and workers about archaeological material (e.g., pottery, stone tools, remnants of stone-walling, graves, etc) and fossils that may be located underground. In the event that any of the above are unearthed, all construction within a radius of at least 10m of such indicator should cease and the area be demarcated by a danger tape. Accordingly, a professional archaeologist or Limpopo Provincial Heritage Resources Authority (LIHRA) officer should be contacted immediately. Note that any measures to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law. No person may exhume or collect such remains, whether of recent origin or not, without the endorsement by LIHRA. | | | | | | | | | | | | | |
| 9.Socio-economic aspects | | | | | | | | | | | | | |
| Direct employment and skills development / transfer during site preparation and operation | 6 | 4 | 2 | 5 | 60 | Mod | 8 | 4 | 2 | 5 | 70 | Mod | |
| Proposed mitigation measures: <ul style="list-style-type: none"> Local labour force should take first preference for employment especially for semi-skilled and low skilled job categories. Training and skills development programmes should be initiated prior to the commencement of the operation phase. The allocation of employment opportunities should be undertaken on a fair basis. | | | | | | | | | | | | | |
| 10. Traffic aspects | | | | | | | | | | | | | |
| Disruption of normal traffic flow | 1 | 4 | 2 | 5 | 42 | Mod | 1 | 2 | 2 | 5 | 15 | Low | |

Proposed mitigation measures:

- Ensure that incoming and outbound loads are well managed and scheduled to minimise potential disruptions on the site access.
- Necessary and visible signages must be placed at appropriate areas;
- Where necessary traffic control measures must be implemented

11. Waste management

| | | | | | | | | | | | | |
|---------------------|---|---|---|---|----|-----|---|---|---|---|----|-----|
| Impact due to waste | 6 | 4 | 1 | 5 | 55 | Mod | 4 | 4 | 1 | 5 | 45 | Low |
|---------------------|---|---|---|---|----|-----|---|---|---|---|----|-----|

Proposed mitigation measures:

- Good housekeeping must be practiced at all times to ensure that the construction site is kept neat and tidy.
- An adequate number of bins should be placed around the site to control waste.
- All waste generated on site must be collected and transported to the nearest registered landfill site. The disposal slip must be filed on site.
- Waste will be sorted at site so as to sort the recyclable and non-recyclable waste.
- All empty hazardous containers must be stored in a dedicated area and later removed from the site for appropriate disposal at a licensed facility.

Assessment of potential impacts associated with the Rehabilitation, Decommissioning and Closure Phase

| ENVIRONMENTAL IMPACT | ENVIRONMENTAL SIGNIFICANCE | | | | | | | | | | | |
|---|----------------------------|---|---|---|-------|----|------------------|---|---|---|-------|----|
| | Before Mitigation | | | | | | After Mitigation | | | | | |
| | M | D | S | P | Total | SP | M | D | S | P | Total | SP |
| 1. Ecology | | | | | | | | | | | | |
| Establishment and spread of declared weeds and alien invader plants during site preparation and Operational Phase. | 2 | 5 | 6 | 4 | 36 | 52 | 1 | 1 | 2 | 2 | 8 | L |
| Proposed mitigation measures: | | | | | | | | | | | | |
| <ul style="list-style-type: none"> • Keep disturbance of vegetation surrounding borrow-pit area to a minimum. • Rehabilitate disturbed areas as quickly as possible following completion of mining activities in an area. • Do not translocate soil stockpiles from areas with alien plants. • Establish an on-going monitoring programme to monitor the establishment of alien invasive species. | | | | | | | | | | | | |
| 2. Soils | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|----|-----|---|---|---|---|----|---|
| Physical disturbance of soils during land clearing and operation of the mining area. | 2 | 5 | 2 | 4 | 36 | Mod | 1 | 2 | 2 | 3 | 15 | L |
| Proposed mitigation measures: | | | | | | | | | | | | |
| <ul style="list-style-type: none"> Limit clearance to the footprint to the immediate development area. Rehabilitate disturbed areas as quickly as possible following completion of the mining phase activities in an area | | | | | | | | | | | | |
| 3. Dust | | | | | | | | | | | | |
| Dust emissions during site preparation and operational phase. Dust emissions within the site due to movement of vehicles and operation equipment during site preparation and operational phase. Exhaust emissions, noise and traffic are anticipated from haulage trucks and operation machinery to and from site, as well as on-site. | 2 | 2 | 2 | 4 | 24 | L | 1 | 1 | 1 | 2 | 6 | L |
| Proposed mitigation measures: | | | | | | | | | | | | |
| <ul style="list-style-type: none"> Implement a practical speed limit on site (e.g. 20km/hr). Vehicles transporting equipment must ensure that they are maintained in good order. Vehicles which are emitting volumes of smoke should be taken for maintenance immediately. All vehicles must be road-worthy and all drivers must have a valid license. If abnormal loads will be transported to site the relevant permits or clearances must be in place. Transporting of goods through the use of abnormal loads needs to take place during off-peak hours. An appropriate dust suppressant must be applied on all exposed areas as required to minimise/control airborne dust. Ensure that a complaints register is kept at the construction site from the first day of construction. The construction activities should be kept to the mining footprint being applied for. | | | | | | | | | | | | |
| 4. Land capability and use | | | | | | | | | | | | |
| Land degradation during site preparation and operation of the site. The removal of topsoil and vegetation with heavy machines deprives the land its nutrients and render the land infertile for agricultural purpose. | 1 | 5 | 8 | 4 | 56 | Mod | 1 | 2 | 1 | 3 | 12 | L |
| Proposed mitigation measures: | | | | | | | | | | | | |
| <ul style="list-style-type: none"> Avoid unnecessary impacts on natural vegetation, especially outside the development footprint. | | | | | | | | | | | | |

- Excavations should be contained, within the footprint of the mining area.
- Ensure the project site is fenced off (e.g. using construction mesh) to prohibit activities outside of the area being applied for.
- Rehabilitate disturbed areas as quickly as possible following completion of the mining phase activities in an area

5. Noise

| | | | | | | | | | | | | |
|---|---|---|---|---|----|-----|---|---|---|---|----|---|
| Noise Pollution during site preparation and operation Excavation, and vehicles movement to and from the site hauling and transporting Gravel materials, and the voices of the excavation crew. | 2 | 2 | 6 | 3 | 30 | Mod | 1 | 2 | 2 | 4 | 14 | L |
|---|---|---|---|---|----|-----|---|---|---|---|----|---|

Proposed mitigation measures:

- Local people should be informed of the project before commencement
- A speed limit of 20km/h should be maintained on site and outside the site
- Construction vehicles should be serviced on regular basis
- Restrict unnecessary movement of heavy vehicles through residential areas.

5. Cultural heritage

| | | | | | | | | | | | | |
|---|---|---|---|---|----|---|---|---|---|---|---|---|
| Cultural-historical resources during site preparation and operational Potential impact on heritage resources identified. | 1 | 3 | 1 | 3 | 15 | L | 1 | 2 | 1 | 1 | 4 | L |
|---|---|---|---|---|----|---|---|---|---|---|---|---|

Proposed mitigation measures:

- Workers should be workshopped about the importance of heritage resources.
- Despite that no archaeological objects were observed during the survey of the proposed site and that the area is disturbed, the client is reminded that unavailability of archaeological material does not mean absentee, archaeological material might be hidden underground. It is thus the responsibility of the developer to notify contractors and workers about archaeological material (e.g., pottery, stone tools, remnants of stone-walling, graves, etc) and fossils that may be located underground.
- In the event that any of the above are unearthed, all construction within a radius of at least 10m of such indicator should cease and the area be demarcated by a danger tape. Accordingly, a professional archaeologist or Limpopo Provincial Heritage Resources Authority (LIHRA) officer should be contacted immediately.
- Note that any measures to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law.
- No person may exhume or collect such remains, whether of recent origin or not, without the endorsement by LIHRA.

6.Socio-economic aspects

| | | | | | | | | | | | | |
|---|---|---|---|---|----|-----|---|---|---|---|----|-----|
| Direct employment and skills development / transfer during site preparation and operation | 6 | 4 | 2 | 5 | 60 | Mod | 8 | 4 | 2 | 5 | 70 | Mod |
|---|---|---|---|---|----|-----|---|---|---|---|----|-----|

Proposed mitigation measures:

- Local labour force should take first preference for employment especially for semi-skilled and low skilled job categories.
- Training and skills development programmes should be initiated prior to the commencement of the operation phase.
- The allocation of employment opportunities should be undertaken on a fair basis.

k) Summary of specialist reports.

(This summary must be completed if any specialist reports informed the impact assessment and final site layout process and must be in the following tabular form):-

| LIST OF STUDIES UNDERTAKEN | RECOMMENDATIONS OF SPECIALIST REPORTS | SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable) | REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED. |
|-----------------------------|---|---|--|
| Heritage Specialist Study | <p>The findings and recommendations for the study are as follows:</p> <ul style="list-style-type: none"> • There are no archaeological or any other cultural heritage resources located within the direct path of the proposed borrow-pit site. • Given the spatial extent of the project activities, this study recommends that a cultural heritage resources – monitoring program be designed to deal with potential archaeological or historical finds, including unmarked human burials that may accidentally be found during development. This is particularly more important during earth moving activities. • Should any archaeological or any other physical cultural resources be discovered subsurface during gravel extraction, heritage authorities should be informed. • From an archaeological and cultural heritage resources perspective, there are no objections to the proposed project, and we recommend to the Provincial Heritage Resource Agency, South African Heritage Resource Agency to approve the project as planned. | X | 3(J) |
| Ecological Specialist Study | <p>The Biodiversity/Ecological Impact Assessment study made the following conclusions and recommendations:</p> <ul style="list-style-type: none"> • The removal of natural vegetation is unavoidable, but the area should be rehabilitated with indigenous plant located in and around the proposed project area; | X | 3(J) |

| | | | |
|---|---|----------|-------------|
| | <ul style="list-style-type: none"> • All licenses must be obtained prior to mining (including the licences to remove protected plants if required); • All ablution facilities must be provided (1 toilet per 15 employees); • Where possible, mining should proceed during the dry winter months (low or zero flow periods) in order to limit the potential for erosion linked to high runoff rates; • Ensure active re-vegetation of cleared/mined areas as being important in-order to limit erosion potential. | | |
| <p>Geotechnical Investigation Study</p> | <p>Based on the above assessments of the three borrow pits, it is recommended that borrow-pit 1 be used as the source of material for this project. This is due to no restrictions on the size of the borrow pit and available material. Suitable quantities of G5-G6 material are located within the proposed footprint of the borrow pit. The material should be excavated with care and strict quality controls to limit risk of contamination of the good quality material.</p> <p>It is likely that rock fragments greater than 64 mm may be encountered during excavation. It is recommended that either a) on-site processing by means of crushing and screening be undertaken to reduce these rock fragments from the material in order to meet the TRH14 specifications or b) material greater than 2/3 layer thickness should be removed from the fill material (sorting). Samples of the weathered sandstone bedrock were crushed down to <64 mm prior to testing.</p> <p>Material meeting the G4 requirement was not identified in any of the borrow pits investigated and will need to be imported, and most likely commercially sourced.</p> <p>It is recommended that constant testing be conducted on the material excavated from the borrow pit in order to monitor the quality of the material being used. This testing is to be conducted prior to the material being utilised during construction.</p> | <p>X</p> | <p>3(J)</p> |

| | | | |
|--|---|--|--|
| | The volume estimates given in this report are based on available areas at each borrow pit at the time of the field investigation. | | |
|--|---|--|--|

Attach copies of Specialist Reports as appendices. Please refer to **Appendix C** for the specialist studies.

I) Environmental impact statement

(i) Summary of the key findings of the environmental impact assessment;

This section provides a summary of the assessment conclusions for the proposed borrow pit mining activities to be undertaken by Makhado Local Municipality. Borrow pit mining activities are intensive and hence they have potentially medium environmental impacts without mitigation and low impacts with mitigation measures. The assessed impact ratings after implementation of the mitigation measures above are summarised as follows:

Table 6 : Summary of the key findings of the environmental impact assessment

| Potential Impacts (Positive: +ve; Negative: -ve) | Impact Significance Without Mitigation | Impact Significance With Mitigation |
|---|--|-------------------------------------|
| Site Preparation and Operational Phases | | |
| Ecology <ul style="list-style-type: none"> • Destruction / loss of indigenous natural vegetation during site preparation • Fragmentation of vegetation during site preparation. • Establishment and spread of declared weeds and alien invader plants during site preparation and Operational Phase | Medium (-ve) | Low (-ve) |
| Soils Physical disturbance of soils during land clearing and operation of the mining area. | Medium(-ve) | Low(-ve) |
| Dust Dust emissions during site preparation and operational phase. Dust emissions within the site due to movement of vehicles and operation equipment during site preparation and operational phase. Exhaust emissions, noise and traffic are anticipated from haulage trucks and operation machinery to and from site, as well as on-site.. | Low(-ve) | Low(-ve) |
| Land capability and use Land degradation during site preparation and operation of the site. The removal of topsoil and vegetation with heavy machines deprives the land its nutrients and render the land infertile for agricultural purpose. | Moderate(-ve) | Low(-ve) |
| Noise Noise Pollution during site preparation and operation Excavation, and vehicles movement to and from the site hauling and transporting Gravel materials, and the voices of the excavation crew. | Low(-ve) | Low(-ve) |
| Cultural heritage Cultural-historical resources during site preparation and operational | Low(-ve) | Low(-ve) |
| Socio-economic aspects Direct employment and skills development / transfer during site preparation and operation | Moderate (+ve) | Moderate (+ve) |
| Rehabilitation and Decommissioning phase | | |
| Disruption of sensitive ecological ecosystems | Low(-ve) | Low(-ve) |

| Potential Impacts (Positive: +ve; Negative: -ve) | Impact Significance Without Mitigation | Impact Significance With Mitigation |
|--|--|-------------------------------------|
| The area will be bare excavated ground after mining activities. Without vegetation cover, these areas are sensitive to erosion and invasion by alien plant species | | |
| Disturbance to wildlife in the surrounding area Activities associated with the decommissioning phase are similar to those associated with the site establishment and operation. Increased vehicular movement, increased noise levels and increased dust may result in the disturbance of sensitive faunal populations but this will be a short-term impact. | Low(-ve) | Low(-ve) |

All of the identified potential impacts will occur for a limited time and the extent of the impacts will be localised. All of the identified impacts can be suitably mitigated with the residual impact ratings being of low significance. After borrow pit mining activities have been completed and the borrow pit rehabilitated to pre-excavation status, the impacts will cease to exist.

(ii) Final Site Map

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

The final site map is attached as **Appendix B**.

(iii) Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;

Positive and negative impacts associated with the proposed borrow pit mining activities include:

Positive

The proposed borrow pit mining activities to obtain Gravel material will allow for the construction of the bridge as the material will be used for filling. Subsequently, the operation of the borrow-pit mining and the proposed bridge construction will result in:

- Direct employment and skills development / transfer during site preparation and operation. The construction phase will create a limited number of employment opportunities. Skills development/ transfer will occur as employees will be trained in environmental awareness.
- The proposed bridge construction will positively contribute to the social, safety, and economic aspects of the areas.

Negative

During the preparation and actual operation of the borrow pit (i.e. excavations), the following potential negative impacts could occur:

- Destruction / loss of indigenous natural vegetation during site preparation Natural plant communities are dynamic ecosystems that provide habitats that support all forms of life. Different types of plant communities (and habitats) exist in the study area, and these occur within and around the study area. The current condition of the vegetation communities of the study area can be described as transformed/ degraded due to agriculture and previous mining
- Fragmentation of vegetation and edge effects during site preparation. Fragmentation is one of the most important impacts on vegetation, especially when this creates breaks in previously continuous vegetation, causing a reduction in the gene pool and a decrease in species richness and diversity. This impact occurs when areas are cleared for

developments or an area is invaded by alien invasive plant species. Fragmentation results in the isolation of functional ecosystems, and results in reduced biodiversity and reduced movement due to the absence of ecological corridors.

- Establishment and spread of declared weeds and alien invader plants during site preparation and Operational Phase. As with mining activities, the introduction of alien and invader plant species is inevitable; with disturbance comes the influx of aliens. The life of mine (i.e. all phases) could result in the area being invaded by alien invasive species. Alien invader species need to be consistently managed over the entire Life of Mine of the project.
- Physical disturbance of soils during land clearing and operation of the mine Land clearing activities on site could lead to physical disturbance of the soils on site which has a potential of causing soil erosion and dust.
- Dust emissions during site preparation and operational phase. Dust emissions within the site due to movement of vehicles and operation equipment during site preparation and operational phase. Exhaust emissions, noise and traffic are anticipated from haulage trucks and operation machinery to and from site, as well as on-site.
- Land degradation during site preparation and operation of the site The removal of topsoil and vegetation with heavy machines deprives the land its nutrients and render the land infertile for agricultural purpose.
- Destruction or loss of cultural and heritage resources during the excavation of Gravel material ;
- Noise generation from set-up (removal of vegetation and topsoil) and operational activities of excavation;
- Visual intrusion caused by the excavation activities in the largely agricultural setting al beit temporary in nature;
- Increase in traffic volumes in the vicinity of the site during hauling and transportation of Gravel material to laydown areas where bridge construction are to take place; and
- Animal life will be affected in the immediate vicinity of the excavation activities. It is anticipated that the noise and general activity will keep the animal life away from the site while the borrow pit mining is ongoing.

m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;

Based on the assessment and where applicable the recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation.

The objectives of the EMPr will be to:

- Provide sufficient information to strategically plan the borrow pit mining activities as to avoid unnecessary social and environmental impacts.
- Provide sufficient information and guidance to plan borrow pit mining activities in a manner that would reduce impacts (both social and environmental) as far as practically possible.
- Ensure an approach that will provide the necessary confidence in terms of environmental compliance.
- Provide a management programme that is effective and practical for implementation.

Through the implementation of the proposed mitigation measures it is anticipated that the identified social and environmental impacts can be managed and mitigated effectively. Through the implementation of the mitigation and management measures it is expected that:

- Noise generation can be managed through consultation and restriction of operating hours and by maintaining equipment and applying noise abatement equipment if necessary;
- Visual intrusion can be managed through consultation with landowners/ stakeholders by informing landowners/ stakeholders of the temporary nature of the intrusion and the rehabilitation that will take place;
- Traffic is managed as far as possible and vehicle congested is prevented in and around the borrow pit mining site. This can be done by limiting haulage vehicles to transport Gravel material materials during off-peak hours to prevent further congestion;
- Dust fall can be managed by application of wet suppression on exposed surfaces and use of water during excavation and stockpiling;
- Soil disturbance and clearance of vegetation at the site will be limited to the absolute minimum required and disturbed areas will be re-vegetated with locally indigenous species as soon as possible;
- Animal life is protected and preserved at all times and the borrow pit mining activities has minimal disturbance to the surrounding habitat;
- Heritage and Cultural features which might be encountered during excavation should be reported to relevant authorities.
- Employment is created during the mining - contributing to the local economic even if it is only on a temporary basis.

n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

The following aspects should be considered:

- Gate accessing the site should be closed and monitored at all time. Only authorised personnel should be given access to the site.
- All wastes generated must be disposed of at an appropriate registered landfill and disposal certificate be should be kept on site.
- Clearing of vegetation should be limited to the area being applied for only.
- Appointment of an Environmental Control Officer (ECO) to oversee compliance with the Environmental Management Programme (EMPr).
- ECO site audits to ensure compliance and to advise on any mitigation measures necessary to negate any environmental degradation.
- The ECO must compile monthly ECO Audit reports on the state of the environment and areas of compliance and non-compliance with the EMPr. These reports must be made available to the Department of Mineral Resources (DMR) and other authorities who undertake site inspections.
- The ECO needs to be consulted in the pre-construction phase to ensure that the site has been adequately fenced off.
- Before construction commences the contractors need to receive induction training in accordance with the approved EMPr.

o) Description of any assumptions, uncertainties and gaps in knowledge.

(Which relate to the assessment and mitigation measures proposed)

The following assumptions and limitations are applicable to the studies undertaken within this Basic Assessment process:

- It is assumed that the description of the proposed project, provided by the applicant is sufficient for providing the authorities with the right information for understanding the proposed project.
- All information provided by the Makhado Local Municipality and I&APs to the environmental team was correct and valid at the time it was provided.
- It is assumed that the borrow pit site identified by Makhado Local Municipality represent technically suitable sites for the borrow pit mining activities.
- Conclusions of studies assume that any potential impacts on the environment associated with the proposed borrow pit mining activities will be avoided, mitigated, or offset.
- This report and its investigations are project-specific.

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

i) Reasons why the activity should be authorized or not.

It is the opinion of the EAP that the proposed borrow pit mining activities should be authorised.

- The environmental impacts associated with the borrow pit mining activities are minimal provided that the proposed mitigation and rehabilitation thereafter is implemented;
- With appropriate care and consideration, the impacts resulting from borrow pit mining can be suitably avoided, minimised or mitigated;
- With implementing the appropriate rehabilitation activities, the impacts associated with the borrow pit mining activities can be managed;
- Without implementation of borrow pit mining activities the bridge construction could be delayed until such time another site is found and the procedure to obtain a mining permit is carried out.
- The proposed bridge construction will benefit the general society in that it will provide them with a much needed infrastructure for safe and easy river crossing and also create employment opportunities during construction of the bridge.
- The project will create temporary jobs from semi-skilled to skilled jobs that the local people will benefit from.

ii) Conditions that must be included in the authorisation

The following conditions must be considered:

- Gate accessing the site should be closed and monitored at all time. Only authorised personnel should be given access to the site.
- All wastes generated must be disposed of at an appropriate registered landfill and disposal certificate be should be kept on site.
- Clearing of vegetation should be limited to the area being applied for only.
- Appointment of an Environmental Control Officer (ECO) to oversee compliance with the Environmental Management Programme (EMPr).
- ECO site audits to ensure compliance and to advise on any mitigation measures necessary to negate any environmental degradation.
- The ECO must compile monthly ECO Audit reports on the state of the environment and areas of compliance and non-compliance with the EMPr. These reports must be made available to the Department of Mineral Resources and other authorities who undertake site inspections.
- The ECO needs to be consulted in the pre-construction phase to ensure that the site has been adequately fenced off.
- Before construction commences the contractors need to receive an induction training in accordance with the approved EMPr.

q) Period for which the Environmental Authorisation is required.

The Environmental Authorisation will be required for a period of two (2) years.

r) Undertaking

Confirm that the undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Basic assessment report and the Environmental Management Programme report.

The undertaking provided at the end of the EMPr is applicable to both, this Basic Assessment Report and the EMPr in Part B, below.

s) Financial Provision

State the amount that is required to both manage and rehabilitate the environment in respect of rehabilitation.

A financial provision of approximately **R10 645** for the rehabilitation activities. The calculation of the quantum (breakdown) of the costs is attached as **Appendix D**.

i) Explain how the aforesaid amount was derived.

The aforesaid amount was derived using the Department of Mineral Resources standard methods for the calculation of the quantum of closure-related financial provision provided by a mine. The amount anticipated for

the operating cost of the borrow-pit will be provided for in the Financial and Technical Competence Report once the contractors are appointed.

ii) Confirm that this amount can be provided for from operating expenditure.

(Confirm that the amount, is anticipated to be an operating cost and is provided for as such in the Mining work programme, Financial and Technical Competence Report or Prospecting Work Programme as the case may be).

The amount that has been calculated will be added to the quantum calculation for the entire operation and will be provided for under the operating expenditure of the operation.

t) Specific Information required by the competent Authority

i) Compliance with the provisions of sections 24(4)(a) and (b) read with section 24 (3) (a) and (7) of the National Environmental Management Act (Act 107 of 1998). the EIA report must include the:-

(1) Impact on the socio-economic conditions of any directly affected person.

(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as an **Appendix** .

Please refer to **Section j** above. A full consultation process will be implemented during the environmental authorisation process. The purpose of the consultation is to provide affected persons the opportunity to raise any potential concerns. Concerns raised will be captured and addressed within the public participation section of this report.

(2) Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.

(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) with the exception of the national estate contemplated in section 3(2)(i)(vi) and (vii) of that Act, attach the investigation report as **Appendix 2.19.2** and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6.and 2.12.herein).

The Heritage impact study conducted on site indicated that there are no cultural or heritage feature were identified on site. Furthermore, the site has already been disturbed by mining activities (previous borrow-pit activities). However, it is recommended that in the event that any archaeological or heritage features of are unearthed, all construction within a radius of at least 10m of such indicator should cease and the area be demarcated by a danger tape.

u) Other matters required in terms of sections 24(4)(a) and (b) of the Act.

(the EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as **Appendix 4**).

Information on the preferred proposed alternative as well as the motivation has been included in Section g and Section h.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1) Draft environmental management programme.

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

Virginia Ramakuwela

The requirement for the provision of the details and expertise of the EAP are included in PART A, Section 1 (a) and attached as **Appendix A**.

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

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

c) **Composite Map**

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

The composite plan is included in **Appendix C**.

d) **Description of Impact management objectives including management statements**

- i) **Determination of closure objectives.** (ensure that the closure objectives are informed by the type of environment described)

The broad rehabilitation objectives include the following aspects:

- Restoration of previous land use capability
- No biodiversity loss

Objectives for the proposed project are as follows:

- Prevent soil, surface water and groundwater contamination;
- Comply with the relevant local and national regulatory requirements; and

- Maintain and monitor the rehabilitated areas.

ii) **Volumes and rate of water use required for the operation.**

The volumes and rates of water to be used are yet to be determined. However, the necessary authorisation will be acquired from the Department of Water and Sanitation.

iii) **Has a water use licence has been applied for?**

No. The water use has not been applied for.

iv) Impacts to be mitigated in their respective phases

Measures to rehabilitate the environment affected by the undertaking of any listed activity. **Please refer to Table 7, Table 8 and Table 9.**

| ACTIVITIES | PHASE | SIZE AND SCALE of disturbance | MITIGATION MEASURES | COMPLIANCE WITH STANDARDS | TIME PERIOD FOR IMPLEMENTATION |
|--|---|--|---|---|---|
| <p>(E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc</p> <p>E.g. For mining,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)</p> | <p>(of operation in which activity will take place.</p> <p>State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure).</p> | <p>(volumes, tonnages and hectares or m²)</p> | <p>(describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)</p> | <p>(A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)</p> | <p>Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:-.. Upon cessation of the individual activity or.</p> <p>Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.</p> |

e) Impact Management Outcomes

(A description of impact management outcomes, identifying the standard of impact management required for the aspects contemplated in paragraph ());

Please refer to Table 7, Table 8 and Table 9.

| ACTIVITY (whether listed or not listed). (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.). | POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...) | ASPECTS AFFECTED | PHASE In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure) | MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. <ul style="list-style-type: none"> • Modify through alternative method. • Control through noise control • Control through management and monitoring • Remedy through rehabilitation.. | STANDARD TO BE ACHIEVED (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc. |
|--|--|-------------------------|--|--|--|
| | | | | | |
| | | | | | |

f) Impact Management Actions

(A description of impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (c) and (d) will be achieved).

Please refer to Table 7, Table 8 and Table 9.

| <p>ACTIVITY whether listed or not listed.</p> <p>(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.).</p> | <p>POTENTIAL IMPACT</p> <p>(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc....etc...)</p> | <p>MITIGATION TYPE</p> <p>(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc)</p> <p>E.g.</p> <ul style="list-style-type: none"> • Modify through alternative method. • Control through noise control • Control through management and monitoring <p>Remedy through rehabilitation..</p> | <p>TIME PERIOD FOR IMPLEMENTATION</p> <p>Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required.</p> <p>With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:-..</p> <p>Upon cessation of the individual activity</p> <p>or.</p> <p>Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.</p> | <p>COMPLIANCE WITH STANDARDS</p> <p>(A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)</p> |
|--|---|--|--|---|
| | | | | |
| | | | | |

The majority of the impacts to the environment are expected to be localised and associated with the area of disturbance (i.e. footprint of the mining site). The environmental impacts associated with the mining activities have been assessed according to the assessment criteria given in Part 1, Section 14. The results of this assessment were included in Part 1, Section 20. The tables below provide site-specific mitigation/ management measures, and also identify the responsible party actions for activities, or processes that have sufficiently significant impacts to require mitigation.

Table 7: Proposed mitigation measures for the Site Establishment Phase

| Impact | Nature of Impact | Mitigation Measure & standards to be achieved (impact management outcome) | Time period for implementation | Responsible Person |
|--|---|---|--|---|
| Destruction / loss of indigenous natural vegetation due site preparation activities. | Natural plant communities are dynamic ecosystems that provide habitats that support all forms of life. Different types of plant communities (and habitats) exist in the study area, and these occur within and around the study area. The current condition of the vegetation communities of the study area can be described as transformed/ degraded due to agriculture and previous mining | <ul style="list-style-type: none"> • Areas to be cleared must be clearly marked in the field to eliminate unnecessary clearing. • A field survey must be undertaken before mining commences at to confirm that no ecologically sensitive areas or conservation areas are present in sections to be cleared. • Limit unnecessary impacts on surrounding natural vegetation, e.g. driving around in the veld, use access roads only. • Avoid unnecessary impacts on natural vegetation, especially outside the development footprint. • Vegetation clearance should be contained, within the footprint of the mining area. • Ensure the project site is fenced off (e.g. using construction mesh) to prohibit activities outside of the area being applied for. | During site preparation and operational phases | Site manager and ECO in consultation with relevant specialist |
| Fragmentation of vegetation | Fragmentation is one of the most important impacts on vegetation, especially when this creates breaks in previously continuous vegetation, causing a reduction in the gene pool and a decrease in species richness and diversity. This impact occurs when areas are cleared for developments or an area is invaded by alien invasive plant species. Fragmentation results in the isolation of functional ecosystems, and results in reduced biodiversity and reduced movement due to the absence of ecological corridors. | <ul style="list-style-type: none"> • Ecologist/ ECO with an Ecology background to undertake ecological walkthrough to identify all species of conservation concern prior to site establishment. A permit / permission to be obtained from the relevant local municipality for the relocation of SCC where applicable. | During site preparation and operational phases | Site ECO |

| Impact | Nature of Impact | Mitigation Measure & standards to be achieved (impact management outcome) | Time period for implementation | Responsible Person |
|--|--|--|--|-----------------------------------|
| Establishment and spread of declared weeds and alien invader plants. | As with mining activities, the introduction of alien and invader plant species is inevitable; with disturbance comes the influx of aliens. The life of mine (i.e. all phases) could result in the area being invaded by alien invasive species. Alien invader species need to be consistently managed over the entire Life of Mine of the project. | <ul style="list-style-type: none"> • Keep disturbance of vegetation surrounding borrow-pit area to a minimum. • Rehabilitate disturbed areas as quickly as possible following completion of mining activities in an area. • Do not translocate soil stockpiles from areas with alien plants. • Implement an Alien and Invasive Control Plan to avoid establishment of a soil seed banks that would take decades to remove. • Establish an on-going monitoring programme to detect and quantify any aliens that may become established. • | During site preparation and operation | Mining manager and ECO to monitor |
| Physical disturbance of soils during land clearing | Land clearing activities on site could lead to physical disturbance of the soils on site which has a potential of causing soil erosion and dust. | <ul style="list-style-type: none"> • Identify disturbance areas and restrict construction activity to these areas. • Access roads to be carefully planned and constructed to minimise the impacted area and prevent unnecessary excavation, placement, and compaction of soil. • Limit clearance to the footprint to the immediate development area. • Rehabilitate disturbed areas as quickly as possible following completion of the mining phase activities in an area • | During construction | Mining manager and ECO to monitor |
| Dust emissions | Dust emissions within the site due to movement of vehicles and site clearing of vegetation during site preparation and operational phase. Exhaust emissions, noise and traffic are anticipated from haulage trucks and operation machinery to and from site, as well as on-site. | <ul style="list-style-type: none"> • Adequate planning and scheduling of the construction activities to allow for disruptions caused by rain and wet conditions. The scheduling must make provision for environmental training/awareness raising for workers prior to the commencement of the construction phase (site establishment). Records of all training must be maintained | During site preparation and operational phases | Contractor and ECO |

| Impact | Nature of Impact | Mitigation Measure & standards to be achieved (impact management outcome) | Time period for implementation | Responsible Person |
|--------|------------------|---|--------------------------------|--------------------|
| | | <ul style="list-style-type: none"> • Adjacent land owners must be timeously informed that the construction phase will commence and must be kept informed of the progress throughout. • Implement a practical speed limit on site (e.g. 20km/hr). • Vehicles transporting equipment must ensure that they are maintained in good order. Vehicles which are emitting volumes of smoke should be taken for maintenance immediately. • All vehicles must be road-worthy and all drivers must have a valid license. • If abnormal loads will be transported to site the relevant permits or clearances must be in place. • Transporting of goods through the use of abnormal loads needs to take place during off-peak hours. • An appropriate dust suppressant must be applied on all exposed areas as required to minimise/control airborne dust. • Ensure that a complaints register is kept at the construction site from the first day of construction. • The construction activities should be kept to the mining footprint being applied for. • Particulate Matter (PM10) must closely be monitored and kept within the threshold. • Proper measures must be in place during the excavation of the borrow pit. • It is recommended that dust suppression be conducted at all times to reduce dust emissions. • No burning of waste or other materials is permitted on site. • Adherence to the National Environmental Management: Air Quality Act (Act No.39 of 2004) is expected at all times. | | |

| Impact | Nature of Impact | Mitigation Measure & standards to be achieved (impact management outcome) | Time period for implementation | Responsible Person |
|---|--|--|--|--------------------------------|
| Waste Management | Soil contamination | <ul style="list-style-type: none"> Ensure that all waste including that generated by the clearing or cutting down of vegetation must be removed and disposed of safely at a registered landfill site. | During site preparation | Contractor |
| Direct employment and skills development / transfer | The construction phase will create a limited number of employment opportunities. Skills development/ transfer will occur as employees will be trained in what Mining entails as well as environmental awareness training. | <ul style="list-style-type: none"> It is recommended that local employment policy is adopted to maximise the opportunities made available to the local labour force. Where reasonable and practical the contractor should appoint local contractors and implement a (local first) policy especially for semi-skilled and low skilled job categories. Training and skills development programmes should be initiated prior to the commencement of the operation phase. The allocation of employment opportunities should be undertaken on a fair basis. | During site preparation and operation | Project Manager and Contractor |
| Land degradation | The removal of topsoil and vegetation with heavy machines deprives the land its nutrients and render the land infertile for agricultural purpose. | <ul style="list-style-type: none"> Avoid unnecessary impacts on natural vegetation, especially outside the development footprint. Excavations should be contained, within the footprint of the mining area. Ensure the project site is fenced off (e.g. using construction mesh) to prohibit activities outside of the area being applied for. Rehabilitate disturbed areas as quickly as possible following completion of the mining phase activities in an area | During site preparation and operational phases | Contractor and ECO |
| Disturbance to animal life in the vicinity | The site establishment and operational phase activities are associated with an increase in noise levels, vehicular movements and dust levels. Noise pollution can depress local populations of sensitive faunal groups and increased dust levels can smother natural environments. Animals differ in | <ul style="list-style-type: none"> Local people should be informed of the project before commencement A speed limit of 20km/h should be maintained on site and outside the site Dust control measures must be implemented at all times Construction vehicles should be serviced on regular basis | During site preparation and operational phases | Contractor and ECO |

| Impact | Nature of Impact | Mitigation Measure & standards to be achieved (impact management outcome) | Time period for implementation | Responsible Person |
|-------------------------------|---|--|---|---------------------------|
| | <p>the degree to which they tolerate such disturbance, and can be expected to have potentially negative and positive impacts on various faunal groups. Dust may be generated as a result of mining activities and, in particular, where there is exposed ground. Specific activities that may contribute to release of fugitive dust include offloading and stockpiling of materials such as sand, excavation, storage of excavated materials and movement of heavy vehicles. The generation of dust may be higher during windy, dry periods. The increase in dust levels may negatively impact the plants and animal species which utilise the area. An increase in vehicular traffic may also result in road fatalities of faunal species</p> | <ul style="list-style-type: none"> • No heavy vehicles to be parked outside the designated construction area where it could obstruct motorists' views. • Restrict the movement of heavy vehicles through residential areas. • Dust impacts must be mitigated through the implementation of appropriate dust suppression, as required. | | |
| Noise generation | <p>Excavation, and vehicles movement to and from the site hauling and transporting Gravel materials, and the voices of the excavation crew</p> | <ul style="list-style-type: none"> • Local people should be informed of the project before commencement • A speed limit of 20km/h should be maintained on site and outside the site • Construction vehicles should be serviced on regular basis • Restrict the movement of heavy vehicles through residential areas. | <p>During site preparation and operational phases</p> | <p>Contractor and ECO</p> |
| Cultural-historical resources | <p>Potential impact on heritage resources</p> | <ul style="list-style-type: none"> • Despite that no archaeological objects were observed during the survey of the proposed site and that the area is disturbed, the client is reminded that unavailability of archaeological | | |

| Impact | Nature of Impact | Mitigation Measure & standards to be achieved (impact management outcome) | Time period for implementation | Responsible Person |
|--------|------------------|---|--------------------------------|--------------------|
| | | <p>material does not mean absentee, archaeological material might be hidden underground. It is thus the responsibility of the developer to notify contractors and workers about archaeological material (e.g., pottery, stone tools, remnants of stone-walling, graves, etc) and fossils that may be located underground.</p> <ul style="list-style-type: none"> • In the event that any of the above are unearthed, all construction within a radius of at least 10m of such indicator should cease and the area be demarcated by a danger tape. Accordingly, a professional archaeologist or Limpopo Heritage Resources Authority (LIHRA) officer should be contacted immediately. • Noteworthy that any measures to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law. • No person may exhume or collect such remains, whether of recent origin or not, without the endorsement by LIHRA. | | |

Table 8: Proposed mitigation measures for the Operational Phase

| Issue/ Activity | Nature of Impact | Mitigation Measure & standards to be achieved (impact management outcome) | Timeframe for implementation | Responsible Person |
|---|--|---|------------------------------|-----------------------------------|
| Physical disturbance of soils during mining | Mining activities on site could lead to physical disturbance of the soils on site which has a potential of causing soil erosion. | <ul style="list-style-type: none"> • Limit clearance to the footprint to the immediate development area. • Rehabilitate disturbed areas as quickly as possible following completion of the mining phase activities in an area | During operation | Mining manager and ECO to monitor |

| Issue/ Activity | Nature of Impact | Mitigation Measure & standards to be achieved (impact management outcome) | Timeframe for implementation | Responsible Person |
|---|--|--|------------------------------|-------------------------------|
| Establishment and spread of declared weeds and alien invader plants | As with mining activities, the introduction of alien and invader plant species is inevitable; with disturbance comes the influx of aliens. The life of mine (i.e. all phases) could result in the area being invaded by alien invasive species. Alien invader species need to be consistently managed over the entire Life of Mine of the project. | <ul style="list-style-type: none"> • Keep disturbance of vegetation surrounding borrow-pit area to a minimum. • Rehabilitate disturbed areas as quickly as possible following completion of mining activities in an area. • Do not translocate soil stockpiles from areas with alien plants. • Implement an Alien and Invasive Control Plan to avoid establishment of a soil seed banks that would take decades to remove. • Establish an on-going monitoring programme to detect and quantify any aliens that may become established. | During Operation | ECO to monitor |
| Dust emissions | Dust emissions within the site due to movement of vehicles and clearing of vegetation during site preparation and operational phase. Exhaust emissions, noise and traffic are anticipated from haulage trucks and operation machinery to and from site, as well as on-site. | <ul style="list-style-type: none"> • Adequate planning and scheduling of the construction activities to allow for disruptions caused by rain and wet conditions. The scheduling must make provision for environmental training/awareness raising for workers prior to the commencement of the construction phase (site establishment). Records of all training must be maintained • Adjacent land owners must be timeously informed that the construction phase will commence and must be kept informed of the progress throughout. • Implement a practical speed limit on site (e.g. 20km/hr). • Vehicles transporting equipment must ensure that they are maintained in good order. Vehicles which | During Operation | ECO and Contractor to monitor |

| Issue/ Activity | Nature of Impact | Mitigation Measure & standards to be achieved (impact management outcome) | Timeframe for implementation | Responsible Person |
|--|---|---|--|---------------------------------|
| | | <p>are emitting volumes of smoke should be taken for maintenance immediately.</p> <ul style="list-style-type: none"> • All vehicles must be road-worthy and all drivers must have a valid license. • If abnormal loads will be transported to site the relevant permits or clearances must be in place. • Transporting of goods through the use of abnormal loads needs to take place during off-peak hours. • An appropriate dust suppressant must be applied on all exposed areas as required to minimise/control airborne dust. • Ensure that a complaints register is kept at the construction site from the first day of construction. • The construction activities should be kept to the mining footprint being applied for. | | |
| Disturbance of surrounding residents | Temporary disruptions in the daily living and movement patterns of neighbouring residents could be foreseen, although it is anticipated that the negative impacts associated with this aspect would be minimal and could be successfully mitigated. Nuisances arising from mining activities (such as dust / construction noise) could occur, which would require avoidance / mitigation. | <ul style="list-style-type: none"> • Vehicle movement to and from the site should be minimised as far as possible. • Roads must be maintained to a manner that will ensure that nuisance to the community from dust is not visibly excessive • Appropriate dust suppressant must be applied to the roads as required to minimise/control airborne dust. • Restrict the movement of heavy vehicles through residential areas. | During operation | Site manager and ECO to monitor |
| Disturbance to animal life in the vicinity | The site establishment and operational phase activities are associated with an increase in noise | <ul style="list-style-type: none"> • A speed limit of 20km/h should be maintained on site and outside the site | During site preparation and operational phases | Contractor and ECO |

| Issue/ Activity | Nature of Impact | Mitigation Measure & standards to be achieved (impact management outcome) | Timeframe for implementation | Responsible Person |
|------------------|---|---|--|--------------------|
| | <p>levels, vehicular movements and dust levels. Noise pollution can depress local populations of sensitive faunal groups and increased dust levels can smother natural environments. Animals differ in the degree to which they tolerate such disturbance, and can be expected to have potentially negative and positive impacts on various faunal groups. Dust may be generated as a result of mining activities and, in particular, where there is exposed ground. Specific activities that may contribute to release of fugitive dust include offloading and stockpiling of materials such as sand, excavation, storage of excavated materials and movement of heavy vehicles. The generation of dust may be higher during windy, dry periods. The increase in dust levels may negatively impact the plants and animal species which utilise the area. An increase in vehicular traffic may also result in road fatalities of faunal species</p> | <ul style="list-style-type: none"> • Dust control measures must be implemented at all times • Construction vehicles should be serviced on regular basis • No heavy vehicles to be parked outside the designated construction area where it could obstruct motorists' views. • Restrict the movement of heavy vehicles through residential areas. • Dust impacts must be mitigated through the implementation of appropriate dust suppression, as required. | | |
| Noise generation | Excavation, and vehicles movement to and from the site hauling and | <ul style="list-style-type: none"> • A speed limit of 20km/h should be maintained on site and outside the site | During site preparation and operational phases | Contractor and ECO |

| Issue/ Activity | Nature of Impact | Mitigation Measure & standards to be achieved (impact management outcome) | Timeframe for implementation | Responsible Person |
|---|---|--|------------------------------|-----------------------------|
| | transporting Gravel materials, and the voices of the excavation crew | <ul style="list-style-type: none"> • Construction vehicles should be serviced on regular basis • Restrict the movement of heavy vehicles through residential areas. | | |
| Waste Management | Soil contamination | <ul style="list-style-type: none"> • Adequate waste skips to be provided around the construction camp and site. • Waste is to be removed regularly and disposed of at a licensed municipal landfill site. • Builders' rubble must be disposed of at a licensed municipal landfill site. • No illegal burning of waste or other materials should take place on site. • Hazardous waste and waste contaminated with oil and other hazardous chemicals must be separated from general waste and disposed of at a designated hazardous landfill site. • Waste must be handled in the correct manner following the principles enshrined within the 'Cradle to Grave' concept. | During site operation | Contractor and ECO |
| Direct employment and skills development / transfer | The construction phase will create a limited number of employment opportunities. Skills development/ transfer will occur as employees will be trained in what Mining entails as well as environmental awareness training. | <ul style="list-style-type: none"> • It is recommended that local employment policy is adopted to maximise the opportunities made available to the local labour force. • Training and skills development programmes should be initiated prior to the commencement of the operation phase. • The allocation of employment opportunities should be undertaken on a fair basis. | During Operation | Site Manager and Contractor |

| Issue/ Activity | Nature of Impact | Mitigation Measure & standards to be achieved (impact management outcome) | Timeframe for implementation | Responsible Person |
|-------------------------------|--|---|------------------------------|-------------------------------|
| Cultural-historical resources | Potential impact on heritage resources | <ul style="list-style-type: none"> • Despite that no archaeological objects were observed during the survey of the proposed site and that the area is disturbed, the client is reminded that unavailability of archaeological material does not mean absentee, archaeological material might be hidden underground. It is thus the responsibility of the developer to notify contractors and workers about archaeological material (e.g., pottery, stone tools, remnants of stone-walling, graves, etc) and fossils that may be located underground. • In the event that any of the above are unearthed, all construction within a radius of at least 10m of such indicator should cease and the area be demarcated by a danger tape. Accordingly, a professional archaeologist or Limpopo Heritage Resources Authority (LIHRA) officer should be contacted immediately. • Noteworthy that any measures to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law. • No person may exhume or collect such remains, whether of recent origin or not, without the endorsement by LIHRA . | During Operation | ECO and Contractor to monitor |

Table 9: Proposed mitigation measures for Rehabilitation, Decommissioning and Closure Phase

| Issue/ Activity | Nature of Impact | Mitigation Measure & standards to be achieved (impact management outcome) | Timeframe for implementation | Responsible Person |
|--|--|---|--|--------------------|
| Disruption of sensitive ecological ecosystems (limited to the mining footprint). | The area will be bare excavated ground after mining activities. Without vegetation cover, these areas are sensitive to erosion and invasion by alien plant species | <ul style="list-style-type: none"> Avoid unnecessary impacts on natural vegetation. Impacts should be contained, as much as possible, within the footprint of the mining area. | During decommissioning and for the timeframe stipulated by the DMR to monitor the progress of site rehabilitation. | Site manager |
| Disturbance to faunal species in the surrounding area | Activities associated with the decommissioning phase are similar to those associated with the site establishment and operation. Increased vehicular movement, increased noise levels and increased dust may result in the disturbance of sensitive faunal populations, but this will be a short-term impact. | <ul style="list-style-type: none"> Avoid unnecessary movement of vehicles and noise pollution | During Rehabilitation | ECO to monitor |

i) Financial Provision
(1) Determination of the amount of Financial Provision.

(a) Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation.

The broad rehabilitation objectives include the following aspects:

- Restoration of previous land use capability
- No biodiversity loss

Objectives for the proposed project are as follows:

- Prevent soil, surface water and groundwater contamination;
- Comply with the relevant local and national regulatory requirements; and
- Maintain and monitor the rehabilitated areas.

(b) Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and interested and affected parties.

The BAR and EMPr is currently on a 30-day public review period, from 02 November – 02 December 2020. The public review period will afford landowners and I&APs an opportunity to confirm the environmental objectives or add/raise concerns to the considered environmental objectives.

(c) Provide a rehabilitation plan that describes and shows the scale and aerial extent of the main mining activities, including the anticipated mining area at the time of closure.

After mining has been completed, the applicant will ensure the site is reverted back to its original state as far as possible, by implementing the measures listed in the table below.

| Aspect/ Impact | Rehabilitation Measure | Monitoring Frequency & Responsibility |
|------------------------------------|---|---------------------------------------|
| Removal of construction structures | <ul style="list-style-type: none"> • Clear and completely remove from site all construction plant equipment, storage containers, signage, temporary fencing, temporary services, fixtures and any other temporary works; and | Once-off; Contractor |

| Aspect/ Impact | Rehabilitation Measure | Monitoring Frequency & Responsibility |
|--------------------------------|---|--|
| | <ul style="list-style-type: none"> • Ensure that all access roads utilised during mining (which are not earmarked for closure and rehabilitation) are returned (as far as possible) to their state prior to construction. | |
| Vegetation clearing/Replanting | <ul style="list-style-type: none"> • Remove any emerging alien and invasive vegetation to prevent further establishment; • All planting work is to be undertaken by suitably qualified personnel making use of the appropriate equipment; • Transplant during the winter (between April and September); and • Plant indigenous plants to minimise the spread of alien and invasive vegetation. | When revegetation is done and in blooming season; Makhado Local Municipality or contractor appointed |
| Topsoil replacement | <ul style="list-style-type: none"> • Replace and redistribute stockpiled topsoil together with herbaceous vegetation, overlying grass and other fine organic matter in all disturbed areas of the mining site, including temporary access routes and roads. Replace topsoil to the original depth (i.e. as much as was removed prior to construction). • Prohibiting the use of topsoil suspected to be contaminated with the seed of alien vegetation. Alternatively, the soil is to be sprayed with specified herbicides. • Backfill planting holes with excavated material / approved topsoil, thoroughly mixed with weed free manure or compost (per volume about one quarter of the plant hole), one cup of 2:3:2 fertiliser and an approved ant and termite poison. • Where local soil has poor drainage, broken rock (Approx. 75 mm in diameter) must be placed to a depth of 150mm at the bottom of the planting hole prior to planting and backfilling with approved plant medium mixture. | Once-off; contractor |
| Waste and Rubble Removal | <ul style="list-style-type: none"> • Clear the site of all inert waste and rubble, including surplus rock, foundations and batching plant aggregates. • Remove from site all domestic waste and dispose of in the approved manner at a registered waste disposal site. | Once-off; Contractor |

| Aspect/ Impact | Rehabilitation Measure | Monitoring Frequency & Responsibility |
|---------------------------|--|---|
| Solid and Hazardous Waste | <ul style="list-style-type: none"> • Dispose of all hazardous waste not earmarked for reuse, recycling or resale at a registered hazardous waste disposal site. • Remove from site all temporary fuel stores, hazardous substance stores, hazardous waste stores and pollution control sumps. Dispose of hazardous waste in the approved manner. • Do not hose oil or fuel spills into a storm water drain or sewer, or into the surrounding natural environment. • Dispose of all visible remains of excess cement and concrete after the completion of tasks. Dispose of in the approved manner (solid waste concrete may be treated as inert construction rubble, but wet cement and liquid slurry, as well as cement powder must be treated as hazardous waste). | Once-off; Contractor |
| Erosion protection | <ul style="list-style-type: none"> • Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction site. • Retain shrubbery and grass species wherever possible. • Perform regular monitoring and maintenance of erosion control measures. | After rainfall events; Makhado Local Municipality or contractor appointed |

(d) Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives.

Makhado Local Municipality will set aside the prescribed financial provision for use during the rehabilitation phase. Makhado Local Municipality will specify that the contractor is required to comply with all the environmental measures specified in the EMP. This will include avoiding unnecessary disturbance of natural vegetation and the rehabilitation of the site, immediately after mining has been completed.

(e) Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline.

The financial provision was calculated by means of the DMR's standard methods and attached as **Appendix D**. The closure liability will focus on the proposed mining activities and the cost for rehabilitation and closure of the proposed site according to the DMR Guideline format.

- (f) Confirm that the financial provision will be provided as determined.**

The total amount will be paid into the DMR's Rehabilitation fund or through a Bank Guarantee by the applicant.

Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including

- g) Monitoring of Impact Management Actions
- h) Monitoring and reporting frequency
- i) Responsible persons
- j) Time period for implementing impact management actions
- k) Mechanism for monitoring compliance

| SOURCE ACTIVITY | IMPACTS REQUIRING MONITORING PROGRAMMES | FUNCTIONAL REQUIREMENTS FOR MONITORING | ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES) | MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS |
|------------------------|---|--|--|---|
| Mining activities | All commitments contained in the BAR and EMPr | Ensure commitments made within the approved BAR and EMPr are being adhered to. | Appointed ECO | Undertake and submit Environmental Performance Audit report on a monthly basis |
| Mining activities | Noise, Dust, Visual, Soil & vegetation, Social, Housekeeping & maintenance and Waste Management | Daily and Weekly site inspection | Appointed Contractor | |
| Post mining | Revegetation, soil stability & erosion and infestation of alien invasive species | The borrow-pit site shall be monitored post closure and rehabilitation. Obtain site closure certificate. | Appointed ECO | Undertake and submit monthly monitoring report |

l) Indicate the frequency of the submission of the performance assessment/ environmental audit report.

The Environmental Audit report will be submitted on a monthly basis.

m) Environmental Awareness Plan

(1) Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work.

Environmental Awareness training will be conducted with all employees before commencement of borrow-pit activities. The awareness will be conducted by the appointed Environmental Compliance Officer (ECO).

Environmental awareness training will be provided to all personnel on site. The environmental training will include, amongst others, aspects such as:

- Awareness training for contractors and employees
- Job specific training – training for personnel performing tasks which could cause potentially significant environmental impacts;
- Comprehensive training – on emergency response, spill management, etc;
- Specialised skills;
- Training verification and record keeping;
- Environmental issues on site;
- Roles and responsibilities;
- The construction environmental management measures;
- Cultural awareness; and
- Heritage discovery procedures

All attendees shall remain for the duration of the training and, on completion, sign an attendance register that clearly indicates participants' names. A copy of the register shall be kept on record by the ECO.

(2) Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment.

All employees must be provided with environmental awareness training to inform them of any environmental risks which may result from their work and the manner in which the risks must be dealt with in order to avoid pollution or the degradation of the environment. This should be in conjunction with the implementation of the EMPr.

**n) Specific information required by the Competent Authority
(Among others, confirm that the financial provision will be reviewed annually).**

The project is planned to be completed within 12 months.

2) UNDERTAKING

The EAP herewith confirms

- a)** the correctness of the information provided in the reports

- b) the inclusion of comments and inputs from stakeholders and I&APs;
- c) the inclusion of inputs and recommendations from the specialist reports where relevant; and
- d) that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected. parties are correctly reflected herein.



Signature of the environmental assessment practitioner:

Mamadi and Company SA (Pty) Ltd

Name of company:

30 October 2020

Date:

-END-