BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED BORROW-PIT IN JAKKALSKUIL VILLAGE WITHIN MOGALAKWENA LOCAL MUNICIPALITY OF WATERBERG DISTRICT MUNICIPALITY, LIMPOPO PROVINCE.

Borrow-pit no. 7
Farm Jakhalskuil, 754LR

Prepared for:
Roads Agency Limpopo SOC Ltd

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RAL Project Reference: RAL/T1255/2021

Prepared by:

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mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT

And

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

ecology

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).

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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 un-interpreted 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 ASSSSMENT AND BASIC ASSESSMENT REPORT

3. Contact Person and correspondence address

a) Details of

i) Details of the EAP

Name of The Practitioner: Ike Rampedi

Tel No.: 011 532 8659

Fax No. : 086 403 2628

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

ii) Expertise of the EAP.

(1) **The qualifications of the EAP**
(with evidence).

- MSc Environmental Science, University of the Witwatersrand, 2016
- BSc Hons Environmental and Water Science, University of the Western Cape,2013

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)

Ike Rampedi has over 11 years of experience with excellent track record for delivering projects in public sectors (all spheres of government), and private sector Oil and Gas, Construction, Glass Manufacturing Industries, Mining, Agro processing etc. His huge focus is on, Environmental Management and Sustainability through key sector professional services i.e., Development of Air Quality Management Plan (AQMP), Environmental Authorisation Applications (EA and WULA), Water Quality Analysis, Water Resource Management, review and development of environmental By-law, environmental advisory and compliance strategy, rehabilitation, and mining closure applications. As an EAP, Ike has a strong background and experience in S24G rectification application i.e. Environmental Impact Assessments (EIAs), Basic Assessments (BA), Environmental Management Programs (EMPr), Development of Environmental Management Plans (OEMPr), Contacting Public Participation Processes (PPP), Stakeholder Consultation and Environmental Compliance Monitoring.

Refer to **Appendix A** for the EAP's CV

b) Location of the overall Activity.

Farm Name:	Farm Jakhalskuil, 754 LR
Application area (Ha)	Approximately 5 Ha
Magisterial district:	Waterberg District Municipality
Distance and direction from nearest town	The site is located ~60KM southeast of Mokopane Town
21 digit Surveyor General Code for each farm portion	T0LR00000000075400000

c) Locality map

(show nearest town, scale not smaller than 1:250000). Please refer to **Appendix B-1** for 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-2**

(i) Listed and specified activities

NAME OF ACTIVITY **(E.g. For prospecting -** drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**Aerial extent of the Activity** **Ha or m²**	**LISTED ACTIVITY** Mark with an X where applicable or affected.	**APPLICABLE LISTING NOTICE (*GNR 544, GNR 545 or GNR 546)***
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

The Roads Agency Limpopo SOC Ltd (RAL) intends to undertake preventative maintenance on a 20.3km section of the existing road D192. The existing road was constructed in 1991 under the EPWP programme (Gundolashu). The Preventative maintenance begins at the intersection of R518 to Jakkalskuil village. Seven (7) borrow pits will be established to source the infilling gravel material. The existing D192 road has three (3) bridges, and 35 culverts and maintenance will require gravel material for road in-filling. The preventative maintenance of a 20.3km section of the existing road D192 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 site designated for the proposed borrow-pit is covered with high layers of vegetation, and the site has already been disturbed by mining activities (previous borrow-pit activities). The Borrow-pit Environmental Authorisation is required for the contractor to excavate and provide the required fill materials.

Permits/Authorisations

The proposed borrow-pit for the preventative maintenance of a 20.3km section of the existing road D192 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
Activity 27 of NEMA, GN. R.327, 07 April 2017, Listing Notice 1 of the 2014, EIA Regulations	Environmental Authorisation

Accordingly, RAL is applying for an 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 for the proposed borrow-pit that will take place at Jakkalskuil Village.

Services

The following services are required:

- **Access:** The proposed project site is accessible from road D192. via gravel road on the western side where excavation will take place in Jakkalskuil 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.
- **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 maintenance of a 20.3km section of the existing D192 road. 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.

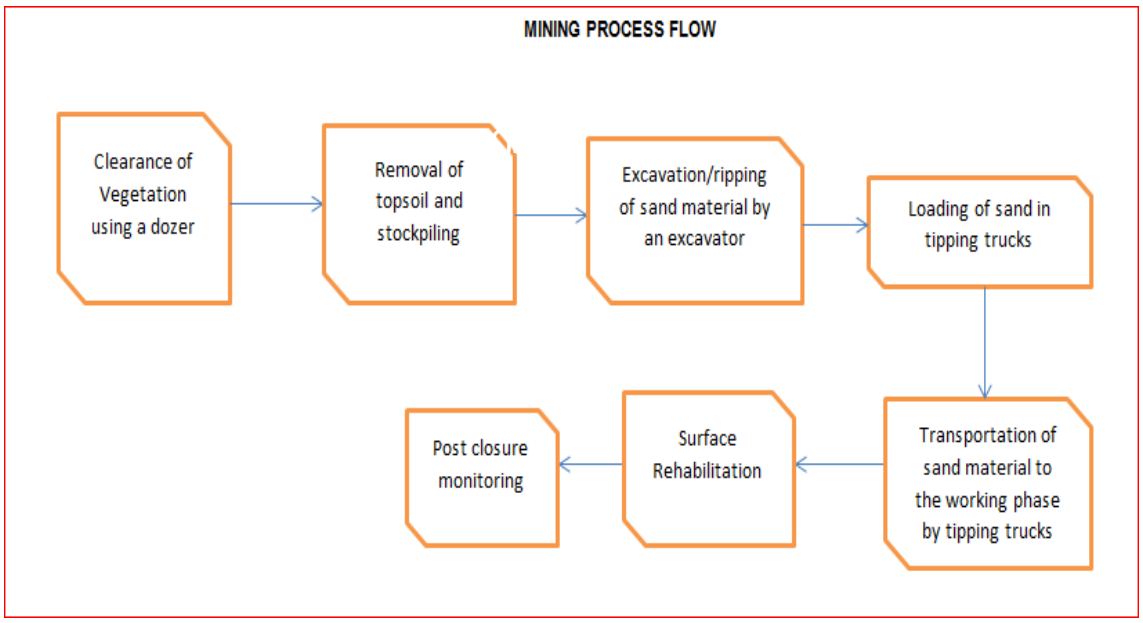

Figure 1: Mining Process Flow Diagram

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)	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. 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. In terms of GNR 326 and GNR 327 of 2014 a Basic Assessment Process is required to be undertaken for the proposed project.	Department of Mineral Resources (DMR) – competent authority Limpopo Economic Development, Environment and Tourism (LEDET)	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). This Basic Assessment Report is being submitted to the competent and commenting authority in support of the application for authorisation.
National Environmental Management Act (Act No 107 of 1998)	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.	DMR LEDET	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

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
	» Any development or other activity which will change the character of a site exceeding 5 000 m^2 in extent » The relevant Heritage Authority must be notified of developments such as linear developments (*i.e.* 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 m^2; or the re-zoning of a site exceeding 10 000 m^2 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)	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. 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. 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,	DMR LEDET	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. 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.

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 LDARD 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.	LDARD	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.	LDARD	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
	prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products. » 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. The use, conveyance, or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force.		
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)	The Minister may by notice in the *Gazette* publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment. The Minister may amend the list by – * Adding other waste management activities to the list. * Removing waste management activities from the list. * Making other changes to the particulars on the list. 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. Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that: » The containers in which any waste is stored, are intact and not corroded or in » any other way rendered unlit for the safe storage of waste. » Adequate measures are taken to prevent accidental spillage or leaking. » The waste cannot be blown away.	DEA: Waste Management LEDET: Waste Management	As no waste disposal site is to be associated with the proposed project, no permit is required in this regard. 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.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	» 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)	» 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 D192 road was constructed in 1991 under the EPWP programme (Gundolashu) and it has been in existence for over 30 years and has since suffered structural damage overtime and it is currently in a dilapidated state. The road has potholes, edge breaks and structural failures. The road traverse along seven (07) villages from Lesodi to Jakkalskuil village. The community of the seven villages utilises the road daily to go work and to town. The community has been complaining that the state of the road is affecting the conditions of their cars and the taxi association has also raised concerns on their vehicles being damaged by the road. As such the community has raised their concerns with RAL to get the road maintained to an acceptable condition.

The proposed preventative maintenance road D192 and upgrade to culvert will allow for a safer traveller for motorist, pedestrians and cyclists and allow for the overall upliftment of the community. The project will also create jobs which will provide relief to the problem of unemployment.

Road D192 can be classified as poor with the being the most distressed with Structural failure such as Potholes, Base Deformation and Cracks, Block cracking Potholes, Edge breaks. The road currently has poor drainage as the associated infrastructure such as culverts have insufficient capacity and/or are blocked. The upgrade will address the stormwater issues associated with the road.

The purpose of preventative maintenance of road D192 is to ensure that the road remains serviceable until the end of its design life. Maintenance therefore performs the important function of:

• Prolonging the life of the road by reducing the rate of deterioration (both on-carriageway as well as off-carriageway), thereby safeguard previous investments in construction and rehabilitation,

• Lowering the cost of operating vehicles on the road by providing a smooth-running surface,

• Keeping the road open on a continuous basis by preventing it from becoming impassable.

The preventative maintenance of the proposed road D192 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 Jakkalskuil village in the area which is use as dumping site. 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 road site.

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

The preferred location for the Borrow-Pit site is in Jakkalskuil Village in the Mokgalakwena Local Municipality . The preferred site is only the alternative site for the proposed Borrow-Pit. The determination of the preferred site and the layout for the site has taken into consideration the minimisation of the 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 Jakkalskuil 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 is no evidence of archaeological or cultural heritage resources 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

Not applicable

(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 in Jakkalskuil village which will not be cost-effective and will cause a delay in the construction of the preventative maintenance of a 20.3km section of the existing road D192 in Jakkalskuil village. 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 RAL 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 Mokopane Express and Bosveld Review 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 E-mail 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 public central place 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)

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	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.
AFFECTED PARTIES					
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					

Communities					
Dept. Land Affairs					
Traditional Leaders					
Dept. Environmental Affairs					
Other Competent Authorities affected					
Limpopo Department of Economic Development, Environment and Tourism (LEDET)		28 October 2022	According to the Protected Areas Database (EGIS), proclaimed in terms of the National Environmental Management: Protected Areas Act (NEM:PAA), 2004 (Act No 31 of 2004), the proposed borrow pitJ6 and 7 fall within the Waterberg Biosphere Reserve (declared since 2001, January'1). Furthermore, the proposed borrow pit 7 is within a waterlogged area with dense vegetation, hence the entire property has been classified as Critical Biodiversity Area 1 (CBA 1) in terms of the Waterberg Bioregional Plan (WBP) Gazetted in Provincial Notice 1of 2019, No 2966 of 04 January 2019.	The proposed Borrow-pit activities will be limited to the area demarcated for such activity and the necessary rehabilitation measures will be implemented to ensure vegetation regrowth. Mitigation measures has been provided in the EMPr	Part B, Section e (Table 9,10,11 and 12)
Limpopo Department of Economic Development, Environment and Tourism (LEDET)		28 October 2022	In light of the above please note that mining activities could be allowed subjected to a detailed Ecological Impact Assessment with the reasonable protection measures of the above mentioned specific environmental features to ensure that activities are designed to maintain overall ecological functioning of the area.	An Ecological study was not conducted for the proposed Borrow-pits given the current state of the site. A site Alternative motivation report has been compiled for the site	Appendix C-3
Limpopo Department of Economic Development, Environment and Tourism (LEDET)		28 October 2022	Although the above mentioned borrow pits could be allowed, the Department advices that an alternative site similar to proposed borrow pits 1 and 5 be considered. The borrow pit 5 is proposed on area previously used for crop farming whist borrow pit 1 is proposed adjacent to old rehabilitated borrow pit,	Noted, A site alternative assessment report was undertaken for the proposed Borrow-pits.	Appendix C-3

South African Heritage Resources Agency (SAHRA)		22 November 2022	The SAHRA Archaeology, Palaeontology, and Meteorites (APM) Unit cannot make an informed decision without the submission of a desktop palaeontological assessment undertaken by a suitably qualified palaeontology install documents compiled for this application. As such the SAHRA requests the submission of the draft environmental reports compiled for this application and its appendices to the case.	Noted. A desktop Palaeontology Assessment study was undertaken, and the findings of the study has been highlighted in the report.	Appendix C-4
South African Heritage Resources Agency (SAHRA)		22 November 2022	The .kml file must be amended to map all 7 borrow pit locations and submitted to the palaeo-sensitivity map on the case.	Noted, the kml file has been amended submitted to SAHRIS	
OTHER AFFECTED PARTIES					
Joseph Moshidi (Kgoro)		30 August 2022	What employment process will be undertaken to ensure fairness?	The employment process will be done through the social consultant employed by RAL with the assistance from the PSC and the community Liaison Officer. And the community will be informed of when the employment process will take place and an advert will also be published.	
L.F Maselela (Taxi association)		30 August 2022	How many people will be employed from the community?	The number of people to be employed is not known at this stage, however, this will be communicated when construction is about to start.	
Milly Langa (PSC)		30 August 2022	How will people with businesses benefit?	A notice will be issued for the business people to register their names on the SMME database and will be required to submit the costing proposal for specific project activities as required by the contractor.	
INTERESTED PARTIES					
					.

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 preventative maintenance of a 20.3km of the existing road D192 starts at the intersection of R518 Junction running through Lesodi, Rantakane, Basterspard, Kobeana and ending at Jakkalskuil village within the jurisdiction of Mokgalakwena Local Municipality in Waterberg District Municipality, Limpopo Province. (Refer to **Appendix B-1** for Locality Map). The properties fall outside an urban area. The surrounding land uses include residential areas, and the proposed project site is accessible from Mokopane town via R518 which is 60 km from the D192 road. The proposed project site is accessible from Mokopane town via R518 which is 60 km to D192.The proposed borrow pit is located at Jakkalskuil village along an unnamed gravel road that joins the D192 road. **Table 2 &3** below outlines the coordinates for the proposed borrow pit.

Table 2: Center of Borrow Pit Location

Center	South	East
Center	23˚50' 39" S	28˚36' 04" E

Table 3: Four corner coordinates of Borrow Pit locations

Corner	South	East
Corner 1	23°50' 39.34"S	28°36' 6.77"E
Corner 2	23°50' 42.58"S	28°36' 6.50"E
Corner 3	23°50' 42.07"S	28°35' 55.62"E
Corner 4	23°50' 38.39"S	28°35' 54.39"E

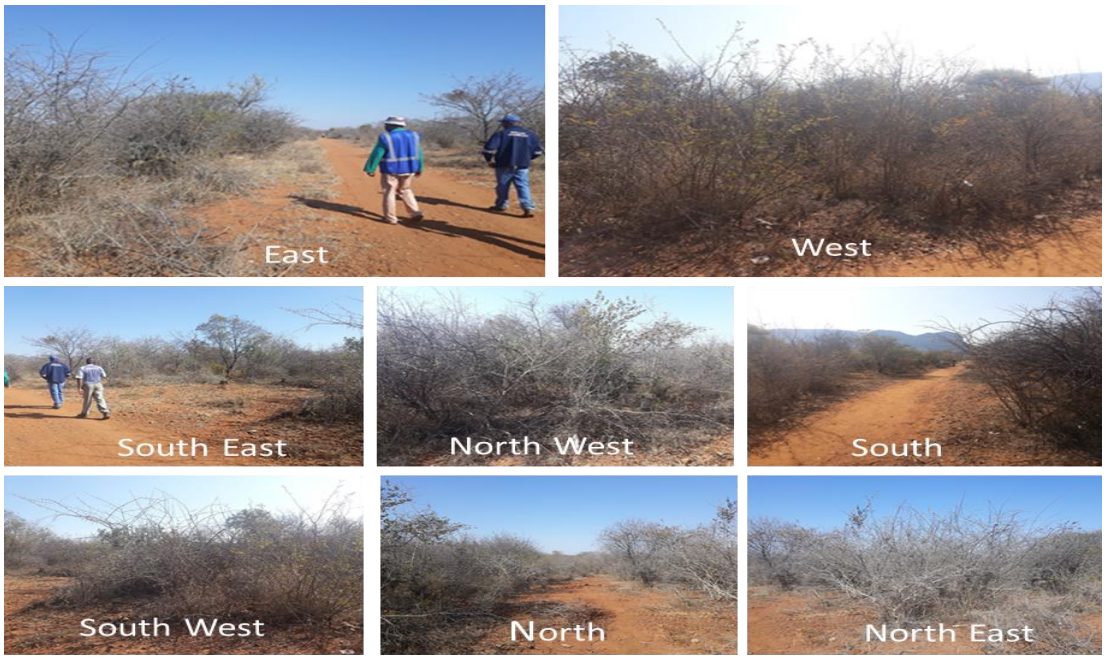

Figure 2: Site Picture for Borrow Pit 7

Climate

The site is located at an elevation of 1027.86 meters (3372.24 feet) above sea level. It has a Subtropical steppe climate (Classification: BSh). The district's yearly temperature is 22.25ºC (72.05ºF) and it is 1.03% higher than South Africa's averages. Bakenberg has an average of 55.23mm (2.17in) annual precipitation, it typically receives about 55.23 millimeters (2.17 inches) of precipitation and has 81.27 rainy days (22.27% of the time) annually. The annual high temperature is 26.49ºC (79.68ºF) while the annual low temperature is 14.12ºC (57.42ºF). Temperature ranges between 11.95°C (53.51°F) and 36.83°C (98.29°F) with an average temperature of 24.31°C. The warmest month is November (29.07ºC / 84.33ºF), coldest month June (8.71ºC / 47.68ºF), wettest month January (143.57mm / 5.65in) while the driest month is August (1.28mm / 0.05in).

Humidity is 59.15%. The month with the highest average relative humidity is February (68.42 %) while the month with the lowest average relative humidity is August (49.4 %). December has highest number of rainy days December (14.66 days) while June has the lowest number of rainy days (0.18 days). Annual rainfall is 55.23 mm. Precipitation is the lowest in June, with an average of 2.15 mm and most of the precipitation here falls in January, averaging 143.57 mm.

The chart below displays the mean monthly temperature and precipitation of Bakenberg in recent years.

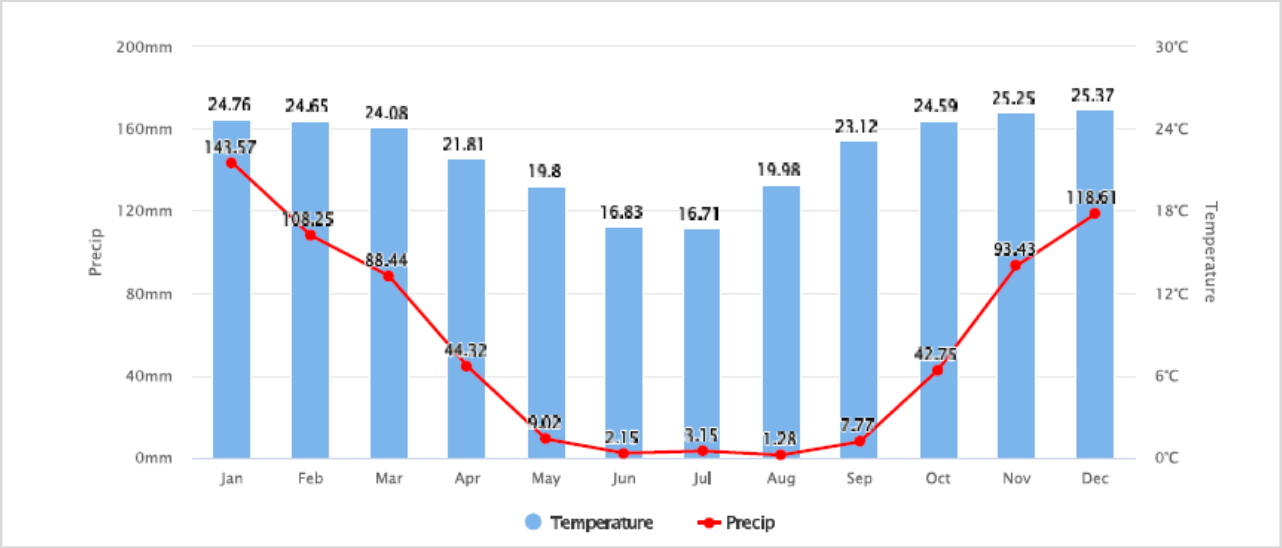

Figure 3: Bakenberg mean monthly temperature and precipitation

Topography

A visual assessment and analysis of 1:50 000 maps indicates that the majority of the road traverses a fairly flat to rolling terrain, and cuts across a flat catchment basin. there is evidence that it is susceptible to inundation during heavy rains.

The mountainous area of the Waterberg forms a large plateau with steep escarpments to the south and east. The mountain range has predominantly sandstone hills and mountains. The area receives between 650 and 900 mm of rain annually. It is characterized by numerous streams and small rivers, rock-pools, deep and large pools in the stream and riverbeds, fountains, marshes, and other features associated with the high rainfall on the rocky areas of the mountains. The bare and beautiful sandstone cliffs so typical of the Waterberg mountains and other adjacent hills or koppies can be described as a major characterizing feature of the biosphere reserve as well. The terrain in this area is flat to rolling, as the average vertical slopes are 1.7% to 2.0%. Please refer to **Appendix B-3** for the Topographical Map.

Geology

The main mass of the Waterberg consists of sedimentary rock, and is bounded by escarpments on the north, east and south with the central portion forming the Palala Plateau. These sediments are entirely detritus and consist of sandstones, mudstones, shales, conglomerates, and lenses of grits.

The Waterberg Group of Sandstone is almost entirely limited to the Waterberg Biosphere Reserve. The Bushveld Igneous Complex, the bedrock of the Waterberg mountains, was formed 1,954 ± 30 million years ago while the Waterberg System or Super Group was formed some 1 790 million years ago following an extensive period of levelling due to the erosion of the Bushveld Igneous Complex.

Due to the domination of quartzitic sandstone, the nature of the soil is predominantly sandy. Sandy soils are very leached due to the relatively high rainfall and are, therefore, mostly of a distrophic nature. As a result of the predominantly hilly and mountainous nature of the terrain, a large portion of the soils are very shallow and rocky and can therefore be classified according to the South African soil classification system of as being of the Glenrosa and Mispah soil forms. Dominant soils found on the flat areas such as the plateau and lower lying plains are of the Clovelly and Avalon forms. Although these soil forms are also found in the valleys and drainage lines, other soil forms with a higher clay and nutrient content and generally with a better developed structure are more common.

Please refer to **Appendix B-4** for the Geology Map.

Water Resource

The study area falls within the Limpopo Water Management Area (WMA) and Mogalakwena Sub Water Management Area (SWMA) more specifically in the A62A quaternary catchment area. Major rivers within this WMA include the Limpopo, Matlabas, Mokolo, Lephalala, Mogalakwena Sand and Nzhelele. The proposed Borrow-pit study area is however not located within the close proximity of any water resource. Please refer to **Appendix B-5** for the Sensitivity Map.

Biodiversity

The site falls within the Makhado sweet bushveld (Hardly Protected) vegetation which is vulnerable in terms of Vegetation Conservation Status (SANBI, 2008). The site is in an area classified as Critical Biodiversity Area 1 (CBA 1) in terms of the Waterberg Bioregional Plan (WBP) Gazetted in Provincial Notice 1 of 2019, No 2966 of 04 January 2019. There have been previous Borrow-pit activities and illegal waste dumping within the proposed site. The potential impacts associated with borrow-pit will have impacts has been assessed and possible mitigation measures has been provided in the EMPr. There site is situated along the existing gravel road and no access road will required and this will minimize the removal of vegetation.

Socio-Economic

There is no activities on site, except for the observed illegal dumping activities. Residential areas situated within 100m of the proposed BP site. The site is within 800m of the D192 road where the material will be transported for use, and this will minimize the cost for transporting material to the working area. RAL have appointed a Geotechnical Specialist to investigate the availability of the required gravel material, and the findings of the reports indicate that the site has enough of the required

material. The proposed site was selected with the assistance from the tribal authority as the suitable site for the proposed Borrow-pit activity.

Cultural and Heritage

A Heritage Impact Specialist (Vhufa Hashu Heritage Consultants) was appointed to assess the availability of heritage and archaeological features that may be impacted by the project. The findings of the study indicated that there are no heritage or archaeological features within the identified site, however, there are community graves. Please refer to Appendix C-1 for Heritage Impact Report.

A paleontological desktop assessment was also undertaken for the proposed site and the finding of the report indicated that the Borrow-pit is situated on the Makgabeng Formation of the Waterberg Group. The Makgabeng Formation consists of fine to medium grained sandstone. The subrounded to well-rounded grains of these sandstones were originally set down as desert dunes 1.8 Billion years ago. There are also sandstones that formed from sand that were deposited between the dunes and in playa lakes (Barker et al. 2009). Refer to the Paleontological report in Appendix C-4.

(b) Description of the current land uses.

The farm Jakhalskuil 754 LR, where Borrow pit 7 is located, is currently covered with tall vegetation where the community collects firewood for various purposes.

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

The entire extent of Borrow pit 7 lies within Makhado Sweet Bushveld vegetation and is accessible via an unnamed gravel road that connects to the D192 road. The site designated for the proposed borrow-pit is covered with high layers of vegetation and has already been disturbed by mining activities (previous borrow-pit activities).

(d) Environmental and current land use map.

(Show all environmental, and current land use features)

Refer to **Appendix B-7** for the Land Cover Map

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 4: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	Site Establishment	No	Yes	No

Potential Impacts	Phase	Reversible (Yes / No)	Irreplaceable Damage (Yes / No)	Can Impact Be Avoided? (Yes / No)
The removal of topsoil and vegetation with heavy machines deprives the land its nutrients and render the land infertile for agricultural purpose.				
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
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. 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	Site Establishment & Operation	Yes	Yes	Yes

Potential Impacts	Phase	Reversible (Yes / No)	Irreplaceable Damage (Yes / No)	Can Impact Be Avoided? (Yes / No)
area. An increase in vehicular traffic may also result in road fatalities of faunal species				
Noise Pollution Excavation, and vehicles movement to and from the site hauling and transporting Gravel materials, and the voices of the excavation crew.	Site Establishment & Operation	No	No	Yes
Air Pollution Dust emission during excavation, clearing of vegetation and loading and haulage of materials by trucks. Dust pollution may cause Cardiovascular diseases.	Site Establishment & Operation	No	No	Yes
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	Rehabilitation, Decoms & Closure	Yes	Yes	No
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.	Rehabilitation, Decoms & Closure	Yes	No	Yes
Social Impact Employment Opportunities and skills development for local residence.	Site Establishment, Operation and Rehabilitation, Decoms & Closure	Yes	No	Yes
Cultural-historical resources Potential impact on heritage resources identified	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 5: 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:

Significance Points (SP) = (M + D + S) x P

The maximum SP value is up to 100. The environmental effects were then rated based on the system provided in Table 6: Significant Point System below.

Table 6: Significant Point System

SP	SIGNIFICANCE RANKING	DESCRIPTION
SP>70	Indicates High (H) environmental significance	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 = 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 site that fall within the protected area are included in **Appendix E-6** and the Ecological Impact Assessment is attached in **Appendix C-3** of this 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).

Issues that were raised attached in **Appendix E-6** that required an assessment/ discussion of mitigation measures.

ix) Motivation where no alternative sites were considered.

Not Applicable

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

The current location and layout are the only alternatives

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 erer 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.

Table 7: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	5	6	3	36	Mod	1	2	2	3	15	L
Proposed mitigation measures: • 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. • No ecologically sensitive areas or conservation areas should be cleared without a permit. • 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.	2	5	6	4	52	Mod	1	1	2	2	8	L
Proposed mitigation measures: • 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	Mod	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.	8	2	2	4	48	Mod	4	2	1	2	14	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..	6	1	2	5	45	Mod	4	1	1	2	12	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.	6	2	2	4	40	Mod	4	2	1	5	35	L
Proposed mitigation measures: • 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	6	2	2	4	40	Mod	1	1	1	2	6	L
Proposed mitigation measures: • 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.	8	5	2	4	60	Mod	1	1	1	3	15	L
Proposed mitigation measures: • 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 Excavation, and vehicles movement to and from the site hauling and transporting Gravel materials, and the voices of the excavation crew.	4	1	2	5	35	Mod	1	1	2	3	12	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.												
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: • 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: • 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	8	4	2	5	70	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	2	18	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.												

Table 8: 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.	6	4	1	5	55	Mod	4	4	1	2	18	Low
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	5	8	4	56	Mod	1	2	1	3	12	L

Proposed mitigation measures:

- 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	The recommendations of the Heritage Impact Assessment are as follows: Development projects that involve any form of earth-moving are potential threats to archaeological materials and sites. Archaeological sites are buried under the soil surface where they are relatively safe until natural forces such as erosion and human development actions such as road construction expose them. These sites are usually identified by exposed bone materials, pottery remains, burnt daga house remains, ash middens etc. The most sensitive of these are human remains.	X	**Appendix C-1**
Geotechnical Investigation Study	Makhuma Consulting (Pty) Ltd was approached and appointed by Morula Consulting Engineers to undertake a geotechnical investigation for the design and planning. **Site Access-**At the time of the investigation, the entire road was accessible with 2-wheel drive vehicles. However, the borrow pit areas were not easily accessible, therefore, access roads may be required. **Site Drainage** The control of surface and potential sub-surface seepage is required to protect layer works from ingress of water leading to continued weathering of material and consequently, settlement of layer works. It is, therefore, recommended that surface drainage is such that it directs water away from the road reserve and collected in open or piped drains and several culverts are required at various locations along the road. **Excavatability** The excavatability of materials along the road and the borrow pit location has been evaluated according to the South African Bureau of Standards' Standardized Specification for Civil Engineering Construction classification for earthworks. Soft excavation conditions in terms of the above standard are expected up to an average depth of 1.2 meters along the road. However, intermediate and hard rock excavation conditions are expected at the borrow pit locations. Therefore, it is recommended that a larger excavator other than a TLB be used for material excavations at the borrow pits.	X	**Appendix C-2**

	Groundwater Seepage No notable groundwater seepage into excavation was not encountered. **Stability of Excavation** It is recommended that all excavations in soils be adequately battered to safe angles and/or shored in order to safeguard construction personnel working in trenches. A slightly steeper batter angle of 1 vertical: 2.5 horizontal could be accommodated in the sand horizon and 1 vertical: 4 horizontal. All the test pits excavated along the road remained stable during the time of the investigation. **Earthworks** It is recommended that all earthworks are carried out in accordance with SANS 1200 D. All topsoil and fill should be cleared from the areas that will be subject to earthworks and the topsoil stockpiled for later site rehabilitation. **Material classification and usage** Materials along the road may be classified in terms of their suitability for use in earthworks and road construction fill on the basis of field observations and laboratory testing. The investigation revealed abundant sandy soils with minor gravel over the majority of the site which classified G8 to worse than G9 quality soil with some G6 to G7 from KM 0.0 to KM 6.5. The subgrade should be compacted to at least 93% Mod AASHTO density, but preferably to refusal density		
Palaeontology Study	Borrow Pits 4, 6 and 7 are situated on diabase. Diabase, being igneous rock, is non-fossiliferous and therefore of no palaeontological concern.		**Appendix C-4**

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

l) 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 RAL. 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 7: 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 • 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 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	Low(-ve)	Low(-ve)
Disturbance to wildlife in the surrounding area Activities associated with the decommissioning phase are similar to those associated with the site establishment and operation.	Low(-ve)	Low(-ve)

Potential Impacts (Positive: +ve; Negative: -ve)	Impact Significance Without Mitigation	Impact Significance With Mitigation
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.		

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-7** Land Cover Map

(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 maintenance of the existing D192 road.as the material will be used for filing. Subsequently, the operation of the borrow-pit mining and the proposed preventative maintenance of a 20.3 km section of the existing D192 road.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 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 agricutural 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 the maintenance of the existing D192 road 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 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 RAL 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 RAL 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 maintenance of D192 road could be delayed until such time another site is found and the procedure to obtain a mining permit is carried out.
- The proposed preventative maintenance will benefit the general society in that it will provide them with a much-needed infrastructure for safe travel and also create employment opportunities during preventative maintenance
- 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 Ten (10) 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 000 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).

Vhufa Hashu Heritage Consultants was appointed by Mamadi & Company SA (Pty) Ltd to to undertake a phase 1 Heritage Impact Assessment for the proposed maintenance of road D192 starting from road R518 to Jakkalskuil Village within Waterberg District Municipality of Limpopo Province, in compliance with Section 38 of the National Heritage Resources Act 25 of 1999.

Borrow Pit is situated in Jakkalskuil Village on the eastern side of the proposed borrow pit 6 and western side of road D192 (GPS S23.842632° E28.601528°).

No archaeological or any other cultural heritage resources was located within the direct path of the proposed borrow pit site. The proposed extraction of gravel material can continue as planned.

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).

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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 any areas that should be avoided, including buffers)

The composite plan is included in **Appendix B-5** Sensitivity Map

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 9, Table 10, Table 11 and Table 12.

Table 11: Proposed mitigation measure for rehabilitation , Decommissioning and Closure Phase

ACTIVITIES **(E.g. For prospecting -** drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **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.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE of disturbance** (volumes, tonnages and hectares or m²)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (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)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. 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. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.

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 9, Table 10, Table 11 and Table 12

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.** • **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 9, Table 10, Table 11 and Table 12.

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…)**	**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.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** **Remedy through rehabilitation..**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. 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. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.	**COMPLIANCE WITH STANDARDS** (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)

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 9: Proposed mitigation measure 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	• 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. • Should any environmental damage result from this mining activity or the operation thereof, the developer must within 14 days of the damage being caused, rectify the situation to an acceptable state of condition.	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	• 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
	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.	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.	• 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.	• 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	• 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
	operation machinery to and from site, as well as on-site.	• 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	• 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.	• 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.	• 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	• 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
	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	• 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 transporting Gravel materials, and the voices of the excavation crew	• 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.	During site preparation and operational phases	Contractor and ECO
Cultural-historical resources	Potential impact on 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		

Impact	Nature of Impact	Mitigation Measure & standards to be achieved (impact management outcome)	Time period for implementation	Responsible Person
		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. • Surface excavations should continuously be monitored by the ECO and any fossil material be unearthed the excavation must be halted. • If fossiliferous material has been disturbed during the excavation process it should be put aside to prevent it from being destroyed. • The ECO then has to take a GPS reading of the site and take digital pictures of the fossil material and the site from which it came. • The ECO then should contact a palaeontologist and supply the palaeontologist with the information (locality and pictures) so that the palaeontologist can assess the importance of the find and make recommendations.		

Impact	Nature of Impact	Mitigation Measure & standards to be achieved (impact management outcome)	Time period for implementation	Responsible Person
		• If the palaeontologist is convinced that this is a major find an inspection of the site must be scheduled as soon as possible in order to minimise delays to the development		

Table 10: Proposed mitigation measure 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.	• 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
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.	• 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.	• 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 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
		• 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.		
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	• 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.	During operation	Site manager and ECO to monitor

Issue/ Activity	Nature of Impact	Mitigation Measure & standards to be achieved (impact management outcome)	Timeframe for implementation	Responsible Person
	activities (such as dust / construction noise) could occur, which would require avoidance / mitigation.	• Restrict the movement of heavy vehicles through residential areas.		
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. 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	• 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 • 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.	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
	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			
Noise generation	Excavation, and vehicles movement to and from the site hauling and transporting Gravel materials, and the voices of the excavation crew	• 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.	During site preparation and operational phases	Contractor and ECO
Waste Management	Soil contamination	• 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	• It is recommended that local employment policy is adopted to maximise the opportunities made available to the local labour force.	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
	be trained in what Mining entails as well as environmental awareness training.	• 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.		
Cultural-historical resource**s**	Potential impact on 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 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

Issue/ Activity	Nature of Impact	Mitigation Measure & standards to be achieved (impact management outcome)	Timeframe for implementation	Responsible Person
		• Surface excavations should continuously be monitored by the ECO and any fossil material be unearthed the excavation must be halted. • If fossiliferous material has been disturbed during the excavation process it should be put aside to prevent it from being destroyed. • The ECO then has to take a GPS reading of the site and take digital pictures of the fossil material and the site from which it came. • The ECO then should contact a palaeontologist and supply the palaeontologist with the information (locality and pictures) so that the palaeontologist can assess the importance of the find and make recommendations. • If the palaeontologist is convinced that this is a major find an inspection of the site must be scheduled as soon as possible in order to minimise delays to the development.		

Table 11: Proposed mitigation measure 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	• 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.	• 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 was sent for a public review for 30-day period. The public review period 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.

Table 12: Rehabilitation measures

Aspect/ Impact	Rehabilitation Measure	Monitoring Frequency & Responsibility
Removal of construction structures	• Clear and completely remove from site all construction plant equipment, storage containers, signage, temporary fencing, temporary services, fixtures and any other temporary works; and • 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.	Once-off; Contractor
Vegetation clearing/Replanting	• 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; RAL or contractor appointed
Topsoil replacement	• 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	• Clear the site of all inert waste and rubble, including surplus rock, foundations and batching plant aggregates.	Once-off; Contractor

	• Remove from site all domestic waste and dispose of in the approved manner at a registered waste disposal site.	
Solid and Hazardous Waste	• 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	• Retain shrubbery and grass species wherever possible. • Perform regular monitoring and maintenance of erosion control measures.	After rainfall events; RAL or contractor appointed

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

RAL will set aside the prescribed financial provision for use during the rehabilitation phase. RAL will specify that the contractor is required to comply with all the environmental measures specified in the EMPr. 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 Perfomance Audit report on a monthly basis
Mining activities	Noise, Dust, Visual, Soil & vegetation, Social, Housekeeping & maintenance and Waste Management	Daily and Weekly site inspection	Apponited Contractor	
Post mining	Revegetation, soil stabilty & 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 commencemnt 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:

20 January 2023

Date:

-END-

APPENDIX A: EAP CV

APPENDIX B: SITE PLAN(S)

Appendix B-1 – Locality Map

Appendix B-2 – Site Layout Map

Appendix B-3 – Topography Map

Appendix B-4 – Geology Map

Appendix B-5 – Sensitivity Map

Appendix B-6 – Vegetation Types Map & Vegetation Conservation Status Map

Appendix B7 – Land cover Map

APPENDIX C: SPECIALIST STUDIES

Appendix C-1: Heritage Impact Assessment Specialist Report

Appendix C-2: Geotechnical Investigation Report

Appendix C-3: Ecological Impact Assessment

Appendix C-4: Paleontological Study

APPENDIX D: CALCULATION OF THE QUANTUM

APPENDIX E: PUBLIC CONSULTATION REPORT

Appendix E-1: Newspaper Advert

Appendix E-2: Site Notices

Appendix E-3: Background Information Document (BID)

Appendix E-4: Stakeholder Database

Appendix E-5: Comments and Response Report (CRR)

Appendix E-6: Consultation Meeting & Minutes

Appendix E-7: Deeds Information Property