mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENTREPORT

And

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT: GREATER TZANEEN LOCAL MUNICIPALITY

TEL NO: 015 307 8000

FAX NO: 015 307 8049

POSTAL ADDRESS: P O BOX 24, Tzaneen, 0850

PHYSICAL ADDRESS:

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 BASICASSESSMENTREPORT

3. Contact Person and correspondence address

a) Details of

i) Details of the EAP

Name of The Practitioner: NTC Environmental Services
Tel No.: +27 11 462 2022 / +27 72 679 3782
Fax No. : 086 692 8639
e-mail address: raisibe@ntcenvironmental.co.za

ii) Expertise of the EAP.

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

Attached as Appendix C1.

(2) **Summary of the EAP's past experience**.
(In carrying out the Environmental Impact Assessment Procedure)

EAP's CV is attached as Appendix C2.

b) Location of the overall Activity.

Farm Name:	Burgersdorp 19 KT
Application area (Ha)	4 Ha
Magisterial district:	Mopani District
Distance and direction from nearest town	32.2 km South East of Tzaneen
21 digit Surveyor General Code for each farm portion	TOKT0000000001900000

c) Locality map
(show nearest town, scale not smaller than 1:250000). Locality Map is attached as Appendix A

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

Site Plan is attached as Appendix B.

(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)***
The Greater Tzaneen Local Municipality has embarked on a rural development program that will see the upgrading of the D3769 (Myakayaka – Burgersdorp – Mafarane) and the D5014 (Tickyline – Makudiburg) roads from gravel to tar (Draft 2014/15 IDP), more specifically the upgrade of 15.1km road from tickyline, Myakayaka, Mineview, Burgersdorp to Mafarana. The proposed road upgrades requires aggregate material from the surrounding area and to fulfil this requirement, the establishment and utilisation of two borrow pits have been proposed which requires a mining permit.	4 ha	x	R983 activity 21, Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002.

(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)

The Greater Tzaneen Municipality has sought to upgrade the Mafarana to Burgersdorp roads from gravel to tar. The existing road layers do not contain sufficient material for the upgrade thus the building material will be sourced from two borrow pits. The location of the borrow pits is on the farm Burgersdorp 19 KT.

Borrow pit 1 (to provide gravel) and 2 (to provide sandy materials) are situated on the farm Burgersdorp 19KT at coordinates 24°01'29.22''S and 30°19'16.51''E; and 24°02'10.35''S and 30°19'43.08''E respectively.
A description of the proposed activities is further detailed below:

PRE MINING PHASE (Construction Phase)

The following will be carried out before operation of the mining activities**:**

- **Site preparation**

This phase will consist of clearing the site of vegetation, topsoil and overburden in order to expose the underlying material to be utilized. Topsoil will be cleared by means of a bulldozer and stockpiled adjacent to the active mining area. Site clearing must be restricted to what is absolutely necessary for the efficient mining of the aggregate material for road construction.

- **Conservation of Heritage Resources**

Should any items of historical or archaeological importance be uncovered during the development and operation of the borrow pit, all activities must cease until the South African Heritage Resources Agency (SAHRA) has been notified. Further mining will only proceed once the go-ahead has been received from SAHRA.

- **Fencing**

Before any activities commence, a standard stock fence will be erected to prevent unlawful entry to the mining area as well as for safety reasons. Access to the proposed mining area must be controlled and the gate must remain locked at all times if the borrow pit is not in use.

- **Roads**

Access to the proposed mining area will be gained from the existing gravel road to Mhadawa.

- **Traffic safety**

To ensure road safety heavy vehicle signs must be erected at the access point to the mining areas as per provisions of the Road Traffic Act. Traffic safety measures will be implemented at the exit point of the borrow pit which connects to the gravel road to Mhadawa.

MINING PHASE (Operational Phase)

Road construction material mined from the borrow pit will be transported from the workface to the stockpile area where it will be collected from by trucks and transported to the point of use.

- **Limitation of activities**

All mining must take place in accordance with the provisions made in the Mafarana to Burgersdorp EMPr and with applicable mine health and safety regulations.

No trespassing on properties adjacent to the approved mine areas will be allowed. Poaching of wild animals, picking of wildflowers and interference with livestock is prohibited.

- **Solid waste management**

No burning, burying or dumping of any waste materials, vegetation, litter or refuse shall be permitted Insignificant amounts of general domestic waste will be generated on site at the borrow pit. Waste generated on site should be moved to the construction camp site and disposed of at a registered/permitted waste disposal site.

All vehicle maintenance will take place at a designated area in the construction camp. Scrap metal produced during machinery and vehicle maintenance will be stored in a specified area at the construction camp until removed for recycling.

Hazardous wastes, including used oil and batteries will be stored in tamper proof containers and should be disposed of at the nearest hazardous waste disposal site. The only mine residue produced will be overburden. This will be stockpiled in a specified area and returned to the excavation on closure.

- **Sanitation**

All temporary/portable toilets shall be secured to the ground to the satisfaction of the environmental officer to prevent them from toppling over or being blown over. No septic tanks or pit latrines are to be established.

The Contractor shall ensure maintenance of all toilets in a clean sanitary condition to the satisfaction of the PM. Toilets are to be serviced twice per week and toilet paper shall be provided. The Contractor shall ensure that no spillage occurs when the toilets are cleaned or emptied and that the contents are removed from the site to an appropriate location/facility. The toilet contractor is to provide proof that the toilet contents are disposed of at an appropriate facility.
Discharge of waste from toilets into the environment and burial of toilet waste is strictly prohibited.

- **Water supply**

No water will be required for mining purposes. Only drinking water for security and operators will be required.

- **Noise control**

The contractor shall keep noise level within acceptable limits. The Contractor shall comply with all relevant guidelines and regulations. The use of all plant and machinery shall be appropriate to the task required in order to reduce noise levels.
Any complaints received by the Contractor regarding noise will be recorded and communicated to the Project Manager (PM).

- **Dust control**

The Contractor shall be responsible for the control of dust arising from his operations and activities. Control measures shall include regular spraying of working/exposed areas with water at an application rate that will not result in soil erosion or runoff. The frequency of spraying will be agreed with the PM.

The excavation, handling and transport of erodible materials shall be avoided under high wind conditions. Top soil stockpiles shall be wetted and/or sheltered from the wind with a cover.

- **Fire prevention**

The Contractor shall take all reasonable and precautionary steps to ensure that fires are not started as a consequence of his activities on site. The Contractor shall ensure that there is basic fire-fighting equipment available on site.

Flammable materials should be stored under conditions that will limit the potential for ignition and the spread of fires. Smoking shall not be permitted in those areas where there is a fire hazard. These areas shall include: fuel storage areas, any areas where vegetation or other material is such as to make likely the rapid spread of an initial flame. The Contractor shall hold fire prevention talks with staff to create an awareness of the risks of fire.

- **Pollution prevention**

Any fuel or oil spillages must be addressed immediately, removed from the mine and be disposed of at a licensed facility. Drip trays must be placed under parked vehicles when refueling or servicing.

MINE CLOSURE PHASE (Decommissioning Phase)

- **Borrow pit rehabilitation**

After the end of mining the borrow pit will be rehabilitated to ensure revegetation takes place. The site will be cleared of all litter and scrap, which may have accumulated.

Suitable earthmoving machinery will be used to profile the borrow pit sidewalls to the final slope as per specification in the layout plan, and to slope the floor of the borrow pit. Spoil material from the construction areas will be used to profile the borrow pit areas and assist in the rehabilitation process. Topsoil will be returned to the site, and its vegetation cover will be monitored according to the rehabilitation plan.

e) Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLIY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)
Minerals and Petroleum Resources	Sections 16,	The application for mining

Development Act (28 of 2002)	20, 22 and 27	permit will be lodged with the Department Mineral Resources for borrow pit mining
National Environmental Management : Air Quality Act (Act No 39 of 2004)	Section 24(b)	To enhance dust suppression and to control emissions from vehicles working on the Borrow Pit
National Environmental Management Act (NEMA) (Act 107 of 1998)		The application for mining permit will be lodged with the Department Mineral Resources for borrow pit mining

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 Greater Tzaneen Local Municipality has embarked on a rural development program that will see the upgrading of the D3769 (Myakayaka – Burgersdorp – Mafarane) and the D5014 (Tickyline – Makudiburg) roads from gravel to tar (Draft 2014/15 IDP), more specifically the upgrade of 15.1km road from tickyline, Myakayaka, Mineview, Burgersdorp to Mafarana. The purpose of the road upgrade is to provide improved infrastructure and accessibility in the local region. It was communicated by various local communities that current road conditions cause concerns for local commuters as they become dangerous during wet or night time conditions, and cause dust and visual impacts during the day.

The proposed road upgrade has commenced and various sectional upgrades are underway. However, at some of the remaining sections upgrade activities were ceased or delayed as the engineering team determined that sufficient quantities of adequate base material was not available in the area. Following this, the Greater Tzaneen Local Municipality recommended the use of borrow pits to obtain the necessary aggregate material.

Two areas adjacent to one another were identified as having the ideal material for road upgrade purposes, and were within a short distance from the route that it ensures cost effectiveness during construction upgrades.

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

As already mention in the above, the Greater Tzaneen Local Municipality is in the process of upgrading roads within the local regions as part of an infrastructural and

community improvement effort. In order to continue with the road upgrades, the engineering team identified the need to source aggregate material from two borrow pits located in the village of Burgersdorp. The borrow pits identified were selected for the following reasons:

- Aggregate material is ideal material necessary for the upgrades;
- They are located within close proximity to the upgrade route;
- They are previously disturbed due to illegal dumping and sand mining occurring both on site and on neighbouring properties; and
- Access roads are already established, as well as connecting roads to the proposed upgrades.

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 proposed location of the two borrow pits is on farm Burgersdorp 19 KT. Borrow pit 1 with coordinates 24°01’29.22’’S and 30°19’16.51’’E will provide gravel material whilst borrow pit 2 with coordinates of 24°02’10.35’’S and 30°19’43.08’’ will provide sand material.

b) The activity is mining for aggregate material necessary for road construction.

c) Please refer to Appendix B.

d) The development, operation and rehabilitation of the Borrow Pits is considered simplistic in nature. The applicant proposes the following:

- Establish a temporary site office;
- Development of a boudary fence and designated access points;
- Vehicles and machinery parking;
- Topsoil stockpiles;
- Aggregate material stockpiles;
- Security guard.

Below is the Mine Method Statetment

The purpose of mining this borrow pit is to obtain suitable material to be used for earthworks construction. The main activities associated with mining of the borrow pit will include the clearing of the borrow pit area (i.e. removal of trees and grass), removal of topsoil to stockpile, construction of access roads/ramps, excavation of the borrow pit material to stockpile, loading the borrow material into tipper trucks, processing the borrowed material for use in earthworks construction, management of the borrow pit, and closure and rehabilitation of the borrow pit.

Permits for the use of borrow pits must be obtained before any work can start on the borrow pit. Daily excavation inspection sheets are to be completed and all works is to be inspected by foreman and site engineer. Records of competency, risk assessments, toolbox talks and DSTI's will be kept at site office for reference.

The following specifications are to be adhered to:

- SANS 1200
- Additions and variations to SANS 1200
- General Conditions of Contract (GCC02)
- Special Conditions of Contract (GCC10) – New Edition, June 2008.

<u>Clearing and Grubbing</u>

This task involves the clearing and removal of trees and grass to designated areas identified by the engineer.

- The borrow pit area is to be surveyed before any work commences
- Environmental guidelines according to the EMP must be adhered to
- All trees and grass is to be removed and grubbed material is dozed into stockpiles
- Loaders and tippers remove the grubbed material to the designated stockpile area identified by the Engineer

<u>Stripping of Topsoil</u>

This task involves the removal of topsoil material to stockpile, identified by the engineer, for future use.

- The borrow pit area is to be surveyed before any work commences
- The topsoil is to be dozed or graded to stockpile or to the edge of the borrow pit area as specified by the Engineer
- Topsoil is moved to designated stockpile are with the use of loaders and tippers
- The size and quantity of equipment to be used is determined by the conditions on site
- Stockpiling procedures are to be followed as per the EMP
- Water carts to be used for dust suppression

<u>Management of Borrow Pit</u>

This task involves the management of the face of excavations, barricading and providing access to the borrow pit.

- Side slopes of the borrow pit to be trimmed to correct slope angle except for the live borrow pit face
- Floor of borrow pit to be checked regularly to ensure smooth and safe driving surfaces
- Berms to be constructed on the edges of the borrow pit
- Drainage measures to be put in place to prevent damming of water
- Water carts to be used for dust suppression

- Testing of materials is to be done in accordance with quality plan
- Guidelines according to the EMP must be adhered to

Rehabilitation of Borrow Pit

This task involves the rehabilitation of the borrow pit by the laying and spreading of top soil onto the borrow pit excavation.

- Spoil/Waste site To be identified by engineer.

Personnel, Plant and Equipment

Geotechnical Contractor who will use the following equipment:

- Excavators
- Dozers
- Tipper Trucks (12 m^3)
- 140H Graders
- Water Trucks (14 kl)
- Flags
- Lowbed Truck (For transporting machines on and off site)

Search and Rescue Contractor who will use the following equipment:

- Hand tools (pick, fork, screwdriver etc).

e) In terms of the sand and gravel harvesting methodology, it is anticipated that topsoil will be removed and stockpiled separately with the intention of using this material for rehabilitation purposes. The desired material will be stripped using Dozers, 140H Graders and Excavators, and either termporarily stockpiled on site, or placed in Tipper Trucks for immediate transport to the road upgrade route. Where possible, the applicant proposes to rehabilitate the borrow pits as materaisl are removed/utilised i.e. similar to open cast mining, areas from which material is already removed will be infilled, levelled, topsoiled and vegetated.

f) Should the proposed Borrow Pits not be permitted, it will result in one of the following outcomes:

- The proposed road upgrade project will not be completed; and
- The material will need to be sourced from elsewhere.

Each of these are further detailed below.

Cessation of the Road Upgrade project

Should the required materials not be sourced the road upgrade will be ceased. This means the current road conditions will remain and accessibility to and within the region will remain dangerous and difficult. As the road upgrade is already underway, the cessation will result in employment loss as contractors, engineers, local labourers are no longer required. This is turn has downstream impacts of supplier chains. Further to this, the money already spent on upgrades would have been in vain, as the road is likely to revert to its originial poor condition unless upgrade activities (tarring) is completed.

Sourcing Material elsewhere

Should the Greater Tzaneen Local Municipality seek material from alternate sources it may be required to obtain permits for those areas e.g. borrow pits in other areas. There are several concerns with this options including:

- The sourced material may be inadequate and result in poor workmanship and road degrading in the future;

- the material may cost more to transport as it may be sourced from other regions;
- a greenfield site elsewhere will be impacted during mining actitivies.

Following from the above, the no-go option may result in various direct and indirect negative socio-economic and environmental impacts, and as such is not considered by the project team as a feasible option.

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.

Public participation was conducted as part of this borrow pit mining permit application process, as per the requirements of the Authorities and EIA regulations. The following was undertaken:

1. An advertisement was placed in the local newspaper.
2. Site notices were placed at a place conspicuous and accessible to public close to the site
3. A stakeholder meeting was held
4. Written notification were sent out
5. Landowner's Consent

1. <u>An advertisement was placed in the local newspaper</u>

The NEMA EIA Regulations (specifically regulation 41(2)(c)) requires that an advertisement be placed in either a local newspaper or a Government Gazette. Should the project have a potential impact that extends beyond the boundaries of the metropolitan or local municipality, the project should be advertised within at least one provincial or national newspaper. In terms of the Mafarana to Burgersdorp road upgrade development, NTC determined that an advertisement should be and was published in a local newspaper. The Letaba Herald published the advertisement on 10 July 2015. Refer to Appendix D2 for a copy of the newspaper advertisement. The public was invited to comment on the proposed project in the advertisement, and was invited as I&APs.

2. <u>Site Notices</u>

The NEMA EIA Regulations (specifically regulation 41(2)(a)) requires public that site notices be fixed at a place conspicuous and accessible to the public at the boundary or / on the fence of the site where the activity to which the application relates is to be undertaken and on any alternative sites. Five site notices were placed to notify the public of the project and to invite stakeholder and I&APs to register and comment on the project. Refer to Appendix D3 for the site notice compiled and photographic evidence of the placement.

3. Stakeholders Meeting

A meeting was held on the 9th of December at Mafarana Combined School and at Xi Kiti Burgersford which was aimed at informing the surrounding community about the environmental issues associated with the road development and inviting them to register as I&APs. BID's were given out to the meeting attendees upon arrival. Proof of the stakeholders meeting is attached as Appendix D4.

4. Written Communication

A Background Information Document (BID) was compiled to outline environmental process(es) and provided the necessary EAP contact details to allow for I&AP registration was distributed to all affected parties. Refer to Appendix D5 for the BID and proof of distribution.

5. Landowners Consent

A landowner's consent letter is attached as appendix D8.

6. Authority Correspondence

The project details were communicated to the Limpopo Department of Economic Development, Environment and Tourism (LEDET) for comment.

Other Government departments will be notified and requested to comment on the EMPr.

The DMR was sent a draft EMPr for comment, and a mining permit application in order to register the project as required.

iii) Summary of issues raised by I&Aps

(Complete the table summarising comments and issues raised, and reaction to those responses)

Comments raised by I&APs are attached as Appendix D6. Authorities' comments are attached as Appendix D9.

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**	26/06/2015			
Tribal Authority					
Lawful occupier/s of the land	**X**	09/12/2015	Permission to use borrow pit granted.		Appendix D8
Landowners or lawful occupiers on adjacent properties	**X**				
Municipal councillor	**X**	03/12/2015	Request to experdite Borrow permit approval.		Appendix D9
Municipality	**X**	20			
Organs of state (Responsible for infrastructure that may be					

affected Roads Department, Eskom, Telkom, DWA e					
Communities	**X**				
Three focus group meetins held with: • Mafarana (Ward 22&25) • Burgersdorp and Gabaza (Ward 28) General consensus from all parties was the need to complete the roads as soon as possible, the need to consult with the communities going forward, and to request the use of local labourers and suppliers as far as possible. None objected to using the borrow pit.		09/12/2015	Concerns regarding road conditions being dangerous and querying the timeframes as to when the road will be completed.	Noted. The engineers can commence with upgrades as soon as the borrow pit mining permit is obtained.	Section 3 f
			Questions whether the road aggregate material can be sourced elsewhere to speed up road upgrades.	Noted that the material from beneath the existing road is not adequate and so is the soils directly around the road. Using a borrow pit elsewhere would still require a mining permit.	Section 3 f
			Asked if local labourers can be used and trained.	Noted. The engineer confirmed that wherever possible local labourers will be used and skills will be transferred through training and job shadowing. Similarly, suppliers will be sourced from within the region.	Section 3 f and j
			Confirmation that the use of borrow pit is accepted and requested this be completed as soon as possible	Noted.	
			Requested improved communications between the project team and the local communitities.	Noted. The Community Liaison Officer will facilitate increased communications through monthly meetings and regular feedback to the community leaders	N/A – between engineers on road and community.
Dept. Land Affairs					
Traditional Leaders					
Dept. Environmental Affairs	**X**				

Other Competent Authorities affected					
OTHER AFFECTED PARTIES					
INTERESTED PARTIES					
Please refer to Appendix D4 for the full attendance registers.					

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).

1. CLIMATE

The Limpopo State of the Environment Report (Phase 1) (2004) states that Limpopo falls in the summer rainfall region with the western part semi-arid and the eastern part largely sub-tropical with mild and mostly frost free Winter seasons. Tzaneen is located on the eastern part of the Limpopo Province and has a temperate climate with hot summers and mild winters. On average Tzaneen receives about 881mm of rain per year, with most rainfall occurring mainly during mid-summer months. It receives the lowest rainfall of about 5mm in July and the highest (182mm) in January. Figure 1 below depicts monthly average daily temperatures and rainfall values for Tzaneen. The average midday temperatures for Tzaneen range from 21.9°C in June to 29.1°C in January (www.saexplorer.co.za, accessed December 2015).

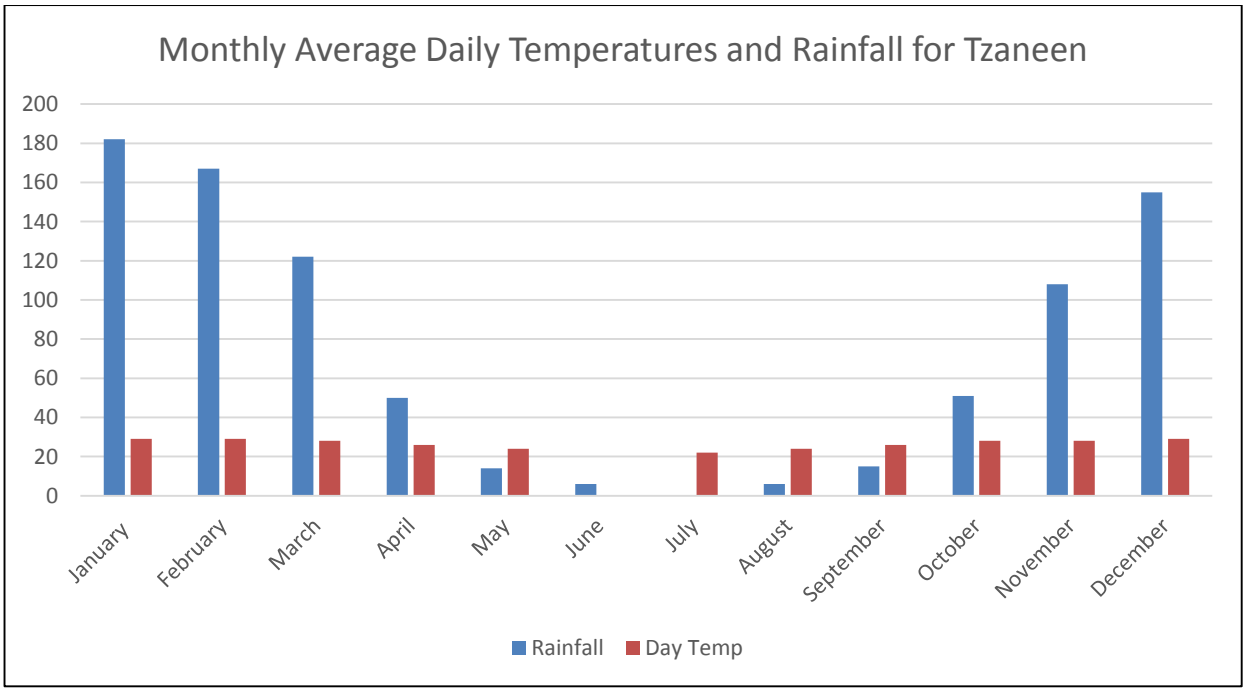

Figure 1: Monthly Average Daily Temperatures and Rainfall for Tzaneen

It is anticipated that the Mafarana to Burgersdorp Roads project will have no impact on the local climate.

2. GEOLOGY

The Geology of Limpopo is diverse and complex as it is made up of rock formations from the Archean, Pre-Cambrian, Palaezoic and the Mesozoic times. The Archean formations form the basement rocks and is characterised by granites and gneisses as well as metamorphic rocks such as phyllites, banded ironstone, quartzite, conglomerates and limestone. The Transvaal group rocks as well as the batholith intrusion of the Bushveld Igneous Complex form part of the Pre-Cambrian period with lithologies such as Quartzites and

Dolomites of the Black Reef formation; and the plutonic rocks of the Bushveld Igneous Complex. The Palaezoic Era is represented by beds of thickly bedded red or purple Quartzitic sandstones and conglomerates which form very strong escarpments and ridges. Lastly, the Mesozoic formations include the Granite-Gneiss Complex of the Karoo which overlays a central portion of the Bushveld igneous complex known as the Springbok Flats. The horizontally deposited Karoo formation is believed to have been the youngest occurring system in the province and is now in the process of being removed by the erosion. (Limpopo State of the Environment Report (Phase 1), 2004).

3. FLORA

The Limpopo State of the Environment Report (2004) states that Limpopo falls within the Greater Savannah biome, otherwise known as the Bushveld with minor representation of grassland and forest biomes. The repost attests that Floral sensitivity in the Limpopo Province is consider in floral endemism as well as vegetation type representation and conservation. Veld types in the province can be divided into 15 different veld types and can further be categorised into bushveld, grassland and forest broad biomes (see table 1 below).

Table 1: Veld Types Of Limpopo (Limpopo State of the Environment Report (Phase 1), 2004)

Biome	Acocks Vegetation Type
Bushveld	• Mopani veld • Arid Sweet Bushveld • Lowveld Sour Bushveld • Sour Bushveld • Arid Bushveld • Sour Mixed Bushveld • Springbok Flats Turf Thornveld • Mixed Bushveld • Lowveld • Kalahari Thornveld and Shrub Bushveld • Sourish Mixed Bushveld • Other Turf Thornveld
Grassland	• North-eastern mountain Sourveld • Pietersburg Plateau Grassveld • North-Eastern Sandy Highveld
Forest	• Afromontane Forest

Out of the fifteen veld types found in the province, the Pieterburg Plateau Grassveld (Pietersburg False Grassveld) occurs exclusively in Limpopo. Important vegetation types such as the Turf Thornveld and northeast Mountain Sourveld are under extreme pressure and are poorly conserved (Limpopo SOER, 2004). As depicted on the Vegetation Map (Map 1) below, The Greater Tzaneen Municipality Flora is composed of Arid sweet Bushveld, Lowveld Sour Bushveld and North-eastern Mountain Sourveld. The percentage vegetation type occurring in Limpopo and the relative percentage under conservation within and outside of the province is illustrated in Table 2. This information may be used to determine priorities in terms of bio-diversity conservation which is critical for the preservation of floral diversity.

Map 1 Limpopo Lithology Map

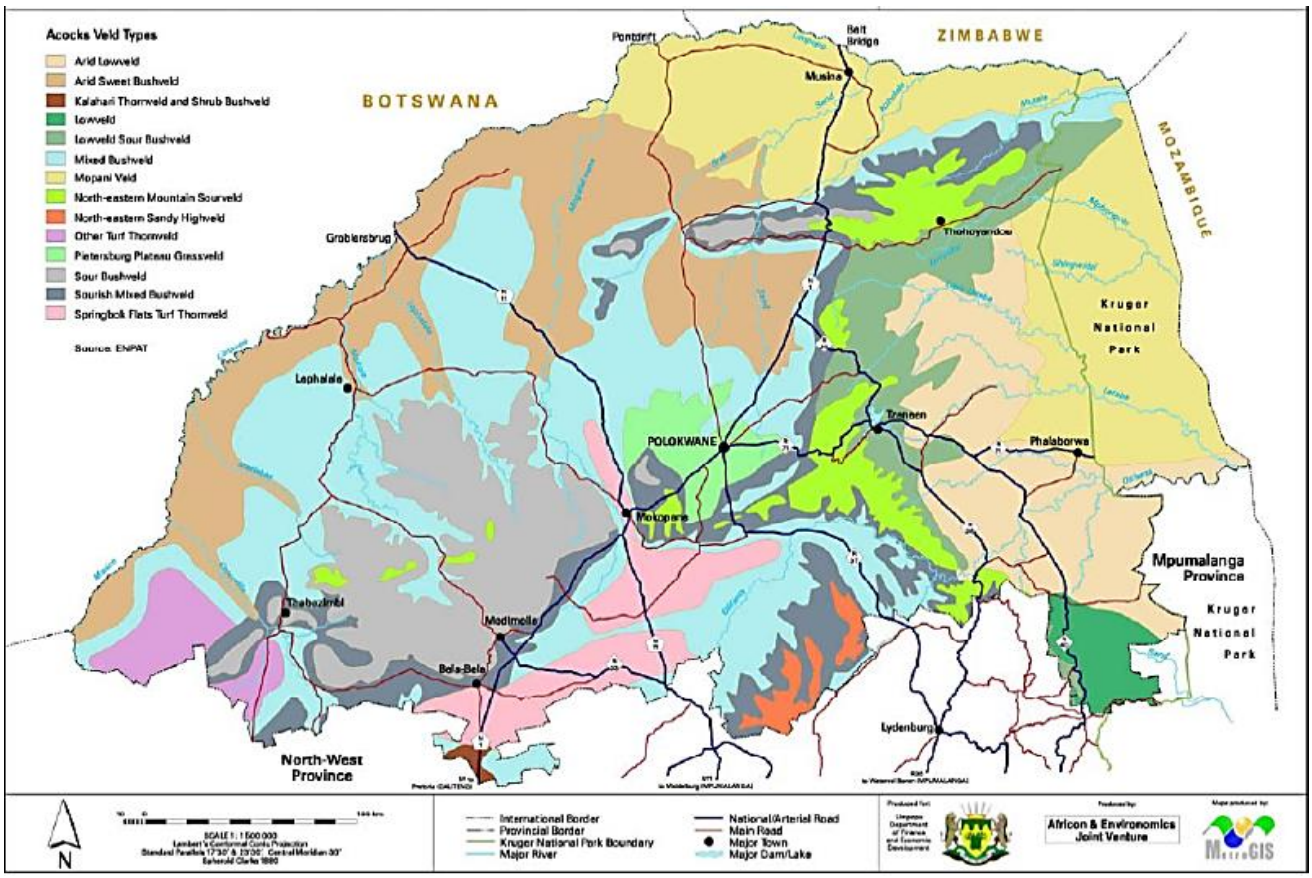

Table 2: Conservation Status of Veld Types (Acocks) in the Province

Veld Type	Size ha	Size of veld type in Limpopo ha	% of veld type in Limpopo	% modified	% total conserved (Nationally	% conserved in Limpopo
North-Eastern Mountain Sourveld	952 840	752474	78.97	45	18.39	6.89
Lowveld Sour Bushveld	1 194180	790 337	66.18	76	8.45	0.59
Lowveld	2 379 110	178 369	7.49	23	20.26	0.28
Arid Lowveld	1 900 450	1 147 683	60.39	22	31.73	1.75
Arid Sweet Bushveld	1 822 050	1 720 890	94.44	23	0.59	0.59
Mopanie Veld	2 086 800	2 027 848	97.17	7	43.54	2.67
Kalahari Thornveld	13 008 190	19 078	0.14	2	0.38	0.0046
Mixed Bushveld	3 986 720	2 895 218	72.62	36	3.88	2.00
Sourish Mixed Bushveld	3448 180	995 065	28.85	27	1.35	0.52
Sourish Bushveld	1 301 870	1 117523	85.83	28	5.1	3.56
Turf Thornveld	587 900	494 137	84.05	94	0,27	0.27
Pietersburg False Grassveld	248900	248 900	100	88	0.62	0.62
North-Eastern Sand Highveld	1 475 200	92 934	6.29	52	0.05	0.04

Limpopo State of the Environment report (2004) states that the vegetation of the Lowveld areas are extensively conserved, especially the Mopani veld which is includes private reserves, provincial and national parks. The report further laments that overgrazing of the veld due to overstocking remains unaccounted for in some of the reserves.

4. SOCIO-ECONOMIC

a. DEMOGRAPHICS AND EDUCATION

Greater Tzaneen Municipality has a population size of 390 095, which is the largest municipality in terms of population contribution (36%) in the Mopani District. 96% of the population are black African, with whites second at 3%, and coloureds less than 100 in number as per Census 2011 results. For every 100 women there are 94 men. Most of the people speak Sepedi as a first language at 46,0%, followed by Xitsonga at 40,7%.Other official languages make up 13,2%. (www.statssa.gov , accessed December 2015). The education level of the Greater Tzaneen Municipality is depicted in Figure 2 below.

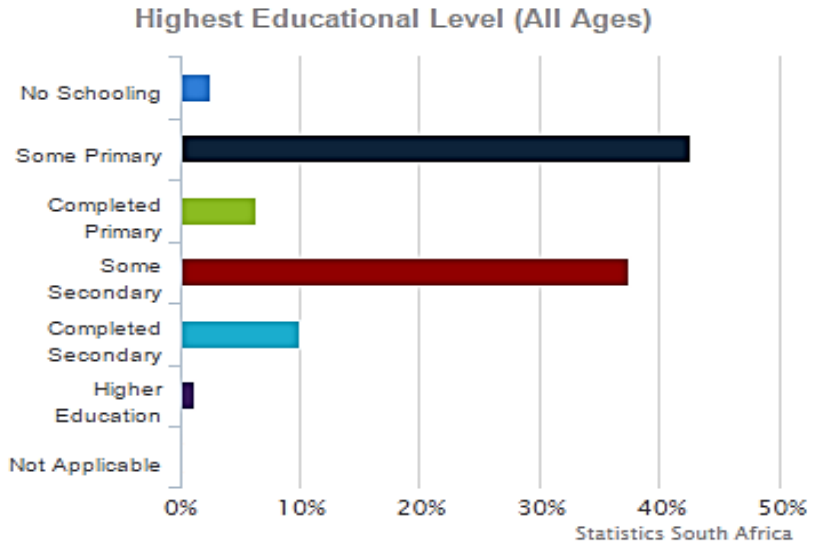

Figure 2: Education Level of the Greater Tzaneen Municipality (www.statssa.gov, accessed December 2015)

b. INCOME

According to (www.statssa.gov , accessed December 2015), there are 27 051 people that are economically active (employed or unemployed but looking for work), and of these, 36,7% are unemployed. Of the 11 948 economically active youth (15–34 years) in the area, 48,5% are unemployed. The Greater Tzaneen Draft IDP 2014-15 states that the unemployment rate requires integrated efforts by the municipality to create decent work and sustainable livelihoods for the people.

c. WATER AND SANITATION

The Mopani District Municipality is the Water Service Authority of the Tzaneen area whereby the service is rendered by the Greater Tzaneen Municipality on their behalf. The Greater Tzaneen Integrated Development Plan (IDP) (2008) reports that the Tours Water Scheme currently serve 22 villages with a population of 55 244 people of which 17 558 (31.78%) people receive RDP water services. Pit Latrines are most commonly used in the rural areas.

d. ELECTRICITY

According to the 2008 Greater Tzaneen Draft IDP, The Greater Tzaneen Municipality distributes to an area approximately 3500km2 in extent with two main areas of difference being the general areas of Nkowankowa, Lenyenye and Southern most areas which are serviced by Eskom. The distribution system is the use of overhead power lines. There is currently a backlog of streetlights in Nkowankowa and most rural area within the Greater Tzaneen Municipality are without street lights.

e. ROADS

The Greater Tzaneen Municipality is responsible for approximately 2300km of municipal road network which compises of district/ conector and municipal / access roads (Greater Tzaneen Draft IDP 2014-15). The IDP further states that the planning capacity of the Municipality is impaired due to lack of information regarding the conditions, state and exact length of our road network. At present there is no inventory / data base that can accurately profile and identify upgrading and maintenance needs as and when required. Prioritization for upgrading and maintenance of roads is a problem due to lack of proper information, more especially on the conditions of the pavement, surfacing drainage structures, signage and other road accessories.

(b) Description of the current land uses.

The surrounding land use within the proposed area is open veld and residential. The proposed site for the mining activity is an open veld which is currently being used illegally as a borrow pit by the local communities. Furthermore the surrounding areas are used for illegal dumping of domestic waste, illegal borrow pits and sand mining.

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

a) Surrounding land use
The surrounding land use within the proposed area is open veld and residential. The proposed site is an open veld.

b) Topography
The proposed area is situated on a flat to gentle slope with slope draped towards the western direction

c) Flora and Fauna
According to Low and Rebelo, 1996 the proposed site falls under savanna biome. The area vegetation is comprised of mix species.

d) Heritage
No burial sites identified on the larger sections of the exact area proposed for mining activities. However, there is always the possibility of encountering previously unidentified burial sites in any landscape in South Africa. The construction team must watch out for possible chance finds in the project area. In the event that burial sites are encountered during construction, they are still protected by applicable legislations and may not be disturbed

e) Air quality
The most significant source of dust generation results from vehicular movement on the gravel road. There are no obvious smoke pollution sources in the area, except household fires

f) Noise

Sources of noise in the area include noise generated by traffic moving along the road.

G) Roads

Access to the proposed mining area will be gained from the existing gravel road from Burgersdorp to Mhadawa village

(d) Environmental and current land use map.

(Show all environmental, and current land use features)

Locality map is attached as appendix A

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).

The following potential impacts were identified by the EAP as potentially relevant to the operation of the Borrow Pits, and were identified from a desktop review, site visit and in consultation with identified I&APs:

- Vegetation and Fauna loss and disturbance;
- Topsoil loss;
- Surface water contamination;
- Noise generation;
- Increased dust generation;
- Loss of a natural resource;
- Improved local infrastructure; and
- Increased job opportunities and skills transfer.

These are further detailed in the subsections below and have been assessed in accordance with the NTC Impact Assessment Methodology.

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).

The potential environmental impacts identified during the Borrow Pit project were evaluated according to severity, duration, extent and significance of the impact, and include the potential occurrence and assessment of cumulative impacts. The Risk Assessment Methodology below was used for the ranking of the impacts.

This system derives environmental significance by rating the consequence of the impact on the environment and the likelihood of the impact occurring. Consequence is calculated as the average of

the sum of the severity, duration and extent, while Likelihood is the average of the frequency of the activity together with the probability of an environmental impact occurring during those frequencies. Table 3 to Table 5 detail the rating assignment process, as well as the calculations applied to achieve averages and the overall significance.

The methodology was applied to the identified impacts without and with the application of proposed mitigation measures.

Determination of Consequence

Consequence is calculated as the average of the sum of the ratings of severity, duration and extent of the environmental impact.

Table 3: Assessment and Rating of Severity, Duration and Extent

Rating/ Description	1	2	3	4	5
Severity	Negligible / non-harmful / minimal deterioration (0 – 20%)	Minor / potentially harmful / measurable deterioration (20 – 40%)	Moderate / harmful / moderate deterioration (40 – 60%)	Significant / very harmful / substantial deterioration (60 – 80%)	Irreversible / permanent / death (80 – 100%)
Duration	Less than 1 month / quickly reversible	Less than 1 year / quickly reversible	More than 1 year / reversible over time	More than 10 years / reversible over time / life of project or facility	Beyond life of project of facility / permanent
Extent	Within immediate area of activity	Surrounding area within project boundary	Beyond project boundary	Regional / provincial	National / international
Consequence	**(Severity + Duration + Extent) / 3**				

Determination of Likelihood

Likelihood considers the frequency of the activity together with the probability of the environmental impact associated with that activity occurring.

Table 4: Assessment and Rating of Frequency and Probability

Rating/ Description	1	2	3	4	5
Frequency	Less than once a year	Once in a year	Quarterly	Weekly	**Daily**
Probability	Almost impossible / Never	Unlikely	Probable	Highly likely	**Definite**
Likelihood	**(Frequency + Probability) / 2**				

Environmental Significance

Environmental significance is the product of the consequence and likelihood values:

- **Significance = Consequence X Likelihood**

Table 5: Determination of Environmental Significance

Significance	Description
L (1 – 4.9)	Low environmental significance
LM (5 – 9.9)	Low to medium environmental significance
M (10 – 14.99)	Medium environmental significance
MH (15 – 19.9)	Medium to high environmental significance
H (20 – 25)	High environmental significance. Likely to be a fatal flaw.

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)

Not applicable. Not site layout or location alternatives were considered. Motivation is provided in this report in this regard.

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).

Impact (Risk)	Risk	Action/Management
Air quality	Low	The area should be watered regularly to prevent dust generation impacting neighboring residents. The speed of haul trucks and other vehicles must be strictly controlled to avoid dangerous conditions, excessive dust or excessive deterioration of the road being used
Security and site accessibility	Medium	The borrow pit site is not fenced currently and exposure to the pits, water contained in open trenches and heavy equipment/machinery was a concern. The applicant indicated that a fence will be erected around the site and access to the borrow pits will be restricted to authorised personnel only.
Employment	Medium	Employment of local labourers will be preferred where possible and where skills are available. Similarly, training of the local community members to ensure skills transfer and improvement will be undertaken.

ix) Motivation where no alternative sites were considered.

The Greater Tzaneen Local Municipality did not consider site alternatives as the proposed Borrow Pit locations provided the following:

- Ideal source material for road upgrade requirements;
- Efficient transport on existing road networks;
- Reduced environmental degradation as the site is already impacted by illegal dumping and sand mining activities.

Therefore, the identification of alternative borrow pit locations was deemed impractical as it would result in increased material transport costs, increased road traffic and safety concerns, potential increased environmental impacts at other greenfield locations, poor quality aggregrate material resulting is reduced road upgrade quality and durability.

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

No alternative site considered.

i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity.**(Including (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process**

and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.)

The significance of an impact is an expression of the cost or value of an impact to society. Parameters such as intensity of impacts, duration, extent, significance and probability of occurrence are used in assessing the identified environmental impacts. Impacts are divided according to phases, construction and operation phase, assessed and mitigation measures proposed.

Section J below provides a summary of the impact assessment and details the potential impacts noting both the determined significance rating without mitigation (WoM) measures, proposed mitigation measures, and significant rating with mitigation measures (WM). The full impacts table with calculations is included in Appendix E.

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).

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.)	**POTENTIAL IMPACT** (Including the potential impacts for cumulative impacts) (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollutionetc.…etc…)	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)	**SIGNIFICANCE** if not mitigated	**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 through rehabilitation..	**SIGNIFICANCE** if mitigated
Foot and vehicular movement on site	Loss of topsoil from the site due to erosion	Soils	Construction and operation	**Low**	Ensure the areas cleared are the minimum possible. Mark out areas for clearance prior to clearing works. Ensure that exposed areas are covered with slag/gravel or grassed to reduce surface run-off where possible.	**Low**
Stockpiling	Loss of topsoil or subsurface aggregrate materials due to incorrect stockpiling and exposure to winds / rains etc.	Soils	Operational	**Low**	The stockpile area should be vegetated or covered, or protected from high winds and rain.	**Low**
Storage of hazardous goods	Soil contamination from dirty water run-off and / or dirty water storage	Soils	Construction and operation	**Low-Medium**	Storage of hazardous materials / goods should be within an impermeable bund.	**Low**

Parked vehicles leaking / dripping	Soil contamination from leaking or dripping hydrocarbons from parked vehicles	Soils	Construction and operation	**Low-Medium**	Vehicles or machinery should be well maintained and regularly inspected for leaks and faults. Vehicles or machinery should use drip trays if stationary for extended periods.	**Low**
Use of ablution facilities	Soil contamination from leaking or poorly maintained portable ablution facilities.	Soils	Construction and operation	**Low-Medium**	Dirty surface run-off should be directed to water-tight holding facilities i.e. contained on site,	**Low**
Storage of hazardous goods	Leaks, spills of hazardous goods / materials during operation of the pit may seep into and contaminate ground water resources	Ground water	Construction and operation	**Low-Medium**	Good engineering design of waste containment facilities should reduce the risk of groundwater contamination. Storage of hazardous materials / goods should be within an impermeable bund.	**Low**
Storage of contaminated surface run-off	Potential ground water contamination from dirty water run-off and / or dirty water storage permeating through the soil	Ground water	Construction and operation	**Low-Medium**	Dirty surface run-off should be directed to the water holding facility i.e. contained on site. Used oils should be transferred off-site for recycling or re-use by a license party.	**Low**
Vegetation and soil removal, or continued bare soil exposure to the elements	Increased sedimentation of surrounding areas due to erosion onsite	Surface Water	Construction and operation	**Low-Medium**	During topsoil removal, it must be removed and stockpiled separately for later use during rehabilitation. Erosion protection must be implemented to ensure sedimentation of surrounding areas is prevented.	**Low**
Storage, handling, and / or use of dangerous or hazardous materials on site	Potential contamination of water sources due to hydrocarbon leaks/spills	Surface Water	Construction and operation	**Low-Medium**	If hydrocarbons and/or chemicals are stored / kept on site, they must be stored in an impermeable bund. SDS' must be readily available and only personnel trained in hydrocarbon handling should handle such materials. Spill	**Low**

					kits must be well stocked and readily available to contain possible leaks and or spills. Where possible drips must be utilised for vehicles standing longer than 24hrs, and all vehicles must be well maintained (off site maintenance only).	
Site clearance and excavations	Loss of species diversity during both site establishment and borrow pit operation and increase habitat fragmentation	Flora	Construction and operation	**Low-Medium**	Ensure the areas cleared are the minimum possible. Mark out areas for clearance prior to clearing works. Where possible, large tree or indigenous species should be retained or relocated for later use during rehabilitation. Ensure that the rehabilitation plan is implemented to mitigate fragmentation and re-introduce biodiversity	**Low**
Transport of materials, and use of vehicles on site and the surrounding road network	Increased soil disturbance and vehicle use on and around the site could increase alien invasive species propagation in the area and onsite	Flora	Construction and operation	**Low-Medium**	Ensure alien plant species are not allowed to establish and / or are removed at regular intervals should they establish.	**Low**
Site clearance and excavations	Loss of faunal habitat due to clearing and plant operations, as well as stockpiling. Death/injury to faunal species which may be located beneath the ground should excavations be required on site e.g. establishment of	Fauna	Construction and operation	**Low-Medium**	Ensure the areas cleared are the minimum possible. Mark out areas for clearance prior to clearing works. Where possible, large tree or indigenous species should be retained or relocated for later use during rehabilitation. The ECO should conduct a site walk over prior to clearance and excavations to facilitate faunal species movement off-site. Species located on site	**Low**

	additional infrastructure				should be removed by a trained / qualified professional.	
Use of lighting and noisy vehicles / machinery	The use of lighting may disturb fauna (especially nocturnal fauna) resulting in migration to the surrounding areas	Fauna	Construction and operation	**Low-Medium**	Only use lighting when and where it is essential to the safe operation of the plant. Where lighting is necessary to the plant operation, they should face down. The use of infrared or coloured lighting should be considered as an alternative to white lighting to avoid impacting nocturnal fauna or avifauna e.g. owls and rodents	**Low**
Vehicle, machinery and equipment use	Increased ambient noise during operation, particularly during screening and washing and transportation of materials	Noise	Construction and operation	**Low-Medium**	Vehicles, equipment, machinery generating loud noise volumes must be repaired or fitted with noise abatement protection. Delivery or collection should occur during daylight hours. The use of heavy noise generating machinery (pumps, vehicles etc.) should be limited to daylight hours only.	**Low**
Vehicle and machinery accessing the site	Increased traffic congestion along access roads to and from the site, particularly peak hours	Traffic	Construction and operation	**Low-Medium**	Speed limits and traffic regulations must be adhered to on and off site. Access to surrounding roads must be minimised during peak hour traffic and wherever possible right turns across lanes should be avoided e.g. plan routes in advance and where possible implement use of single route to mitigate traffic impacts.	**Low**
Appointment of contractors and	This will result in direct temporary	Socio-economic	Construction and operation	**Low-Medium**	Local contractors and community members should	**Medium**

subsequent sub-contractors	jobs, as well as up and down stream employment of suppliers or contractors.				be used as far as practical. Promotion of local labour use by subcontractors should be promoted.	
Skills transfer and mentorship, as well as on the job training	Skills transfer and mentorship resulting in improved local skills set in the medium and long term.	Socio-economic	Construction and operation	**Low-Medium**	To ensure that skill transfer occurs, local employees should undergo both informal and formal training, e.g. job shadowing, training courses, tool box talks, skills assessments. A training programme should be developed to track training and development of employees, as well as schedule training.	**Medium**
Road upgrades	Improved accessibility within the local region due to improved road infrastructure.	Socio-economic	Construction and operation	**Low-Medium**	-	**Medium**
Movement on and around the site, storage of materials and waste, as well as possible clearing or construction of infrastructure	The possibility of uncovering unearthed burial grounds and graves within or around the operational area may arise,	Heritage	Construction and operation	**Low-Medium**	Should any heritage resources be found on site, be it archaeological artefacts, graves and structures older than 60 years old; the applicant should immediately cease with the activity and report the incident to the relevant authorities. The applicant should induct employees on the importance of heritage resources and that they should not be impacted in any way if uncovered on site.	**Low**

The supporting impact assessment conducted by the EAP must be attached as an appendix, marked **Appendix E.**

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 Impact Assessment	No graves, archaeological or cultural sites were identified on site during the Heritage Impact Assessment done by Vhubvo archae-Heritage Consultants. If archaeological sites are exposed during mining operations, it should immediately be reported to SAHRA	X	**C** (d)

Specialist report is attached as **Appendix G**.

l) Environmental impact statement

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

During the BA process, the potential impacts of the Borrow Pits on the biophysical and socio-economic environments were assessed and it was determined that there is no significant impacts. The main potential impacts were limited to:

- Biodiversity loss and fragmentation;
- Topsoil loss;
- Surface water contamination;
- Noise and dust generation;
- Loss of a natural resource;
- Improved local infrastructure; and
- Increased job opportunities and skills transfer.

The Borrow Pits are expected to provide employment to and skills transfer within the local community, and on the job training and mentorship by contractors and site engineers (especially the highly skilled personnel from out of country) will be encouraged.

The potential impacts assessed can be sufficiently minimised through the implementation of the recommended mitigation and management measures as detailed in the EMPr and impacts table (Appendix F).

The socio-economic impacts associated with the proposed project should have a positive influence on the area which can be further enhanced through adequate contractor management, and improved plant management through EMPr implementation.

(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 is attached as **Appendix B**

Site map is attached as **Appendix B**

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

Positive Impacts

Positive impacts on the socio-economic status for the area will arise through the provision of employment. During construction temporary employment opportunities will be created for local

residents, thereby creating economic benefit to the community. The road contributes to infrastructure development in the area as well as will provide safer roads for community members.

Negative impacts

Negative impacts such as soil loss, biodiversity loss, increased noise and dust generation and water contamination may potentially occur during the construction and operation of the Borrow Pits. However, even without mitigation these were not determined to be significant mainly due to the limited size of the site, the proposed mining methodologies to be employed, and the degraded nature of the site presently.

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 this document are to:

- Encourage good management practices through planning and commitment to environmental issues;
- Reduce or mitigate environmental impacts and risk that the Chrome SW Plant may cause during operation;
- Define how the management of the environment is implemented and designated responsible person(s), as well as how performance is evaluated and reported;
- Provide rational and practical environmental guidelines to:
    - Minimise disturbance of the surrounding environment;
    - Prevent or minimise contamination and / or pollution;
    - Protect of on-site indigenous flora and fauna;
    - Prevent soil erosion and facilitate re-vegetation of affected areas;
    - Prevent contamination of surface and / or groundwater;
    - Prevent potential spillages and leakages of chemical and hydrocarbon substances as well as general / hazardous wastes;
    - Comply with relevant legislation, regulations, standards and guidelines for the protection of the environment; and
    - Adopt the best practical means available to prevent or minimise adverse environmental impacts.
- Develop waste management practices based on prevention, minimisation, recycling, treatment or disposal of any waste that could be generated as a result of the project;
- Describe monitoring procedures required to identify and prevent the occurrence of potential environmental impacts; and

- Train employees and contractors with regard to their environmental obligations and general awareness on site.

Soil erosion

- Areas cleared shall be levelled in order to minimize the possibility of soil erosion.
- Areas where soil erosion is taking place shall be rehabilitated in order to prevent further erosion of the specific area.
- Dust abatement techniques shall be used on open / bare surfaces to minimize windblown erosion.
- Erosion controls shall be applied to minimize soil erosion from vehicular traffic, e.g. soil compacting and speed limits.
- Equipment and vehicles shall not be allowed outside the designated routes and site boundaries as determined by the site engineers.
- Routine site inspections shall be conducted to assess the effectiveness and the maintenance requirements for erosion and sediment control system.
- Rehabilitation of excavated and / or exposed areas should be completed as soon as practical following aggregate material removal.
- Topsoil should be stockpiled separately in a designated area identified by the engineer in consultation with the engineer. This soil may only be used for on site rehabilitation.

Air quality

- Dust generated by excavation activities, stockpiling and transport shall be controlled by means of water spraying. Similarly, covering stockpiles with a tarpaulin or vegetation should be encouraged.
- Vehicles shall travel at low speed on gravel / dirt roads to limit dust generation.
- Rehabilitation of excavated and / or exposed areas should be completed as soon as practical following aggregate material removal.

Biodiversity Degradation

- Vegetation clearing shall be restricted to the minimum area only. Proper demarcation of areas to be cleared shall be done which will reduce the risk of unnecessary destruction of vegetation.
- The applicant must ensure that any permits for the removal / relocation of plant or faunal species are obtained prior to undertaking these activities. Appropriately qualified personnel must be utilised in this regard.
- Alien vegetation management should be implemented to prevent propagation of alien vegetation on site and spreading to the adjacent properties.

- Faun species located on site should be removed / relocated prior to excavations as far as practical. This could be completed through visual inspection and undertaken by trained staff or third party contractors.

n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

The Environmental Management Programme report contains guidelines, operating procedures and rehabilitation/pollution control requirements which should be binding on the holder of the mining permit. It is essential that this portion be carefully studied, understood, implemented and adhered to at all time.

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

(Which relate to the assessment and mitigation measures proposed)

Due to the brief nature of the site visits conducted at the study area, this assessment is based largely on our understanding of the physical and ecological setting based on available literature and based on information that has been gathered on site.

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.

Following from the above, the sites identified were largely impacted, and the EAP did not identify any environmental fatal flaws or significant negative impacts, provided that the mitigation and management measures are implemented, that should cease progress. The EMPr sufficiently address the potential negative impacts while enhancing potential positive impacts. It is further noted that during the I&AP consultations with local community leaders and members, that there is a strong need for the road upgrades and that the time is of the essence in this regard; as such the use of soils from the identified borrow pits was considered favourably so long as it facilitate local infrastructural development for community benefits.

ii) Conditions that must be included in the authorisation

As per the above, the EMPr must be adhered to during mining operations.

q) Period for which the Environmental Authorisation is required.

2 years

r) Undertaking

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

The EAP confirms that the undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both this BA report and the EMPr.

s) Financial Provision

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

i) Explain how the aforesaid amount was derived.

R500 000 will be paid for financial provision

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 required amount will be provided should the right be granted.

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 ofInvestigation, 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** .

This site is located in a rural area of Burgersdorp Village. The majority of the community members are unemployed and are likely to directly benefit from the road upgrade and borrow pit project through temporary employment opportunities and skills transfer. It was requested by the local communities (during PPP focus group meetings) that local labourers and suppliers be utilised during the project so as to promote local benefits further. The lively hood of the community around Burgersdorp will improve because the road will attract businesses during construction and operational phase, as well as improve access to and through the area.

The site is currently being used illegally for sand mining and dumping of domestic and general waste. The operation of a borrow pit with controlled access will improve the site conditions, and implementation of an approved rehabilitation plan has the potential to improve site conditions in the future. The land owner is in agreement with the use of the site for borrow pit purposes (**Appendix D8**).

(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).

No heritage resources were observed on site. Heritage impact Assessment report is attached as **Appendix G**.

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)**.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

NOTE: An EMPr has been compiled as separate document for onsite implementation during Borrow Pit operations and is provided as Appendix F herewith. The below subsection shall be read in conjunction with this said EMPr.

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).

Already included in part 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).

It is included in part A.

c) Composite Map

(Provide a map **(Attached as an Appendix B**) 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)

Map is attached as appendix B.

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 area shall rehabilitated to allow vegetation establishment. The Borrow pits will be filled, levelled and sloped to minimise erosion and maximise vegetation establishment, and where necessary fertilisation and seeding will be completed along with post monitoring to ensure adequate vegetation establishment.

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

The use of water for activities other than water spraying or human consumption is not likely. Water sourced from current road upgrade activities will be used on site and therefore no water will be sourced from a natural resource in the surrounding areas.

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

No

iv) Impacts to be mitigated in their respective phases

Measures to rehabilitate the environment affected by the undertaking of any listed activity

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 m^2)	**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.
Soil loss due to handling, excavation and stockpiling	Construction and Operation	~4ha	• Topsoil must be stripped aside and be used for rehabilitation. • All areas susceptible to erosion must be vegetated or graded appropriately to it does not result in excessive erosion, gully formation and/or pooling of water. • The contractor shall be responsible for the safe siting, operation, maintenance and closure of any spoil site used during the contract period. This shall include existing spoil sites that are being re-entered. • Before spoil sites may be used, proposals for their locality, intended method of	• NEMA	After permit has been issued

			operation, maintenance and rehabilitation shall be given to the Engineer for approval.		
Removal of indigenous, protected plant species or red data species	Construction and Operation	~4ha	• Where areas are going to be disturbed through the destruction of vegetation, for example the establishment of the construction camp, the vegetation occurring in the area to be disturbed must be salvaged and kept in a controlled environment such as a nursery, for future re-planting in the disturbed areas as a measure of rehabilitation; • The construction camp, office and storage areas for material and equipment must be fenced in to prevent impacts and human interference to spread further than the site.	• National Environmental Management: Biodiversity Act, 2004 (Act No. 10 Of 2004): Norms And Standards For The Translocation Of Indigenous Species In South Africa (2015) (General Notice 44) • NEM:BA – Alien and Invasive Species Regulations, 2014 (GNR 598) (2014) • NEM:BA – Alien And Invasive Species Regulations, 2014 (General Notice 83)	After permit has been issued
Use of Herbicide / Pesticides for the eradication of alien plant and/or faunal species	Construction and Operation	~4ha	• The use of herbicides shall be in compliance with the terms of the Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947	• National Environmental Management: Biodiversity Act,	After permit has been issued

			(Act No 36 of 1947). In terms of this Act, a registered pest control operator shall apply herbicides, or shall supervise the application of herbicides. • The use of herbicides shall be restricted to the removal and control of alien vegetation, and shall not be permitted within identified sensitive areas.	2004 (Act No. 10 Of 2004): Norms And Standards For The Translocation Of Indigenous Species In South Africa (2015) (General Notice 44) • SANS 10206:2010	
Storage and Handling of hazardous substances including fuel and gas	Construction and Operation	~10m^2	• Before containment or storage facilities can be erected, the contractor shall furnish the Engineer with details of the preventative measures which are proposed to be installed in order to mitigate against pollution of the surrounding environment from leaks or spillage. • The preferred method shall be a concrete floor that is bunded. • The proposals shall also indicate the emergency procedures to be implemented in the event of misuse or spillage of substances that will negatively impact on an individual or the environment. • All the necessary handling and safety equipment required for the safe use of petrochemicals and oils shall be provided by the contractor to, and used or worn by	• Mine Safety and Health Act, 1996 (Act 29 of 1996) • Various SANS • NEM:WA • GNR 331_National Norms and Standards Remediation of Contamination	After permit has been issued

			the staff whose duty it is to manage and maintain the supplier's plant, machinery and equipment. • Petrochemicals, oils and identified hazardous substances shall only be stored under controlled conditions. • All hazardous materials will be stored in a secured, area that is fenced with access limited to authorised personnel only. • The contractor shall provide proof that relevant authorisation to store such substances has been obtained from the relevant authority. • In addition, hazard signs indicating the nature of the stored materials shall be clearly displayed on the storage facility or containment structure. • In the event of a reportable spillage under Section 30 NEMA or 28 NWA, the contractor is to appoint someone to clean up immediately. Spillage must be reported to Department of Water Affairs as applicable. • Small non reportable spills must be clean by the contractor / staff immediately using on site spill kits. • Spill kits must be retained on site and in good condition..		
Noise and air pollution	Construction and Operation	~4ha	• To minimize air and noise pollution, construction team shall use only equipment in good condition, which shall be properly maintained.	NEM:AQA (No. 39 of 2004) as amended	After permit has been issued

			• Cleared areas and roads must be undergo regular dust suppression to prevent dust generation • Disturbance or disruption of the daily lives of local communities and their livelihood, including noise and dust pollution shall be minimized in as far as is practicable. • Construction must be limited to normal working hours i.e. per the Mining Health and Safety Act • All machinery, including earthmoving vehicles must be regularly maintained. • Installation of sound vibration detectors on plant machinery is recommended. • Construction vehicles must use designated entry and exit routes so that noise impacts can be largely confined to specific access routes. • All construction activities must abide to national noise laws and municipality by-laws. • Noisy operational activities should be undertaken during day light hours only. If noisy activities are temporarily required outside day light hours, neighbours should be informed in advance. • A complaints register must be made available the site security office. Should any complaints be received, these must be logged in the complaints register and reported to the responsible person on-site. All complaints must be closed out		

			within 14 days.		
Potential fuel and oil spills	Construction and Operation	~4ha	• No maintenance/servicing of construction vehicles is permitted on side. Places where hazardous material or substances are handled / stored must be bunded. • In the case of spillage, the contractor will be liable to arrange for a competent company to clear the affected area. • Chemical toilets must be provided at least 100m from the non-perennial stream and must be regularly serviced to avoid spills or leaks from toilets. • Dirty surface run-off should be directed to water-tight holding facilities i.e. contained within the onsite impoundments (e.g. sump and holding dam) • Regular inspections of all bund areas should be undertaken to ensure no leakages occur. • No discharge of pollutants such as contaminated water, cement, fuels or oils should be allowed to flow off-site. The French drain system should be regularly inspected to ensure continued functionality and maintenance.	• Dangerous Goods (Storage and Handling) SANS standards various • Safety Data Sheet	After permit has been issued
Storm water management	Construction and Operation	~4ha	• A storm water management plan should be compiled and implemented for the site to ensure no contaminated storm water enters the environment. If deemed necessary, the determination and separation of clean and dirty water areas should be implemented.	• NWA • NWA: GNR 704 • NEMA	After permit has been issued

			• Erosion protection measures should be implemented on the site to reduce erosion and sedimentation of the receiving environment. Measures could include: ▪ Sandbags; ▪ Sediment traps; ▪ Bunding around soil stockpiles; ▪ Vegetation of areas not to be developed.		

e) Impact Management Outcomes

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

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.**
Soil loss due to handling, excavation and stockpiling	Loss of topsoil, vegetation	Soil Biodiversity	• Construction and Operation	• Topsoil must be stripped aside and be used for rehabilitation. • All areas susceptible to erosion must be vegetated or graded appropriately to it does not	Manage and avoid.

				result in excessive erosion, gully formation and/or pooling of water. • The contractor shall be responsible for the safe siting, operation, maintenance and closure of any spoil site used during the contract period. This shall include existing spoil sites that are being re-entered. • Before spoil sites may be used, proposals for their locality, intended method of operation, maintenance and rehabilitation shall be given to the Engineer for approval.	
Removal of indigenous, protected plant species or red data species during excavations	Loss of topsoil, vegetation	Soil Biodiversity	• Construction and Operation	• Where areas are going to be disturbed through the destruction of vegetation, for example the establishment of the construction camp, the vegetation occurring in the area to be disturbed must be salvaged and kept in a controlled environment such as a nursery, for future re-planting in the disturbed areas as a measure of rehabilitation; • The construction camp, office and storage areas for material and equipment must be fenced in to prevent impacts and	Manage and avoid.

				human interference to spread further than the site.	
Use of Herbicide / Pesticides for the eradication of alien plant and/or faunal species	Loss of topsoil, vegetation	Soil Biodiversity	• Construction and Operation	• The use of herbicides shall be in compliance with the terms of the Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No 36 of 1947). In terms of this Act, a registered pest control operator shall apply herbicides, or shall supervise the application of herbicides. • The use of herbicides shall be restricted to the removal and control of alien vegetation, and shall not be permitted within identified sensitive areas.	Manage and avoid.
Storage and Handling of hazardous substances including fuel and gas	Soil and water contamination	Soils Surface and Ground Water	• Construction and Operation	• Before containment or storage facilities can be erected, the contractor shall furnish the Engineer with details of the preventative measures which are proposed to be installed in order to mitigate against pollution of the surrounding environment from leaks or spillage. • The preferred method shall be a concrete floor that is bunded. • The proposals shall also indicate the emergency procedures to be implemented	Manage and avoid.

				in the event of misuse or spillage of substances that will negatively impact on an individual or the environment. • All the necessary handling and safety equipment required for the safe use of petrochemicals and oils shall be provided by the contractor to, and used or worn by the staff whose duty it is to manage and maintain the supplier's plant, machinery and equipment. • Petrochemicals, oils and identified hazardous substances shall only be stored under controlled conditions. • All hazardous materials will be stored in a secured, area that is fenced with access limited to authorised personnel only. • The contractor shall provide proof that relevant authorisation to store such substances has been obtained from the relevant authority. • In addition, hazard signs indicating the nature of the stored materials shall be clearly displayed on the storage facility or containment structure. • In the event of a reportable	

				spillage under Section 30 NEMA or 28 NWA, the contractor is to appoint someone to clean up immediately. Spillage must be reported to Department of Water Affairs as applicable. • Small non reportable spills must be clean by the contractor / staff immediately using on site spill kits. • Spill kits must be retained on site and in good condition..	
Noise and air pollution	Increased dust pollution Health impacts	Air Social	• Construction and Operation	• To minimize air and noise pollution, construction team shall use only equipment in good condition, which shall be properly maintained. • Cleared areas and roads must be undergo regular dust suppression to prevent dust generation • Disturbance or disruption of the daily lives of local communities and their livelihood, including noise and dust pollution shall be minimized in as far as is practicable. • Construction must be limited to normal working hours i.e. per the Mining Health and Safety Act	Manage and avoid.

				• All machinery, including earthmoving vehicles must be regularly maintained. • Installation of sound vibration detectors on plant machinery is recommended. • Construction vehicles must use designated entry and exit routes so that noise impacts can be largely confined to specific access routes. • All construction activities must abide to national noise laws and municipality by-laws. • Noisy operational activities should be undertaken during day light hours only. If noisy activities are temporarily required outside day light hours, neighbours should be informed in advance. A complaints register must be made available the site security office. Should any complaints be received, these must be logged in the complaints register and reported to the responsible person on-site. All complaints must be closed out within 14 days.	
Potential fuel and oil spills	Soil and water contamination	Soils Surface and Ground Water	• Construction and Operation	• No maintenance/servicing of construction vehicles is permitted on side. Places where hazardous material or	Manage and avoid.

				substances are handled / stored must be bunded. • In the case of spillage, the contractor will be liable to arrange for a competent company to clear the affected area. • Chemical toilets must be provided at least 100m from the non-perennial stream and must be regularly serviced to avoid spills or leaks from toilets. • Dirty surface run-off should be directed to water-tight holding facilities i.e. contained within the onsite impoundments (e.g. sump and holding dam) • Regular inspections of all bund areas should be undertaken to ensure no leakages occur. • No discharge of pollutants such as contaminated water, cement, fuels or oils should be allowed to flow off-site. The French drain system should be regularly inspected to ensure continued functionality and maintenance.	
Storm water management	Soil and water contamination	Soils Surface and Ground Water	▪ Construction and Operation	• A storm water management plan should be compiled and implemented for the site to ensure no contaminated storm	Manage and avoid.

				water enters the environment. If deemed necessary, the determination and separation of clean and dirty water areas should be implemented. • Erosion protection measures should be implemented on the site to reduce erosion and sedimentation of the receiving environment. Measures could include: ▪ Sandbags; ▪ Sediment traps; ▪ Bunding around soil stockpiles; • Vegetation of areas not to be developed.	

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).

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)
Site clearance and excavaions	Loss of biodiversity	Managed though demarcation, biodiversity plan, and alien invasive management	Weekly	NEM:BA
excavation	Noise	construction should be limited to normal working hours that is 7h00 to 17h00	Daily	NEM:AQA
hauling and transport	Dust	Dust suppression control should be implemented	When required	NEM:AQA
stockpiles	Soil erosion	Proper storage of spoil material.	When required	NEM:AQA

		Dust Control Measures and Storm water control measures		
Storage hazardous materials	Water pollution	Chemical ablution is recommended and should be maintained	Weekly	National Water Act, 1998 (Act No. 36 0f 1998)
Stormwater management	Surface water contamination	Clean and dirty water should be separated and dirty water contained onsite.	Ongoing (daily)	National Water Act, 1998 (Act No. 36 0f 1998) GNR 704

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 area shall be rehabilitated to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix. The excavation slopes and floor (including previously over-excavated areas) of the borrow pit shall be finished off to create a smooth surface and neat appearance.

- **Soil Erosion**
  - Storm water management control measures shall be implemented.
  - Ensure effective topsoil management practices.
  - A photographic record shall be kept of all spoil sites for monitoring purposes, and must include photographs of before the site is used, as well as after re-vegetation.
  - Appropriate re-vegetation measures to minimise soil erosion will be undertaken by the Concessionaire. This will include either strip sodding or seeding or full sodding.
  - After the stockpiled material has been removed, the site shall be re-instated to its original condition.
  - No foreign material generated/deposited during construction shall remain on site. Areas affected by stockpiling shall be landscaped, top soiled, grassed and maintained at the contractor's cost until clearance from the ECO is received.

- **Vegetation destruction**

Land capability of disturbed / affected areas shall be maximized through effective rehabilitation and remediation practices.

(b) Confirm specifically that the environmental objectives in relation to closure have been

consulted with landowner and interested and affected parties.

The environmental objectives in relation to closure have been discussed with interested and affected parties during the stakeholder meeting which was held on the 9th of December 2015 and also communicated in the EMPr. Consultation with the landowner and I&APs is still in progress as the EMPr will be made available to stakeholders from the 18th of December 2015 to 5 February 2015.

(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.

The approach to the work is set out in detail in the following section for the identified tasks.

VEGETATION

- Top soil will be reinstated to ensure revegetation
- No construction equipment, vehicles or unauthorized personnel shall be allowed onto areas that have been finished off.
- Only persons or equipment required for the preparation of areas and rehabilitation of the site shall be allowed to operate on these areas.

EROSION

- Any tunnels or erosion channels developed during the extraction of gravel material shall be backfilled and compacted and the areas restored to an appropriate condition. Stabilisation of cleared areas to prevent and control erosion shall be undertaken.

WATERCOURSE SEDIMENTATION

- Storm water surface runoff- Speed control open berm

DUST

- During rehabilitation, the contractor shall ensure that the generation of dust is minimised and shall implement dust suppression measures (e.g. water spray vehicles, covering of material stockpiles, etc.) if and when required.

HAZARDOUS MATERIAL

- There will be No hazardous material at borrow pit except spillages from hauling trucks. No chemicals will be used during mining activities

FIRE

- Major steps would be taken to avoid increasing the risk of fire through activities on site. Basic fire-fighting equipment will be available during borrow pit rehabilitation.
- No possible threat of fire except through cigarettes. This will be addressed during toolbox talks

SPILLAGES

- Water pollution should be prevented from direct or indirect spillage of pollutants such as fuels or oils. In the event of a spillage, the Contractor will be liable to arrange for competent instances to clear the affected area.

LANDSCAPING AND GROUND SURFACE PREPARATION

GROUND SURFACE PREPARATION

- Cut and fill slopes shall be shaped and trimmed to approximate the natural condition and contours as closely as possible.

LAND SCALPING

- All visible weeds shall be removed from the area before replacing topsoil Compacted soil shall be ripped along the contour and hand-trimmed. Topsoil shall then be spread evenly over the surface. The final prepared ground surface shall be furrowed to follow the natural contours of the land.

LAND USE

- The areas impacted shall be reclaimed for future use (e.g. agricultural)

The borrow pit rehabilitation plan should be adhered to so that negative environmental impacts can be avoided. This borrow pit rehabilitation plan should be used as an on-site reference during rehabilitation of borrow pits

.

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

The rehabilitation plan of the proposed mining activity in line with the closure objectives. An application for borrow pit closure will be submitted within three months prior to closure for DMR approval and will include the rehabilitation methodologies implemented, monitoring during and post closure, responsible persons, and financial provisions available for rehabilitation.

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

Breakdown for Rehabilitation cost

Activity	Cost
Site restoration and access roads	R50,000.00
Well abandonment, site clearance	N/A
Collection and disposal of waste	N/A
Shaping , levelling and vegetation subsided areas rehabilitation of damaged existing infrastructure (fences)	R50,000.00
Monitoring, maintenance, management cost	R50,000.00
Follow up monitoring, maintenance, planting seeding and fertilizer application (revegetation)	R50,000.00
Total	R200,000.00

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

The required amount will be provided should the right be granted.

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
Soil stockpiling	Location of stockpile	Stockpiles to be located on area where indicated by the mine plan These piles should not impede drainage	Environmental officer contractor	Monthly Continuously
Vehicle maintenance	Water pollution	Ensure all vehicles are in good working order	Environmental officer contractor	Monthly Continuously
Dust	Air quality	Usage of water tanker as and when necessary	Environmental officer contractor	Monthly Continuously
Site clearance	Vegetation clearance	Vegetation should be limited to demarcated area only	Environmental officer contractor	Monthly Continuously
Excavation	Heritage impacts	No archaeological impact were discovered during inspection	Environmental officer contractor	Monthly bases Continuously

Biodiversity	Planting and spreading of alien plant species	Alien vegetation shall be managed in terms of the Regulation GNR. 1048 of 25 May 1984 (as amended) issued in terms of the Conservation of Agricultural Resources Act, Act	Contractor, Municipality	Daily
Surface and Groundwater pollution	Managed sanitation facilities for construction workers	Regular servicing of chemical toilets	Contractor and ECO	Daily

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

NTC Group will, on a quarterly basis, undertake EMPr performance assessments of the Borrow Pits operations. Records of the assessment will be submitted to the applicant who will be made aware of non-compliances and recommendations required to rectify such. Similar, copies of these quarterly reports can be issued to the DMR on request for their records.

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.

The EMPr forms part of the formal site induction for all contractors, sub-contractors and labourers, preferably in their native language. The induction training will, as a minimum, include the following:

- The importance of conformance with environmental policies;
- The environmental impacts, actual or potential;
- Roles and responsibilities in achieving conformance with the company's environmental policies and procedures;
- The mitigation measures required to be implemented when carrying out activities;
- The potential consequences of defying specified operating procedures;
- Operational Procedures Documents and Plans implemented and their availability;
    - Storm water management;
    - Monitoring;
    - Vegetation management;
    - Safety Data Sheets (SDS);
    - Maintenance and training schedules/records,
    - Fuel and chemical management;
    - Traffic management;
    - Air / Dust management;
    - Housekeeping

- Use of PPE
- Machinery, equipment and vehicle use
- Fires and/or floods

- Environmental awareness;
- Heritage or culturally significant area management (inter alia the graves north west of the site);
- Pollution prevention and incident / accident reporting and close-out;
- Emergency procedures and contact persons(s).

Contractors, sub-contractors and employees must acknowledge their understanding of the EMPr and environmental responsibilities by signing an induction attendance record.
Regular toolbox talks should be completed and include an environmental element to ensure continual awareness is maintained on site.

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

The environmental awareness done which include the following:

- The importance of conformance with all environmental policies;
- The environmental impacts, actual or potential, of their work activities;
- The environmental benefits of improved personal performance;
- Their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirement of environmental management systems, including emergency preparedness and response requirements;
- The potential consequences of departure from specified operating procedures;
- The mitigation measures required to be implemented when carrying out their work activities.

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

The financial provision will be reviewed annually.

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:

NTC Group (Pty) Ltd

Name of company:

Date:

-END-