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mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT
And
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT: THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

TEL NO: 012-426-6200

FAX NO: 012-348-1680
POSTAL ADDRESS: PRIVATE BAG X17, LYNNWOOD RIDGE, 0040
PHYSICAL ADDRESS: 38 IDA STREET MENLO PARK
FILE REFERENCE NUMBER SAMRAD: NOT APPLICABLE

FILE REFERENCE NUMBER SAMRAD: NOT APPLICABLE

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 ASSESSMENT AND BASIC ASSESSMENT REPORT

3. Contact Person and correspondence address

a) Details of

i) Details of the EAP

Name of the Practitioner: Seshni Govender

Tel No.: 087 352 1592

Fax No.: 011 798 6005

E-mail address: seshni.govender@rhdhv.com

ii) Expertise of the EAP

(1) **The qualifications of the EAP**

(with evidence)

Prashika Reddy (BSc Hons Botany and BSc Hons Geography), Professional Natural Scientist (400133/10)

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

(In carrying out the Environmental Impact Assessment Procedure)

Prashika Reddy is a Principal Associate with 15 years' experience in various environmental fields including: EIAs, EMPrs, PPP and environmental monitoring and audits. She is/has been part of numerous multi-faceted large-scale projects, including the establishment of linear developments (roads and power lines), industrial plants, electricity generation plants, mixed-use developments and mining projects.

Refer to **Appendix A** for the EAP's Curriculum Vitae.

b) Location of the overall Activity

Farm Name:	Amatava 41 KS Ptn 12
Application area (Ha)	13ha
Magisterial district:	Mokalagwena Local Municipality and Waterberg District Municipality
Distance and direction from nearest town	5.1 km south west of Mokopane
21 digit Surveyor General Code for each farm portion	T0KS00000000004100012

c) Locality map

(show nearest town, scale not smaller than 1:250000).

Refer to **Appendix B** for Locality Map.

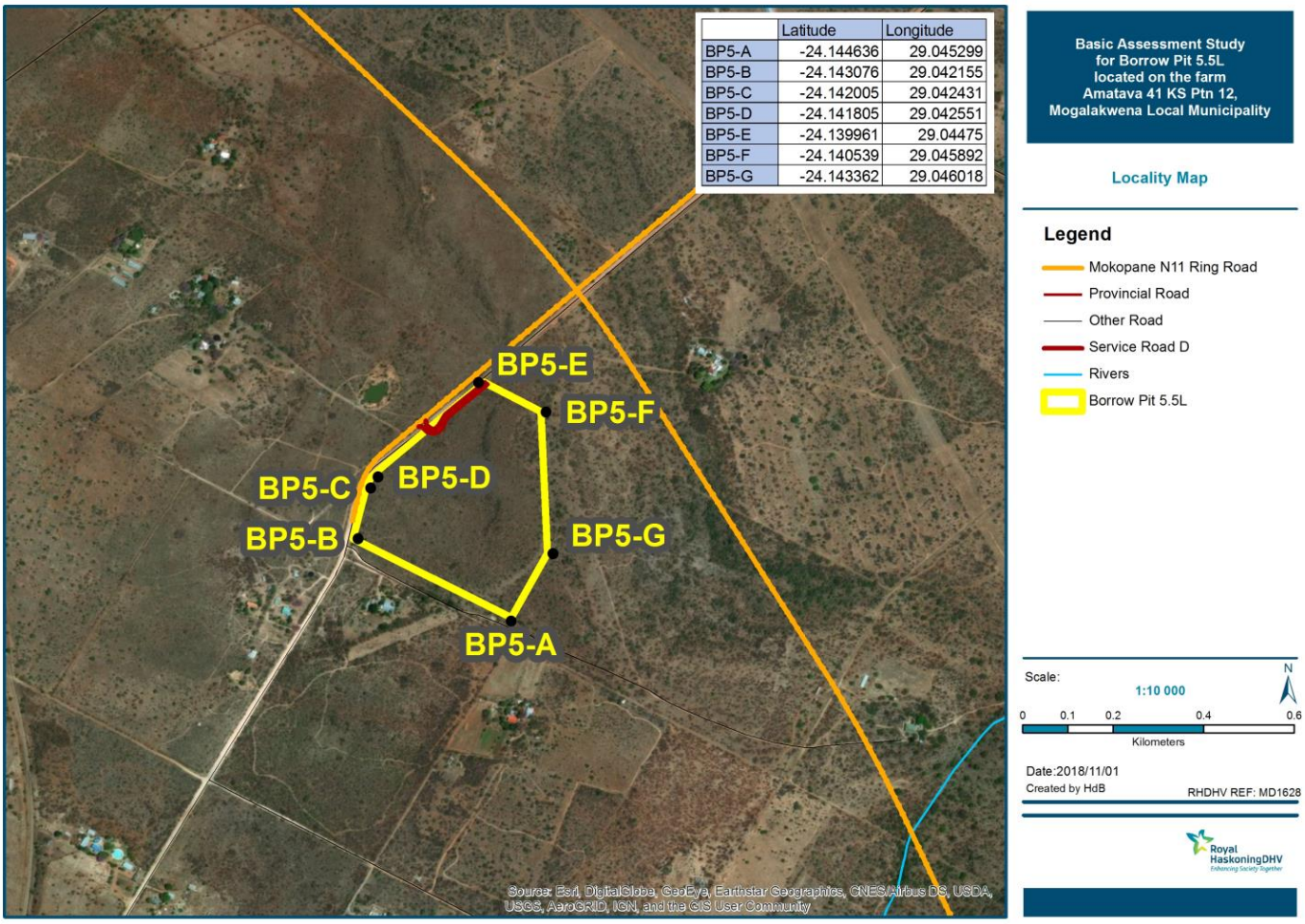


Figure 1: Locality map

d) Description of the scope of the proposed overall activity

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

The South African National Roads Agency Ltd (SANRAL) has commissioned the *Detail Design and the Construction Monitoring of the N11-13X Mokopane Ring Road* to divert the heavy vehicle traffic that travels to and from the mines on the western side of Mokopane and to Botswana, from the already congested existing N11 section which passes through the existing villages and the Mahwelereng Township.

The N11-13X Mokopane Ring Road is a “green field” project where a new road will be constructed. The class of the new road will be Class 1. The new road to be constructed will typically have an overall width of 13.4 m where the initial carriageway will comprise a minimum 2.5 m outer shoulder, 2 x 3.7 m lanes, and 2.5 m inner shoulder. In general, the road reserve varies between 71 – 75 m but there are wider sections where there is a deep cutting or because of allowance for future interchanges.

A limited amount of gravel (G5 – G7 quality) will be available from cut widenings within the road reserve. The remainder of the gravel required for the proposed road construction (gravel layer works) will need to be sourced from borrow pits. This Basic Assessment focuses on Borrow Pit 5.5L within Portion 12 of the farm Amatava 41 KS.

Access will be provided from Service Road D authorised as part of the main N11-13X Mokopane Ring Road project.

Refer to **Appendix C** for the Site Layout Plan.

The details of BP 5.5L are provided in Table 1.

Table 1: Borrow Pit 5.5L details

Details	BP 5.5L
Co-ordinates of mining area – Total = 13ha	13ha: A: 24° 8'40.94"S 29° 2'43.07"E B: 24° 8'35.04"S 29° 2'32.15"E C: 24° 8'31.42"S 29° 2'33.05"E D: 24° 8'30.64"S 29° 2'33.58"E E: 24° 8'23.90"S 29° 2'40.75"E F: 24° 8'25.99"S 29° 2'45.58"E G: 24° 8'36.11"S 29° 2'46.07"E
Name of registered owner of property	Maraba Communal Property Association
Details of property owner	Mr LJ Shadung
Current uses of the property	Agriculture

(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 983, 984 or 985 as per EIA Regulations, 2014 or GNR 324, 325 and 327 as per EIA Regulations, 2014 as amended)**
Mining (borrow pit approval including the associated infrastructure and earthworks related to the extraction of a mineral resource or the primary processing of the mineral resource)	13ha	x	GNR 983 (GNR 327) Activity 21
Closure of borrow pit	13ha	x	GNR 983 (GNR 327) Activity 22 (i)
Removal of indigenous vegetation of more than 1 ha or more but less than 20 ha	13ha	x	GNR 983 (GNR 327) Activity 27
The clearance of an area of 300 square metres or more of indigenous vegetation within a critical biodiversity area	480m^2	x	GNR 985 (GNR 324) Activity 12 (e) (ii)

(ii) Description of the activities to be undertaken

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

The total proposed borrow area will not exceed 13ha in extent. The mining activity details are summarised below:

	BP 5.5L
Mining Area Borrow pit area:	13ha
Maximum depth:	5m
Material quality:	G5/G6 Gravel for fill and selected material
Volume of material:	170 000m^3

Construction Phase

No construction activities will be carried out on this site. All equipment and structures to be used will be mobile.

Operational Phase

Processing

The road construction material will be obtained through use of an excavator. Due to the nature of the material no blasting or crushing is required. The planned sequence of mining activities is as follows:

- Topsoil / vegetation will be removed ahead of the mining face. Initially there will be stripping of vegetation and topsoil. Any seed-bearing material would be kept separate for use during rehabilitation or preferably mulched into the topsoil. Topsoil would, where possible, will be stripped to a depth of 200mm and stockpiled, separately from other soil layers in piles not exceeding 2m in height. Material that cannot be used (i.e. overburden) for the road construction project would be used in the reshaping of the site during rehabilitation and would be stockpiled separately.
- Once the area is stripped, material will be ripped and dug up using an excavator and placed onto haul vehicles for transport to the part of the road construction area where it is required. Mining will commence in such a way that there will be no excessive bench heights which could represent a safety hazard.
- The borrow pit will comprise of one compartment and will be mined to a maximum depth of 5m (measured from natural ground level to the base of the excavation).

Supporting activities

In order to produce the road construction material, there are a number of supporting activities and services being provided to assist in the day to day extraction of the material from the borrow pits. These activities and services include:

- A tank of potable water for domestic consumption will be brought to the site. Process water will be abstracted from existing sources (Municipal or farmer) and used on the site as well as for and for emergency dust suppression.
- A diesel generator will be used for provision of electricity when necessary. Diesel storage for the generator will not exceed EIA Regulatory triggers.
- Access is available from the Service Road D. No new access roads will be created.
- Chemical toilets will be made available for use by workers for the duration of the operation of the borrow pit.
- Refuse bins will be made available.

Decommissioning and Rehabilitation Phase

SANRAL will ensure that the borrow pit is rehabilitated and left in an environmentally acceptable state and to the satisfaction of the Department of Minerals Resources (DMR) and land owners.

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 COMPLY 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)
National Environmental Management Act (No. 107 of 1998 [as amended]) and EIA Regulations (2014) as amended in 2017	Mining activities	The mining activity associated with the project triggers Listing Notice 1 and 3 activities and thus requires an Environmental Authorisation (EA). A Basic Assessment Study is being undertaken and an EMPr has been compiled.
Mineral and Petroleum Resources Development Act (No. 28 of 2002)(as amended)	Mining and closure activities	SANRAL is exempt from applying for a mining permit, but will require an EA in terms of the EIA Regulations (2014) as amended in 2017. A Closure Certificate will be required in terms of section 43 of the MPRDA as SANRAL is not exempted from Section 43.
Mineral and Petroleum Resources	Closure	A Closure Certificate will be required

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 COMPLY 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)
Development Amendment Act (No. 49 of 2008)		in terms of section 43 of the MPRDA. The holder of a mining approval remains responsible for any environmental liability, pollution, ecological degradation, compliance to the conditions of the environmental authorisation and the management and sustainable closure thereof, until a closure certificate is issued.
National Water Act (No. 36 of 1998) and General Authorisation in terms of Section 39 of the National Water Act, for Water Uses as defined in Section 21 (c) or Section 21 (i), GN 509, 26 August 2016	Mining activities within or close to watercourses	The proposed borrow pit is not within 100m from the edge of a river or within 500m of a wetland or pan, therefore no Section 21 c and i water uses are applicable. Water for construction will be obtained from an authorised source (i.e. Municipality or farmer) a Section 21 a water use is therefore not applicable.
National Environmental Management: Waste Act (No. 59 of 2008) and	Waste generation associated with mining activities	Waste from the mining activities will not trigger a listed activity in terms of GN 921, Category A, B or C, hence no Waste Management Licence will be applied for.
National Heritage Resources Act (No. 25 of 1999) and Regulations	Mining activities impact on heritage resources	A Phase I Heritage Impact Assessment was conducted. No areas designated for socio-religious activities were recorded. No remains from the historical period were recorded. No formal or informal graves could be identified. No remains from the Iron Age were recorded. No Stone Age remains were recorded. A desktop paleontological study has been conducted, bearing in mind the age and nature of the strata affected by the proposed development it is considered highly unlikely that any fossils will be encountered, save stromatolites. However, there remains a possibility that Caenozoic aged fossils may be present in cave breccia, although no work has been carried out in this area. No permit will be required from SAHRA.
National Environmental Management: Air Quality Act (No. 39 of 2004) and National Dust Control	Generation of dust during mining activities	Mitigation measures relating to the management of dust impacts are included ***Part B: EMPr*** of this report.

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 COMPLY 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)
Regulations (2013)		
SANS 10103 (Noise Regulations)	Noise impacts during mining	Mitigation measures relating to the management of noise impacts are included ***Part B: EMPr*** of this report.
National Forests Act (No. 84 of 1998) and Regulations	Removal of protected trees during site clearance for mining	Department of Forestry and Fisheries (DAFF) permit will be required to remove, cut or destroy any protected tree species. No protected tree species were noted at the borrow pit site. However, *Sclerocarya birrea subsp caffra* (Marula) and *Vachellia erioloba* (Camel Thorn) are expected to occur within the study area and before any proposed development takes place, a detailed walk down of the area must take place to mark all protected tree species.
National Environmental Management Biodiversity Act (No. 10 of 2004) and Regulations	Threatened or protected species and alien and invasive species management	Mitigation measures relating to the management of alien invasive plants are included in ***Part B: EMPr*** of this report.
Occupational Health and Safety Act (No. 85 of 1993)	General duties of employers to their employees	Mitigation measures ensuring the health and safety of employees are included ***Part B: EMPr*** of this report.
Exemption of Organs of State from certain Provision of the MPRDA - GNR 762, 25 June 2004	Exemption of SANRAL as an Organ of State from provision 22 & 27 of the MPRDA	SANRAL is exempt from applying for a mining permit but notwithstanding this exemption the provisions pertaining to environmental management, financial provision and mine closure in terms of the MPRDA and its Regulations applies to quarrying and borrowing activities undertaken by SANRAL during the construction, upgrading or maintenance of road infrastructure.
Guideline Document for the Evaluation of the Quantum of Closure-related Financial Provision provided by a mine, January 2005	Financial provision associated with the mining activity	Financial provision for the rehabilitation or management of negative environmental impacts associated with the mining activity.
Regulations pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations – No R1147, 20 November 2015	Financial provision associated with the mining activity	Financial provision for the rehabilitation or management of negative environmental impacts associated with the mining activity.
Mining and Biodiversity Guidelines 2013	Terrestrial Habitat	The north-eastern portion of the borrow pit area is situated within an area considered High Biodiversity Importance, with the remaining south-western portion currently not ranked. High Biodiversity Importance areas are important for conserving biodiversity, for supporting or buffering other biodiversity priority

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 COMPLY 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)
		areas, for maintaining important ecosystem services for particular communities or the country as a whole. An environmental impact assessment should include an assessment of optimum, sustainable land use for a particular area and will determine the significance of the impact on biodiversity. Mining options may be limited in these areas, and red flags for mining projects are possible. Authorisations may set limits and specify biodiversity offsets that would be written into licence agreements and/or authorisations.
SANS 10103 (Noise Regulations)	Noise generation during mining activities	Mitigation measures relating to the management of noise impacts are included ***Part B: EMPr*** of this report.
Mogalakwena Local Municipality IDP (2012 – 2016)	Needs and desirability of the proposed mining activities associated with road development	The project considers the planning requirements of the Municipality and reasonable measures have been taken to determine the best practicable environmental option for the proposed sites.
Waterberg District Municipality IDP (2016/17)	Needs and desirability of the road development and associated mining activities	The project considers the planning requirements of the Municipality and reasonable measures have been taken to determine the best practicable environmental option for the proposed sites.
Waterberg District Municipality SDF (2009)	Needs and desirability of the road development and associated mining activities	The project considers the planning requirements of the Municipality and reasonable measures have been taken to determine the best practicable environmental option for the proposed sites.
Waterberg District Municipality EMF (2010)	Needs and desirability of the road development and associated mining activities	The project considers the planning requirements of the Municipality and reasonable measures have been taken to determine the best practicable environmental option for the proposed sites.

e) 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).

Platinum is the major resource mined in the area and the current transportation of the concentrate to the smelter near Polokwane or to Gauteng is by road. The current route for both these destinations follows the N11 through the centre of the Mokopane CBD. All the through traffic from Gauteng to Northern Botswana on the N11 and beyond also follows this route through town.

The N11-13X Mokopane Ring Road project aims to divert the heavy vehicle traffic that travels to and from the mines on the western side of Mokopane and to Botswana, from the already congested existing N11 section which passes through the existing villages and the Mahwelereng Township. This will improve road safety for both traffic and pedestrians.

Furthermore, the continued existence and expansion of the mining industry in the Mogalakwena area is vital for desperately needed employment creation and concomitant poverty alleviation. Improvement in existing transport infrastructure, viz. the realignment of the N11, to ensure this continuity is vital.

BP 5.5L will therefore provide the required material for layer works for the construction of the N11-13X project.

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

The location of BP 5.5L is preferred for the following reasons:

- Testing has shown that BP 5.5L has the required material for additional fill and for the construction of gravel layer works.
- Access will be provided from the Service Road D and the borrow pit is located adjacent to the N11 project hence haulage distance will be reduced.
- Freshwater – No freshwater resources were identified within the footprint area of BP 5.5L or within 500m thereof.
- Vegetation – BP 5.5L falls within the Mixed Bushveld Habitat Unit and the north-eastern portion of the borrow pit area is situated within the within the Polokwane Plateau Bushveld (Least Threatened) vegetation type. While the south-western portion falls within the Makhado Sweet Bushveld (Vulnerable) vegetation type. The habitat unit is dominated by the indigenous *Ziziphus macronata (Buffalo Thorn)* and other Indigenous species associated with the vegetation type namely*, Combretum apiculatum (Red Bush Willow), Vachellia karroo (Sweet thorn) and Gymnosporia senegalensis (Red Spike-Thorn) were observed.* Overall the habitat unit has been degraded by historic and current anthropogenic disturbances, resulting in bush encroachment in disturbed areas and alien plant proliferation, limiting the diversity and abundance of species indigenous to the vegetation type. A small portion of the western boundary of the borrow pit area falls within a Critical Biodiversity Area (CBA) 2 and the remaining portion of the borrow pit area is other natural areas. The habitat unit is no longer in a pristine condition, or a true representation of the Polokwane Plateau Bushveld and Makhado Sweet Bushveld vegetation type. As such, the conservation importance of the study area is considered to be of a moderately low level. No floral or faunal SCC were encountered during the field assessments, but *Gyps coprotheres* (Cape Vulture) and *Python natalensis* (Southern African Python) are likely to occasionally utilise the study area for foraging purposes.
- Heritage – No object of heritage (archaeology and palaeontological) significance were identified within or in close proximity to BP 5.5L.
- Noise and dust impacts are deemed to be of low significance provided that mitigation measures included in the EMPr are adhered to.

g) 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) Property alternatives:

No property alternatives were considered as the location of the borrow pit was in close proximity to the new road alignment

which will result in minimal haulage costs.

(b) Type of activity alternatives:
The contractor can propose commercial sources as an alternative to the gravel from BP 5.5L but the costs might be prohibitive. Should the borrow pit yield insufficient quantities of gravel, this alternative might be pursued.

(c) Design or Layout:
No design or layout alternatives have been assessed.

(d) Technology alternatives:
No technology alternatives have been assessed.

(e) Operational Alternatives:
Two rehabilitation alternatives were considered i.e. progressive rehabilitation (parallel to the material extraction) and rehabilitation of the mining area at the end of the mining activities.

(f) No-go alternative:
The gravel obtained from BP 5.5L will be used for the construction of the N11-13X project. Should the authorisation not be granted, SANRAL will have to obtain material from other sources which may be costly due to haul distances and paying for material from commercial sources which would compromise the timeframes and financial viability for the construction of the N11-13X project.

ii) Details of the Public Participation Process Followed

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

A Basic Assessment study is currently being undertaken for proposed additional infrastructure and areas (interchange, D3519 additional reserve, additional areas required for On-ramp C & causeway associated with Access Road A) identified during the detail design for the N11-13X Mokopane Ring Road. The public participation process for the latter project as well as the public participation for this project has been combined to prevent duplication of efforts and stakeholder fatigue.

The public participation process entailed the following activities:

a. Authority Consultation
The competent authority, the Department of Mineral Resources (DMR): Limpopo Region is required to provide an EA (whether positive or negative) for the project. The DMR was consulted from the outset of this study, and has been engaged throughout the project process.

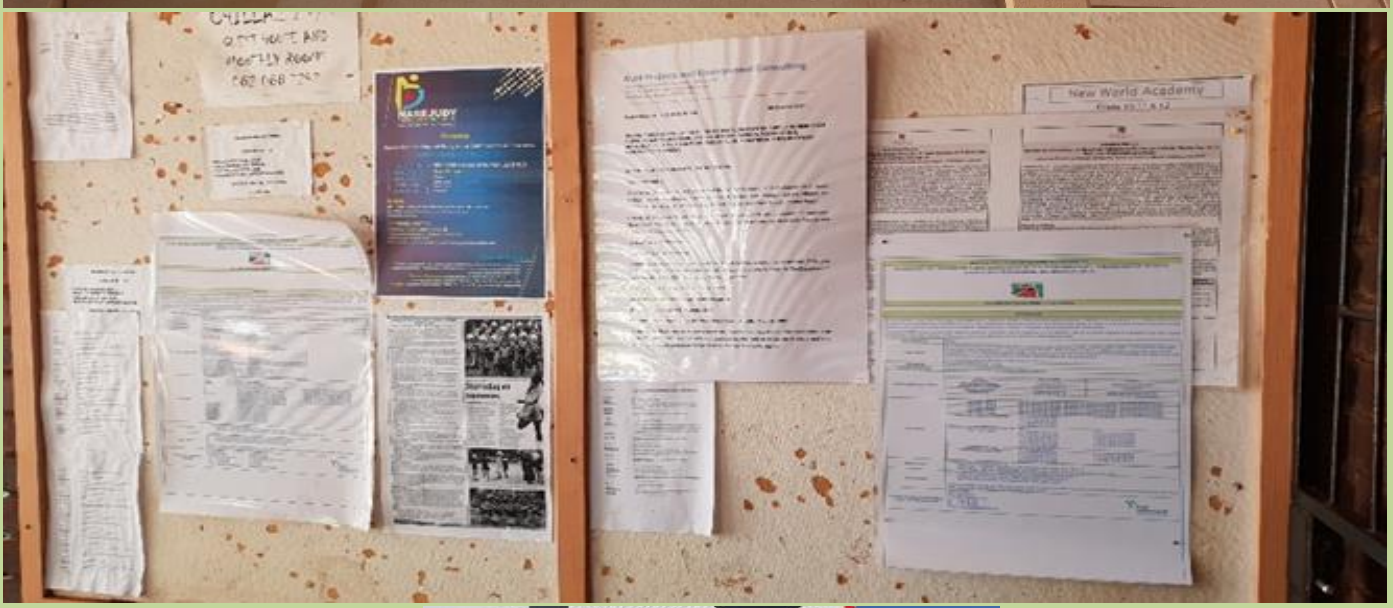
Authority consultation included the following activities:

- A pre-application consultation meeting was held on 11 April 2017 with Mr Nicholas Chavala for other borrow pit applications that was submitted to the DMR: Limpopo Region on 25 January 2018. Minutes of the meeting are attached as **Appendix D**. As this borrow pit application is in addition to the other applications submitted to the Department, the same approach will be undertaken. There has been attempts to engage with the Department regarding this application but at the time of this report, there has not been a response, proof of correspondence has been attached in **Appendix D**.

b. Consultation with Other Relevant Stakeholders
Consultation with other relevant key stakeholders were, and will continue, to be undertaken through telephone calls and written correspondence in order to actively engage these stakeholders from the outset and to provide background information about the project during the BA process. All relevant stakeholders will be allowed an opportunity to comment on the draft Consultation BA Report (BAR).

c. Site Notification
The EIA Regulations (2014) as amended in 2017, requires that a site notice be fixed at a place conspicuous to the public at the boundary or on the fence of the site where the activity to which the application relates and at points of access or high through traffic.

Royal HaskoningDHV erected a number of notices at various noticeable locations in the study area on 05 November 2018 (**Appendix E**).



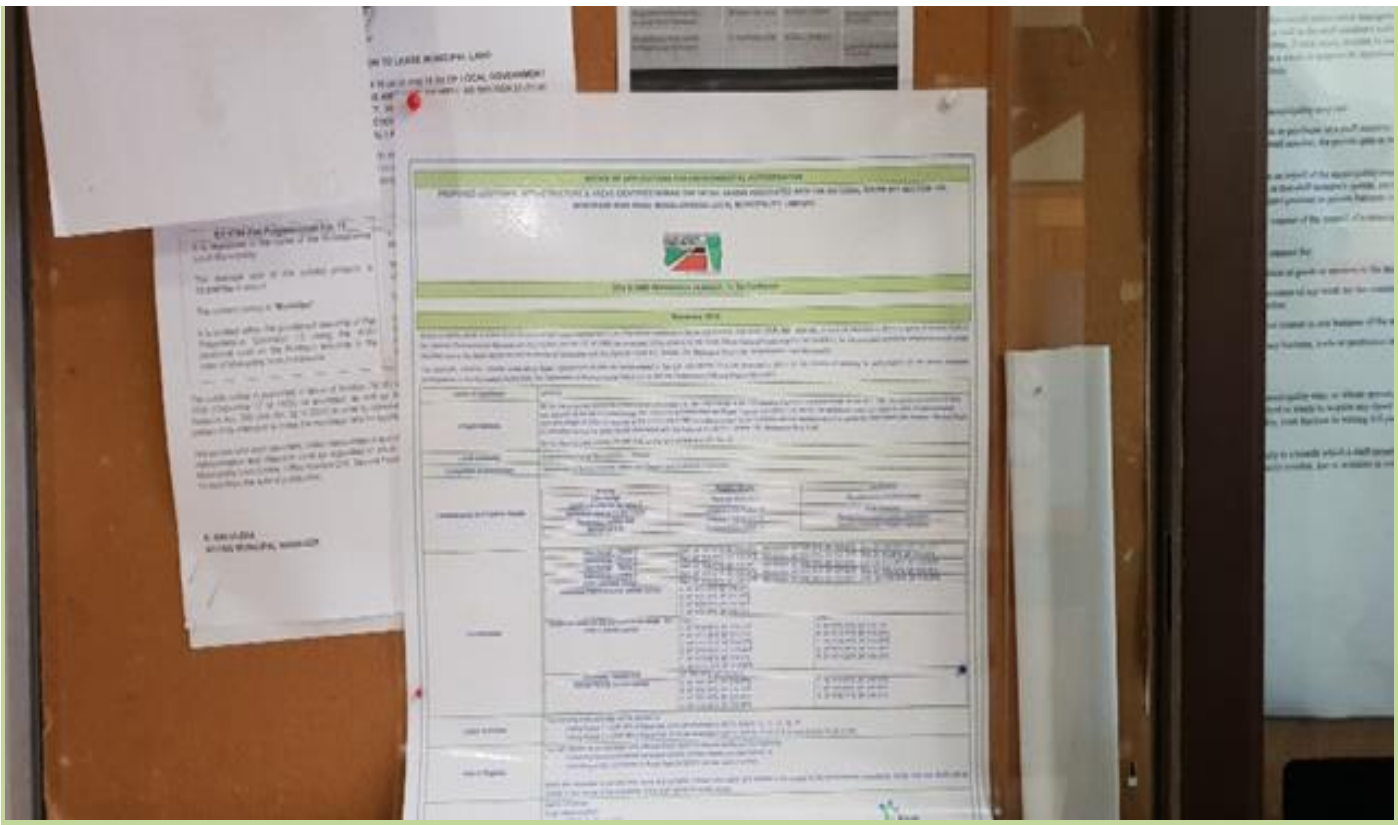


Figure 2: Site notices for Borrow Pit 5.5L (placed on 05 November 2018)

d. Identification of Interested and Affected Parties

Correspondence was sent to key stakeholders and other known I&APs, informing them of the application for the project, the availability of the draft Consultation BAR for review and indicating how they could become involved in the project.

e. Briefing Paper

A Background Information Document (BID) for the proposed project was compiled in English (refer to **Appendix E**) and distributed to key stakeholders. The aim of this document is to provide a brief outline of the application and the nature of the development. It is also aimed at providing preliminary details regarding the BA process, and explains how I&APs could become involved in the project.

The briefing paper was distributed to all identified I&APs and stakeholders, together with a registration / comment sheet inviting I&APs to submit details of any issues, concerns or inputs they might have with regards to the project.

f. Meeting/s

A public meeting will be held on 14 January 2019.

g. Advertising

In compliance with the EIA Regulations 2014 (as amended in 2017), notification of the commencement of the BA process for the project was advertised in a local newspaper as follows:

- Bosveld Newspaper on 23 November 2018 (refer to **Appendix E**).

I&APs were requested to register their interest in the project and become involved in the BA process. The primary aim of these advertisements was to ensure that the widest group of I&APs possible was informed and invited to provide input and questions and comments on the project.

h. Summary of issues raised by I&APs

A summary is included as part of this report.

i. Public Review of the draft Consultation BAR

The draft Consultation BAR (cBAR) will be made available for authority and public review for a total of 30 days (excluding 15 December to 02 January) from 30 November to 17 January 2019.

The report was made available at the following public locations within the study area, which are all readily accessible to I&APs:

- Mogalakwena Municipal Offices
- Mogalakwena Public Library
- Electronically on the Royal HaskoningDHV Website: https://www.royalhaskoningdhv.com/en/south-africa/projects/environmental-reports

j. Final Consultation BAR

The final stage in the BA process entails the capturing of responses and comments from I&APs on the cBAR in order to refine the BAR, and ensure that all issues of significance are addressed.

The final BAR (i.e. fBAR) will be the product of all comments and studies, before being submitted to DMR for review and decision-making.

iii) Summary of issue raised by I&APs

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 issue as mandated by the applicant	Section and paragraph refer in this report where the issues and response were incorporated
AFFECTED PARTIES					
Landowner/s					
Maraba Communal Property Association: Mr Jack Mphago Mr John Shadung	X	07/11/2018	When is the construction period?	Construction will start latest next year in August 2019.	N/A
			What about compensation?	• Temporary Land Acquisition for Borrow Pit - Negotiations will start as soon as Application for the Borrow Pit has been submitted to DMR. • Permanent Acquisition for Road Servitude – Negotiations can start soon, same time as for Temporary Land Acquisition for the Borrow Pit.	N/A
			I request a meeting with the project team to discuss the role of the CPA in the project.	A public meeting will be held on 14 January 2019. Mr Shadung will be invited to the meeting.	N/A
Lawful occupier/s of the land					
Landowners or lawful occupiers on adjacent properties					
Municipal councillor					
Councillor Mthilibofu L.W Ward 16	X				
Municipality					
Mr Mathebula: Office of the Speaker	X				
Mr. Hendrik Ngoepe: Chief Operating Officer	X				
Ms N Nelushi	X				
Organs of state (Responsible for infrastructure that may affected Roads Department, Eskom, Telkom, DWA etc					
Department of Water and Sanitation: Limpopo Ms Doris Maumela	X				
Eskom: Tshifhiwa Matamela	X				
Communities					
Dept. Land Affairs					
Department of Rural					

Development and Land Reform: Limpopo Office Ms Maphuti Ramalla	X				
Other Competent Authorities affected					
Limpopo Department of Economic Development, Environment and Tourism: Ms Mokgadi Mogashoa Ms Harmse Ms NN Gulwako	X				
Department of Agriculture, forestry and fisheries: Ms Mandisa Mashego Mr Clement Mokgotho	X				
Limpopo Heritage Resource Agency (LIHRA): Ms Vhonani Ramalamula	X				
OTHER AFFECTED PARTIES					
Limpopo Department of Transport (LDoT): Ms Annique Moloisi	X				
INTERESTED PARTIES					
DT van Eyk	x				
Mohammed & Ebrahim Essack Tikdeer Prop CC	x	07/11/2018	I have a quarry next to the road and want to meet with someone to discuss access to this quarry from the N11-13X	This issue is beyond the scope of the Basic Assessment process, it is advised that Mr Essack contact Jan Oliver (General Northern Region) for further information. Contact details were provided to Mr Essack on 23 November 2018.	N/A
			I want to supply G5 material for the road, the quarry is registered and I am Level 1 BEE compliant.	SANRAL cannot make a commitment for material sourcing from a commercial source, that decision is at the discretion of the appointed contractor. It is advised that Mr Essack negotiates with the future appointed contractor.	N/A
Hermanus De Nysschen	x				
Zenia Smith Lesego Platinum Uitloop (Pty) Ltd	x				

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).

Geology

The Polokwane Plateau Bushveld is composed of Migmatites and gneisses of the Hout River Gneiss and the Turfloop Granite dominant. The Makhado Sweet Bushveld area is underlain by the gneisses and migmatites of the Hout River Gneiss and the potassium-deficient gneisses of the Goudplaats Gneiss.

(i) Freshwater Resources

BP 5.5L is located within the Bushveld Basin ecoregion and in the A61F quaternary catchment. According to the NFEPA Database, there are no river systems located within the study area, nor within the vicinity thereof (within 500m). The Dorps River is situated approximately 1.8km south of the borrow pit area. According to the NFEPA Database, there are no wetland features located within the study area, nor within the vicinity thereof (within 500m).

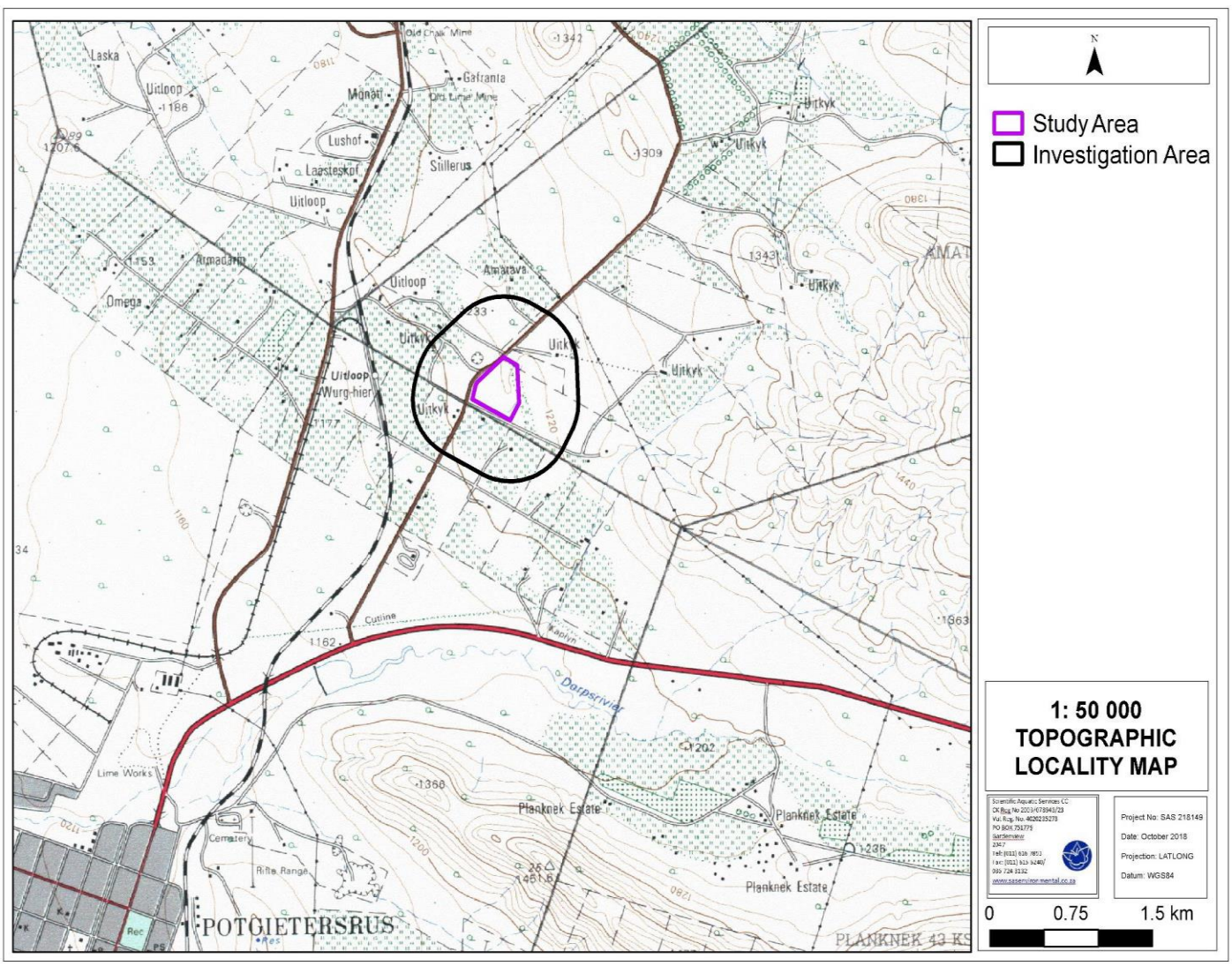


Figure 3: 1:50 000 Topographic Map

(ii) Ecology

Limpopo Conservation Plan Version 2 (2013)

A small portion (480m^2) of the western boundary of the borrow pit 5.5L area falls within a CBA 2 (Figure 4). These are best design selected sites; selected to meet biodiversity pattern and/or ecological process targets; although alternative sites may be available to meet targets. The remaining portion of the borrow pit area is considered to be other natural areas. These are natural and intact areas, but are not required to meet targets, nor identified as CBA or ESA. BP 5.5L area is situated ± 1.7 km north of the Makapan Valley Buffer and ± 13 km west of the Makapan Valley Core. The Glenesk Private Nature Reserve is situated ± 1.9 km east, and the H.L. Crause Private Nature Reserve ±8.59 km northeast of the borrow pit areas. No other protected or conservation areas are situated within 10 km of the study areas other than those listed above.

The borrow pit is located within an ecosystem that has a “Least Concern” status.

Mining and Biodiversity Guidelines (2013)

The north-eastern portion of the borrow pit 5.5L area is situated within an area considered High Biodiversity Importance, with the remaining south-western portion currently not ranked. High Biodiversity Importance areas are important for conserving biodiversity, for supporting or buffering other biodiversity priority areas, for maintaining important ecosystem services for particular communities or the country as a whole. An environmental impact assessment should include an assessment of optimum, sustainable land use for a particular area and will determine the significance of the impact on biodiversity. Mining options may be limited in these areas, and red flags for mining projects are possible. Authorisations may set limits and specify biodiversity offsets that would be written into licence agreements and/or authorisations.

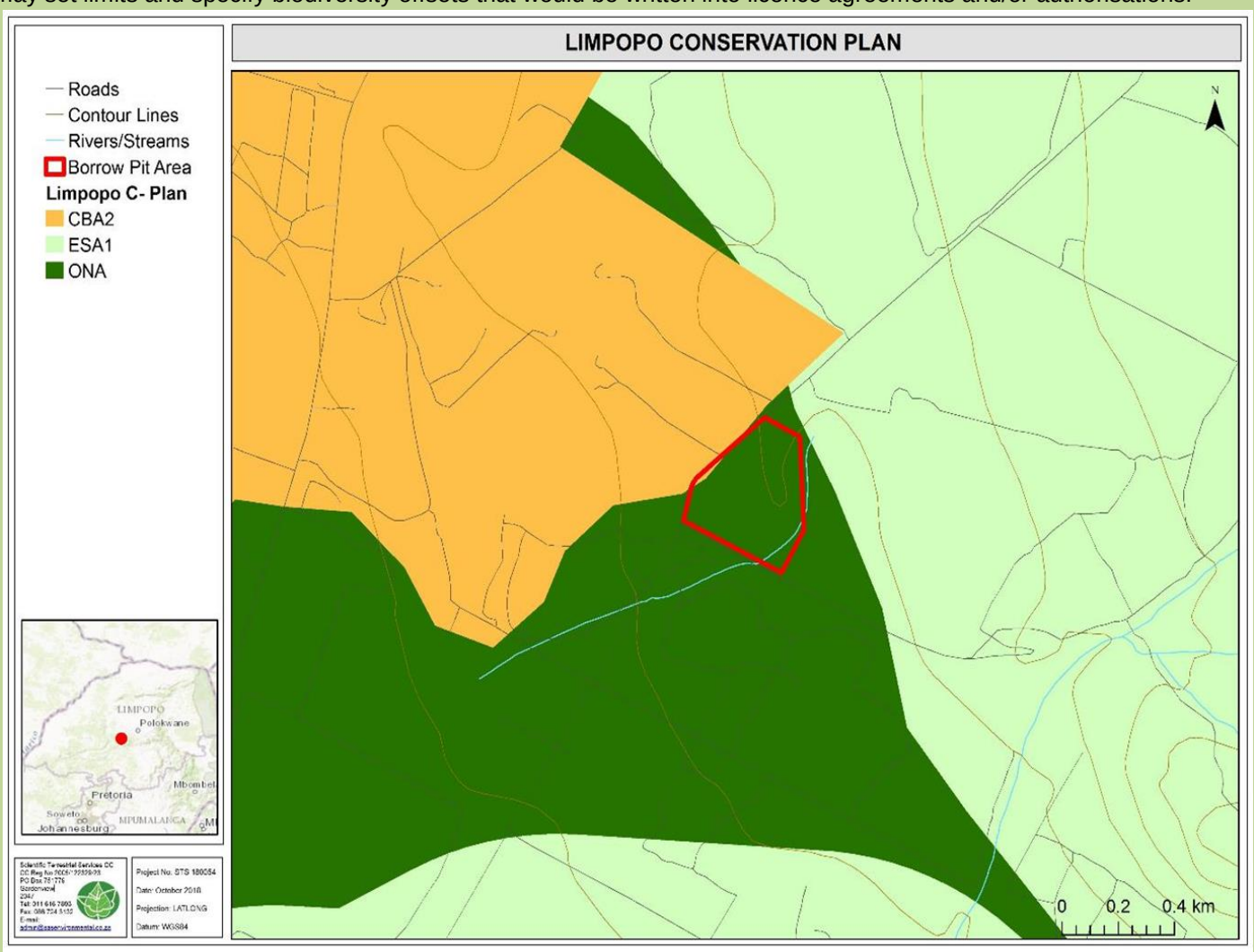


Figure 4: Limpopo C-Plan

Habitat Unit

BP 5.5L falls within the Mixed Bushveld Habitat Unit. The proposed borrow pit is situated within the Polokwane Plateau Bushveld vegetation type and Makhado Sweet Bushveld vegetation type. This habitat unit is predominantly characteristic of the Polokwane Plateau Bushveld vegetation type with *Combretum apiculatum, Panicum maximum* and *Themeda triandra* occurring throughout the area.

Overall the habitat unit has been degraded by historic and current anthropogenic disturbances, resulting in bush encroachment in disturbed areas and alien plant proliferation, limiting the diversity and abundance of species indigenous to the vegetation type.

Photograph 1: Typical views of the Mixed Bushveld Habitat unit

Conservation Status

The Mixed Bushveld Habitat Unit falls within the Polokwane Plateau Bushveld vegetation type, listed as Least Threatened and Makhado Sweet Bushveld listed Vulnerable (Mucina & Rutherford 2006). According to the Mining and Biodiversity Guidelines however, the north-eastern portion of the borrow pit area is situated within an area considered High Biodiversity Importance, with the remaining south-western portion currently not ranked. After the field investigation, it is the opinion of the specialist that the habitat unit is no longer in a pristine condition, or a true representation of the Polokwane Plateau Bushveld and Makhado Sweet Bushveld vegetation type. As such, the conservation importance of the study area is of a moderately low level.

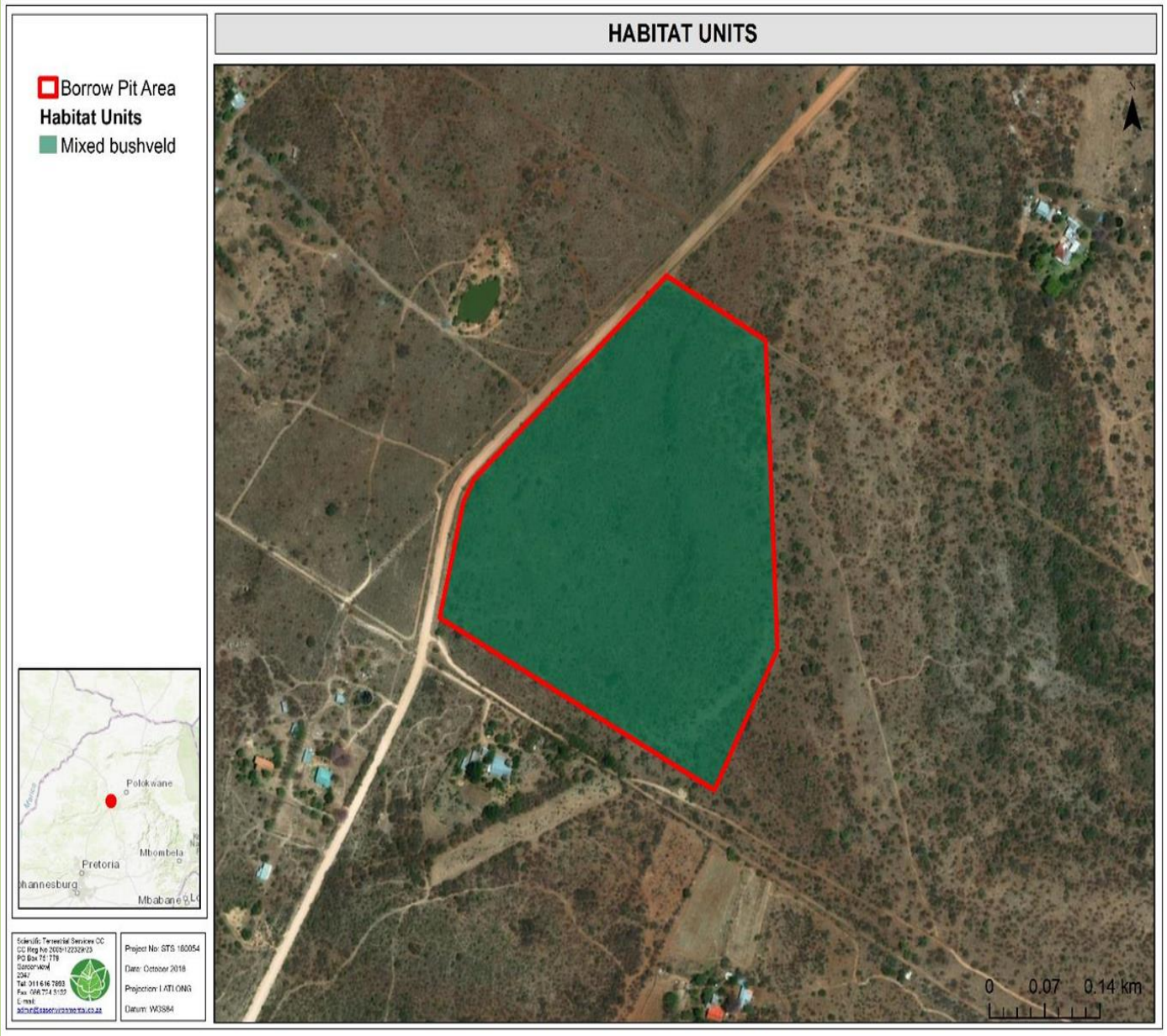


Figure 5: Habitat units encountered within the study area

Terrestrial Species of Conservation Concern (SCC)

No floral SCCs were observed during the field assessment within the proposed BP 5.5L footprint. No faunal SCC were encountered during the field assessments, but *Gyps coprotheres* (Cape Vulture) and *Python natalensis* (Southern African Python) are likely to occasionally utilise the study area for foraging purposes.

Aloe marlothii (Mountain Aloe) is not protected but where this species is going to be destroyed by the proposed development, they can be removed and replanted within the immediate surrounding to preserve this species. However, the following species as listed under the National Forestry Act (1998) were expected to occur within the study area namely *Sclerocarya birrea* subsp*. caffra* (Marula) and *Vachellia erioloba* (Camel Thorn). In terms of this Act, protected tree species may not be cut, disturbed, damaged or destroyed and their products may not be possessed, collected, removed, transported, exported, donated, purchased or sold - except under licence granted by the Department of Water Affairs (or a delegated authority). A detailed walk down of the final layout area must take place to mark all protected tree species, including new recruitment, prior to construction activities commence to mark and apply for all trees that may potentially be affected

Terrestrial Diversity

The terrestrial species diversity has been negatively affected by historic cultivation, and overgrazing by cattle resulting in the habitat unit being dominated by the indigenous *Ziziphus macronata* (Buffalo Thorn). Other Indigenous species associated with the vegetation type namely, *Combretum apiculatum* (Red Bush Willow), *Vachellia karroo* (Sweet thorn) and *Gymnosporia senegalensis* (Red Spike-Thorn) were observed in the study area. Various alien and invasive floral

species listed under NEM:BA as category invaders, that must be removed were also encountered within this habitat unit namely *Opuntia ficus-indica* (Sweet Prickly Pear) and *Datura ferox* (Large Thorn Apple), and *Cereus jamacaru* (Queen of the Night).

Terrestrial Habitat Integrity

On site habitat was affected negatively due to historic and current anthropogenic activities, which provides suitable habitat for common faunal and floral species. Bush encroachment and alien and invasive plant species proliferation were present within disturbed areas within the proposed BP 5.5L study areas. The habitat unit is however connected to a larger open space, which does provide the potential for a variety of faunal species to move through the area. Overall the study area is considered to have a moderately low habitat integrity, with limited opportunities for a diversity faunal species to permanently reside within the area. Continued proliferation of bush encroachment species will result in the continued loss of the remaining indigenous vegetation, culminating in the continued degradation of the natural habitat in the area.

(iii) Heritage and Palaeontology

- No areas designated for socio-religious activities were recorded on the site.
- No remains from the historical period were recorded.
- No formal or informal graves could be identified.
- According to the most recent archaeological cultural distribution sequences by Huffman (2007), this area falls within the distribution area of various cultural groupings originating out of both the Urewe Tradition (eastern stream of migration) and the Kalundu Tradition (western stream of migration). The facies that may be present are:

Urewe Tradition: Kwale branch-	*Mzonjani facies* AD 450 – 750 (Early Iron Age)
Moloko branch-	*Icon facies* AD 1300 - 1500 (Late Iron Age)
	Marateng facies AD 1650-1840 (Late IA)
Kalundu Tradition: Happy Rest sub-branch -	*Doornkop facies* AD 750 - 1000 (Early Iron Age)
	Eiland facies AD 1000 – 1300 (Middle Iron Age)
	Klingbeil facies AD 1000 - 1200 (Middle Iron Age)
	Letaba facies AD 1600 - 1840 (Late Iron Age)
	Marateng facies AD 1650-1840 (Late IA)

- The Iron Age is also well documented in the wider area, with sites dating especially to the Letaba *facies* period.
- No remains from the Iron Age were recorded.
- No Stone Age remains were recorded. No drainage lines or rocky areas were evident on the area to be surveyed.
- The borrow pit area lies within a blue section of the SAHRIS map.
- As part of a project for a Bulk Water supply line (SAHRIS website) that covers a wider area than this survey, Dr L. Rossouw, found that there would be a negligible possibility of unearthing palaeoarchaeological heritage material (Rossouw: 2017).
- According to SAHRA website, the nearest surveys to the proposed development are Case number 10484. A Bulk Water Supply line, by Jaco Van Der Walt. No heritage remains were recorded near the bridge area during their survey (Van Der Walt: 2017).
- The Makapans World Heritage Site lies to the north-east of the proposed development area, approximately 13km NE of the borrow pit. The unique importance of the Makapans World Heritage site should be noted due to its outstanding importance to not only palaeontological finds, but also it the cave's role during the historical period.
- Bearing in mind the age and nature of the strata affected by the proposed development it is considered highly unlikely that any fossils will be encountered, save stromatolites.

(iv) Social

The proposed construction of the N11-13X will improve the pedestrian and road safety to all road users as well as to the surrounding communities. No people should be directly affected by the proposed mining operations at the borrow pit, however the noise and dust generated from these operations might have a temporary effect on these receptors.

There are farm residences located within 150 m of the borrow pit boundary, all safety measures will be strictly adhered to, to ensure that there will be minimal impact on these residences.

The local economy should also benefit from employment opportunities (albeit limited) created during the construction phase of the road and the mining activities.

(v) Noise

The borrow pit is located in close proximity to the D3519 which is a source of existing noise. No crushing of the material will take place.

(b) Description of the current land uses

The farm, Amatava 41 KS Ptn 12 in which BP 5.5L is located has been previously used for agricultural activities.

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

- Access to BP 5.5L is available via the Service Road D.

(d) Environmental and current land use map.

(Show all environmental, and current land use features)

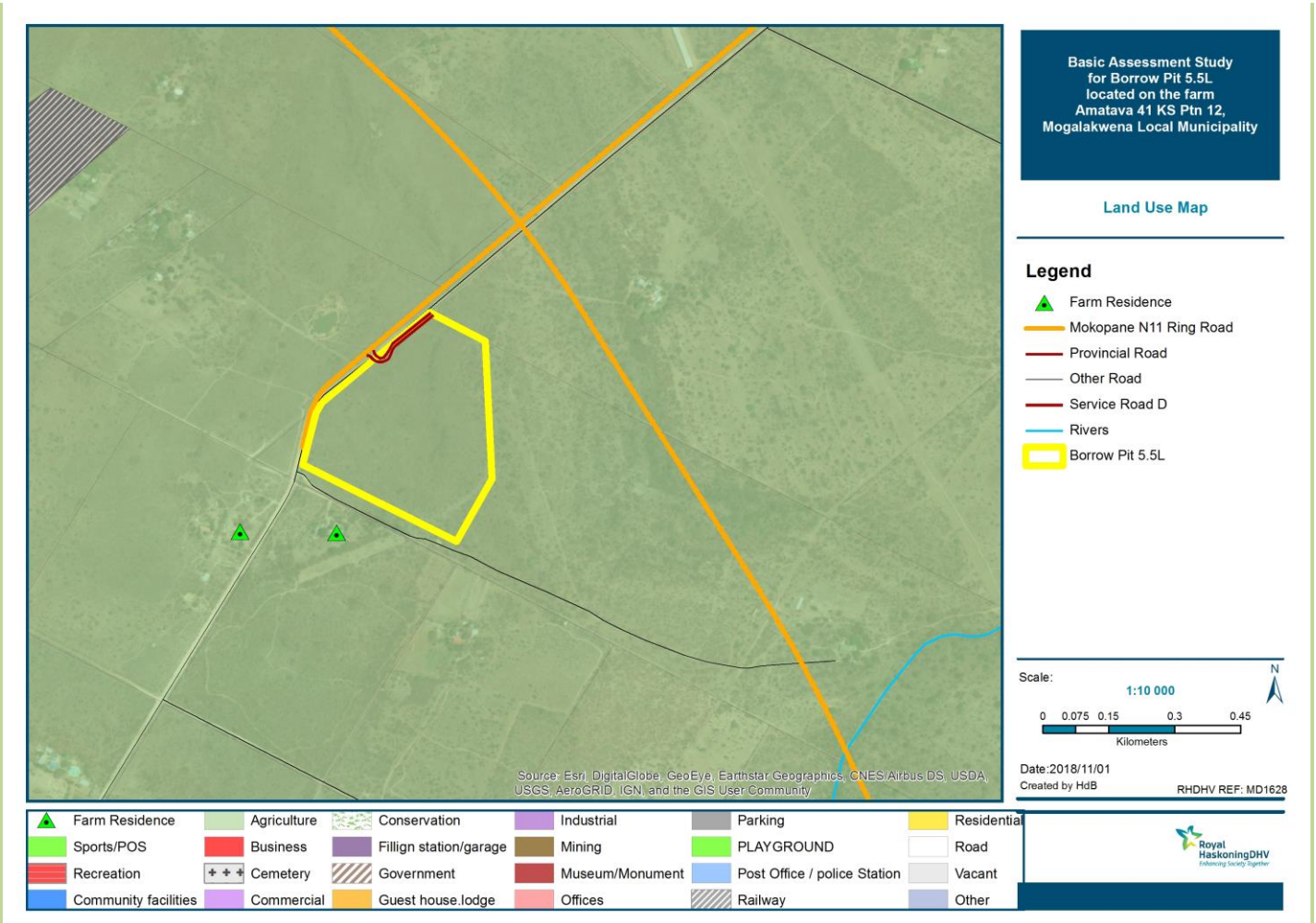


Figure 6: Land use map

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

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

Refer to Section vi for the Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks.

Phase: Construction

Potential Impact	Extent	Duration	Probability	Intensity	Significance	Impact Reversibility	Extent to which the Impact will result in the Irreplaceable Loss of Resources	Can the Impact be Avoided?	Can the Impact be Managed or Mitigated?
Impact on down–gradient freshwater resources	Local	Medium-term	Possible	Low	Low Negative	Completely Reversible	Low	Yes	Yes
Encroachment into non-mining areas	Local	Medium-term	Possible	Low	Medium Negative	Completely Reversible	Low	Yes	Yes
Loss of preferred habitat for floral and faunal SCC	Local	Medium-term	Possible	Low	Medium Negative	Irreversible	Medium	No	No
Loss of floral biodiversity through invasion of alien species	Local	Medium-term	Highly Probable	Moderate	Medium Negative	Moderately Reversible	Low	Yes	Yes
Movement of construction vehicles and earth moving activities leading to erosion, compaction of soils and down slope siltation of terrestrial habitat	Site	Medium-term	Possible	Moderate	Medium Negative	Completely reversible	Low	Yes	Yes
Collision of vehicles with faunal species	Site	Short-term	Possible	Low	Low Negative	Completely reversible	Low	Yes	Yes

Phase: Operations

Potential Impact	Extent	Duration	Probability	Intensity	Significance	Impact Reversibility	Extent to which the Impact will result in the Irreplaceable Loss of Resources	Can the Impact be Avoided / Enhanced?	Can the Impact be Managed or Mitigated?
Change in land form and use	Site	Long-term	Definite	High	High Negative	Moderately Reversible	Medium	No	Yes
Impact on down–gradient freshwater resources	Site	Long-term	Improbable	Low	Low Negative	Moderately Reversible	Low	Yes	Yes
Proliferation of alien and invasive plants species	Site	Long-term	Highly Probable	Moderate	Medium Negative	Completely Reversible	Low	Yes	Yes
On-going disturbance of soils due to general operational activities leading to altered preferred floral and faunal habitat	Site	Long-term	Highly Probable	Moderate	Medium Negative	Moderately Reversible	Low	Yes	Yes
Dumping of material outside of designated areas leading to loss of terrestrial habitat	Site	Long-term	Highly Probable	Moderate	Medium Negative	Completely Reversible	Low	Yes	Yes
Soil erosion as a result of exposed soil and topsoil	Site	Long-term	Highly Probable	Moderate	Medium Negative	Moderately Reversible	Low	Yes	Yes
Seepage affecting soils and the groundwater regime with special mention of the salinization of soils	Site	Long-term	Highly Probable	Moderate	Medium Negative	Moderately Reversible	Low	Yes	Yes
Waste generation during the operations	Site	Long-term	Highly Probable	Moderate	Medium Negative	Completely Reversible	Low	Yes	Yes
Dust	Site	Long-term	Highly Probable	Very High	High Negative	Irreversible	Medium	No	Yes
Noise	Site	Long-term	Highly Probable	Very High	High Negative	Irreversible	Low	No	Yes
Risk of discharge and contamination from all operational vehicles may pollute receiving environment leading to altered terrestrial habitat.	Site	Long-term	Highly Probable	Very High	High Negative	Irreversible	Low	No	Yes

Health and safety of personnel	Site	Long-term	Improbable	Moderate	Medium Negative	Moderately Reversible	Low	Yes	Yes
Unearthing of underground heritage, archaeological artefacts	Site	Permanent	Possible	Low	Medium Negative	Irreversible	High	No	Yes
Impact on access routes	Site	Long-term	Probable	Moderate	Medium Negative	Moderately Reversible	Low	Yes	Yes
Job creation	Local	Medium-term	Possible	Moderate	Medium Positive	Irreversible	Low	Yes	Yes
Cumulative noise	Local	Long-term	Possible	Moderate	Medium Negative	Irreversible	Low	No	Yes

Phase: Rehabilitation

Potential Impact	Extent	Duration	Probability	Intensity	Significance	Impact Reversibility	Extent to which the Impact will result in the Irreplaceable Loss of Resources	Can the Impact be Avoided / Enhanced?	Can the Impact be Managed or Mitigated?
Poor management and monitoring of rehabilitation measures.	Local	Permanent	Possible	Moderate	High Negative	Moderately Reversible	Medium	Yes	Yes
Improper rehabilitation of compacted soil areas leading to limited vegetation regrowth, increased soil erosion and siltation of down slope features.	Local	Permanent	Possible	Moderate	High Negative	Moderately Reversible	Medium	Yes	Yes
Improper implementation of rehabilitation plan leading to increased alien invasive plant proliferation	Site	Medium-term	Highly Probable	High	Medium Negative	Completely Reversible	Low	Yes	Yes
Erosion	Site	Medium-term	Highly Probable	High	Medium Negative	Moderately Reversible	Medium	Yes	Yes
Safety	Site	Medium-term	Possible	High	Medium Negative	Irreversible	High	Yes	Yes
Visual intrusion	Local	Permanent	Highly Probable	Moderate	High Negative	Irreversible	Medium	No	Yes

Phase: Closure

Potential Impact	Extent	Duration	Probability	Intensity	Significance	Impact Reversibility	Extent to which the Impact will result in the Irreplaceable Loss of Resources	Can the Impact be Avoided / Enhanced?	Can the Impact be Managed or Mitigated?
Contaminated soils, visual impacts, alien plant proliferation	Site	Short-term	Possible	Moderate	Low Negative	Moderately Reversible	Low	No	Yes

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 associated with the project will be evaluated according to its nature, extent, duration, intensity, probability and significance of the impacts, whereby:

- Nature: A brief written statement of the environmental aspect being impacted upon by a particular action or activity;
- Extent: The area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales. This is often useful during the detailed assessment phase of a project in terms of further defining the determined significance or intensity of an impact. For example, high at a local scale, but low at a regional scale;
- Duration: Indicates what the lifetime of the impact will be;
- Intensity: Describes whether an impact is destructive or benign;
- Probability: Describes the likelihood of an impact actually occurring; and
- Cumulative: In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

In addition, a quantitative assessment was made of the following two criteria:

- Irreplaceable Loss of Resources (Degree to which a resource can be irreplaceably lost through the mining activity)
  - Low: the potential impact will not result in the irreplaceable loss of the resource.
  - Medium: the potential impact will result in a significant loss of the irreplaceable resource.
  - High: the potential impact will result in the complete loss of the resource.
- Reversibility (Degree to which an impact can be reversed upon the completion of the mining activity)
  - Completely reversible with the implementation of mitigation measures.
  - Moderately reversible but residual impacts are evident.
  - Irreversible: irrespective of the mitigation measures applied and the impact will be permanent.

The criteria to be used for the rating of impacts are provided in Table 2.

Table 2: Criteria used for the rating of impacts

Criteria	Description			
EXTENT	**National (4)** The whole of South Africa	**Regional (3)** Provincial and parts of neighbouring provinces	**Local (2)** Within a radius of 2 km of the construction site	**Site (1)** Within the construction site
DURATION	**Permanent (4)** Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient	**Long-term (3)** The impact will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter. The only class of impact which will be non-transitory	**Medium-term (2)** The impact will last for the period of the construction phase, where after it will be entirely negated	**Short-term (1)** The impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase
INTENSITY	**Very High (4)** Natural, cultural and social functions and processes are altered to extent that they permanently cease	**High (3)** Natural, cultural and social functions and processes are altered to extent that they temporarily cease	**Moderate (2)** Affected environment is altered, but natural, cultural and social functions and processes continue albeit in a modified way	**Low (1)** Impact affects the environment in such a way that natural, cultural and social functions and processes are not affected

Criteria	Description			
PROBABILITY OF OCCURRENCE	**Definite (4)** Impact will certainly occur	**Highly Probable (3)** Most likely that the impact will occur	**Possible (2)** The impact may occur	**Improbable (1)** Likelihood of the impact materialising is very low

Significance is determined through a synthesis of impact characteristics. Significance is also an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

Table 3: Criteria for the rating of classified impacts

	Class	Description
+	**Any value**	Any positive / beneficial 'impact', i.e. where no harm will occur due to the activity being undertaken.
–	**Low impact (4 -6 points)**	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.
	Medium impact (7 -9 points)	Mitigation is possible with additional design and construction inputs.
	High impact (10 -12 points)	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.
	Very high impact (12 - 14 points)	Permanent and important impacts. The design of the site may be affected. Intensive remediation is needed during construction and/or operational phases. Any activity which results in a "very high impact" is likely to be a fatal flaw.
Status		Denotes the perceived effect of the impact on the affected area.
Positive (+)		Beneficial impact.
Negative (-)		Deleterious or adverse impact.
Neutral (/)		Impact is neither beneficial nor adverse.
It is important to note that the status of an impact is assigned based on the *status quo* – i.e. should the project not proceed. Therefore, not all negative impacts are equally significant.		

The suitability and feasibility of all proposed mitigation measures will be included in the assessment of significant impacts. This will be achieved through the comparison of the significance of the impact before and after the proposed mitigation measure is implemented. Mitigation measures identified as necessary will be included in an EMPr.

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)

A summary of the positive and negative impacts of the proposed activity are provided in Section V above. No layout alternatives are applicable to the project. A comparison of the Progressive Rehabilitation and Rehabilitation Post-mining alternatives is provided below.

Progressive Rehabilitation	Rehabilitation Post-Mining
Positive impacts: • The strategy for progressive site rehabilitation is to quickly establish the groundcover layer using locally common grasses and allow for vegetation to establish naturally over a short to medium term timeframe. This	Negative Impacts: • Rehabilitation post-mining delays the establishment of groundcover. The impact on the affected nearby plant and animal communities may be prolonged. • Ongoing dust impacts until vegetation cover is re-established.

Progressive Rehabilitation	Rehabilitation Post-Mining
minimises the effect of mining operations on affected nearby plant and animal communities. • Dust will be controlled and minimised once vegetation has been established. • Reduced visual impacts due to the effective implementation of the rehabilitation process and the attainment of stable slopes and successful revegetation. • Progressive rehabilitation minimises the stormwater runoff and the risk of erosion. Negative Impacts • Potential damage of already rehabilitated areas with adjacent mining activities (i.e. dust impacts on areas of rehabilitated vegetation and stormwater damage).	• The visual impact is present for the duration of the mining activity. Additional visual screening may be required until such time that rehabilitation activities take place. • Additional stormwater measures and erosion protection measures need to be implemented. • Safety of communities in proximity to the borrow pit which could present a potential drowning hazard.

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).

Subsequent to the 30-day public review period, a list of issues raised by I&APs, will be discussed, assessed and incorporated into this report. Mitigation measures will be provided in response to significant impacts.

ix) Motivation where no alternative sites were considered.

Access is available via the service road D. The borrow pit also has the required material for layer works as confirmed by testing.

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

The final layout considers the environmental attributes of the site (i.e. geology; ecology; freshwater resources; heritage and palaeontology; social and noise) as well as the identified impacts (as presented in Section V) and the extent to which these impacts (positive and negative) that can be effectively managed with the mitigation measures proposed in the EMPr.

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 BA study for the proposed project had the following key objectives:

- Undertake an assessment of the social and biophysical environments of the affected area by the proposed project;
- Undertake a detailed assessment of the site and alternatives in terms of environmental criteria including the rating of significant impacts as well as cumulative impacts;
- Identify and recommend appropriate mitigation measures (included in EMPr) for potentially significant environmental impacts; and
- Undertake a fully inclusive public participation process to ensure that Interested and Affected Party (I&AP) issues and concerns were recorded and commented on and addressed in the EIA process.

All of these objectives have been met and this has culminated in the formulation of an Environmental Impact Statement by the EAP, which recommends that the project be authorised.

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 pollution etc….etc…)	**ASPECTS AFFECTED**	**PHASE** In which phase 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
Site preparation	Erosion and sedimentation	Down-gradient water resources	Construction	Low Negative	Control through timing of site preparation works and establish surface water management structures prior to mining activity	Low Negative
Site preparation	Encroachment into non-mining areas	Vegetation and fauna	Construction	Medium Negative	Control through clearly demarcating mining area Stop through fencing off the mining area Manage edge effects of construction activities	Low Negative
Vegetation clearing	Loss of preferred habitat for floral and faunal SCC	Vegetation and fauna	Construction	Medium Negative	Control through working within demarcated area, undertake walk down of site prior to construction	Low Negative
	Invasion of alien invasive plants	Flora	Construction	Medium Negative	Control through implementation of alien invasive plant (IAP) control plan Monitor site every two weeks for IAPs	Low Negative
Construction vehicles	Erosion and compaction of soils	Soils	Construction	Medium Negative	Remedy through ripping and re-profiling disturbed soils Stop construction vehicles from impacting on non-mining and areas prone to erosion	Low Negative

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 pollution etc….etc…)	ASPECTS AFFECTED	PHASE In which phase 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
	Animal fatalities	Fauna	Construction	Low Negative	Manage through personnel awareness	Low Negative
Excavations	Change in land form and use	Topography and land use	Operations	High Negative	Control through management and monitoring through progressive rehabilitation	Medium Negative
	Erosion and sedimentation	Down-gradient water resources	Operations	Low Negative	Control through stormwater management measures Manage stockpiles	Low Negative
	Invasion of alien invasive plants	Flora	Operations	Medium Negative	Control through implementation of alien invasive plant (IAP) control plan	Low Negative
	Physical degradation due to erosion as a result of exposed soil and topsoil	Soils	Operations	Medium Negative	Control through erosion control measures Stockpile subsoil and topsoil separately Stockpiles to be placed in demarcated areas and the height should be limited to 2m to avoid soil compaction	Low Negative
	Dust	Air quality	Operations	High Negative	Control through frequent dust suppression Control speed limit for haul trucks Remedy by addressing dust complaints	Low Negative
	Noise pollution	Noise receptors	Operations	High Negative	Control through maintaining plant and equipment in good working order Remedy by addressing noise complaints	Low Negative
	Groundwater, soils and land pollution	Groundwater, soils and land	Operations	Medium Negative	Control through the provision of waste (general and hazardous) receptacles Monitor disposal of waste through SDCs	Low Negative
	Safety	Nearby	Operations	Medium	Control through: construction staff	Low Negative

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 pollution etc….etc…)	ASPECTS AFFECTED	PHASE In which phase 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
		communities and construction personnel		Negative	wearing appropriate PPE, notifying nearby communities of the mining activity through the appropriate signage; provide training to personnel handling hazardous chemicals or materials Remedy through training of personnel in the correct handling and reporting of spillage/pollution	
	Unearthing of underground heritage and archaeological artefacts	Heritage	Operations	Medium Negative	Stop work immediately if an artefact is uncovered, work to proceed once clearance is provided by an archaeologist or the Provincial Heritage Authority	Low Negative
Rehabilitation and restoration of mined areas	Limited vegetation regrowth	Soils	Rehabilitation	High Negative	Manage and monitor through rehabilitation	Low Negative
	Alien invasive plant proliferation	Flora	Rehabilitation	Medium Negative	Control through implementation of alien invasive plant (IAP) control plan Monitor site every two weeks for IAPs	Low Negative
	Erosion	Soils and down-gradient water resources	Rehabilitation	Medium Negative	Control through stormwater management measures – ensure that the borrow pit is free draining Manage and monitor through rehabilitation	Low Negative
	Safety	Nearby communities and construction	Rehabilitation	Medium Negative	Stop communities from accessing the borrow pit area if it poses a risk after rehabilitation	Low Negative

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 pollution etc.…etc…)	ASPECTS AFFECTED 	PHASE In which phase 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
		personnel			Control access through a stock-proof fencing and gate and access should be controlled	
	Visual intrusion	Visual receptors	Rehabilitation	High Negative	Control through progressive rehabilitation and restricting slopes to no greater than 1:3 Modify mined area to blend in with the surrounding area	Low Negative
Closure and decommissioning the mining area	Contaminated soils, visual impacts, alien plant proliferation	Soils, groundwater, vegetation, visual receptors	Closure	Low Negative	Control through implementation of alien invasive plant (IAP) control plan Manage and monitor through closure plan	Low Negative

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

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 THE REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
Freshwater	Based on the findings of the freshwater assessment, it is the opinion of the wetland ecologist that no wetlands or aquatic systems with associated riparian zones are present within the study area or the immediate surroundings, nor are there features which support the presence of saturated soils for long enough periods for facultative or obligate wetland vegetation to become established and at most the drainage feature indicated on the 1:50 000 topographic map is a preferential flow path on a disused informal track. Furthermore, a General Authorisation is not required in terms of Regulation GN509 of 2016 from the Department of Water and Sanitation for the borrow pit.	X	The identification of impacts and subsequent mitigation measures proposed by the specialist is included in the EMPr as well as used in the culmination of the final layout as well impact statement.
Ecology	The Mixed Bushveld is considered to be of an intermediate ecological importance. No floral SCC were recorded at the time of the survey, it should be noted that the survey was not conducted at the optimal time of year, with insufficient rains it is possible that additional floral SCCs may have not have grown since the dry season. No faunal SCC were encountered during the field assessments, but *Gyps coprotheres* (Cape Vulture) and *Python natalensis* (Southern African Python) are likely to occasionally utilise the study area for foraging purposes. It is the opinion of the ecologists that this study provides the relevant information required in order to implement Integrated Environmental Management (IEM) and to ensure that the best long-term use of the ecological resources in the study area will be made in support of the principle of sustainable development. Based on the terrestrial impact assessment of potential impacts on floral and faunal SCC within the	X	The identification of impacts and subsequent mitigation measures proposed by the specialist is included in the EMPr as well as used in the culmination of the final layout as well impact statement.

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 THE REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
	study area, it is evident that impacts are medium-low to low significance prior to mitigation and of very low significance following the implementation of mitigation measures. It is recommended that, from a terrestrial ecological perspective, the proposed activity be considered favourably, provided that the recommended mitigation measures for the identified impacts Permits should be obtained from DAFF to remove, cut or destroy any protected tree species before the proposed development takes place.		
Heritage	If an artefact on-site is uncovered, work in the immediate vicinity must be stopped immediately. The Contractor must take reasonable precautions to prevent any person from removing or damaging any such article and must immediately, upon discovery thereof, inform the Construction Engineer of such discovery which in turn must contact a registered archaeologist and the Limpopo Heritage Authority. It is recommended that a SACNASP accredited palaeontologist from a local institution such as the University of Limpopo makes one visit to the site during the excavation process to examine new outcrops Work may only resume once clearance is given in writing by the archaeologist and/or the Limpopo Heritage Authority.	X	The identification of impacts and subsequent mitigation measures proposed by the specialist is included in the EMPr as well as used in the culmination of the final layout as well impact statement. The recommendation of the specialist will also be included as a condition of the Authorisation.

Attach copies of Specialist Reports as **G1 (Freshwater Habitat Assessment), G2 (Ecology) and G3 (Heritage & Desktop Palaeontology).**

I) Environmental impact statement

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

Freshwater Habitat

No freshwater resources are located within the proposed borrow pit site, nor within 500m thereof. Since no freshwater resources were identified within 500m of the proposed borrow pit, a risk assessment was not undertaken as it is deemed highly unlikely that the borrow pit poses a threat to the freshwater ecology of the area. Nevertheless, the implementation of general good practice mitigation measures is strongly recommended in order

to ensure that potential risks are minimised as much as possible.

Furthermore, a General Authorisation in terms of Regulation GN509 of 2016 from the Department of Water and Sanitation for the borrow pits is not deemed necessary.

Ecology

The proposed borrow pit 5.5L is situated within the Polokwane Plateau Bushveld vegetation type and Makhado Sweet Bushveld vegetation type. This habitat unit is predominantly characteristic of the Polokwane Plateau Bushveld vegetation type with *Combretum apiculatum, Panicum maximum* and *Themeda triandra* occurring throughout the area. The Mixed Bushveld Habitat Unit falls within the Polokwane Plateau Bushveld vegetation type, listed as Least Threatened and Makhado Sweet Bushveld listed Vulnerable (Mucina & Rutherford 2006). After the field investigation, it is the opinion of the specialist that the habitat unit is no longer in a pristine condition, or a true representation of the Polokwane Plateau Bushveld and Makhado Sweet Bushveld vegetation type. As such, the conservation importance of the study area is considered to be of a moderately low level. A small portion of the western boundary of the borrow pit area falls within a CBA 2 and the remaining portion of the borrow pit area is considered to be other natural areas. The habitat unit is no longer in a pristine condition, or a true representation of the Polokwane Plateau Bushveld and Makhado Sweet Bushveld vegetation type. As such, the conservation importance of the study area is considered to be of a moderately low level.

No Floral SCCs were observed during the field assessment within the proposed BP 5.5L. No faunal SCCs were encountered during the field assessments, but *Gyps coprotheres* (Cape Vulture) and *Python natalensis* (Southern African Python) are likely to occasionally utilise the study area for foraging purposes. *Aloe marlothii* (Mountain Aloe) is not protected but where this species is going to be destroyed by the proposed development, they can be removed and replanted within the immediate surrounding to preserve this species. Permits should be obtained from DAFF to remove, cut or destroy any protected tree species before the proposed development takes place.

The terrestrial species diversity has been negatively affected by historic cultivation, and overgrazing by cattle resulting in the habitat unit being dominated by the indigenous *Ziziphus macronata* (Buffalo Thorn). Other Indigenous species associated with the vegetation type namely, *Combretum apiculatum* (Red Bush Willow), *Vachellia karroo* (Sweet thorn) and *Gymnosporia senegalensis* (Red Spike-Thorn) were observed. Various alien and invasive floral species listed under NEMBA as category invaders, that must be removed were also encountered within this habitat unit namely *Opuntia ficus-indica* (Sweet Prickly Pear) and *Datura ferox* (Large Thorn Apple), and *Cereus jamacaru* (Queen of the Night).

The Mixed Bushveld Habitat Unit has been negatively impacted upon due to historic and current anthropogenic activities resulting mainly from historical cultivation and overgrazing by livestock. This has resulted in bush encroachment and alien plant proliferation within disturbed areas. The habitat unit is considered to be of intermediate ecological importance. The impact resulting in a loss of floral SCC is considered to of low significance for the proposed developments. The loss of floral SCC within the proposed low because of the absence of SCCs present. The loss of floral habitat is however considered to be moderately low, as the habitat unit provides habitat for more common floral and faunal species. All possible steps must be taken to ensure that the activities for the proposed borrow pits be kept to a minimum and disturbance footprint areas be kept to designated areas. Mitigation measure set out in this report must be implemented.

Heritage

No object of heritage (archaeology and palaeontological) significance were identified within or in close proximity to BP 5.5L.

Change in Land Form & Use

This impact is rated as medium negative after mitigation. Rehabilitation measures will ensure that the land returns to its former use (agriculture) albeit in a modified way.

Erosion, Noise, Dust, Waste, Health & Safety

Erosion, noise, dust, waste and health and safety impacts are deemed to be of low significance provided that mitigation measures included in the EMPr are adhered to.

Progressive Rehabilitation

Progressive rehabilitation is preferred over rehabilitation post-mining. The advantages of progressive rehabilitation are: ensuring the quick establishment of groundcover to minimise the effect of mining on plant and animal communities; reduced visual impacts due to the effective implementation of the rehabilitation process and the attainment of stable slopes and successful revegetation and minimising the stormwater runoff and the risk of erosion and reducing the safety risk (e.g. drowning).

(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. Attached as **Appendix H**.

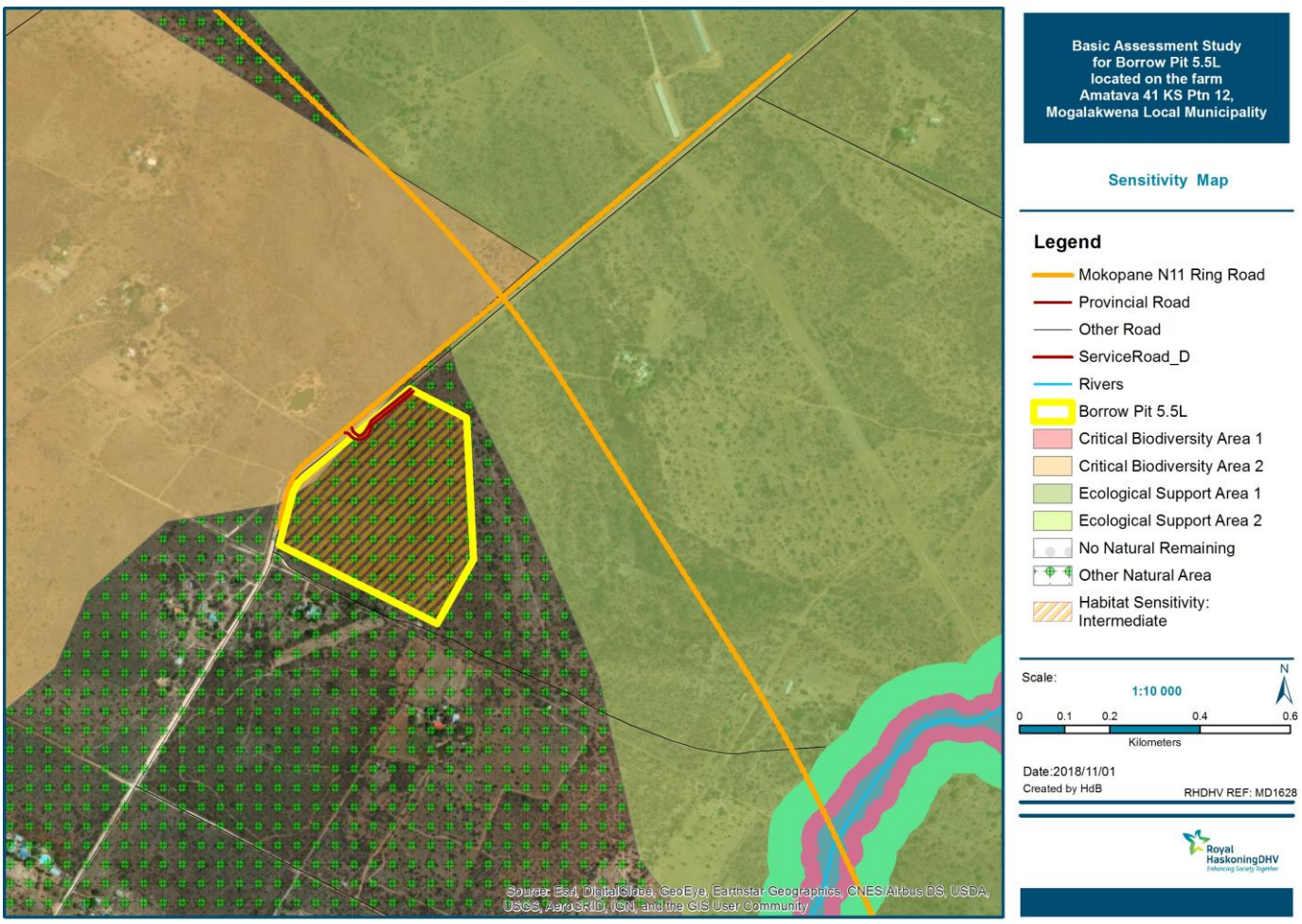


Figure 7: Sensitivity map

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

Potential Impact	Significance before Mitigation	Significance After Mitigation
Construction		

Potential Impact	Significance before Mitigation	Significance After Mitigation
Impact on down–gradient freshwater resources	Low Negative (-6)	Low Negative (-4)
Encroachment into non-mining areas	Medium Negative (-7)	Low Negative (-4)
Loss of preferred habitat for floral SCC	Medium Negative (-7)	Low Negative (-6)
Loss of floral biodiversity through invasion of alien species	Medium Negative (-9)	Low Negative (-6)
Movement of construction vehicles and earth moving activities leading to erosion, compaction of soils and down slope siltation of terrestrial habitat	Medium Negative (-7)	Low Negative (-6)
Loss of preferred habitat for faunal SCC	Medium Negative (-7)	Low Negative (-6)
Collision of vehicles with faunal species.	Low Negative (-5)	Low Negative (-4)
Operations		
Change in land form and use	High Negative (-11)	Medium Negative (-9)
Impact on down–gradient freshwater resources	Low Negative (-6)	Low Negative (-4)
On-going disturbance of soils due to general operational activities leading to altered terrestrial habitat Increased introduction and proliferation of alien and invasive plant species and further transformation of natural habitat Dumping of material outside of designated areas leading to loss of terrestrial habitat.	Medium Negative (-9)	Low Negative (-6)
On-going disturbance of soils due to general operational activities leading to altered preferred faunal habitat. An increase in alien plant species leading to loss of natural vegetation.	Medium Negative (-9)	Low Negative (-6)
Physical degradation due to soil erosion as a result of exposed soil and topsoil. Seepage affecting soils and the groundwater regime with special mention of the salinization of soils.	Medium Negative (-9)	Low Negative (-6)
Waste	Medium Negative (-9)	Low Negative (-4)
Fugitive dust emissions from material handling stockpiles; mobile plant/machinery activities and movement of haul vehicles	High Negative (-10)	Low Negative (-6)
Increase in noise pollution from construction vehicles and mining activities Risk of discharge and contamination from all operational vehicles may pollute receiving environment leading to altered terrestrial habitat.	High Negative (-10)	Low Negative (-5)
Health and safety of construction staff, pedestrians and community members	Medium Negative (-7)	Low Negative (-6)
Unearthing of underground heritage and archaeological artefacts	Medium Negative (-8)	Low Negative (-6)
Access roads	Medium Negative (-8)	Low Negative (-6)
Job creation	Medium Positive (+8)	Medium Positive (+8)
Cumulative noise	Medium Negative (-9)	Low Negative (-6)
Rehabilitation		
Potential Impact	**Without Progressive Rehabilitation**	**With Progressive Rehabilitation**
Limited vegetation regrowth, increased soil erosion and siltation of down slope features	High Negative (-10)	Low Negative (-6)
Increased alien invasive plant proliferation	Medium Negative (-9)	Low Negative (-6)
Erosion	Medium Negative (-9)	Low Negative (-6)
Safety	Medium Negative (-8)	Low Negative (-5)
Visual intrusion	High Negative (-11)	Low Negative (-5)
Closure		
Contaminated soils, visual impacts, alien plant proliferation	Low Negative (-6)	Low Negative (-4)

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.

Mitigation requires proactive planning that is enabled by following the 'mitigation hierarchy' (Figure 8). The application of the mitigation hierarchy is intended firstly, to strive to avoid disturbance of ecosystems and loss of biodiversity, and where this cannot be avoided, to minimise, rehabilitate, and then finally offset any remaining significant residual impacts. The mitigation hierarchy is inherently proactive, requiring the on-going and iterative consideration of alternatives in terms of project location, siting, scale, layout, technology and phasing until the proposed development can best be accommodated without incurring significant negative impacts to the receiving environment. In cases where the receiving environment cannot support the development or where the project will destroy the natural resources on which local communities are wholly dependent for their livelihoods or eradicate unique biodiversity; the development may not be feasible and the developer knows of these risks, and can plan to avoid them, the better.

The impact mitigation and management objectives and outcomes are presented in Figure 8 below.

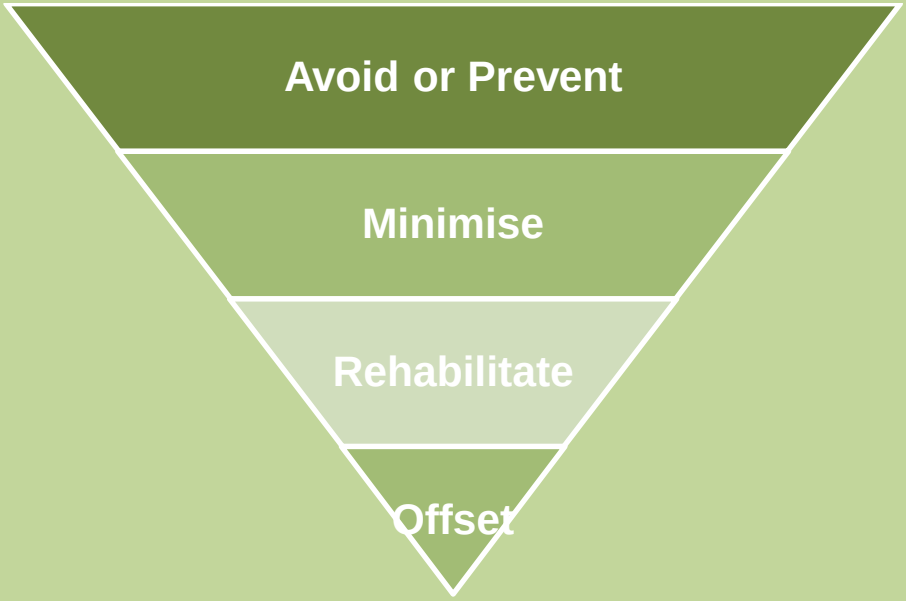


Figure 8: The mitigation hierarchy

Potential Impact	Impact Management Objective	Impact Management Outcome
Erosion and sedimentation into down-gradient freshwater resources	Avoid working in the rainy season Avoid mixing of 'clean' and 'dirty' water	Runoff-induced erosion and sedimentation of the relevant down-gradient system is minimised Implementation of stormwater management controls Rehabilitate mined areas progressively to reduce erosion and runoff
Encroachment into non-mining areas	Prevent impact on adjacent non-mining areas	Impacts are localised to the mining area
Loss of floral and faunal SCC and habitat	Prevent edge effects of mining activities Rehabilitate with indigenous grasses to establish groundcover	All rehabilitated areas should be rehabilitated to a point where natural processes will allow the pre-development ecological functioning and biodiversity of the area to be reinstated
Alien invasive plant proliferation	Minimise or prevent IAP growth and bush encroachment	IAPs are managed by an IAP management control plan

Potential Impact	Impact Management Objective	Impact Management Outcome
	Rehabilitate mined areas progressively	
Soil erosion	Prevent at site	Implementation of adequate erosion and stormwater management controls Management of topsoil and spoil material
Dust	Minimise at site	Effective dust control measures Monitor complaints through register
Noise	Minimise at site	Effective noise abatement measures Monitor complaints through register
Safety	Prevent at site	Safe working environment for personnel as well as communities in the area
Visual	Minimise at site	Rehabilitate mined areas progressively to reduce visual impacts to receptors
Waste	Minimise at site	Safe disposal of waste (general and hazardous waste)
Heritage	Avoid at site	Protection of heritage resources if unearthed during operations
Access roads	Minimise and rehabilitate	Rehabilitate and restore access roads

n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

Refer to Section P (ii) below.

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

(Which relate to the assessment and mitigation measures proposed)

The BA process followed the legislated process required and as governed and specified by the EIA Regulations 2014 (as amended in 2017). Inevitably, when undertaking scientific studies, challenges and limitations are encountered. For this specific BA, the following were encountered:

- All information provided by the Engineering team to the EAP was correct and valid at the time it was provided.
- The EAP does not accept any responsibility in the event that additional information comes to light at a later stage of the process.
- All data from unpublished research is valid and accurate.
- The scope of this investigation is limited to assessing the potential environmental impacts associated with the mining activities at BP 5.5L.
- Freshwater assessment - The freshwater resource assessment was confined to the proposed borrow pit site and did not include an assessment of surrounding properties. The surrounding area was however considered as part of the desktop assessment.
- Ecological assessment –
    - The ecological assessment is confined to the study area and does not include the neighbouring and adjacent properties; these were however considered as part of the desktop assessment;
    - With ecology being dynamic and complex, some aspects (some of which may be important) may have been overlooked. It is, however, expected that most floral and faunal communities have been accurately assessed and considered;
    - Due to the nature and habits of most faunal taxa, the high level of surrounding anthropogenic activities and the time (season) of the assessment, it is unlikely that all species would have been observed during a field assessment of limited duration. Therefore, site observations were compared with literature studies where necessary;
    - Sampling by its nature, means that not all individuals are assessed and identified. Some species and taxa

within the study area may have been missed during the assessment; and
    - The data presented in this report are based on one field assessment, undertaken in October 2018. A more accurate assessment would require that assessments take place in all seasons of the year. However, on-site data was significantly augmented with all available desktop data and previous assessments in the area (Henning B.J., 2008), and the findings of this assessment are considered to be an accurate reflection of the ecological characteristics of the study area.
- Heritage - The survey was thorough, but limitations were experienced due to the fact that archaeological sites are subterranean and only visible when disturbed. Vegetation was moderate to dense.

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.

The BA Study has been undertaken in accordance with the EIA Regulations 2014 (as amended in 2017) in terms of Section 24(5) of the National Environmental Management Act (Act No. 107 of 1998) (as amended). The project, in the EAP's opinion, does not pose a detrimental impact on the receiving environment and it inhabitants and can be mitigated through the measures and recommendation proposed by the specialist disciplines and the EMPr. The EAP therefore recommends the activity be authorised subject to the condition included below.

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ii) Conditions that must be included in the authorisation

In order to achieve appropriate environmental management standards and ensure that the findings of the environmental studies are implemented through practical measures, the recommendations from this BA study are included within an EMPr. The EMPr would be used to ensure compliance with environmental specifications and management measures.

The implementation of the EMPr for the entire life-cycle (i.e. construction, operation, rehabilitation and closure) of the project is considered to be vital in achieving the appropriate environmental management standards as detailed for this project.

In addition, it is recommended that the following key conditions should be included as part of the authorisation:

a) The proponent is not negated from complying with any other statutory requirements that is applicable to the undertaking of the activity. All necessary permits, licences and approvals must be obtained prior to the commencement of construction.
b) The proponent must appoint a suitably experienced Environmental Control Officer (ECO) for the construction phase of the development that will have the responsibility to ensure that the mitigation / rehabilitation measures and recommendations are implemented and to ensure compliance with the provisions of the EMPr.
c) A protected species survey must be conducted prior to construction. Results of this survey will guide permitting requirements for the removal of protected trees within or adjacent to the site.
d) The Rehabilitation Plan and Invasive Species Management Plan must form part of the conditions of environmental authorisation.

q) Period for which the Environmental Authorisation is required.

Environmental Authorisation is required for 5 years.

r) Undertaking

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

The undertaking is provided at the end of the EMPr and is applicable to the BAR 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.

The Financial Provision has been calculated using the Guideline Document for the Evaluation for the Quantum of Closure Related to Financial Provision Provided by a Mine [DMR in September 2004 (Report No. 5863-5900-2-P, Rev 1.6), and updated in January 2005]. The risk class of the mine is Class C (Low Risk) and the area sensitivity is 'Low'. Step 5: Optional Route for Class C mines has been followed. The amount required is **R260 000.00.**

	Environmental sensitivity of the mine area		
	Low	**Medium**	**High**
Rate per hectare to determine the quantum (rands)	R20 000.00	R50 000.00	R80 000.00
Minimum Amount	R10 000.00		

Financial Provision	
Step 5.1: Environmental Sensitivity of the mined (Low)	R20 000.00
Step 5.2: Overall area of mining operation	13ha
Step 5.3: Closure costs	R260 000.00

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).

Refer to **Appendix K**.

t) Specific Information required by the competent Authority

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

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

The proposed borrow pit area is currently used for grazing. The borrow pit area will be rehabilitated back to its pre-mining state once mining activities are completed. The landowner will also be compensated for the use of his property.

(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 areas designated for socio-religious activities were recorded on the site.
- No remains from the historical period were recorded.
- No formal or informal graves could be identified.
- According to the most recent archaeological cultural distribution sequences by Huffman (2007), this area falls within the distribution area of various cultural groupings originating out of both the Urewe Tradition (eastern stream of migration) and the Kalundu Tradition (western stream of migration).
- The Iron Age is also well documented in the wider area, with sites dating especially to the Letaba *facies* period. No remains from the Iron Age were recorded.
- No Stone Age remains were recorded. No drainage lines or rocky areas were evident on the area to be surveyed.

- The area lies within the blue zone on SAHRIS map. No further action is required. A protocol of finds must be compiled if any fossils are encountered.
- As part of a project for a Bulk Water supply line (SAHRIS website) that covers a wider area than this survey, Dr L. Rossouw, found that there would be a negligible possibility of unearthing palaeoarchaeological heritage material (Rossouw: 2017).
- According to SAHRA website, the nearest surveys to the proposed development are Case number 10484. A Bulk Water Supply line, by Jaco Van Der Walt. No heritage remains were recorded near the bridge area during their survey (Van Der Walt: 2017).
- The Makapans World Heritage Site lies to the north-east of the proposed development area, approximately 13km NE of the borrow pit. The unique importance of the Makapans World Heritage site should be noted due to its outstanding universal importance to not only palaeontological finds, but also it the cave's role during the historical period.

From a heritage resources management point of view, the specialist has no objection with regard to the development, provided adequate consultation with the local residents takes place and that an EMPr is in place to ensure their safety. Bearing in mind the age and nature of the strata affected by the proposed development it is considered highly unlikely that any fossils will be encountered, save stromatolites. However, there remains a possibility that Caenozoic aged fossils may be present in cave breccia, although no work has been carried out in this area. In mitigation it is recommended that a SACNASP accredited palaeontologist from a local institution such as the University of Limpopo makes one visit to the site during the excavation process to examine new outcrops.

The Phase I Heritage Survey and Desktop Palaeontology Study is attached as **Appendix G3**.

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)**.

Commercial sources could be considered if the material from the borrow pit is deemed insufficient.

Two rehabilitation alternatives were considered i.e. progressive rehabilitation (parallel to the material extraction) and rehabilitation of the mining area at the end of the mining activities.

The gravel obtained from BP 5.5L will be used for the construction of the N11-13X project. Should the authorisation not be granted, SANRAL will have to obtain material from other sources which may be costly due to haul distances and paying for material from commercial source which would compromise the timeframes and financial viability of the construction of the N11-13X project. Therefore, the No-go alternative is not feasible.

PART B
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1) Draft environmental management programme.

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

The details and expertise of the EAP are included in Part A, section 1(a) herein as requested.

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

The aspects of the activity that are covered by the draft EMPr is included in Part A (Section J).

c) Composite Map

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

The composite map is attached as **Appendix H**.

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)

- Overburden rocks and coarse material must be used to backfill the borrow pit once the mining activity has seized.
- The borrow pit must be shaped to ensure that no stockpiled heaps remain and the area blends in with the existing landscape.
- The mining area must be levelled with topsoil and revegetated with Bushveld Grass Mixture from MayFord.
- Temporary structures on the site (e.g. tanks containing potable water, toilets, refuse bins, generators) must be dismantled and removed.
- The soil must be checked for any spillages from construction vehicles. All spills must be cleared to the point of infiltration. Contaminated soils must be bagged for safe disposal at a licenced hazardous waste disposal site.
- All invasive alien plants that have colonised the mining site must be removed.

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

Water is not required for the exploitation and mining of gravel. Water will be used for dust suppression but this will be obtained from an authorised source (i.e. Municipality or farmer).

iii. Has a water use licence has been applied for?

No water use licence has been applied for as water for mining activities will be obtained from an authorised source (i.e. Municipality or farmer).

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 m²)	MITIGATION MEASURES (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:- Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Vegetation clearing	Construction	13ha	• A detailed walk down of the area must take place to mark all protected tree species and should the protected trees be impacted (removed, cut or destroyed) in any way by mining activities a permit to remove the trees must be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF). • If the Southern African Python is encountered during the walk down, a snake handler must be called in to relocate them. • *Aloe marlothii* (Mountain Aloe) is not protected but when this species is going to be destroyed by the proposed development, they can be removed and replanted within the immediate surroundings to preserve this species. • Manage edge effects of mining through clearly demarcating the mining area. The mining area must be clearly demarcated by means of beacons/stakes at its corners. Mining operations must only take place within this demarcated area. • The alien invasive species identified on site (Dichrostachys cinerea - Sickle bush, *Cereus*	Meet Rehabilitation standards/objectives	Construction

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.
			jamacaru - Queen of the Night, *Opuntia ficus-indica* - Sweet prickly pear and *Datura ferox* - Large Thorn Apple) must be removed. • *Ziziphus macronata* (Buffalo Thorn) must be managed to prevent any further bush encroachment in the surrounding area. • Implement an IAP eradication programme. • All bare surfaces across the mining site must be checked for IAPs every two weeks and alien invasive plants removed by hand pulling/uprooting and adequately disposed.		
Movement of construction vehicles leading to erosion of soils and compaction and animal fatalities	Construction	13ha	• Limit the footprint area of the construction activity (13ha) to what is absolutely essential in order to minimise environmental damage. • Manage edge effects of construction activities. • Rip and profile compacted soils.	Meet Rehabilitation standards/objectives	Construction
Excavations	Operations	13ha	• Remove, stockpile and preserve topsoil for re-use during rehabilitation. • Topsoil must be stripped to a depth of 200mm and stockpiled, separately from other soil layers in piles not exceeding 2m in height. • Stockpiles must be placed away from areas known to contain hazardous substances such as fuel and if any soils are contaminated, it must be stripped and disposed of at a registered hazardous waste dumping site. • Subsoil and topsoil must be stockpiled separately. Stockpiled soil must be replaced in	Meet Rehabilitation standards/objectives	Operations

ACTIVITIES	PHASE	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
(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.)	of operation in which activity will take place. State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	(volumes, tonnages and hectares or m²)	(describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	(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)	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.
			the reverse order to which it was removed (subsoil first followed by topsoil). • The stockpiles may only be placed within demarcated stockpile areas. These areas must be demarcated on the site plan submitted in writing to the Engineer for his approval, together with the contractor's proposed measures for prevention of environmental damage, containment and subsequent rehabilitation. • Material that cannot be used (i.e. overburden) for the road construction project must be used in the reshaping of the site during rehabilitation and must be stockpiled separately. • No direct discharge of sediment-laden water without settlement must be allowed. • Dangerous conditions (e.g. steep slopes, loose and unstable material) must be managed. • Provision of silt traps or silt fences to prevent total suspended solids (TSS) from disturbed areas entering nearby watercourses.		
	Operations	13ha	• To prevent the erosion of topsoils, management measures must include berms, soil traps, hessian curtains and stormwater diversion away from areas susceptible to erosion. It must be ensured that topsoil stockpiles are located outside of any drainage lines and areas susceptible to erosion.	Meet Rehabilitation standards/objectives	Operations

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.
			• The stockpiles must only be placed within demarcated stockpile areas. Subsoil and topsoil must be stockpiled separately. • Stockpiled soils must be kept free of weeds and must not be compacted. • The height of stockpiles must be limited to 2m to avoid soil compaction and destruction of soil micro-organisms.		
	Operations	13ha	• Suitably covered receptacles must be available at all times and conveniently placed for the disposal of waste. • All used oils, grease or hydraulic fluids must be placed therein and these receptacles will be removed from the site on a regular basis for disposal at a registered or licenced disposal facility. • No waste must be burnt on site. • The contractor responsible for the removal of the rubble and waste must supply the applicant with a certificate indicating safe disposal. • Hazardous waste must be disposed of at a licenced hazardous waste landfill site. SDCs must be obtained from the waste removal company as evidence of correct disposal and kept on-site within the Site Environmental File.	Meet Rehabilitation standards/objectives	Operations
Excavations	Operations	13ha	• Dust must be suppressed on the mining site during dry periods by the regular application of water.	Dust suppression controls National Dust Control Regulations (GNR 827 of November 2013)	Operations

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.
			• Water used for this purpose must be used in quantities that will not result in the generation of runoff. • Dust dispersion from mining activities, road and stockpiles must be limited and suppressed to the maximum extent practical. • Stockpiles must be positioned such that they are not vulnerable to wind erosion. • Cover skips and trucks which are loaded with gravel material. • Stockpiles must be situated away from the site boundary, watercourses and nearby receptors and must take into account the predominant wind direction. • A speed limit of 40km/hr must be set for all vehicles travelling over exposed areas or near stockpiles. • Dust and mud must be controlled at vehicle exit and entry points to prevent the dispersion of dust and mud beyond the site boundary. • A Complaints Register must be kept at the Site Office at all times.		
	Operations	13ha	• All mining activities must be undertaken according to daylight working hours. • All mobile plant and equipment must be regularly maintained to ensure their integrity and reliability. • Construction staff working in an area where the 8-hour ambient noise levels exceed 75dBA	Noise standard requirements of the Occupational Health and Safety Act (No. 85 of 1993) SANS 10103	Operations

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.
			must have the appropriate Personal Protective Equipment (PPE). • Surrounding communities and adjacent landowners must be notified upfront of noisy construction activities. • A Complaints Register must be kept at the Site Office at all times.		
	Operations	13ha	• Members of the public adjacent to the mining site must be notified of mining activities in order to limit unnecessary disturbance or interference. • Construction activities should be undertaken during daylight hours. • A Safety Officer must be appointed to continuously monitor the safety conditions during mining. • All construction staff must have the appropriate PPE. • The construction staff handling chemicals or hazardous materials must be trained in the use of the substances and the environmental, health and safety consequences of incidents. • Report and record any environmental, health and safety incidents to the responsible person.	Health and Safety Plan	Operations
Excavations	Operations	13ha	• If an artefact on-site is uncovered, work in the immediate vicinity must be stopped immediately. • The contractor must take reasonable precautions to prevent any person from removing or damaging any such article and	Impact avoided	Operations

ACTIVITIES **(E.g. For prospecting -** drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **E.g. For mining**,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	PHASE of operation in which activity will take place. State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	SIZE AND SCALE of disturbance (volumes, tonnages and hectares or m²)	MITIGATION MEASURES (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	COMPLIANCE WITH STANDARDS (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	TIME PERIOD FOR IMPLEMENTATION Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:- Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
			must immediately, upon discovery thereof, inform the Construction Engineer of such discovery which in turn must contact a registered archaeologist and the Limpopo Heritage Authority. • Work may only resume once clearance is given in writing by the archaeologist and/or the Limpopo Heritage Authority. • A SACNASP accredited palaeontologist from a local institution such as the University of Limpopo makes one visit to the site during the excavation process to examine new outcrops.		
Access roads	Operations	13ha	• The contractor is only permitted to make use of the existing road entrances to the site as well as those agreed to with by the relevant authorities prior to construction commencing. • The mining site must have strict access control to reduce the risks associated with vehicular transportation and pedestrian access on the site. • Access roads must be adequately maintained so as to minimise dust, erosion or undue surface damage. • In the event of a breakdown, maintenance of vehicles must take place with care and the recollection of spillage should be practiced near the surface area to prevent ingress of hydrocarbons into topsoil.	Meet Rehabilitation standards/objectives	Operations
Rehabilitation and restoration of	Rehabilitation	13ha	• Landscape and contour the rehabilitated areas to the pre-mining environment.	Meet Rehabilitation standards/end use	Rehabilitation upon cessation of individual

ACTIVITIES	PHASE	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
(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.)	of operation in which activity will take place. State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	(volumes, tonnages and hectares or m^2)	(describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	(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)	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.
mined areas			• All areas affected by mining must be rehabilitated. • Areas must be reseeded with Bushveld Grass Mixture from MayFord as required. • Monitor and control the re-growth of invasive vegetative material. • All areas of disturbed and compacted soils must be ripped and reprofiled. • Exposed slopes must be stabilized and re-vegetated as soon as practically possible. • Slopes must not be steeper than 1:3. • Erosion control measures such as geofabric, eco-logs and biodegradable silt fences must generally be installed prior to revegetation. On gentle slopes where there is a need to break the energy of surface runoff flowing down a slope, contour berms, silt fences or other structures must be installed at regular intervals across the slope. For moderately-steep areas, geofabrics must be installed to cover the soil surface.	objectives	activity
	Rehabilitation	5ha	• The borrow pit must be free-draining and the runoff water must not cause erosion. Drainage should be designed in such a way that it will minimize ponding. • All disturbed area must be shaped to match the natural slope without increasing the risk of erosion. Use of light machinery is recommended.	Meet Rehabilitation standards/end use objectives	Rehabilitation upon cessation of mining

ACTIVITIES	PHASE	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
(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.)	of operation in which activity will take place. State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	(volumes, tonnages and hectares or m^2)	(describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	(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)	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.
			• Any erosion features created by construction/operation activities must be stabilised. • All rehabilitated areas must be rehabilitated to a point where natural processes will allow the pre-development ecological functioning and biodiversity of the area to be reinstated. • As part of rehabilitation activities, it is recommended that monitoring of the study area occurs every year during high rainfall months, so as to ensure that no new alien vegetation growth occurs. • Refer to the Rehabilitation and Management Plan and IAP Control Plan (**Appendix I**).		
	Rehabilitation	13ha	• Where the borrow pit is likely to pose a significant risk after rehabilitation, e.g. dangerous slopes (steeper than 1:2 or unstable), not free draining, not visible etc., then the perimeter of the borrow pit must be secured with permanent fencing. • Stock-proof fencing, together with appropriate signage, must be utilised as a minimum and must be maintained in a satisfactory condition. • A gate must be provided to permit access to the site for the ongoing monitoring and management of the site rehabilitation. • Care should be taken not to damage existing fences and gates.	Meet Rehabilitation standards/end use objectives	Rehabilitation upon the cessation of mining

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.
			• The borrow pit must blend in with the surrounding area and appears as a natural extension to the adjacent area.		
Site closure	Closure	13ha	• Overburden rocks and coarse material must be used to backfill the borrow pit once the mining activity has seized. • The borrow pit must be shaped to ensure that no stockpiled heaps remain and the area blends in with the existing landscape. • The mining area must be levelled with topsoil and revegetated with Bushveld Grass Mixture from MayFord. • Temporary structures on the site (e.g. tanks containing potable water, toilets, refuse bins, generators) must be dismantled and removed. • The soil must be checked for any spillages from construction vehicles. All spills must be cleared to the point of infiltration. Contaminated soils must be bagged for safe disposal at a licenced hazardous waste disposal site. • All invasive alien plants that have colonised the mining site must be removed.	Meet Rehabilitation standards/ end use objectives	Closure

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, stormwater 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.)** **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.**
Site preparation	Erosion and sedimentation	Down-gradient water resources	Construction	Control through timing of site preparation works and establish surface water management structures prior to mining activity	Rehabilitation standards/objectives
Site preparation and vegetation clearing	Encroachment into non-mining areas	Vegetation and fauna	Construction	Control through clearly demarcating mining area Stop through fencing off the mining area Manage edge effects of construction activities	Rehabilitation standards/objectives
Vegetation clearing	Loss of preferred habitat for floral and faunal SCC	Vegetation and fauna	Construction	Control through working within demarcated area, undertake walk down of site prior to construction	Rehabilitation standards/objectives
	Invasion of alien invasive plants	Flora	Construction	Control through implementation of alien invasive plant (IAP) control plan Monitor site every two weeks for IAPs	Rehabilitation standards/objectives

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, stormwater 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.)** **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.**
Construction vehicles	Erosion and compaction of soils	Soils	Construction	Remedy through ripping and re-profiling disturbed soils Stop construction vehicles from impacting on non-mining and areas prone to erosion	Rehabilitation standards/objectives
	Animal fatalities	Fauna	Operations	Manage through personnel awareness	Rehabilitation standards/objectives
Excavations	Change in land form and use	Topography and land use	Operations	Control through management and monitoring through progressive rehabilitation	Rehabilitation standards/objectives
	Erosion and sedimentation	Down-gradient water resources	Operations	Control through stormwater management measures Manage stockpiles	Rehabilitation standards/objectives
	Invasion of alien invasive plants	Flora	Operations	Control through implementation of alien invasive plant (IAP) control plan	Rehabilitation standards/objectives
	Physical degradation due to erosion as a result of exposed soil and topsoil	Soils	Operations	Control through erosion control measures Stockpile subsoil and topsoil separately Stockpiles to be placed in demarcated areas and the height should be limited to 2m to avoid soil compaction	Rehabilitation standards/objectives
	Dust	Air quality	Operations	Control through frequent dust suppression Control speed limit for haul trucks Remedy by addressing dust complaints	Dust suppression controls National Dust Control Regulations (GNR 827 of November 2013)
	Noise pollution	Noise receptors	Operations	Control through maintaining plant and equipment in good working order Remedy by addressing noise complaints	Noise standard requirements of the Occupational Health and Safety Act (No. 85 of 1993)

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, stormwater 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.)** **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.**
					SANS10103
	Groundwater, soils and land pollution	Groundwater, soils and land	Operations	Control through the provision of waste (general and hazardous) receptacles Monitor disposal of waste through SDCs	Rehabilitation standards/objectives
	Safety	Nearby communities and construction personnel	Operations	Control through: construction staff wearing appropriate PPE, notifying nearby communities of the mining activity through the appropriate signage; provide training to personnel handling hazardous chemicals or materials Remedy through training of personnel in the correct handling and reporting of spillage/pollution	Health and Safety Plan
	Unearthing of underground heritage and archaeological artefacts	Heritage	Operations	Stop work immediately if an artefact is uncovered, work to proceed once clearance is provided by an archaeologist or the Provincial Heritage Authority	Avoid impact
Rehabilitation and restoration of mined areas	Limited vegetation regrowth	Soils	Rehabilitation	Manage and monitor through rehabilitation	Rehabilitation standards/objectives
	Alien invasive plant proliferation	Flora	Rehabilitation	Control through implementation of alien invasive plant (IAP) control plan Monitor site every two weeks for IAPs	Rehabilitation standards/objectives
	Erosion	Soils and down-gradient water resources	Rehabilitation	Control through stormwater management measures – ensure that the borrow pit is free draining Manage and monitor through rehabilitation	Rehabilitation standards/end use objectives
	Safety	Nearby communities and construction personnel	Rehabilitation	Stop communities from accessing the borrow pit area if it poses a risk after rehabilitation Control access through a stock proof fencing and gate and access should be controlled	Rehabilitation standards/end use objectives

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, stormwater 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.)** **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.**
	Visual intrusion	Visual receptors	Rehabilitation	Control through progressive rehabilitation and restricting slopes to no greater than 1:3 Modify mined area to blend in with the surrounding area	Rehabilitation standards/end use objectives
Closure and decommissioning the mining area	Contaminated soils, visual impacts, alien plant proliferation)	Soils, groundwater, vegetation, visual receptors	Closure	Control through implementation of alien invasive plant (IAP) control plan Manage and monitor through closure plan	Rehabilitation standards/end use objectives

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, stormwater 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 preparation	Erosion and sedimentation	Control through timing of site preparation works and establish surface water management structures prior to mining activity	Construction	Rehabilitation standards/objectives
Site preparation	Encroachment into non-mining areas	Control through clearly demarcating mining area Stop through fencing off the mining area Manage edge effects of construction activities	Construction	Rehabilitation standards/objectives
Vegetation clearing	Loss of preferred habitat for floral and faunal SCC	Control through working within demarcated area, undertake walk down of site prior to construction	Construction	Rehabilitation standards/objectives
	Invasion of alien invasive plants	Control through implementation of alien invasive plant (IAP) control plan Monitor site every two weeks for IAPs	Construction	Rehabilitation standards/objectives
Construction vehicles	Erosion and compaction of soils	Remedy through ripping and re-profiling disturbed soils Stop construction vehicles from impacting on non-mining and areas prone to erosion	Construction	Rehabilitation standards/objectives
	Animal fatalities	Manage through personnel awareness	Construction	Rehabilitation standards/objectives
Excavations	Change in land form and use	Control through management and monitoring through progressive rehabilitation	Operations	Rehabilitation standards/objectives
	Erosion and sedimentation	Control through stormwater management measures Manage stockpiles	Operations	Rehabilitation standards/objectives

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, stormwater 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)
	Invasion of alien invasive plants	Control through implementation of alien invasive plant (IAP) control plan	Operations	Rehabilitation standards/objectives
	Physical degradation due to erosion as a result of exposed soil and topsoil	Control through erosion control measures Stockpile subsoil and topsoil separately Stockpiles to be placed in demarcated areas and the height should be limited to 2m to avoid soil compaction	Operations	Rehabilitation standards/objectives
	Dust	Control through frequent dust suppression Control speed limit for haul trucks Remedy by addressing dust complaints	Operations	Dust suppression controls
	Noise pollution	Control through maintaining plant and equipment in good working order Remedy by addressing noise complaints	Operations	Noise level controls
	Groundwater, soils and land pollution	Control through the provision of waste (general and hazardous) receptacles Monitor disposal of waste through SDCs	Operations	Rehabilitation standards/objectives
	Safety	Control through: construction staff wearing appropriate PPE, notifying nearby communities of the mining activity through the appropriate signage; provide training to personnel handling hazardous chemicals or materials Remedy through training of personnel in the correct handling and reporting of spillage/pollution	Operations	Health and Safety Plan
	Unearthing of	Stop work immediately if an artefact is	Operations	Avoid impact

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, stormwater 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)
	underground heritage, archaeological and palaeontological artefacts	uncovered, work to proceed once clearance is provided by an archaeologist or the Provincial Heritage Authority		
Rehabilitation and restoration of mined areas	Limited vegetation regrowth	Manage and monitor through rehabilitation	Rehabilitation upon cessation of the individual activity	Rehabilitation standards/objectives
	Alien invasive plant proliferation	Control through implementation of alien invasive plant (IAP) control plan Monitor site every two weeks for IAPs	Rehabilitation upon the cessation of the individual activity	Rehabilitation standards/objectives
	Erosion	Control through stormwater management measures – ensure that the borrow pit is free draining Manage and monitor through rehabilitation	Rehabilitation upon the cessation of the mining activity	Rehabilitation standards/end use objectives
	Safety	Stop communities from accessing the borrow pit area if it poses a risk after rehabilitation Control access through a stock-proof fencing and gate and access should be controlled	Rehabilitation upon the cessation of the mining activity	Rehabilitation standards/end use objectives
	Visual intrusion	Control through progressive rehabilitation and restricting slopes to no greater than 1:3 Modify mined area to blend in with the surrounding area	Rehabilitation after cessation of mining	Rehabilitation standards/end use objectives
Closure and decommissioning the mining area	Waste, spills, hardened surfaces, removal of construction materials	Control through implementation of alien invasive plant (IAP) control plan Manage and monitor through closure plan	Rehabilitation upon cessation of mining	Rehabilitation standards/end use objectives

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.

- Overburden rocks and coarse material must be used to backfill the borrow pit once the mining activity has seized.
- The borrow pit must be shaped to ensure that no stockpiled heaps remain and the area blends in with the existing landscape.
- The mining area must be levelled with topsoil and revegetated with Bushveld Grass Mixture from MayFord.
- Temporary structures on the site (e.g. tanks containing potable water, toilets, refuse bins, generators) must be dismantled and removed.
- The soil must be checked for any spillages from construction vehicles. All spills must be cleared to the point of infiltration. Contaminated soils must be bagged for safe disposal at a licenced hazardous waste disposal site.
- All invasive alien plants that have colonised the mining site must be removed.

(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 as described in this programme will be used to consult with the landowner and interested and affected parties during the 30 day public review period where after confirmation will be provided.

(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.

Refer to **Appendix I** for the Rehabilitation and Management Plan and Alien Invasive Plant Control Plan.

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

The Rehabilitation Plan ensures that the environment post-mining can be restored to the pre-mining environment so as to ensure:

- Reinstatement of ecological services;
- Reinstatement of topographical sequences;
- Re-instatement and protection of indigenous vegetation;
- Alien and invasive floral management;
- Erosion control and siltation management, including soil management and bank stabilisation;
- Aftercare and maintenance; and
- Monitoring of rehabilitation works.

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

The Financial Provision has been calculated using the Guideline Document for the Evaluation for the Quantum of Closure Related to Financial Provision Provided by a Mine (DMR in September 2004 (Report No. 5863-5900-2-P, Rev 1.6), and updated in January 2005). The risk class of the mine is Class C (Low Risk) and the area sensitivity is 'Low'. Step 5: Optional Route for Class C mines has been followed. The amount required is **R260 000.00.**

	Environmental sensitivity of the mine area		
	Low	**Medium**	**High**
Rate per hectare to determine the quantum (rands)	R20 000.00	R50 000.00	R80 000.00
Minimum Amount	R10 000.00		
Financial Provision			
Step 5.1: Environmental Sensitivity of the mined (Low)	R20 000.00		
Step 5.2: Overall area of mining operation	13ha		
Step 5.3: Closure costs	R260 000.00		

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

Refer to **Appendix K**.

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
Excavations	Erosion and sedimentation	Manage stockpiles Implement and monitor erosion and stormwater control	Environmental Control Officer	Weekly
	Dust	Dust monitoring	Environmental Control Officer	Daily
Rehabilitation	Alien invasive plants (IAPs)	IAP control plan	Environmental Control Officer	Bi-monthly

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

The Environmental Control Officer will undertake audits in compliance with the EMPr every month and will compile monthly audit reports which will be submitted to the Applicant and the DMR.

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 Applicant (SANRAL) is committed to promoting and implementing sustainability throughout their operations. As part of this commitment, the Applicant recognises the importance of making all employees aware of the potential environmental impacts that could result from conducting their jobs and how this potential can be minimised through effective training. Environmental awareness to the employees of the project will be provided by implementing environmental awareness

training in the following forums:

- Toolbox Talks (Daily)
- Environmental Awareness Courses (Ad hoc)
- EMPr Awareness (as and when required)

The above-mentioned awareness activities will be used to share information and to ensure that all personnel are aware of the environment in which they operate and what environmental aspects require attention during their daily operations / activities / tasks. Additionally, personnel awareness training will be undertaken if and when required to strengthen the personnel's understanding of environmental issues.

The method and medium of communication during the environmental meetings will be determined by the Designated Environmental Officer facilitating the meetings. The topics discussed in meetings will be recorded, with all employees present signing an attendance register. As potential environmental impacts differ in each department of the operation, the environmental topics selected for discussion can either be:

- General topics that are applicable to the entire activity;
- Activity specific topics as identified in the impacts on the receiving environment;
- Topics that can be "taken home" and implemented off-site.

General Topics

There are a number of environmental impacts resulting from the proposed project. General topics include, but are not limited to, the following:

- Topsoil and soil management;
- Dust generation impacts;
- Noise generation;
- Domestic waste minimisation and recycling;
- Practical training regarding the clean-up of major and minor hydrocarbon spills / use of spill management kit;
- Practical training on using a fire extinguisher;
- Alien vegetation identification and removal, and the importance of indigenous vegetation.

Activity Specific Topics

Some activities may have environmental impacts that are unique to each area. These must be addressed in the SHEQ meetings. Area specific topics include (and some of these topics may be a repeat of those covered under general topics):

- Stormwater management and protection of water resources;
- Potential for groundwater pollution;
- Identification and management of erosion;
- Vehicle emissions and related impacts;
- Practical training regarding the clean-up of major and minor hydrocarbon spills;
- The importance of the waste management system and implementing good housekeeping;
- Dust generation and why and how to reduce dust; and
- Biodiversity interaction (flora and faunal) awareness.

Take Home Topics

Environmental awareness should not stop at the work place. Many of the concepts learned at work can be applied to employees' lifestyle at home. Topics that can be covered under "take home topics" include, but are not limited to:

- Water consumption and conservation; and
- Domestic waste minimisation and recycling - "Reduce, Reuse and Recycle".

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

Refer to the Impact Assessment attached as **Appendix F**.

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

No specific information has been requested by the Competent Authority.

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:

Royal HaskoningDHV (Pty) Ltd
Name of company:

Date: 26 November 2018

-END-