DRAFT BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME

Farm Name: Excelsior 358 RE

Magisterial District: Windburg

July 2021

Compiled by: Environmental Management Group
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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: Mantsopa Local Municipality

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FILE REFERENCE NUMBER SAMRAD: To be assigned

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ABBREVIATIONS USED IN THIS REPORT

DMR	:	Department of Mineral Resources.
DWS	:	Department of Water and Sanitation.
ECO	:	Environmental Control Official.
EIA	:	Environmental Impact Assessment.
EMPr	:	Environmental Management Programme.
FS	:	Free State.
IAP	:	Interested and Affected Parties.
LOM	:	Life of Mine.
MPRDA	:	Minerals and Petroleum Resources Development Act.
NEMA	:	National Environmental Management Act.
SAHRA	:	South African Heritage Resources Agency.
SAPS	**:**	South African Police Services.

1. IMPORTANT NOTICE

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

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

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

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

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

2. OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

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

(a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;

(b) identify the alternatives considered, including the activity, location, and technology alternatives;

(c) describe the need and desirability of the proposed alternatives,

(d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage , and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on the these aspects to determine:

  (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
  (ii) the degree to which these impacts—
    (aa) can be reversed;
    (bb) may cause irreplaceable loss of resources; and
    (cc) can be managed, avoided or mitigated;

(e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—

  (i) identify and motivate a preferred site, activity and technology alternative;
  (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and
  (iii) identify residual risks that need to be managed and monitored.

PART A

SCOPE OF ASSSSMENT AND BASIC ASSESSMENT REPORT

3. Contact Person and correspondence address

a) Details of

i) Details of the EAP

Name of The Practitioner:	CW Vermeulen
Tel No.:	051 412 6350
Fax No.:	082 824 9308
E-mail address:	cwv@envmgp.com

ii) Expertise of the EAP.

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

CW Vermeulen holds a BSc. Degree in Environmental and Biological Sciences. The full CV of the EAP is attached in Appendix 1.

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

The EAP has over 7 years environmental assessment experience in projects covering waste management, mining permits or rights, road construction, infrastructure developments, agric-industrial developments, etc.

b) Location of the overall Activity.

Farm Name:	Excelsior 358 RE
Application area (Ha):	4.9ha
Magisterial district:	Windburg
Distance and direction from nearest town	2 km West of Excelsior
21 digit Surveyor General Code for each farm portion	F04200000000035800000

c) Locality map

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

The locality map is shown in Appendix 2.

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 proposed site is linear in nature due to the volcanic mechanisms that were present during the intrusion of the dolerite pipe. This means that the 5ha borrow pit area will not be a uniform block but more an elongated rectangle as the dolerite pipe is excavated. The site is easily accessible from the R 703 which is the main road in and out of Excelsior. Once on the R 703, turn onto the R 709 and keeping going for 1 km, where the site will be on the left. Please refer to Appendix 4 which contains the site locality map.

The purpose of registering a borrow pit will be for the supply of construction materials for the surrounding area. Only mobile and temporary structures will be used during the operational period of the borrow pit which includes the office site and space for vehicle parking of ± 0, 5 ha. A 940 m fence will be erected around the borrow pit totalling a surface area of approximately 4, 4 ha. The site will impact an area of approximately 4, 5 ha.

Due to the nature of the material (weathered dolerite) only Excavators and TLBs will be used in the extraction process. Mining of dolerite will be executed as a shallow surface mining operation which makes "cuts" or a minable faces to mine before moving on to the next cut. No blasting will be required.

(i) Listed and specified activities

NAME OF ACTIVITY **(E.g. For prospecting -** drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **E.g. for mining**,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	**Aerial extent of the Activity** **Ha or m²**	**LISTED ACTIVITY** **Mark with an X where applicable or affected.**	**APPLICABLE LISTING NOTICE** ***(GNR 544, GNR 545 or GNR 546)***
Surface mining to excavate material (dolerite).	**4.9 ha**	**X**	**NEMA Listing Notice 1, Activity No. 21, GNR 327 of 7 April 2017**
Clearing of vegetation for surface mining	**4.9 ha**	**X**	**NEMA Listing Notice 1, No. 27 of 327 of 7 April 2017**

(ii) Description of the activities to be undertaken

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

The Mantsopa Local Municipality requires building material to be used in construction projects for the upgrading of various infrastructure in the surrounding area. Therefore, a borrow pit/ gravel quarry is proposed in order to source the above mentioned construction material.

When mining activities start, existing gravels roads will be used to grant access to the borrow pit. Vegetation clearance will have to occur first and for this site no specific areas will need to be avoided. It is recommended that the operation starts at one point, either from East to West or West to East. If topsoil and overburden needs to be removed before mining the materials, they will be stockpiled correctly and used again during the rehabilitation of the borrow pit. Mining will be done primarily by excavator (due to the soft nature of the material) and tipper trucks will remove mined gravel from the site.

Material excavated from the proposed borrow pit will be processed onsite in the following manner:

For the excavation of G5 to G7 material, an excavator will be utilised and all mining operation will be of a shallow surface open cast. An excavator will simply excavate the material and load the excavated material on to hauling trucks.

e) Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLIY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)
Mineral and Petroleum Resources Development Act, No. 28 of 2002 (as amended)	**Sections: 17, 38, 39, 41 and 106**	**Application submitted for a mining permit.**
National Environmental Management Act, No. 107 of 1998 as amended	**Section 24, 44 and 47**	**Environmental authorisation is required prior to the commencement of an activity that requires a mining permit. This is in the process of being done.**

f) Need and desirability of the proposed activities.

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

As the economy of South Africa grows the Mantsopa Local Municipality needs to develop their infrastructure to keep up with the growing population and need for job creation.

It is thus crucial to find and use suitable construction material for infrastructure. This material will be vital to the growth of the Mantsopa Local Municipality and will provide the opportunity for job creation and upgrading of existing infrastructure.

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

An in-depth exploration and site selection process was undertaken to identify suitable areas to register a borrow pit. This commodity is extremely scares in the area and was difficult to find on municipal owned land. It stands to reason that the proposed borrow pit that is located on municipal land is the only alternative. The mining activities will be basic with the following occurring on the proposed site:

1. **Construction and upgrading of existing gravel roads to gain access to the borrow pit,**
2. **Clearance of vegetation and stockpiling of topsoil and overburden,**
3. **Step wise (cuts) excavation of the dolerite material through means of an excavator and,**
4. **Transportation of the excavated material through means of tipper trucks to the project locations.**

As far as possible, modern mining techniques will be used to minimize operational costs and environmental impacts. Due to the simplified nature of mining in a borrow pit no other technology alternatives are recommended/ available.

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

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

Note that a detailed feasibility study was conducted with specific objectives and goals which aided in selecting an appropriate site for registering a borrow pit. This study is attached in Appendix 6.

i) Details of the development footprint alternatives considered.

With reference to the site plan provided as **Appendix 2** and the location of the individual activities on site, provide details of the alternatives considered with respect to:

(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

a) **The site is located on Excelsior 358 Remaining Extent, Excelsior, Mantsopa Local Municipality, Free State Province.**

b) **The activity that will be undertaken is mining and the method used will be basic shallow surface open cast mining.**

c) **Areas that will be dedicated for the storage of topsoil and mined material stockpiles will be demarcated prior to the commencement of stripping. Due to the limited scope of the activities, only one layout is considered in this report.**

d) **No technology alternatives are considered in the report.**

e) **No operational alternatives are considered in the report.**

f) **The No-go alternative implies that no material from the proposed area will be available.**

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.

The following measures were taken regarding the public participation process:

- **Interested and affected parties (I&AP) were identified, and all relevant information sent to these parties.**
- **Notice boards were placed at the location where the borrow pit excavations will take place as well as a nearby local general store where the larger public will be able to take notice of the mining permit application.**
- **Newspaper advertisement will be placed in the Free State Kroon**

The following Interested and Affected Parties were identified:

- **Department of Water and Sanitation;**
- **Department of Agriculture,**
- **Ward Counsillor**
- **Department of Rural Development and Land Reform**
- **Mantsopa Local Municipality**
- **Thabo Mofutsanyana District Municipality**
- **Local District Executive manager of the local Municipality**

The proof of public participation is shown in Appendix 3.

i. Summary of issues raised by I&APs

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

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
AFFECTED PARTIES					
Landowner/s	X				
Mantsopa Local Municipality	X	N/A	No issues were raised	N/A	N/A
Lawful occupier/s of the land					
N/A	X	N/A	No issues were raised	N/A	N/A
Landowners or lawful occupiers on adjacent properties	X	N/A	No issues were raised	N/A	N/A
N/A	X	N/A	No issues were raised	N/A	N/A
Municipal councillor	X	N/A	No issues where raised	N/A	N/A
Municipality	X	N/A	No issues were raised	N/A	N/A
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					
Department of Water and Sanitation	X	N/A	No issues were raised	N/A	N/A

Thabo Mofutsanyana District Municipality	X	N/A	No issues were raised	N/A	N/A
	X	N/A	No issues were raised	N/A	N/A
Communities					
Dept. Land Affairs					
Department of Agriculture,	X	N/A	No issues were raised	N/A	N/A
Traditional Leaders					
None are applicable	X	N/A	No issues were raised	N/A	N/A
Dept. Environmental Affairs					
Department of Rural Development and Land Reform					
Other Competent Authorities affected					
OTHER AFFECTED PARTIES					
None					
INTERESTED PARTIES					
None					

ii. 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).

The borrow pit is located approximately 2 km in a Westerly direction from the town of Escelsior, Free State Province.

The site topography can be classified as being that of at the foot of a mountain which has a medium slope. The site slope increases to the North were the mountain is located and decrease to the south as the topography levels out. The natural vegetation is classified as Bosotho Montane Shrubland (Gm 5), according to Mucina and Rutherford 2010 vegetation classification. This vegetation type (Gm 5) is associated with steep talus slopes and mountainous areas with dense shrubland and dominated by broad-leaved mesophyllous shrubs. The conservation value of the vegetation type is vulnerable. The site is listed as a criticality biodiversity area irreplaceable under the Free State Province Biodiversity Management Plan (2015). There are few other options for meeting biodiversity targets for the features associated with these areas. What was found is that there are general species and no protected species observed on the site. Due to the disturbance and overgrazing the conservation value of the site has been lost; numerous *Seriphium plumosum* was found on the site, which is an indication of overgrazing.

The proposed borrow pit site lies within the Mantsopa Local Municipality, in the Thabo Mofutsanyane District Municipality. According to Stats SA the total population of Mantsopa municipality is 53 036 people, of which 47311 are black African, 1760 are coloured, 4010 are white people and with the other population groups making up the remaining 444 people. The main age group is between 15 and 34 years of age. Only 2,6% of people completed Matric , whereas 4,8% have a higher education. The dependency ratio in the area is 59.8 (This indicates a high pressure on a low active population). 36, 9% have a good quality of water service provided inside a dwelling or yard and 82,5% of people obtain water outside their yard. Electricity is provided for 80,4% of the population.

(b) Description of the current land uses.

The surrounding land is utilised by subsistence farmers as grazing for livestock.

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

There is no infrastructure near proposed borrow pit site.

(d) Environmental and current land use map.

(Show all environmental, and current land use features)

Refer to Appendix 4 to observe the current land use and the environment.

iii. 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 Appendix 5.3 which includes a full risk impact assessment

iv. 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).

Refer to Appendix 5.2 for the methods used to determine the environmental impact.

v. 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)

The site layout of the proposed borrow pit is simple and uncomplicated from a mining perspective since it will only be utilised as a source of construction material. In terms of site layout and its alternatives, no significant changes will be noticed as the site is only a small 5ha area. The only site layout that is worth considering is for the contractor and concerns whether to mine from West to East or East to West. As such, the positive and negative impacts relating to the layout of the borrow pit are insignificant, impacting neither in a positive nor negative manner.

vi. 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).

Refer to Appendix 5.4 for the mitigation measures.

vii. Motivation why no alternative sites were considered.

As previously mentioned, the Mantsopa Local Municipality together with the Feasibility Study (Appendix 6) had objectives which included that dolerite must be used as construction material and it had to be on municipal owned land. Due to the extremely scares resource in the area any dolerite areas found on municipal land were selected. Due to transportation constraints (distance form towns), only the area being applied for is feasible.

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

No alternative development was considered for the small 5ha site, which will be insignificant.

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.)**

Only one layout was considered. Information about the process is contained in Appendix 5.

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 impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)	**SIGNIFICANCE** if not mitigated	**MITIGATION TYPE** (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. Modify through alternative method. Control through noise control Control through management and monitoring through rehabilitation..	**SIGNIFICANCE** if mitigated
Site establishment activities (fencing, signage, access formation, etc.)	**Loss of vegetation**	**Visual character, Land Use**	**Pre-mining**	**Medium**	**Remedy through rehabilitation, Limit footprint**	**Low**
	Habitat destruction	**Visual character**	**Pre-mining**	**Medium**	**Remedy through rehabilitation, Limit footprint**	**Low**
	Visual scarring	**Visual character**	**Pre-mining**	**Medium**	**Remedy through rehabilitation**	**Low**
	Soil erosion	**Visual character, Land use**	**Pre-mining**	**Medium**	**Remedy through rehabilitation, Limit footprint, Control through storm water control**	**Low**
Clearance of area for mining	**Visual scarring**	**Visual character**	**Operational Phase**	**Medium**	**Remedy through rehabilitation**	**Low**
	Destruction of flora and habitat	**Visual character, Land use**	**Operational Phase**	**Medium**	**Remedy through rehabilitation, Limit footprint and removal of vegetation**	**Low**
	Loss of agricultural potential	**Land use management**	**Operational Phase**	**Low**	**Control through soil conservation techniques**	**Low**

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
					Limit footprint of the borrow pit as far possible to limit loss of agricultural land	
	Soil erosion	Land use management	Operational	Medium	Control through soil conservation techniques, Stop through appropriate storage of topsoil	Low
Excavation	Dust emissions	Air quality	Operational Phase	Medium	Use of dust control measures	Low
	Drainage disruption	Drainage	Operational Phase	High	Control through storm water controls	Low
	Slope instability	Topography	Operational Phase	Low	Control through slope management controls	Low
	Noise	Noise	Operational Phase	Low	Control through noise control measures	Low
	Visual scarring	Visual character	Operational Phase	Medium	Remedy through rehabilitation of already worked areas	Low
	Soil erosion	Land use	Operational Phase	High	Remedy through the rehabilitation of already worked areas, Control through slope control, Stop through appropriate storage of topsoil	Low
	Destruction of heritage resource	Heritage issues	Operational Phase	Low	Avoidance	Low
Drilling & blasting (if done)	Noise and vibrations	Noise	Operational Phase	Medium	Use of blast control measures	Low
	Dust	Air quality	Operational Phase	Low	Use of dust control measures	Low
	Fly rock	Safety and land degradation	Operational Phase	Low	Use blast of control measures and site management protocols	Low

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
Waste Disposal and Material storage	Soil contamination	Land degradation	Operational Phase	Low	Avoidance	Low
	Water pollution	Water	Operational Phase	Low	Avoidance	Low
	Increased risk of fire	Safety	Operational Phase	Low	Avoidance	Low
Material handling, hauling and transportation	Dust	Air quality	Operational Phase	Low	Use of dust control measures	Low
	Increased risk of accidents	Safety	Operational Phase	Low	Use of site management protocols	Low
	Noise	Noise	Operational Phase	Low	Control through noise control measures	Low
	Soil contamination from oil/fuel leaks	Land degradation	Operational Phase	Low	Stop through operational control measures.	Low
Removal of infrastructure & equipment and re- shaping of borrow pit	Noise	Noise	Decommissioning and closure	Low	Use of noise control measures	Low
	Dust	Air quality	Decommissioning and closure	Low	Use of dust control measures	Low
	Soil contamination from oil/fuel	Land degradation	Decommissioning and closure	Low	Stop through operational control measures	Low
	Disruption of surface drainage	Water movement	Decommissioning and closure	Low	Remedy with storm water controls, remedy through rehabilitation	Low
Community and labour relations management	Community conflicts and tensions	Community relations	Operational Phase	Low	Control with site management protocols	Low
	Increased risk of fire	Fire risk	Operational Phase	Low	Control with site management protocols	Low
	Reduced security on area	Safety issues	Operational Phase	Low	Control with site management protocols	Low

NAME OF ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
	Improved employment	Community relations	Operational Phase	Low	Control with site management protocols	Low
	Improved skills	Community relations	Operational Phase	Low	Control with site management protocols	Low

The supporting impact assessment conducted by the EAP is attached in Appendix 5.

k) Summary of specialist reports.

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

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
Ecological Assessment	Impact on ecological elements within the study area is considered unlikely	X	
Heritage Impact Assessment	All items of a heritage nature to be handled as per the Heritage Resources Act.	X	

l) Environmental impact statement

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

The findings of the studies undertaken within this EIA to assess both the benefits and potential negative impacts anticipated from the proposed project conclude that:

- There are no environmental fatal flaws that should prevent the proposed borrow pit development, provided that the recommended mitigation and management measures are implemented, and given due consideration during the life of mine of the borrow pit.
- The development will have both positive and negative social impacts. It will create employment for locals during operational and closure and rehabilitation. The negative impacts are very low and restricted to loss of grazing.
- The management of the impacts hinge on the effective and efficient operation of the borrow pit. There is a need to ensure that competent personnel are employed and adequate training and skills development are provided for where it is lacking.
- The cumulative significance of all the negative potential impacts on the environment is considered low due to the limited scale of the development and the scarcity of development in the immediate surrounding area.

(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.

Map information is attached as Appendix 7.

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

No alternatives were considered. The major negative impacts associated with the proposed borrow pit is the deterioration of environmental parameters such as loss of vegetation and land use. These impacts however have no- to low impacts on the small 5 ha scale that is being applied for and if rehabilitation is applied correctly the risks will be considered insignificant.

For the proposed borrow pit the positive impacts far outweigh the small environmental impacts from operating a borrow pit. Authorizing the borrow pit will stimulate the construction sector for the surrounding community which leads to temporary/ permanent job creation. This in turn increase living standards and infrastructure for the area.

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

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

The management objectives and impact management outcomes are:

- To fulfil the requirements of Mineral and Petroleum Resources Development Act, the requirements of the National Environmental Management Act and other legislative requirements.

- To promote the rational development of the borrow pit in order to reduce or eliminate the associated negative environmental impacts.
- To identify proposed mitigation and management measures to manage adverse impacts and to increase benefits.
- To ensure that the applicant use resources efficiently and effectively during the life of mine in order to reduce wastage thereby reducing associated negative environmental impacts.
- To improve the environmental awareness of all personnel who will work at the borrow pit.

n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

The applicant should provide environmental training for all employees working at the borrow pit during life of mine.

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

(Which relate to the assessment and mitigation measures proposed)

In undertaking this investigation and compiling the report, it has been assumed that:

- The information provided by the client, the applicant and specialists is accurate and unbiased.
- The scope of this investigation is limited to assessing the environmental impacts associated with the proposed mine area and does not include assessment of lifecycle analysis of equipment and other materials to be used at the mine.

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.

There are no environmental fatal flaws that should prevent the proposed development of the proposed mine on the current location provided that the recommended mitigation and management measures are implemented

The cumulative significance of all the negative potential impacts on the environment is considered low due to the limited scale of the development and the scarcity of development in the immediate surrounding area.

ii) Conditions that must be included in the authorisation

- The borrow pit will be rehabilitated properly after material has been sourced and the Municipality should give their input in the finishing off and rehabilitation of the mine (Rehabilitation Plan).
- The mine must be managed in accordance with the Environmental Management Program /plan
- The finishing off of the mine must be safe for humans and animals
- People residing in the area should be informed of who will be working on the mine.
- There should be no dumping of any kind of waste at or in the mine.
- Environmental awareness training should be given to all employees working at the mine
- The applicant should provide environmental training for all employees working at the mine during life of mine.

q) Period for which the Environmental Authorisation is required.

3 years for a mining permit.

r) Undertaking

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

The undertaking is provided at the end of the Report.

s) Financial Provision

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

The Department of Mineral and Petroleum Resources was contacted before the submission of this BAR. DMR confirmed that since the Mantsopa Local Municipality is the applicant no financial provision report will be required. Rehabilitation will then be the sole responsibility of the contractor that is utilizing the borrow pit.

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 mining activities will have no direct impact on the social-economic conditions. The landowner is the Mantsopa Local Municipality which is using the land for informal subsistence farming. The material will be used to improve the road conditions and safety that will have a positive impact on the social-economic conditions within the surrounding community.

(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 site of archaeological or historical significance may be moved without a permit from the SAHRA. Any permitted removal of any archaeological or historical matter must be done under the strict supervision of a qualified registered heritage specialist.

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)**.

As the nature and scale of the borrow pit operation is limited to 5ha, no reasonable feasible alternative was therefore considered. Whilst no feasible alternatives are assessed, the assessment of the No Go alternative, i.e. not implementing the borrow pit development was done.

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 of the EAP are provided in Part A.

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

The details are covered in Part A as required.

c) Composite Map

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

The map is included in Appendix 7.

d) Description of Impact management objectives including management statements

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

The closure management objectives took into account the existing environment, possible environmental impacts and the expectations at closure. To ensure that the closure objectives are informed by the type of environment, the anticipated impacts and damage at closure, the sensitivity of the area and expected post closure land use were taken into account. In doing so, principles of integrated environmental management were taken into account together with the principles of sustainable development. The closure objectives are:

- **To create a post mining environment that eliminates unacceptable health hazards and ensures public safety.**
- **To leave the site in a stable, non-polluting and tidy condition with no remaining plant or infrastructure that is not required for post mining operational use.**
- **To minimise or eliminate the downstream environmental impacts on the ecosystem due to interruption of drainage once the borrow pit operations cease.**
- **To establish a stable post-mining land surface which has been rehabilitated that also supports vegetation growth, is erosion resistant and has long term sustainability.**
- **To reduce the need for long-term monitoring and maintenance by establishing effective stability of the disturbed areas.**

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

No water will be used for actual borrow pit operations; however, water will be available for the personnel working at the borrow pit and distributed via a water truck.

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

In terms of actual water usage on site, no water license will be required

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.
Site establishment activities (fencing, signage, access formation, etc.)	**Start-up**	**± 0.5ha**	**See Appendix 5**	**Issues of compliance with standards will be incorporated into the day to day activities at the quarry. The work methods used the monitoring and measures done and the review processes will be aimed at ensuring that legal thresholds as set out in the environmental standards are complied with. This will include compliance with Mining and Petroleum Resources Development Act regulations, Mine Health and Safety Act regulations and National Water Act regulations.**	**During start-up and operational phase.**
Clearance of vegetation for mining	**Start-up & Operational phase**	**± 4.9 ha**	**See Appendix 5**	**The work methods used, the monitoring and measurements done and the review processes will the aimed at ensuring that legal thresholds as set out in the environmental standards are complied with. This will include compliance with**	**During start-up and operational phase as necessary.**

ACTIVITIES	PHASE	SIZE AND SCALE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
				Mining and Petroleum Resources Development Act regulations, Mine Health and Safety Act regulations and Conservation of Agricultural Resources Act.	
Excavation of material	Operational	± 4.9 ha	See Appendix 5	Management of legal compliance will be incorporated into normal business activities. This means that particular responsibilities need to be clearly defined for the identification of relevant issues and delivery of compliance. This will help to ensure that adequate resources are available to support these activities. Environmental standards as set out in Mining and Petroleum Resources Development Act regulations, Mine Health and Safety Act regulations and National Water Act regulations.	Operational phase.
Drilling & blasting (if done)	Operational	As needed	See Appendix 5	All recommendations and mitigation measures will ensure little to no permanent impact on the environment this will ensure effective rehabilitation and restoration.	Operational phase (when necessary)
Waste disposal and material storage	Operational	Undetermined	See Appendix 5	The waste management hierarchy and the proximity principle will be used in ensuring that the environmental standards as set out in National Environmental Management Waste Act regulations and National Water Act regulations, are complied with.	Operational phase.
Material handling, hauling and transportation	Operational	Undetermined	See Appendix 5	Issues of compliance with standards will be incorporated into the day to day business activities at the quarry to ensure that legal thresholds as set out in the environmental standards are complied with. This will include	Operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
				compliance with standards as per Mining and Petroleum Resources Development Act regulations, Mine Health and Safety Act regulations, National Water Act regulations and Mine Health and Safety Act regulations.	
Removal of infrastructure & equipment	Decommissioning and closure	Affected areas	See Appendix 5	The recommendations will incorporate factors that include the elimination or the minimization of negative impacts in the work methodologies used during decommissioning so as to comply with the standards as per Mining and Petroleum Resources Development Act regulations, Mine Health and Safety Act regulations and National Environmental Management Act.	At decommissioning.
Re-shaping of quarry	Decommissioning and closure	±4.9ha	See Appendix 5	Considerations with the elimination or at least the minimization of any future impacts from the quarry and the long term stability of the facility. Also, any concerns in relation to the long term liability for the proposed quarry/mine and its aesthetics will be incorporated in order to ensure compliance with standards as set out in the Mine Health and Safety Act regulations, National Environmental Management Act and National Water Act regulations.	Closure period.
Community and labour relations management	Operational	N/A	See Appendix 5	Will comply with Basic Conditions of Employment Act regulations, Employment equity Act, Labour Relations Act and Skills Development Act.	During operational phase.
Re-vegetation of disturbed areas	Closure	± 4.99ha	See Appendix 5	The future impacts from the quarry and the long term stability of the area, any concerns in relation to the long term liability for the facility	During operational phase in sections where mining has been completed and during

ACTIVITIES	PHASE	SIZE AND SCALE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
				and its aesthetics will be taken into account to ensure compliance with the National Environmental Management Act, Conservation of Agricultural Resources Act and National Environmental Management Biodiversity Act regulations.	closure.

Details of mitigation measures are provided for in Appendix 5.

e) Impact Management Outcomes

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

ACTIVITY (whether listed or not listed). **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)**.	POTENTIAL IMPACT **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	ASPECTS AFFECTED	PHASE In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)**	MITIGATION TYPE **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc)** E.g. • Modify through alternative method. • Control through noise control • Control through management and monitoring • Remedy through rehabilitation.	STANDARD TO BE ACHIEVED **(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.**
Site establishment activities (fencing, signage, access formation, etc.)	Loss of vegetation	Visual character, Land use	Start-up	Remedy through rehabilitation Limit footprint	Impact managed effectively
	Habitat destruction	Visual character, land use	Start-up	Remedy through rehabilitation Limit footprint	Impact reduced
	Visual scarring	Visual character	Start-up and Operational Phase	Remedy through rehabilitation	Impact managed effectively
	Soil erosion	Visual character, land use	Star-up and Operational Phase	Remedy through rehabilitation, storm water control. Limit footprint, Control through storm water control	Impact avoided
Clearance of area for mining	Visual scarring	Visual character	Operational Phase	Remedy through rehabilitation Limit footprint and removal of vegetation.	Impact managed to acceptable levels, residual impact reduced
	Destruction of flora and habitat	Visual character, land sue	Operational Phase	Remedy through rehabilitation	Impact reduced to satisfactory levels
	Loss of agricultural potential	Land use management	Operational Phase	Use soil conservation techniques Limit Foot print	Impact managed to suitable soil fertility levels
	Soil erosion	Visual character, land	Start-up and	Remedy through rehabilitation,	Impact avoided

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
		use	operational	Storm water control	
Excavation	Dust emissions	Air quality	Operational Phase	Control with dust control measures	Particulates reduced to acceptable levels
	Drainage disruption	Drainage	Operational Phase	Control with Storm water controls	Good surface water run-off established around the mining area.
	Slope instability	Topography	Operational Phase	Control with slope management controls	Stable surfaces established
	Noise	Noise	Operational Phase	Control with Noise control measures	Noise reduced to acceptable levels
	Visual scarring	Visual character	Operational Phase	Rehabilitation	Impact managed effectively, residual impact reduced
	Soil erosion	Land use	Operational Phase	Rehabilitation, use slope management control	Impact levels avoided
	Destruction of heritage resource	Heritage issues	Operational Phase	Avoidance	Impact avoided
Drilling & blasting (if done)	Noise and vibrations	Noise	Operational Phase	Control with blast control measures	Noise levels reduced to acceptable levels
	Dust	Air quality	Operational Phase	Control with dust control measures Control with blast control measures	Particulates reduced to acceptable levels
	Fly rock	Safety and land degradation	Operational Phase	Control with blast control measures	Fly rock avoided
Waste Disposal and Material storage	Soil contamination	Land degradation	Operational Phase	Avoidance, operational control measures	Impact avoided
	Water pollution	Water	Operational Phase	Avoidance, operational control measures	Impact avoided
	Increased risk of fire	Safety	Operational Phase	Avoidance, operational control measures	Impact avoided or managed to low levels
Material handling,	Dust	Air quality	Operational Phase	Control with dust control	Particulates reduced to acceptable

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
hauling and transportation				measures	levels
	Increased risk of accidents	Safety	Operational Phase	Use site management protocols	Accidents avoided or reduced to low levels
	Noise	Noise	Operational Phase	Control with noise control measures	Noise reduced to acceptable levels
	Soil contamination from oil/fuel leaks	Land degradation	Operational Phase	Operational control measures	Impact managed to suitable soil fertility levels
Removal of infrastructure & equipment and re-shaping of Quarry	Noise	Noise	Decommissioning and Closure	Control with noise control measures	Noise levels reduced to acceptable levels
	Dust	Air quality	Decommissioning and Closure	Control with dust control measures	Particulates reduced to acceptable levels
	Soil contamination from oil/fuel	Land degradation, water pollution	Decommissioning and Closure	Avoidance, Control with operational control measures	Impact managed to suitable soil fertility levels
	Disruption of surface drainage	Water movement	Decommissioning and Closure	Control with storm water controls	Free drainage achieved
Community and labour relations management	Community conflicts and tensions	Community relations	Operational Phase	Control using site management protocols	Reduction in complaints and incidences of conflict
	Increased risk of fire	Fire risk	Operational Phase	Control using Site management protocols	Fires avoided and risk reduced
	Reduced security on area	Safety issues	Operational Phase	Control site management protocols	Improvement in security and elimination of theft incidences
	Improved employment	Community relations	Operational Phase	Control site management protocols	Increase in number of people employed
	Improved skills	Community relations	Operational Phase	Controls site management protocols	Improvement in skills level

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	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
whether listed or not listed. **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.).**	**(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**(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..**	Describe the time period when the measures in the environmental management program must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regards 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.	(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 establishment activities (fencing, signage, access formation, etc.)	**Loss of vegetation**	**Remedy through rehabilitation Limit footprint**	**Start-up**	**Issues of compliance with standards will be incorporated into the day to day activities at the mine. The work methods used, the monitoring and measures done, and the review processes will be aimed at ensuring that legal thresholds, as set out in the environmental standards, are complied with. This will include compliance with Mining and Petroleum Resources Development Act regulations, Mine Health and Safety Act regulations and National Water Act regulations.**
	Habitat destruction	**Remedy through rehabilitation Limit footprint**	**Start-up**	
	Visual scarring	**Remedy through rehabilitation**	**Start-up and Operational Phase**	
	Soil erosion	**Remedy through rehabilitation, storm water control. Limit footprint, Control through storm water control**	**Start-up and Operational Phase**	
Clearance of area for mining	**Visual scarring**	**Remedy through rehabilitation Limit footprint and removal of vegetation.**	**Operational Phase**	**The work methods used, the monitoring and measurements done and the review processes will be aimed at ensuring that legal thresholds, as set out in the environmental standards, are complied with. This will include compliance with Mining and Petroleum Resources Development Act regulations, Mine Health and Safety Act regulations and**
	Destruction of flora and habitat	**Remedy through rehabilitation**	**Operational Phase**	
	Loss of agricultural potential	**Use soil conservation techniques Limit foot print as far as possible**	**Operational Phase**	

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
	Soil erosion	Remedy through rehabilitation, Storm water control	Operational Phase	Conservation of Agricultural Resources Act.
Excavation	Dust emissions	Control with dust control measures	Operational Phase	Management of legal compliance will be incorporated into normal business activities. This means that particular responsibilities need to be clearly defined for the identification of relevant issues and delivery of compliance. This will help to ensure that adequate resources are available to support these activities. Environmental standards as set out in Mining and Petroleum Resources Development Act regulations and Mine Health and Safety Act regulations.
	Drainage disruption	Control with Storm water controls	Operational Phase	
	Slope instability	Control with slope management controls	Operational Phase	
	Noise	Control with Noise control measures	Operational Phase	
	Visual scarring	Rehabilitation	Operational Phase	
	Soil erosion	Rehabilitation, use slope management control, storm water control	Operational Phase	
	Destruction of heritage resource	Avoidance	Operational Phase	
Drilling & blasting (if done)	Noise and vibrations	Control with blast control measures	Operational Phase	This will be achieved by clearly outlining the environmental standards to be achieved and the thresholds which are not to be exceeded in the management system used at the site. This will include compliance with standards as per, Explosive Act regulations, Mine Health and Safety Act regulations and the Hazardous Substances Act.
	Dust	Control with dust control measures Control with blast control measures	Operational Phase	
	Fly rock	Control with blast control measures, operational control.	Operational Phase	
Waste disposal and material storage	Soil contamination	Avoidance, Operational control measures	Operational Phase	The waste management hierarchy and the proximity principle will be used in ensuring that the environmental standards as set out in National Environmental Management Waste Act regulations and National Water Act regulations are complied with.
	Water pollution	Avoidance, Operational control measures	Operational Phase	
	Increased risk of fire	Avoidance, Operational control measures	Operational Phase	
Material handling, hauling and transportation	Dust	Control with dust Control measures	Operational Phase	Issues of compliance with standards will be incorporated into the day to day activities at the mine to ensure that legal thresholds as set out in
	Increased risk of accidents	Site management protocols	Operational Phase	

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
	Noise	Control with noise control measures	Operational Phase	the environmental standards are complied with. This will include compliance with Mining and Petroleum Resources Development Act regulations, Mine Health and Safety Act regulations, National Water Act regulations and Mine Health and Safety Act regulations.
	Soil contamination from oil/fuel leaks	Control with operational control measures	Operational Phase	
Removal of infrastructure & equipment and shaping of quarry	Noise	Control with noise control measures	Decommissioning and Closure	The recommendations will incorporate factors that include the elimination or the minimization of negative impacts in the work methodologies used during decommissioning so as to comply with the Mining and Petroleum Resources Development Act regulations, Mine Health and Safety Act regulations and National Environmental Management Act.
	Dust	Control with dust control measures	Decommissioning and Closure	
	Soil contamination from oil/fuel	Control with operational control measures	Decommissioning and Closure	
	Disruption of surface drainage	Control with storm water controls	Decommissioning and Closure	
Community and labour relations management	Community conflicts and tensions	Control using site management protocols	Operational Phase	The future impacts from the mine and the long term stability of the area, any concerns in relation to the long term liability for the facility and its aesthetics will be taken into account to ensure compliance with the National Environmental Management Act, Conservation of Agricultural Resources Act and National Environmental Management Biodiversity Act regulations.
	Increased risk of fire	Control using site management protocols	Operational Phase	
	Reduced security in area	Control site management protocols	Operational Phase	
	Improved employment	Control site management protocols	Operational Phase	
	Improved skills	Use of site management protocols	Operational Phase	

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.

Note that the Mantsopa local municipality is the applicant but will not be required to submit a financial provision report. The responsibility of rehabilitation will be the sole responsibility of the contractor using the borrow pit. Whilst steps are taken throughout the project life cycle to reduce negative environmental impacts as they occur, the specific closure objectives are as follows:

- To create a post mining environment that eliminates unacceptable health hazards and ensures public safety.
- To leave the site in a stable, non-polluting and tidy condition with no remaining plant or infrastructure that is not required for post mining operational use.
- To minimise or eliminate the downstream environmental impacts on the ecosystem due to interruption of drainage once the mine operations cease.
- To establish a stable post-mining land surface which has been rehabilitated that also supports vegetation growth, is erosion resistant and has long term sustainability.
- To rehabilitate the disturbed areas to an end land use similar to that prior to commencement of any mining activities as far possible, in this case an end land use of at least grazing.
- To reduce the need for long-term monitoring and maintenance by establishing effective stability of the disturbed areas.

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

Objectives have been set out in regard to closing of the borrow pit. Consultation between the EAP, landowner and I&AP has taken place.

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

The rehabilitation plan is shown in Appendix 9.

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

The rehabilitation takes into consideration the nature of the impacted land at the end of operational activities and objectives at closure and the need to ensure that the post closure maintenance is minimal.

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

A financial provision report will not be applicable to the Mantsopa Local Municipality which is the applicant. The contractor which utilizes the borrow pit will be responsible for the total cost of rehabilitation as set out according to the EMPr and Rehabilitation Plan.

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

The applicant, Mantsopa Local Municipality, will be responsible to ensure rehabilitation is done by the contractor.

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
Site establishment activities (fencing, signage, access formation, etc.)	Loss of vegetation, Habitat destruction, Visual scarring, Soil erosion	Visual checks, monitoring incidences of non-compliance, recording of key parameters See Appendix 10 for details	Appointed Contractor/	At start and as and when required. Record incidences of non-compliance monthly. See Appendix 9 for details
Clearance of area for mining	Visual scarring, Destruction of flora and habitat, Loss of agricultural potential	Visual checks, monitoring incidences of non-compliance, recording of key parameters See Appendix 10 for details	Appointed Contractor	At start and as and when required. Record incidences of non-conformances as they occur and do monthly report. See Appendix 9 for details
Excavation	Dust emissions, Drainage disruption, Slope instability, Visual Scarring, Soil erosion, Destruction of heritage resources	Visual checks, monitoring incidences of non-compliance, recording of key parameters See Appendix 10 for details	Appointed Contractor	During operational phase. Record measurements monthly and incidences of non-compliance. See Appendix 9 for details
Drilling & blasting (if done)	Noise and vibrations, Dust, Fly rock	Visual checks, monitoring incidences of non-compliance, recording of key parameters See Appendix 10 for details	Appointed Contractor	When drilling and/or blasting is done. Record key parameters when done. See Appendix 9 for details
Waste disposal and	Soil contamination,	Visual checks, monitoring incidences	Appointed Contractor	During life of mine as and when

material storage	Water pollution, Increased risk of fire	of non-compliance, recording of key parameters See Appendix 9 for details		required. Record key parameters monthly and non-compliances. See Appendix 9 for details
Material handling, hauling and transportation	Dust, Increased risk of accidents, Noise, Soil contamination	Visual checks, monitoring incidences of non-compliance, recording of key parameters See Appendix 10 for details	Appointed Contractor	Ongoing during life of mine and record key parameters monthly & non compliances. See Appendix 9 for details
Removal of infrastructure & equipment and shaping of quarry	Noise, Dust, Soil contamination, Disruption of surface drainage	Visual checks, monitoring incidences of non-compliance, recording of key parameters See Appendix 10 for details	Appointed Contractor	At decommissioning and closure and when required. Maintain disposal records. See Appendix 9 for details
Community and labour relations management	Community conflicts and tensions, Increased risk of fire, Reduced security on area, Improved employment rates, Improved skills	Monitoring incidences of complaints, recording of key parameters See Appendix 10 for details	Appointed Contractor	During life of mine and record complaints, incidents and labour statistics monthly. See Appendix 9 for details

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

Once the borrow pit is utilized by a contractor, they will be required to appoint an Environmental Control Officer, which then will be required to perform a monthly environmental compliance report which includes the borrow pit area.

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.

All employees will go through an induction of general environmental issues and given specifics on their jobs. The training will include:

- Making employees aware that everyone has a right to a clean environment and that everyone has a responsibility to protect the environment.
- Explanation of the importance of complying with the EMP specifications.
- Discussion of the potential environmental impacts of operational activities and mitigation measures that must be implemented when carrying out activities.
- The importance of personal performance on dealing with environmental issued and explanations of the management structure of individuals responsible for matters pertaining to the EMP.
- Communication can be done either in a written or verbal format but will be in an appropriate format for the receiving audience. Records of all training done are to be kept.

Refer to Environmental Awareness Plan Appendix 11

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

- The applicant will endeavor to improve the competence and skills of personnel. A culture of environmental protection will be promoted.
- Procedures will be put in place to effectively minimize any identified high risk areas and to proactively control any environmental incidents if they occur.
- The applicant will also continuously improve and promote a code that goes beyond minimal compliance with environmental legislation.

n) Specific information required by the Competent Authority

(Among others, confirm that the financial provision will be reviewed annually).

Confirm

2) UNDERTAKING BY EAP

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:

Name of company:

Date:

Signature of the Commissioner of Oaths:

Name:

Designation:

Date:

Official stamp of Commissioner of Oaths (below)

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APPENDIXES

APPENDIX 1

EAP CURRICULUM VITAE

CURRICULUM VITAE

CW Vermeulen

1. Family name: Vermeulen
2. First name: CW
3. Date of birth: 1 January 1990
4. Nationality: South African
5. Languages: Afrikaans and English
6. Education:

Institution	Degree(s) or Diploma(s) obtained
North West University Potchefstroom 2010 – 2014	BSc. Environmental and Biological Sciences

7. Present position: Director

8. Current Responsiblities Other skills (e.g computer literacy,etc.)

- Coordinating all specialist assessments
- Free State Borrow Pit investigation Project Co-coordinator.
- Water Licenses and Environmental Authorisations.
- Conduct Environmental Impact Assessments and other environmental investigations.
- Conduct Environmental Compliance and other Environmental Audits.
- Conduct Ecological Specialist Assessments.
- Mining right and Mining permit applications
- GIS Mapping

9. Professional experience:

Date	1/05/2017 - Present
Organisation	Environmental Management Group
Position	Director

Date	6/2009 - 12/2010
Organisation	Krugersdorp Game Reserve
Position	Assistant Game Manager
Responsibilities	Game capturing, Grazing capacity evaluations, Assisting with lion breeding project.

Date	1/2015 - 3/2015
Organisation	Zantow Environmental
Position	Environmental Specialist Consultant (Alien and Invasive Flora)
Responsibilities	Conducting specialist assessments concerning alien and invasive flora.

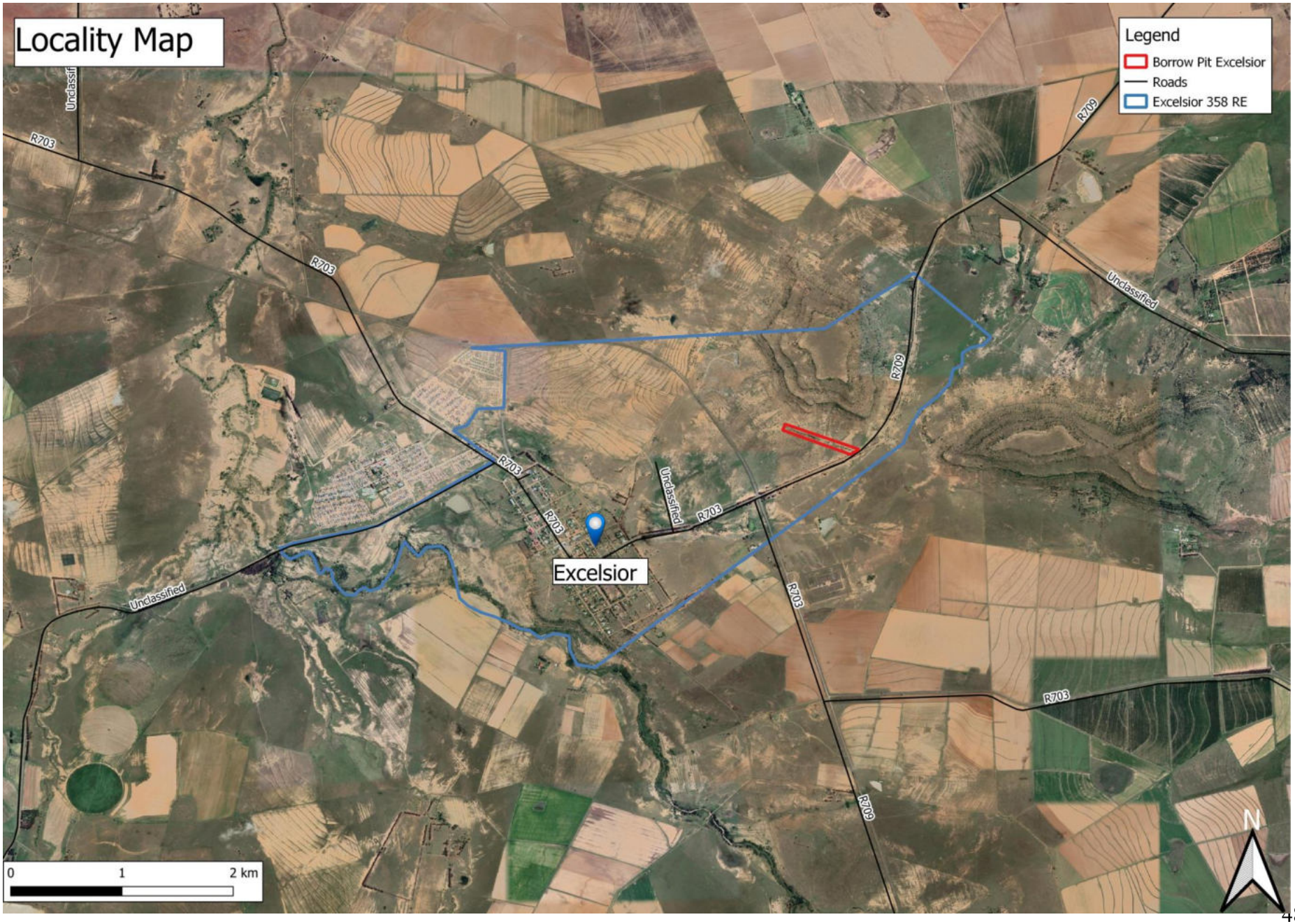
Date	4/2015 - 3/2016
Organisation	Hilland Environmental
Position	Junior Environmental Assessment Practitioner and Environmental Specialist (Avifauna)

Responsibilities	Conducting faunal and floral Specialist Assessments, Environmental Impact Assessments, Environmental Compliance, Environmental Monitoring and Auditing. Composing and implementing Rehabilitation Plans

Date	3/2016 - 8/2016
Organisation	Bokamoso Environmental
Position	Environmental Specialist (Fauna and Avifauna), Water Use License Application Consultant, General Environmental Consultant.
Responsibilities	Conducting specialist Faunal and Avifaunal assessments. Applying for Water Use Licenses. GIS Mapping.

APPENDIX 2

LOCALITY MAP


Locality Map
Legend
Borrow Pit Excelsior
Roads
Excelsior 358 RE
R703
R709
Unclassified
Excelsior
0
1
2 km
N

APPENDIX 3

PUBLIC PARTICIPATION

NOTICE OF APPLICATION FOR ENVIRONMENTAL AUTHORISATION OF A MINING PERMIT

ENVIRONMENTAL MANAGEMENT GROUP

PUBLIC PARTICIPATION REPORT

Contents

ABBREVIATIONS

BID	Background Information Document
DWS	Department of Water and Sanitation
RI&APS	Registered Interested & Affected Parties
I&APS	Interested & Affected Parties
PPP	Public Participation Process

1. INTRODUCTION

The Public Participation Process (PPP) forms an integral part of the rectification application process. It provides people with the opportunity to raise their issues and concerns about the proposed establishment of a Borrow Pit in Excelsior. A comprehensive public participation process was conducted by EMG Consultants, to ensure that all identified Interested and Affected Parties (I&APs) were informed of the proposed project and their input is able to influence decision-making process with regards to the development.

2. APPROACH AND METHODOLOGY

The Public Participation Process was conducted as per Regulation 39, 40, 41, 42, 43 & 44 of the Environmental Impact Assessment Regulations 2014 (as amended 07 April 2017) and the Public Participation Guidelines, 2017 were considered. Steps, which were taken to inform the identified I&APs and surrounding community of the proposed development included:

- ♣ Newspaper advertisement;
- ♣ On site Notice and Posters;
- ♣ Notifications, i.e. Distribution of Background Information Document (BID) to neighbouring property Owners & Stakeholders.

3. PUBLIC PARTICIPATION PROCESS CONDUCTED

The methods that were undertaken during conducting of the public participation process as discussed in detail below.

3.1. NEWSPAPER ADVERTISEMENT

The project will be advertised in the Vrystaatkroon newspaper, on the 14th of June 2021 to inform the I&APs of the Application for Environmental Authorisation of a Mining Permit for the establishment of a Borrow Pit in Excelsior.

3.1.1 Newspaper Advert

NOTICE OF APPLICATION FOR ENVIRONMENTAL AUTHORISATION OF MINING PERMITS

Notice is hereby given in terms of regulation 41 of Government Notice No. R326 under the National Environmental Management Act (Act 107 of 1998) as amended 7 April 2017, Mineral and Petroleum Resources Development Act 28 OF 2002 as amended of intent to carry out the following projects:

APPLICATION FOR ENVIRONMENTAL AUTHORISATION OF MINING PERMITS

NEMA: Listing Notice 1 (NO. 327, 07 APRIL 2017)

R327	21	Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including — (a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource[,] ; or **[including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)]** (b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing; but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing Notice 2 applies.
R327	27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— I. the undertaking of a linear activity; or II. maintenance purposes undertaken in accordance with a maintenance management plan

LOCATIONS: **Excelsior**, situated on the farm Excelsior, 358 on remaining extent
Hobhouse, situated on the farm Gorra's Stad, 75 on portion 2
Ladybrand, situated on the farm Dorp Gronden Lady Brand 451, remaining extent.
Tweesprult (Thaba Patchoa), situated on the farm Mammas Hoek 802, remaining extent

PROPONENT: Mantsopa Local Municipality Free State

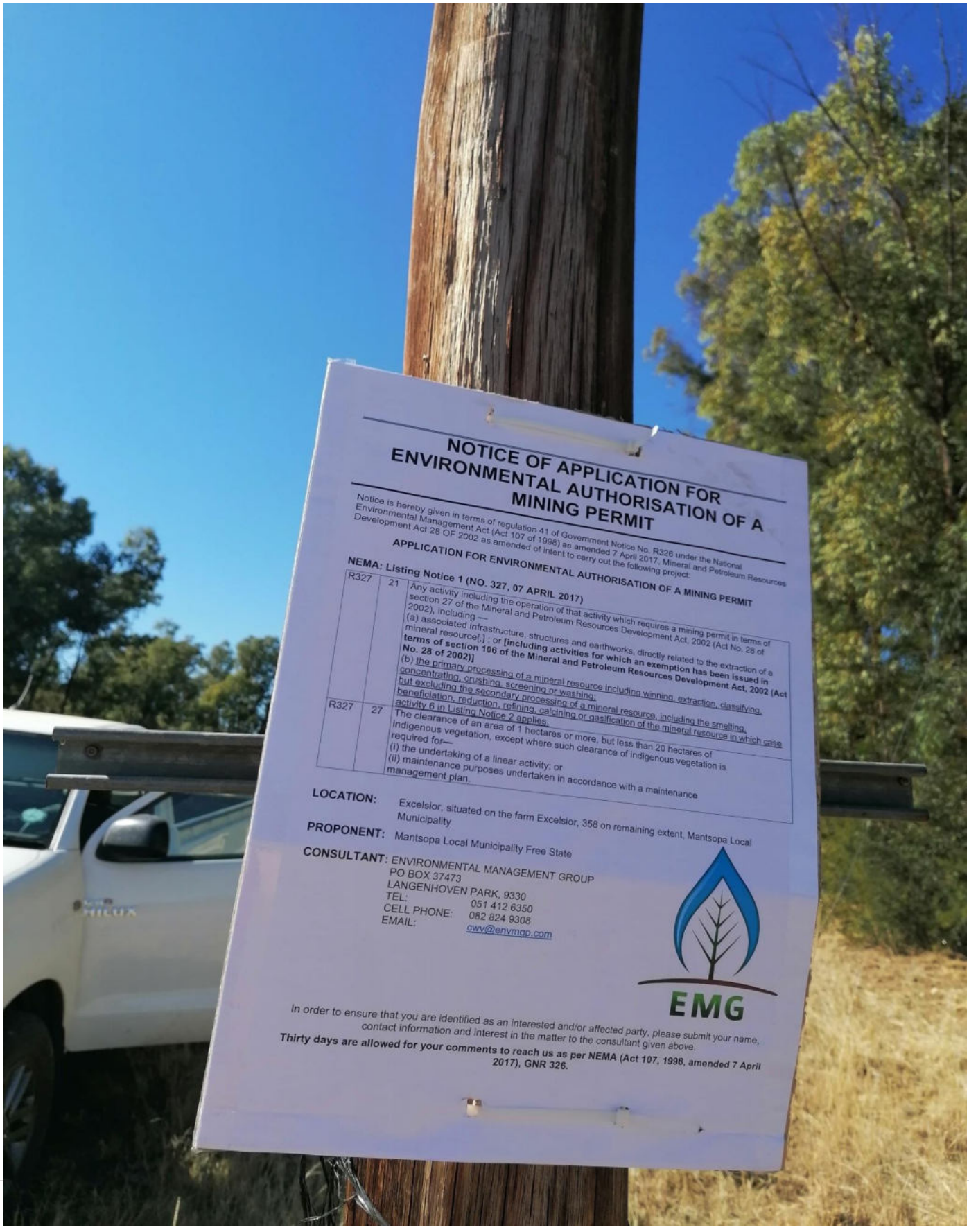
CONSULTANT: ENVIRONMENTAL MANAGEMENT GROUP
PO BOX 37473
LANGENHOVEN PARK, 9330
TEL: 051 412 6350
CELL PHONE: 082 824 9308
EMAIL: [redacted]

In order to ensure that you are identified as an interested and/or affected party, please submit your name, contact information and interest in the matter to the consultant given above.

Thirty days are allowed for your comments to reach us as per NEMA (Act 107, 1998, amended 7 April 2017), GNR 326.

3.2. SITE NOTICES

On site notices was placed on the 2nd of June 2021, to bring the Application for Environmental Authorisation of a Mining Permit for the establishment of a Borrow Pit in Excelsior to the attention of I&APs including surrounding land users.



3.2.1 The poster was placed in surrounding area.

NOTICE OF APPLICATION FOR ENVIRONMENTAL AUTHORISATION OF A MINING PERMIT

Notice is hereby given in terms of regulation 41 of Government Notice No. R326 under the National Environmental Management Act (Act 107 of 1998) as amended 7 April 2017, Mineral and Petroleum Resources Development Act 28 OF 2002 as amended of intent to carry out the following project:

APPLICATION FOR ENVIRONMENTAL AUTHORISATION OF A MINING PERMIT

NEMA: Listing Notice 1 (NO. 327, 07 APRIL 2017)

R327	21	Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including — (a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource[.] ; or **[including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)]** (b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing; but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing Notice 2 applies.
R327	27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.

LOCATION: Excelsior, situated on the farm Excelsior, 358 on remaining extent, Mantsopa Local Municipality

PROPONENT: Mantsopa Local Municipality Free State

CONSULTANT: ENVIRONMENTAL MANAGEMENT GROUP
PO BOX 37473
LANGENHOVEN PARK, 9330
TEL: 051 412 6350
CELL PHONE: 082 824 9308
EMAIL: cwv@envmgp.com

EMG

In order to ensure that you are identified as an interested and/or affected party, please submit your name, contact information and interest in the matter to the consultant given above.

Thirty days are allowed for your comments to reach us as per NEMA (Act 107, 1998, amended 7 April 2017), GNR 326.

3.3. DISTRIBUTION OF BACKGROUND INFORMATION DOCUMENT

For notification of I&APs about the proposed project, a BID, shown below was compiled, and it was sent to the identified I&APs.

NOTICE OF APPLICATION FOR ENVIRONMENTAL AUTHORISATION OF A MINING PERMIT

ENVIRONMENTAL MANAGEMENT GROUP
NOTICE OF APPLICATION FOR ENVIRONMENTAL AUTHORISATION OF A MINING PERMIT

CHRISTIEN KRUGER
Background Information Document

Background Information Document for the Notice of Application for Environmental Authorization of a Mining Permit

June 2021

INTRODUCTION

Environmental Management Group is applying for Environmental Authorisation on behalf of Mantsopa Local Municipality for the Application for Environmental Authorization of a Mining Permit in Excelsior.

LOCALITY

The proposed Borrow Pit will be located near Excelsior on remaining extent of farm Excelsior 358 which falls under the Mantsopa Local Municipality, in the Free State Province.

ENVIRONMENTAL AUTHORISATION

Prior to the commencement of the proposed Borrow Pit establishment, Environmental Authorization in terms of the National Environmental Management Act (NEMA), 107 of 1998, as amended 7 April 2017 is required from the competent authority Department of Mineral Resources (DMR). The Environmental Assessment Process will be conducted in terms of the 2014 NEMA environmental impact assessment (EIA) Regulations, GNR 326 as amended.

According to the National Environmental Management Act (Act 107 of 1998) as amended 7 April 2017, Listing Notice 1 (NO. 327, 07 APRIL 2017) – R 327 the following activity applicable to this project:

- **Activity 27**: The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for-
  (i) the undertaking of a linear activity; or
  (ii) maintenance purposes undertaken in accordance with a maintenance management plan.

- **Activity 21:** Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including —
  (a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource[,] ; or **[including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)]**

  (b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing;
  but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing Notice 2 applies.

PURPOSE OF THIS DOCUMENT

EMG has prepared this document to inform you about:

- The proposed application;
- The current understanding of the baseline environmental and social conditions;
- The required environmental assessment processes;
- Possible environmental impacts and proposed specialist studies;
- How you can have input into the Environmental Authorization;

YOU'RE ROLE

You have been identified as an interested and/or affected party (I&AP) who may want to be informed about the proposed project and have input into the environmental assessment processes and environmental reports.
You have an opportunity to review this document and provide your initial comments to us for incorporation in the environmental assessment process. You will also be given the opportunity to provide input at the public meeting, if the need arises. And to review and comment on some reports:
♣ Draft BAR
Comments will be recorded and included in the reports submitted to the relevant authorities for decision-making.

HOW TO RESPOND

If you are interested in receiving further information on the project please register your details with the persons listed below. Responses to this document can be submitted by means of the attached comments sheet and/or through communication with the persons listed below.
Christien Kruger
Tel: 051 412 6350 or Fax: 051 412 6351 E-mail: ckruger@envmgp.com

MAPS


Locality Map
Legend
Borrow Pit Excelsior
Roads
Excelsior 358 RE
R703
R709
Unclassified
Excelsior
0
1
2 km
N

PROJECT DESCRIPTION

Environmental Authorisation is required for a Mining Permit for a Borrow pit less than 5ha. In order to provide gravel (dolerite) material for construction purposes, extraction of gravel (dolerite) from a quarry by means of surface mining is needed. As well as the primary processing of a dolerite including winning, classifying, concentrating, crushing, screening and washing.

POTENTIAL ENVIRONMENTAL IMPACTS

Below is a preliminary list of potential impacts identified at this stage of the process and will be investigated as part of the environmental assessment process. The list will be refined during the course of the Basic Assessment Process.

- Ecological assessment
- Heritage impact assessment

ENVIRONMENTAL AUTHORISATION

The environmental assessment processes will be conducted to inform the competent authorities in their decision-making. These processes are conducted simultaneously.

STEPS IN THE ENVIRONMENTAL AUTHORISATION PROCESSES

The environmental authorisation processes provides information on the project and environment in which it is being undertaken; identifies, in consultation with registered interested & affected parties (RI&APs), the potential negative as well as positive impacts of the project; and reports on management measures required to mitigate impacts to an acceptable level. The likely process steps and timeframes are provided below. RI&APs and other stakeholders on the project's database will receive notification of public participation opportunities in advance.

PUBLIC PARTICIPATION

Public Participation provides Stakeholders and I&APs the opportunity to raise issues of concern and comment on the proposed activity. Notify other regulatory authorities and I&APs of project and environmental assessment (via newspaper advertisements, site notices and this BID document)

PROCESS STEPS (in accordance with GN R326)	**RESPONSIBLE PARTY**	**TIMEFRAME**
1. Initial communication to clarify the application with the Authorising Department.	EAP	1 day
2. EAP to conduct a site investigation	EAP	1 day
3. EAP to submit Basic Assessment Application to competent authority.	EAP	1 day
4. Competent authority Accepts Application	DMR	14 days
5. EAP to undertake the BAR and compile a Report (including the draft EMP) subjected to 30 days Public Participation Process	EAP	90 days
6. EAP to submit Final BAR report inclusive of comments to competent authority.	EAP	1 day
7. Competent Authority to grant environmental authorisation	DMR	107 days
8. Environmental Authorisation subjected to 20-day appeal process	EAP	20 days
9. Final Approval of Environmental Authorisation	DMR	1 day

PARTIES INVOLVED IN THE ENVIRONMENTAL APPLICATION PROCESSES

IAPs

- Surrounding landowners, land users and communities

KEY STAKEHOLDERS

- Department of Rural Development and Land Reform
- Department Of Agriculture and Rural Development
- Department of Water and Sanitation (DWS)
- Department of Heritage (SAHRIS)
- Department of Public Works and Infrastructure

LOCAL AUTHORITIES

- Mantsopa Local Municipality
- Thabo Mofutsanyana District Municipality
- Mayor & Ward Councillor

Please let us know if there are any additional parties that should be involved.

Proposed School Development in Frankfort

Registration and Response Form for Interested and Affected Parties (I&AP)

Date	

Particulars of the I&AP

Name			
Postal Address & Code			
Street Address & Code			
Telephone number		Cell Phone Number	
Fax Number		E-Mail Address	

Please Identify your Interest in the Proposed Project:

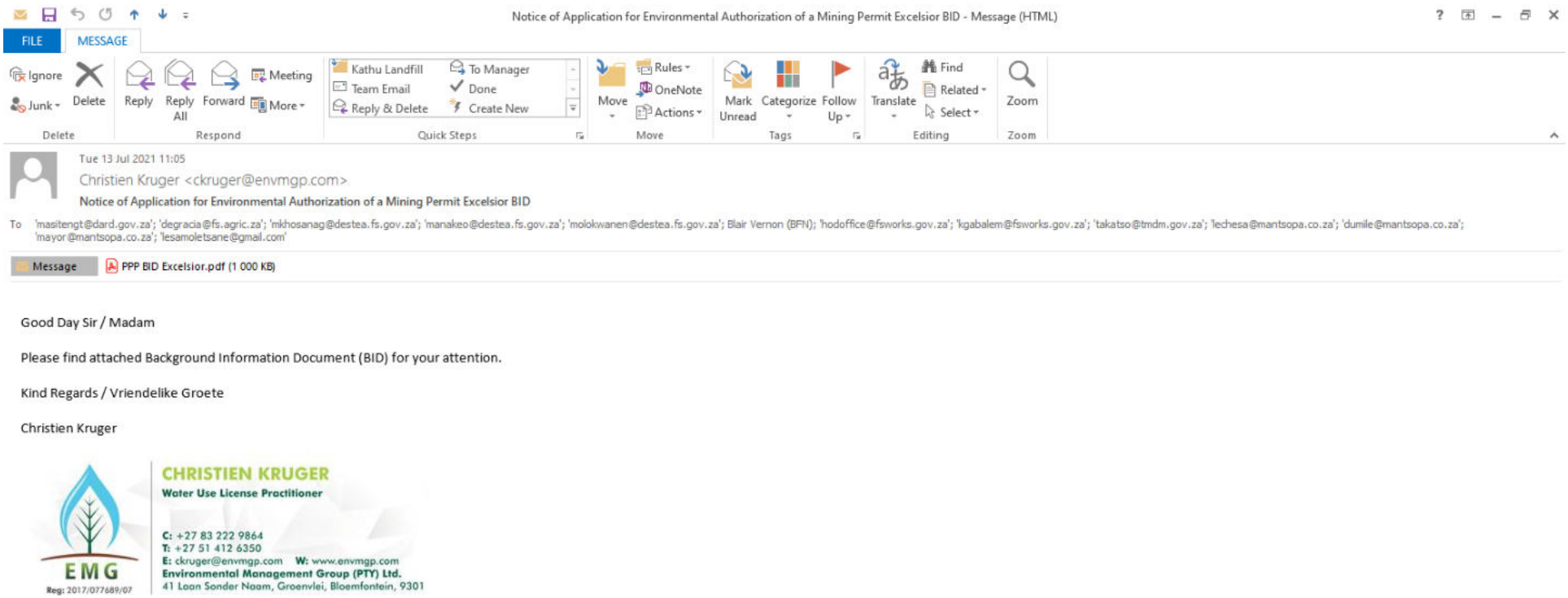
Please write your comments and questions here:

Please return completed document prior to 30 days lapsing to:

Christien Kruger
ENVMGP
Tel: 051 412 6350
Fax: 086 556 2152
Email: ckruger@envmgp.com
Website: envmgp.com

3.4 NOTIFICATION TO LOCAL AUTHORITIES & STAKEHOLDERS

3.4.1 BID circulated to all I&AP's, Stakeholders and Departments.



Notice of Application for Environmental Authorization of a Mining Permit Excelsior BID - Message (HTML)

FILE MESSAGE

Ignore Junk Delete | Reply Reply All Forward Meeting More | Kathu Landfill Team Email Reply & Delete To Manager Done Create New | Move Rules OneNote Actions | Mark Unread Categorize Follow Up | Translate Find Related Select | Zoom

Delete Respond Quick Steps Move Tags Editing Zoom

Tue 13 Jul 2021 11:05

Christien Kruger <ckruger@envmgp.com>

Notice of Application for Environmental Authorization of a Mining Permit Excelsior BID

To 'masitengt@dard.gov.za'; 'degracia@fs.agric.za'; 'mkhosanag@destea.fs.gov.za'; 'manakeo@destea.fs.gov.za'; 'molokwanen@destea.fs.gov.za'; Blair Vernon (BFN); 'hodoffice@fsworks.gov.za'; 'kgabalem@fsworks.gov.za'; 'takatso@tmdm.gov.za'; 'lechesa@mantsopa.co.za'; 'dumile@mantsopa.co.za'; 'mayor@mantsopa.co.za'; 'lesamoletsane@gmail.com'

Message PPP BID Excelsior.pdf (1 000 KB)

Good Day Sir / Madam

Please find attached Background Information Document (BID) for your attention.

Kind Regards / Vriendelike Groete

Christien Kruger

CHRISTIEN KRUGER
Water Use License Practitioner

C: +27 83 222 9864
T: +27 51 412 6350
E: ckruger@envmgp.com W: www.envmgp.com
Environmental Management Group (PTY) Ltd.
41 Laan Sonder Naam, Groenvlei, Bloemfontein, 9301

EMG
Reg: 2017/077689/07

3.5 LIST OF I&AP'S

List of Stakeholders and I&AP's				
Department / Organisation	**Contact Person**	**E-Mail Address**	**Address**	**Contact Nr**
Department of Agriculture and Rural Development	Dr T Masiteng	masitengt@dard.gov.za - degracia@fs.agric.za	Gielie Joubert St Glen, BFN, 9360	051 861 8363 – 060 983 8820
Department of Economic Development, Tourism, Environmental Affairs & Small Business	Mrs Grace Skosana	mkhosanag@destea.fs.gov.za - manakeo@destea.fs.gov.za - molokwanen@destea.fs.gov.za	113 St Andrews Street Bloemfontein 9300	051 400 4800
Department of Water & Sanitation	Mr. Vernon Blair Deputy Director: Water Use	BlairV@dws.gov.za, NelG@dws,gov.za	Bloem Plaza 2nd Floor c/o Charlotte Maxeke & East Burger Streets, Bloemfontein, 9300	051 405 9000 082 807 3552
Free State Department of Public Works and Infrastructure	Mr M Mohlahlo	hodoffice@fsworks.gov.za – kgabalem@fsworks.gov.za	Room 146, OR Tambo House Cnr St, Andrews and Markgraaf Streets Bloemfontein 9300	051 492 3915
Thabo Mofutsanyana District Municipality	Ms. Takatso Lebenya	takatso@tmdm.gov.za	Old Parliament Building 1 Mampoi Street PHUTHADITJHABA 9870	Tel: (058) 718 1036 / 1089
Mantsopa Local Municipality	Mr. T.P Masejane	lechesa@mantsopa.co.za - dumile@mantsopa.co.za	No 38 Joubert Street Ladybrand 9745	051 924 0654
Mantsopa Local Municipality	Mayor	mayor@mantsopa.co.za	No 38 Joubert Street Ladybrand 9745	
Mantsopa Local Municipality Ward 8 Councillor	Mr. LP Moletsane	lesamoletsane@gmail.com	No 38 Joubert Street Ladybrand 9745	084 351 0822

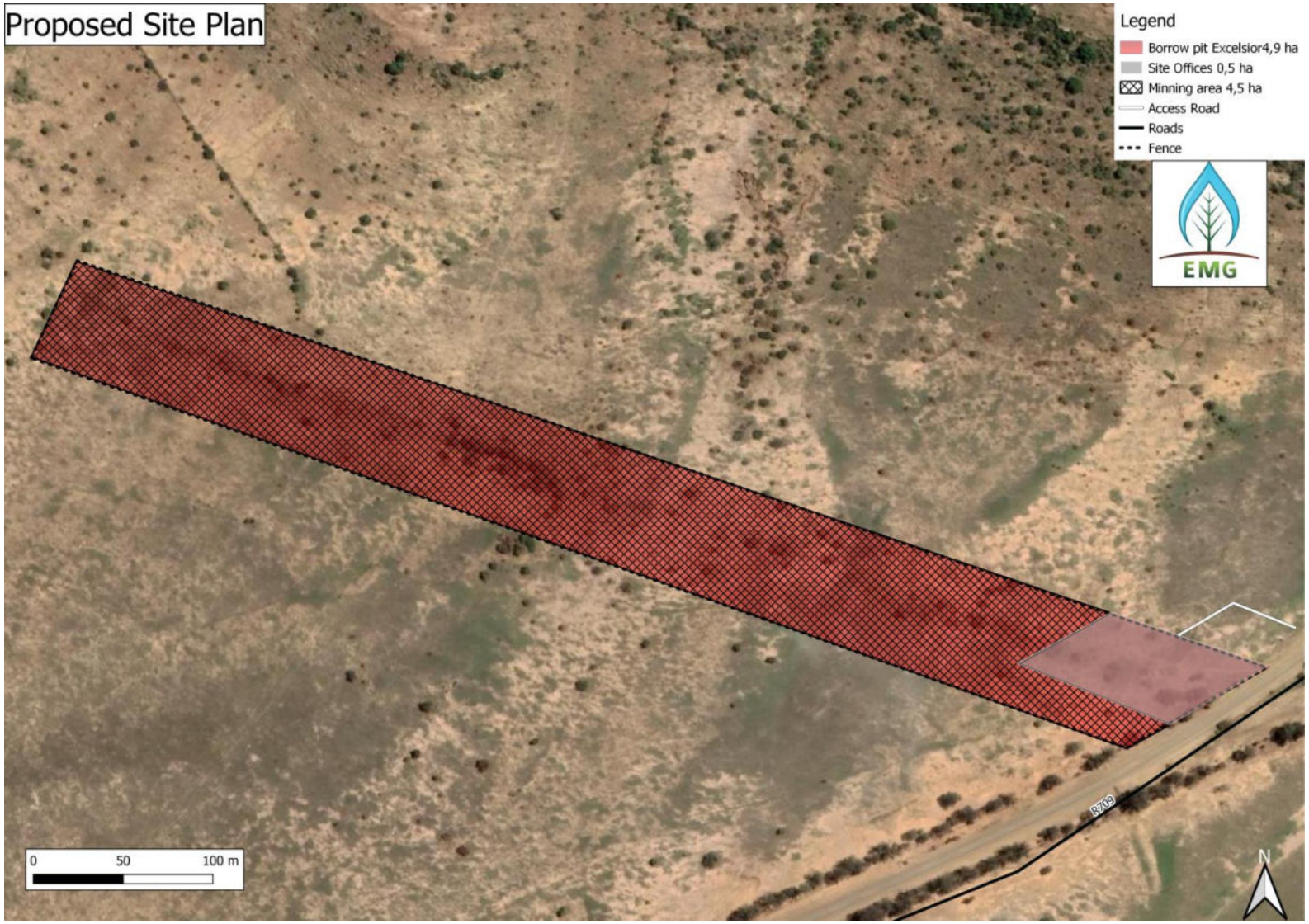
4. CONCLUSION

It is concluded that the methods incorporated in the public participation process to inform the surrounding landowners, users, organs of state and identified government authorities was adequate. All the identified I&APs were given with an opportunity to give input regarding the Application for Environmental Authorization of a Mining Permit for the establishment of a Borrow and no objections were received.

APPENDIX 4

PROPOSED SITE PLAN and ON SITE SURVEY

APPENDIX 4.1: Proposed site plan



APPENDIX 4.2: Site Photos taken on the 2 July 2021

APPENDIX 5

IMPACTS AND RISK ASSESSMENT REPORT

IMPACTS AND RISKS REPORT

Introduction.

This report describes the environmental impacts and risks identified during the environmental impact assessment carried out for the quarry.

Environmental Impact Assessment is a structured approach for obtaining and evaluating environmental information prior to its use in decision-making in the development process. This information consists, basically, of predictions of how the environment is expected to change if certain alternative actions are implemented and advise on how best to manage environmental changes if one alternative is selected and implemented. NEMA through the EIA regulations requires that listed activities that have, or are likely to have a detrimental effect on the environment should be authorised and a license applied for before commencement. An EIA must be done as stipulated in the EIA regulations made under section 24(5) of NEMA. The EIA process used for this project refers to the process which involves the identification and assessment of direct, indirect and cumulative environmental impacts of a proposed project. In addition to this the specific requirements for environmental assessments as stipulated in the Minerals and Petroleum Resources Development regulations were also taken into account to ensure that all aspects of the impacts and risks were taken into account.

The report contains the following appendixes to comply with the requirements of the Basic Assessment Report and Environmental Management Program.

APPENDIX 5.1: Nature of the Impacts and Risks Identified

APPENDIX 5.2: Methodology Used in Assessing the Impacts and Consequences.

Appendix 5.3: Assessment of the Impacts and Risks before Mitigation

Appendix 5.4: Possible Mitigation Measures that could be applied and the level of risk.

Appendix 5.5: Assessment of the Impacts and Risks after Mitigation

Appendix 5.6: Assessment of the No-Go Alternative.

APPENDIX 5.1: IMPACTS AND RISK IDENTIFIED INCLUDING THEIR NATURE, SIGNIFICANCE CONSEQUENSES, EXTENT PROBABILITY AND REVERSIBILITY

1) DESCRIPTION OF THE NATURE OF POTENTIAL ENVIRONMENTAL IMPACTS AND RISKS

a) Destruction of Flora and Habitat Loss

The mine/quarry establishment will result in net vegetation loss during the establishment and the operational phases. Net vegetation loss will result in secondary impacts on fauna due to habitat loss. Direct loss or damage to habitat leads to reduced foraging/food resources, disturbance and displacement of fauna. If invasive weeds find themselves in the area as a result of being accidentally carried into the area, for example along tyres of vehicles, there might be a weed invasion/proliferation of opportunist species. This will threaten indigenous vegetation species. Whilst assessment noted that the site does not have rare or endangered species, the removal of vegetation need to be carefully managed to limit the impacts.

b) Air Quality Deterioration

Stripping of soil and vegetation and excavating for gravel can result in dust emissions. Dust can cause adverse environmental impacts such as soiling of property or surfaces, visual impacts and personal discomfort (for example, gritty eyes) and can also cause considerable annoyance to people and respiratory problems for sensitive people. It can be a very contentious issue, particularly for heavy dusty activities. Wind whipping can result in dust emission from stockpiles and bare surfaces. The mobilisation of vehicles and equipment on site can result in excessive vehicular emissions such as smoke if they are not properly maintained. Dust pollution can also be very problematic due to the concentration of heavy machinery and vehicle on the gravel access roads in the area during the operational phase.

c) Visual Impact

Disturbance of the mine/quarry area and excavated areas can cause visual scarring of the environment if not properly handled. Before rehabilitation, during operational phase, the mine/quarry surfaces with bare patches may contrast with the surrounding area that has vegetation, making the site unpleasant.

d) Land and Soil Contamination and Erosion Impacts

Soil surface erosion, loss of topsoil and deterioration of soil quality and productivity may occur due to the removal of stabilising vegetation from certain areas in order to facilitate work. Soils may also be compacted by heavy vehicles and construction equipment. Once disturbed, soils become more susceptible to erosion. Also associated with land pollution is the disposal of waste. Careless unregulated waste management practices during operation of the quarry will exacerbate this problem. Oil and fuel leakages from the vehicle and material stored can cause soil contamination by hazardous substances if they occur. Improper disposal of food cartons and other domestic forms of mining garbage could lead to littering of the site and pollution.

e) Water Conservation and Water Pollution

The mine/quarry operation will require use of water mainly for dust suppression. Water is a scarce resource and needs to be conserved. The impact of using water resources for dust suppression should be weighted up against the impact of dust. Poor waste management practices at the mine/quarry site areas may lead to the contamination of water. Sewage and sanitary effluent has the potential to adversely affect the quality of water if not properly handled. Fuel leakage and chemical spills can also cause problems to water resources. These may be washed during rains and end up polluting water bodies.

f) Disruption of Surface Drainage

Failure to incorporate drainage control systems on site and from excavated area can lead to interruption of natural drainage. Natural movement of surface water might be changed. The mine/quarry might form a pool(s), depriving

areas that normally get surface water, of the resource. Ecosystem functions that depend on natural water surface drainage of the area will be negatively affected. Drowning of animals may occur in the formed pools.

g) Slope Instability

Unstable slopes or slope failure of excavated surfaces may result in safety problems if the excavation is not managed.

h) Erosion

Removal of vegetation cover and the disturbance of soils can lead to soil erosion during rainy periods where soil is loose.

i) Noise and Vibration

The proposed mine/quarry development is anticipated to cause increased noise levels in the area during the operational phase, due to the movement of construction vehicles and machinery. If drilling and blasting is done this can be a major source of noise. Noise and vibration generated during operational phase has the potential to cause annoyance and disturbance effects on noise sensitive receptors, ear damage to workers and cause damage to structures as a result of vibration if operations are not handled properly.

j) Increased Risk of Fire

The presence of workers and mine/quarry operational related activities poses an increased risk of veld fires. The potential risk of veld fires is heightened during windy conditions in the area. Fire may result in the loss of grazing vegetation and would therefore impact negatively on the affected community's livelihoods. Changes to the fire regime may impact on ecosystem integrity and biodiversity in the long term.

k) Safety and Security Risks

Conduct of mine/quarry workers is also important in considering public safety. Trespassing and illegal access onto private land may compromise the safety of local communities. As the mine/quarry development is taking place in a farming area, collisions with livestock are likely to be present as a hazard.

l.) Creation of Employment Opportunities And Skills Development

The development of the mine/quarry is expected to create employment opportunities during operation of the quarry mine in the area. Some will be low skilled positions (i.e. Administrative clerk etc.) and semi-skilled workers (i.e. drivers, equipment operators etc.) and some skilled personnel (i.e. operational management etc.) Although the development of the mine is a small operation, and does not guarantee the generation of significant employment opportunities there is need to maximise the employment opportunities for the locals.

m). Skills Development Impacts

The majority of the training benefits are likely to accrue to personnel employed by the relevant beneficiaries. The training should provide for meaningful skills development for members from the local community.

APPENDIX 5.2: METHODOLOGY USED IN DETERMINING THE NATURE, SIGNIFICANCE, CONSEQUENCES, EXTENT, DURATION AND PROBABILITY OF THE POTENTIAL IMPACTS.

The mine/quarry development will result in a number of environmental impacts and risks so it is important to determine the critical ones so that effort can be concentrated in managing them. The following criterion was used to determine the significance of the impacts. The criterion takes into account the nature of the impact, the duration the extent, the magnitude, and the likelihood of occurrence to determine the significance of the potential impact.

The following ratings will be used.

The duration was assigned a score of 1 to 5 where:

- 1 - The lifetime of the impact will be of a very short duration.
- 2 - The lifetime of the impact will be of a short duration.
- 3 - Assigned to medium-term (5–15 years)
- 4 - Assigned to long term (> 15 years)
- 5 - Permanent.

The magnitude, quantified on a scale from 0-10, where a score is assigned:

- 0 - is small and will have no effect on the environment
- 2 - is minor and will not result in an impact on processes
- 4 - is low and will cause a slight impact on processes
- 6 - is moderate and will result in processes continuing but in a modified way
- 8 - is high (processes are altered to the extent that they temporarily cease)
- 10 - is very high and results in complete destruction of patterns and permanent cessation of processes

The extent indicates whether the impact will be local (limited to the immediate area or site of development), regional, national or international. A score of between 1 and 5 is assigned as appropriate (with a score of 1 being low and a score of 5 being high). The scores are as follows:

- 1 - Local immediate area
- 2 - Local immediate area and surroundings
- 3 - Regional
- 4 - National
- 5 - International

The probability of occurrence, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale, score of 1–5 where:

- 1 - is very improbable (probably will not happen)
- 2 - is improbable (some possibility, but low likelihood)
- 3 - is probable (distinct possibility)
- 4 - is highly probable (most likely)
- 5 - is definite (impact will occur regardless of any prevention measures)

The significance, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high. The significance is determined by combining the criteria in the following formula:

S = (E+D+M) P; where S = Significance weighting

E = Extent, D = Duration, M = Magnitude, P = Probability

The status of the impact describes whether the impact will have positive, negative or neutral ramifications of the environment.

The significance weightings for each potential impact are as follows:

Value	Significance
<30 points	Low (i.e. where this impact would not have a direct influence on the decision to develop in the area)
30-60 points	Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated)
>60 points	High (i.e. where the impact must have an influence on the decision process to develop in the area)

APPENDIX 5.3: THE ASSESSMENT OF IMPACTS BEFORE MITIGATION OF THE IMPACTS.

	Activity	Impact	Positive /Negative	Duration	Magnitude	Extent	Probability	Significance Rating Before Mitigation		Is Impact Reversible? Yes/No	Irreplaceable Loss of Resources? Yes/No
	START-UP ACTIVITIES										
1	Site establishment activities, vegetation stripping	Loss of vegetation	Neg	2	6	1	5	45	Medium	Reversible	No
		Habitat destruction	Neg	2	6	1	5	45	Medium	Reversible	No
		Visual scarring	Neg	2	2	2	5	45	Medium	Reversible	No
		Air quality deterioration	Neg	1	2	2	4	20	Low	Reversible	No
		Soil erosion	Neg	2	4	2	2	16	Low	Reversible	No
		Potential loss of agricultural potential	Neg	2	2	1	4	20	Low	Reversible	No
		Impact of use of water during all operations	Neg	1	2	1	4	16	Low	Reversible	No
		Safety and security	Neg	1	2	2	2	10	Low	Reversible	No
2	Soil stripping and stockpiling	Dust	Neg	1	4	2	2	14	Low	Reversible	No
		Disruption of drainage	Neg	3	2	2	2	14	Low	Reversible	No
	DURING OPERATIONAL PHASE										
3	Clearance of area for mining	Visual impact	Neg	3	6	2	5	55	Medium	Reversible	No
		Destruction of flora and habitat	Neg	3	6	1	5	50	Medium	Reversible	No
		Loss of agricultural potential	Neg	3	7	2	4	48	Medium	Reversible	No
4	Material excavation	Dust emissions	Neg	2	4	2	5	40	Medium	Reversible	No
		Drainage disruption	Neg	3	6	2	3	33	Medium	Reversible	No
		Slope instability	Neg	2	6	1	4	36	Medium	Reversible	No

	Activity	Impact	Positive /Negative	Duration	Magnitude	Extent	Probability	Significance Rating Before Mitigation		Is Impact Reversible? Yes/No	Irreplaceable Loss of Resources? Yes/No
		Noise	Neg	1	2	1	4	16	Low	Reversible	No
		Visual Scarring	Neg	3	7	2	4	48	Medium	Reversible	No
		Soil erosion	Neg	3	7	2	4	48	Medium	Reversible	No
		Altered topography	Neg	4	7	1	4	52	Medium	Irreversible	No
5	Drilling & blasting (if done)	Noise and vibrations	Neg	1	3	1	5	25	Low	Reversible	No
		Air quality Deterioration	Neg	1	3	1	5	25	Low	Reversible	No
6	Stockpiles	Dust	Neg	1	2	1	3	12	Low	Reversible	No
		Surface disturbances	Neg	2	2	1	3	15	Low	Reversible	No
		Drainage disruption	Neg	1	2	1	3	12	Low	Reversible	No
7	Material handling, hauling and transportation	Dust	Neg	1	2	2	4	20	Low	Reversible	No
		Increased risk of accidents	Neg	2	2	1	2	10	Low	Reversible	No
		Noise	Neg	1	2	1	3	12	Low	Reversible	No
		Soil contamination from oil/fuel leaks	Neg	2	2	1	3	15	Low	Reversible	No
8	Waste Disposal and Material storage	Soil contamination	Neg	2	2	1	3	15	Low	Reversible	No
		Water pollution	Neg	2	2	2	3	18	Low	Reversible	No
		Increased risk of fire	Neg	2	2	1	3	15	Low	Reversible	No
	DURING CLOSURE AND POST CLOSURE										
9	Decommissioning of site and shaping of quarry	Noise	Neg	1	2	1	3	12	Low	Reversible	No
		Dust	Neg	1	2	1	3	12	Low	Reversible	No
		Soil contamination from oil/fuel	Neg	1	2	1	3	12	Low	Reversible	No
		Disruption of surface	Neg	1	2	1	3	12	Low	Reversible	No

	Activity	Impact	Positive /Negative	Duration	Magnitude	Extent	Probability	Significance Rating Before Mitigation		Is Impact Reversible? Yes/No	Irreplaceable Loss of Resources? Yes/No
		drainage									
	SOCIO ECONOMIC IMPACTS										
10	Negative socio-economic impacts	Community conflicts and tensions	Neg	2	2	2	2	12	Low	N/A	N/A
		Increase risk of fire	Neg	2	2	2	2	12	Low	N/A	N/A
		Reduced security in area	Neg	2	2	2	2	12	Low	N/A	N/A
11	Positive socio economic impacts	Employment opportunities	Pos	2	2	2	2	12	Low	N/A	N/A
		Training and Skills Development	Pos	2	2	1	2	10	Low	N/A	N/A
	HERITAGE RESOURCES IMPACTS										
11	Heritage impacts	Potential impacts associated with site of a cultural or archaeological importance	Neg	5	2	1	1	8	Low	Irreversible	Irreplaceable if it occurs
	CUMULATIVE IMPACTS										
12		Increased loss of vegetation	Neg	2	6	1	5	45	Medium	Reversible	No

APPENDIX 5.4: POSSIBLE MITIGATION MEASURES THAT COULD BE APPLIED AND THE LEVEL OF RISK

1. INTRODUCTION

These technical and management processes in this section have been developed to enable the applicant to mitigate negative environmental impacts and to provide a proactive approach to manage identified environmental risks. It provides systematic and explicit mitigation and monitoring measures for the proposed mine/quarry to ensure implementation during the planning, construction, operational and decommissioning phase of the project. It also mandates the Department to internalise the environmental impacts that would otherwise be a social cost.

2. PERMITS AND PERMISSIONS

All pertinent permits, approvals and agreements are to be obtained before activities commence on site and the conditions are to be strictly adhered to.

3. GENERAL SITE ESTABLISHMENT

Objective: To ensure proper control of the mining area.

Management measures

- Access at the mine area shall be controlled and adequate precautions taken to prevent unauthorised entry to the mine/quarry. A fence or other barrier should be erected to restrict access
- The area must be clearly demarcated along its boundaries.
- Permanent beacons must be firmly erected and maintained in their correct position throughout the life of the operation.
- Resultant operations shall only take place within this demarcated area.
- Mine boundaries shall be signposted and laid out so as to be clearly visible and identifiable.
- Entry to the mine area shall be controlled and unauthorised entry prohibited.
- Adequate precautions shall be taken to protect persons present at, or in the vicinity of, the mine from risks that may arise from mine operations

Time Schedule for Implementation: At start-up and throughout life of mine.

4. MINING AREA LAYOUT PLAN

Objective: To ensure proper control of the mining area

Management measures

- A copy of the layout plan of the mine/quarry must be available at the mining site for scrutiny when required.
- The plan should be updated on a regular basis with regards to the actual progress of establishment of surface infrastructure, mining operations and rehabilitation.
- The final layout plan must be submitted to DMR at the closure of the mine/quarry or when operations have ceased.

- Beacons as indicated on the layout plan or as prescribed by the DMR must be firmly erected and maintained in their correct positions throughout the life of the operations.

Time Schedule for Implementation: At start-up and throughout life of mine.

5. ESTABLISHMENT OF SITE OFFICE/CAMP

- The planning and design for the Site infrastructure must ensure that there is a minimum impact on the environment. Where possible existing infrastructure and disturbed areas must be used.
- No construction camps will be allowed in sensitive areas such as wetlands.
- The area size chosen for these purposes shall be the minimum reasonably required and which will involve the least disturbance to vegetation.
- No trees or shrubs will be felled or damaged for the purpose of obtaining firewood. Fires will only be allowed in facilities or equipment specially constructed for this purpose and only in areas demarcated for that purpose.
- Adequate firefighting equipment must be available at all areas that might pose a fire risk.
- Lighting and noise disturbance or any other form of disturbance that may have an effect on the landowner/tenant/persons lawfully living in the vicinity shall be kept to a minimum.
- Chemical toilet facilities or other approved toilet facilities should be sited in such a way that they do not cause water or other pollution. The use of existing facilities must take place in consultation with the owners of the facilities.
- In cases where facilities are linked to existing sewerage structures, all necessary regulatory requirements concerning construction and maintenance should be adhered to.
- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and treated prior to discharge or removed from the site for appropriate disposal.
- Adequate facilities waste receptacles should be made available for waste collection on site prior to removal for disposal at an authorised waste disposal facility on site.
- Adequate storage facilities should be available for materials. The nature of the storage facilities should be as per the recommendations of the manufacturer. The storage areas shall be securely secured and appropriately marked to indicate the goods in the storage.
- Provisions shall be made for the storage of hazardous substances and stocks. Diesel and oil, etc. shall be stored in areas with impervious flooring such as concrete and properly bunded. Drip pans, a thin concrete slab or other impervious surfaces shall be installed in such storage areas with a view to prevent soil and water pollution.

Time Schedule for Implementation: At start-up and throughout life of mine.

6. ACCESS ROADS ON THE SITE

- The access road to the area and the camp-site/site office must be established in consultation with the landowner/tenant and existing roads shall be used as far as practicable.
- Should a portion of the access road be newly constructed, the route shall be selected that a minimum number of bushes or trees are felled and existing fence lines shall be followed as far as possible. Adequate drainage and erosion protection shall be provided where necessary.

- The erection of gates in fence lines and the open or closed status of gates in new and existing positions shall be clarified in consultation with the landowner/tenant and maintained throughout the operational period.
- No other routes will be used by vehicles or personnel for the purpose of gaining access to the site except designated areas only.
- In the case of dual or multiple uses of access roads by other users, arrangements for multiple responsibilities must be made with the other users. If not, the maintenance of access roads will be the responsibility of the mine/quarry operator.
- Traffic controls/signage should be installed as appropriate, particularly in advance of temporary route changes or deviations and alternatives should be provided as necessary to maintain required access.
- Movement of heavy earth moving machinery should be restricted to certain access roads.
- Access roads shall be adequately maintained so as to minimise dust, erosion or undue surface damage. Spraying with water or use of dust suppressants shall be done as is necessary.

Time Schedule for Implementation: At start-up and throughout life of mine.

7. MANAGING SOCIAL IMPACT RELATED ISSUES

- Effective two-way public disclosure and public consultation should be implemented to allay community perceptions. There should be an opportunity provided for the resolution of grievances or complaints received and recorded from individuals in the community.
- Community should be adequately informed in advance of activities being done at the mining area that are likely to affect them.
- Labour recruitment should occur in a manner that is objective, transparent, and wherever possible, provide opportunities for people from the local area.
- The activities of the mine/quarry operators and company employees should be routinely reviewed to ensure good community relations are being maintained. The project proponent should use its influence as employer to encourage responsible behaviour among employees.
- The landowner should be fully compensated prior to usage of his land for mining and he should be notified when operations commence and who will work on the site.
- An agreement should be made with the land owner that he is satisfied with the level of rehabilitation on completion of the mining.

8. SPECIFIC MITIGATION MEASURES FOR ENVIRONMENTAL IMPACTS AND RISKS

8.1 MANAGING SOIL IMPACTS

These measures are targeted at managing soil erosion, soil contamination, compaction of soil and removal of topsoil.

- The area that is stripped of vegetation should be kept to an absolute minimum
- The contractor shall at all times carefully consider what machinery is appropriate to the task while minimising the extent of environmental damage and unnecessary movements should be prohibited.
- The topsoil, including the existing grass cover is to be shallowly ripped (only the depth of the topsoil) before removal. This is to ensure that organic plant material, and the natural seed base is included in the stripping process. The soil is to be stored and the soil stockpiles shall not be higher than 2m.
- Topsoil shall be stored separately from subsoil and other overburden material.
- No vehicles shall be allowed access onto the stockpiles after they have been placed.
- Stockpiles shall not be allowed to become contaminated with oil, diesel, petrol, garbage or any other material, which may inhibit the later growth of vegetation.
- The mine/quarry operator shall apply soil conservation measures to the stockpiles to prevent erosion.
- Ensure regular maintenance of equipment to prevent diesel and hydraulic spillages.
- Where possible ensure low work surface gradients so that run-off flows at a controlled rate so as to minimize channelling and soil erosion during high rainfall.
- At the end of operations, all disturbed areas shall be re-vegetated.

TIMING: At Start – up and throughout the operational phase of the mine/quarry

8.2 LOSS OF VEGETATION AND HABITAT DESTRUCTION

- Clearance of vegetation should be restricted to the absolute minimum required to facilitate access and undertake quarry activities. Disturbance of topsoil and vegetation rootstock must be minimized as far as possible.
- Trees larger than 2m should not be removed unless it is absolutely necessary and cannot be avoided.
- No protected species must be removed without a permit. A final walkthrough must be done by an ecologist to ensure that the areas where vegetation is to be cleared do not have protected species.
- Any alien species identified should be cleared.
- Burning of any waste material is not permitted under any circumstances.
- Rehabilitation strategies following operational activities must ensure that appropriate indigenous plant species are used and should be done as per rehabilitation plan.

TIMING: At Start – up and throughout the operational phase of the quarry mine

8.3 DUST AND VEHICLE FUMES

- Avoid unnecessary excessive vehicle movement.
- Limit vehicle speeds on unsurfaced roads.
- Rehabilitate disturbed areas with vegetation as soon as operation is completed.
- Maintain equipment and vehicles in good working order to avoid excessive emissions.
- Mine/quarry working floors should be sprayed with water from time to time to reduce dust emission during operations

- The use of rubber curtains/other material to limit dust during screening should be considered.
- Spray roads, material stockpiles and screening areas with water if dust becomes problematic.
- No fires should be allowed on site.

TIMING: Throughout life of mine

8.4 BLASTING IMPACTS (if done)

- All blasting and handling of blasting materials should be done in accordance with the Explosives Act and the Mine Health and Safety Act
- A risk assessment has to be undertaken that takes into account the safety of the people, infrastructure and the surrounding environment. A pre and post blasting survey should be done.
- A blasting time schedule shall be distributed to all surrounding villages indicating the time and date for blasting activities. It is recommended that blasting takes place between 1200hrs and 1500hrs.
- At all times blasting shall be carried out in such a way that ground vibration, air blast and scatter are kept within such limits as to avoid damage to adjacent structures/machinery etc. already placed at the works. Any fly rock should be cleared after blasting.

TIMING: As and when blasting occurs

8.5 WASTE DISPOSAL

- All personnel must be instructed to dispose of waste in a proper manner.
- Suitable receptacles shall be available at all times and conveniently placed for the disposal of waste.
- No waste shall under any circumstance be disposed of in the veld. No burning of waste is permitted on site and the mining area should be protected from illegal dumping of waste.
- All used oils, grease or hydraulic fluids shall be placed in appropriate impervious containers and these receptacles will be removed from the site on a regular basis for disposal at a registered or licensed disposal facility or sent for recycling/reuse with a registered facility.
- Spills should be cleaned up immediately by removing the spillage together with the polluted soil and by disposing thereof at a recognised facility. In areas where the spills are small, an appropriate absorbent agent can be used and the area treated accordingly.
- Contaminated materials and residues from machinery maintenance and other sources contaminated with hazardous waste should be stored in proper containers that avoid seepage to the ground.
- The 'reduce, reuse, recycle' waste management philosophy will be used where possible.
- Only authorized registered waste disposal contractors should be hired for collection of waste for all waste streams

TIMING: At Start – up and throughout the operational phase of the mine/quarry

8.6 STABILITY OF EXCAVATIONS

- Excavations shall take place only within the approved demarcated mine area and appropriate barriers should be put as necessary.
- The appointed contractor/operator shall ensure that a place of work, whether temporary or permanent in or near the excavation has a structure and solidity appropriate to its use and is operated, supervised and maintained, so as to withstand the environmental forces anticipated and be safe.
- The mine/quarry operator shall ensure that material is not placed or stacked near the edge of any excavation,

where it is likely to endanger people at work and equipment or where it is likely to cause collapse of the side of the excavation.

- Excavations should be routinely inspected. If cracks occur in any structure they need to be investigated to ascertain if there is a risk to safety
- Overburden rocks and coarse material shall be placed concurrently in the excavations or stored adjacent to the excavation, if practicable, to be used as backfill material once the quarry has been excavated.
- Appropriate drainage provisions must be constructed as necessary to accommodate the surface water movement. If the water table is reached during excavations appropriate pumping facilities should be provided.
- Excavated areas should be kept in a safe and stable manner. No unstable block should be present. Reshaping of the mining area may need to be done to ensure that this objective is reached. The profiling should be done to match the surrounding landscape.
- The mine/quarry should be finished in such a manner that it is self-draining as far as is possible
- Top soil should be put back on the surfaces and the areas re-vegetated.

TIMING: During operational phase, closure and post closure of the quarry mine

8.7 VISUAL IMPACTS

- The excavated area must serve as a final depositing area for the placement of overburden. Rocks and coarse material removed from the excavation must be backfilled into the excavation.
- Once excavation parts that can be filled have been refilled with overburden, rocks and coarse natural materials, the quarry shall be profiled with acceptable contours and erosion control measures, the topsoil previously stored shall be returned to its original depth over the area. The profiling shall be done to match the surrounding landscape as far as is reasonable possible.
- The area shall be fertilised if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, then there may be need for the soil to be analysed and any deleterious effects on the soil arising from the mine area, be corrected and the area be seeded with a suitable vegetation seed mix.

TIMING: At Start –up and throughout the whole life of the mine/quarry

8.8 EQUIPMENT USED ON SITE

- Only well-maintained vehicles and equipment should be operated onsite and all machinery should be serviced regularly during the mine operation to limit operational impacts as a result of spillage, emissions and noise.
- The maintenance of vehicles and some equipment used for any purpose during the mine operation will take place only in the maintenance workshops which are not located on the mine/quarry. No vehicle may be extensively repaired in any place at the quarry. The exception is only to allow the machinery to be moved in the event of a breakdown for further repairs outside the mine/quarry.
- A maintenance schedule should be prepared in order to ensure that equipment is in is best form so as to not cause unnecessary pollution such as noise, emissions and makes effective use of energy.
- Machinery or equipment used on the mine area must not constitute a pollution hazard. No equipment leaking oil should be used. Drip tray should be used to prevent pollution

TIMING: At Start – up and throughout the operational phase of the mine/quarry

8.9 NOISE

- Work activities required outside normal working hours must be approved by the Project Manager, and where necessary, advance warning provided to adjacent residents.
- Noise levels exceeding 85dB shall only be permitted where approved and with appropriate advanced warning to adjacent residents (minimum of 2 days) being provided.
- Noise that could cause a major disturbance should only be carried out during daylight hours and with advance warning provided as above.
- Adequate ear protection should be provided to employees in noisy areas
- No amplified music shall be allowed at the site.
- Construction vehicles and plant to be in good working order.

TIMING: At Start – up and throughout the operational phase of the mine/quarry

8.10 SAFETY AND SECURITY RISKS

- The mine/quarry should be fenced off and adequate beacons put in place. Entry to the mine area shall be controlled and unauthorised entry prohibited.
- Adequate precautions shall be taken to protect persons present at, or in the vicinity of, the mine/quarry from risks that may arise from the operation
- Adequate signage should be put in place regarding safety and to warn the public it is a mine.
- The appointed mine operator should be held liable for damage to farm/community infrastructure that can be linked to workers.
- The appointed contractor/ mine operator should have a code of conduct governing activities of workers during the work at the mine and ensure that all workers are informed of the conditions, specifically trespassing on adjacent farms/plots.
- Workers are only to use designated access roads for movement of materials from or to site.
- Safety rules, such as the application of speed limits in particularly, restriction of heavy vehicle movements to specific access roads should be in place.
- There should be procedures for managing and storing waste on site that may pose a threat to livestock if ingested e.g. plastics.
- There should be a mechanism to inform police of theft that occur on site.

TIMING: At Start – up and throughout the operational phase of the mine

8.11 ALTERED TOPOGRAPHY IMPACTS

- Mining techniques used should try to avoid the creation of steep slopes.
- On completion of mining, proper profiling should be made and profiling shall be done to match the surrounding landscape as far as is reasonable possible.
- Slopes on finishing off the mine should be gentle to ensure slope stability and the easy re-establishment of vegetation.
- Appropriate drainage provisions must be constructed as necessary to accommodate the free surface water movement.
- On completion all slopes and disturbed areas are to be re-top soiled and re-vegetated in order to prevent erosion, improve aesthetics and regenerate the biodiversity of the site.

TIMING: During the operational and closing phase.

8.12 DEALING WITH EMERGENCIES

- The mine operator should identify all situations that can lead to emergency situations and provide response strategies. The situations should include fire and major chemical spill.
- Contact details of all departments/service providers to be contacted in case of an emergency shall be made available to employees.
- Equipment for dealing with emergencies such as spill kits, firefighting equipment, first aid boxes etc. shall be made available and personnel properly trained in its use.
- All the emergency equipment should be serviced, repaired and maintained as per supplier's specification or as per engineering specification to ensure that the equipment is in order. Service certificates should be kept on site and be available on inspection.
- All staff on site should be trained on how to handle emergency situations and emergency drills/ rehearsals should be conducted periodically to ensure that staff are prepared. The training shall be recorded.

TIMING: Whenever an emergency occurs during the operational and closing phase.

APPENDIX 5.5: ASSESSMENT OF IMPACTS AFTER MITIGATION MEASURES

	Activity	Impact	Positive /Negative	Duration	Magnitude	Extent	Probability	Significance Rating after mitigation	
	START-UP ACTIVITIES								
1	Site establishment activities, vegetation stripping	Loss of vegetation	Neg	2	4	1	3	21	Low
		Habitat destruction	Neg	2	4	1	3	21	Low
		Visual scarring	Neg	2	3	2	3	21	Low
		Air quality deterioration	Neg	2	2	2	3	18	Low
		Soil erosion	Neg	2	2	2	3	18	Low
		Potential loss of agricultural potential	Neg	1	6	2	2	18	Low
		Safety and security	Neg	2	2	1	1	5	Low
2	Soil stripping and stockpiling	Dust	Neg	2	4	2	2	16	Low
		Disruption of drainage	Neg	3	2	1	2	12	Low
	DURING OPERATIONAL PHASE								
3	Clearance of area for mining	Visual impact	Neg	2	4	1	3	21	Low
		Destruction of flora and habitat	Neg	2	4	1	3	21	Low
		Loss of agricultural potential	Neg	1	7	1	2	18	Low
4	Dolerite excavation	Dust emissions	Neg	1	4	2	2	14	Low
		Drainage disruption	Neg	3	2	1	3	24	Low
		Slope instability	Neg	2	3	1	1	6	Low
		Noise	Neg	1	2	1	3	12	Low
		Visual Scarring	Neg	2	3	2	3	21	Low
		Altered topography	Neg	2	4	2	3	24	Low
		Soil erosion	Neg	2	1	2	3	15	Low
5	Drilling & blasting (if done)	Noise and vibrations	Neg	1	4	1	1	6	Low
		Air quality deterioration	Neg	1	3	1	1	5	Low
6	Stockpiles	Dust	Neg	1	2	1	2	8	Low
		Surface disturbances	Neg	1	2	1	2	8	Low
		Drainage disruption	Neg	1	2	1	2	8	Low
7	Material handling, hauling and transportation	Dust	Neg	2	2	1	3	15	Low
		Increased risk of accidents	Neg	1	2	1	3	12	Low
		Noise	Neg	1	2	1	3	12	Low
		Soil contamination from oil/fuel leaks	Neg	1	2	1	3	12	Low
8	Waste Disposal and Material storage	Soil contamination	Neg	1	2	1	3	12	Low
		Water pollution	Neg	1	2	1	3	12	Low

	Activity	Impact	Positive /Negative	Duration	Magnitude	Extent	Probability	Significance Rating after mitigation	
		Increased risk of fire	Neg	1	2	1	3	12	Low
	DURING CLOSURE AND POST CLOSURE								
9	Decommissioning of site and shaping of quarry	Noise	Neg	1	2	1	2	8	Low
		Air quality deterioration (dust)	Neg	1	2	1	2	8	Low
		Soil contamination from oil/fuel	Neg	1	2	1	2	8	Low
		Disruption of surface drainage	Neg	1	2	1	2	8	Low
	SOCIO ECONOMIC IMPACTS								
10	Negative socio-economic impacts	Community conflicts and tensions	Neg	1	2	2	2	10	Low
		Increased risk of fire	Neg	1	2	1	2	8	Low
		Reduced security in area	Neg	1	2	1	2	8	Low
11	Positive socio economic impacts	Employment opportunities	Pos	2	2	2	3	18	Low
		Training and Skills Development	Pos	2	2	2	3	18	Low
	HERITAGE RESOURCES IMPACTS								
11	Heritage impacts	Potential impacts associated with site of a cultural or archaeological importance	Neg	5	1	1	1	7	Low
	CUMULATIVE IMPACTS								
12	Use of mine	Increased loss of vegetation	Neg	2	4	1	2	14	Low

APPENDIX 5.6: ASSESSMENT OF NO-GO ALTERNATIVE

The no-go alternative means that no development will take place on the site. This means that current impacts that are on site as a result of previous activities will continue to occur.

Activity	Impact	Positive /Negative	Duration	Magnitude	Extent	Probability	Significance Rating	
NO GO ALTERNATIVE								
Leaving area as is.	Visual Scarring	Neg	2	4	2	4	32	Medium
	Drainage disruption	Neg	3	2	2	2	14	Low

APPENDIX 6

SPECIALISTS STUDIES

HERITAGE STUDY

Phase 1 Heritage Impact Assessment of a new Borrow Pit site near Excelsior, FS Province.

Report prepared by
Paleo Field Services
PO Box 38806 Langenhovenpark
Bloemfontein 9330
July 2021

Summary

A Phase 1 Heritage Impact Assessment was carried out over a 5 ha - area designated for use as a new borrow pit near Excelsior, Free State Province. There is no aboveground evidence of historically significant building structures older than 60 years, Stone Age archaeological remains, Iron Age structures or material of cultural significance within the confines of the development footprint. The archaeological and cultural component of the proposed project footprint is assigned a site rating of General Protection C (GP.C). It is recommended that the development may proceed, provided that all excavation activities are restricted to within the boundaries of the footprint.

Introduction

A Phase 1 Heritage Impact Assessment was carried out over a 5 ha - area designated for use as a new borrow pit near Excelsior, Free State Province (**Fig. 1 & 2**). The extent of the affected areas (over 5000 m2) falls within the requirements for a Heritage Impact Assessment (HIA) as required by Section 38 (Heritage Resources Management) of the South African National Heritage Resources Act (Act No. 25 of 1999). The site visit and subsequent assessment took place during May 2016. The task involved identification of possible archaeological sites or occurrences in the proposed zone, an assessment of their significance, possible impact by the proposed development and recommendations for mitigation where relevant.

Terms of Reference

- Identify and map possible heritage sites and occurrences using published and database resources;
- Determine and assess the potential impacts of the proposed development on potential heritage resources;
- Recommend mitigation measures to minimize potential impacts associated with the proposed development.

Approach and Methodology

The heritage significance of the affected area was based on existing field data, database information and published literature. A field assessment, using a Garmin Etrex Vista GPS hand model (set to the WGS 84 map datum) and a digital camera for recording purposes followed this. Geological maps, aerial photographs and site records were integrated with data acquired during the on-site inspection. The study area is rated according to field rating categories as prescribed by SAHRA (**Table 1**).

Locality data

Maps: 1:50 000 scale topographical map 2827 CC Excelsior

1:250 scale geological map 2826 Winburg

Site coordinates (**Fig. 2**):

A) 28°55'42.40"S 27° 4'48.89"E

B) 28°55'52.14"S 27° 5'10.31"E

The study area lies about 2.5 km east-northeast of the Excelsior CBD on the R709 provincial road going to Winburg (**Fig. 3**).

Background

The study area is located within the outcrop area of the late Permian Katberg Formation of the Tarkastad Subgroup (*Trt,* Karoo Supergroup) (Nolte 1995; Johnson *et al.* 2006) (**Fig. 4**). Intrusive dykes and sills of resistant Jurassic dolerites (*Jd*) are common in the region but are not fossiliferous. The Katberg Formation sedimentary strata are assigned to the *Lystrosaurus* Assemblage Zone (AZ) (Groenewald 1991, Groenewald & Kitching 1995) (**Fig. 5**). This biozone is characterized by the abundant genus *Lystrosaurus,* which represents up to 95% of the vertebrate fossils. Other common genera include *Procolophon, Moschorhinus, Proterosuchus, Lydekkerina*, and *Thrinaxodon*. Given the position of the borrow pit, the likelihood of impact on potential Quaternary fossil exposures is considered very minor.

The archaeological footprint in the area are primarily represented by Stone Age archaeological localities, rock art sites and an extensive footprint related to the distribution of Iron Age settlements and early history of Sotho-speaking communities along the Caledon River Valley. Previously recorded Stone Age sites in the region are found at Bokpoort, Orange Springs Fort Savange, Leliehoek and Rose Cottage Cave. In addition to Later Stone Age levels with European and Iron Age artifacts, Rose Cottage Cave also has a long cultural sequence incorporating several MSA and LSA industries ranging from ca. 70 ka to around 10 ka ago. Rock shelters associated with more recent hunter – gatherer activities are found at Rooikrans, Mauermanshoek, Westbury and Tienfontein. Historical accounts of the middle Caledon Valley indicate that hunter-gatherers survived as communities until the end of the Basuto Wars and the establishment of European farms in 1869. Stow (1905) records traditions about the last "Bushmen" inhabitants of the Korannaberg/Viervoetberg (Mequatling) situated between Excelsior and Labybrand, and the Platberg situated about 4 km south of Ladybrand.

Numerous rock art sites have been recorded in the region with over 30 farms, listed in the Ladybrand district (Van Riet Low 1941).

A number of Iron Age settlements, which resemble Maggs's Type V settlement pattern in many aspects of their material culture, are found in the Caledon Valley and surrounds, including those at Mequatling and Tihela. According to historical accounts, the southward migration of early Sotho-speaking communities led to at least one group reaching the Caledon Valley about the mid-seventeenth century and occupying most of the upper and middle parts of the valley by 1800 AD. A

major event to take place among the indigenous tribes of the interior highveld of South Africa before the coming of European settlers was the Difaqane raids and wars. Precipitated by the rise of Shaka's Zulu empire among the coastal Nguni-speaking peoples, it resulted in the creation of large-scale refugee communities that were continued and extended over the whole interior by resident Southern Sotho-speaking peoples who could not resist the advanced military and political system of the Nguni invaders, but rather led to the segmentation of the Southern Sotho into numerous antagonistic communities scattered along the Caledon River Valley. One group was the Leghoya who in 1810 or 1812, were finally conquered and completely absorbed by the Taung under their chief, Moletsane, with whom they settled at Mequatling, to the west of Ladybrand, in 1837. Although the Leghoya were subjects of Moletsane they lived as separate pockets among the Taung and actually retained their own chief. In 1869, by the Treaty of Aliwal North, Moletsane's territory, which had previously been part of Basutoland, was ceded to the Orange Free State, and Moletsane with his Taung and Leghoya followers moved into south Basutoland, between Mafeteng and Mohale's Hoek, where he was granted land by Moshesh.

Field Assessment and Recommendations

The footprint is located on a weather-resistant dolerite dyke considered to be of low palaeontological significance (**Fig. 6 & 7**). There is no above-ground evidence of historically significant building structures older than 60 years, Stone Age archaeological remains, Iron Age structures or material of cultural significance within the confines of the development footprint. The archaeological and cultural component of the proposed project footprint is assigned a site rating of General Protection C (GP.C). It is recommended that the development may proceed, provided that all excavation activities are restricted to within the boundaries of the footprint.

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DECLARATION OF INDEPENDENCE

I, Lloyd Rossouw, declare that I act as an independent specialist consultant. I do not have or will not have any financial interest in the undertaking of the activity other than remuneration for work as stipulated in the terms of reference and have no interest in secondary or downstream developments resulting from the authorization of this project.

Tables and Figures

Table 1. Field rating categories as prescribed by SAHRA.

Field Rating	**Grade**	**Significance**	**Mitigation**
National Significance (NS)	Grade 1	-	Conservation; national site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; provincial site nomination
Local Significance (LS)	Grade 3A	High significance	Conservation; mitigation not advised
Local Significance (LS)	Grade 3B	High significance	Mitigation (part of site should be retained)
Generally Protected A (GP.A)	-	High/medium significance	Mitigation before destruction
Generally Protected B (GP.B)	-	Medium significance	Recording before destruction
Generally Protected C (GP.C)	-	Low significance	Destruction

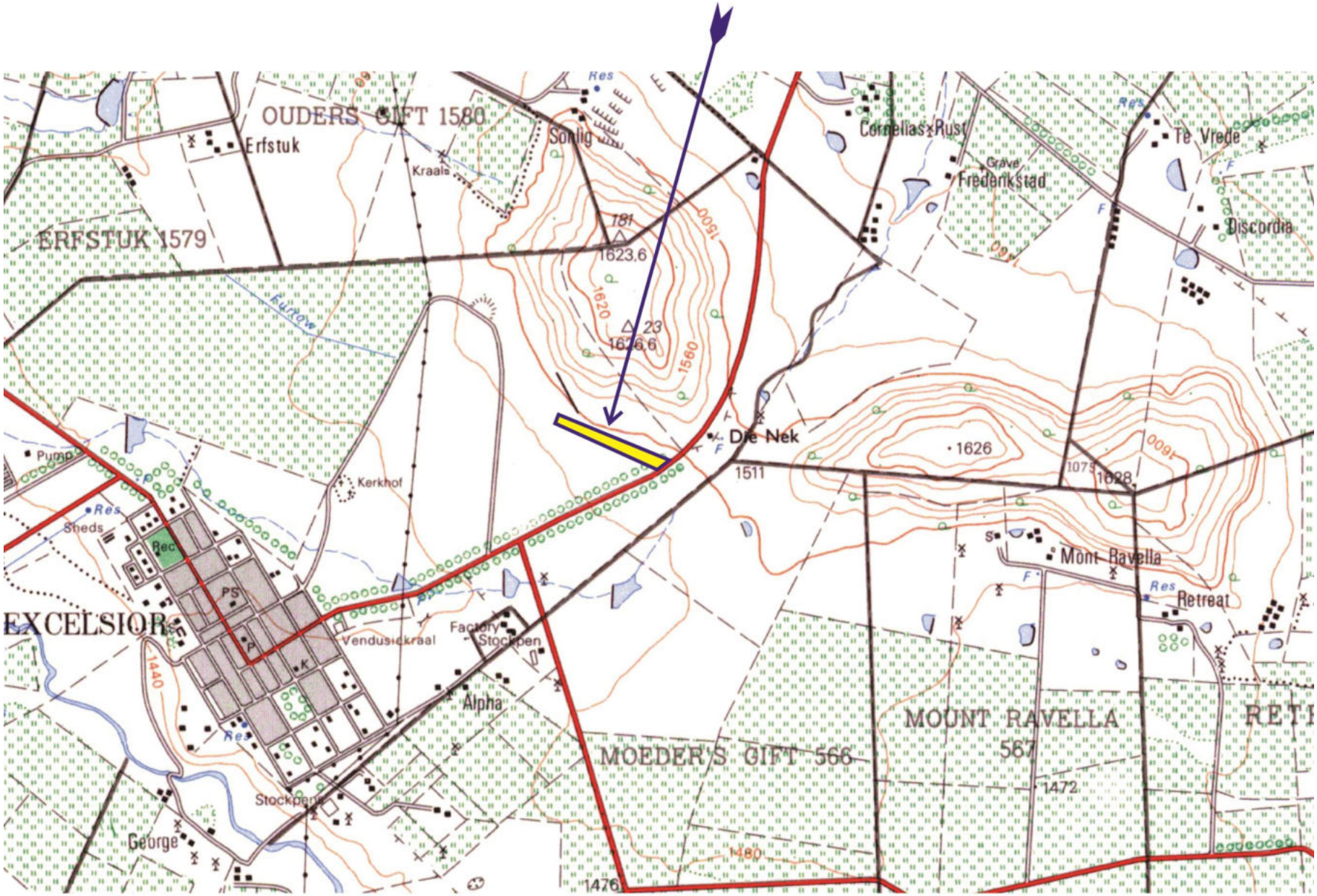

Figure 1. Map of the proposed borrow pit area marked on portion of 1:50 000 scale topographic map 2827CC Excelsior.

Figure 2. Aerial view and layout of the site.

Figure 3. General view of the site, looking north.

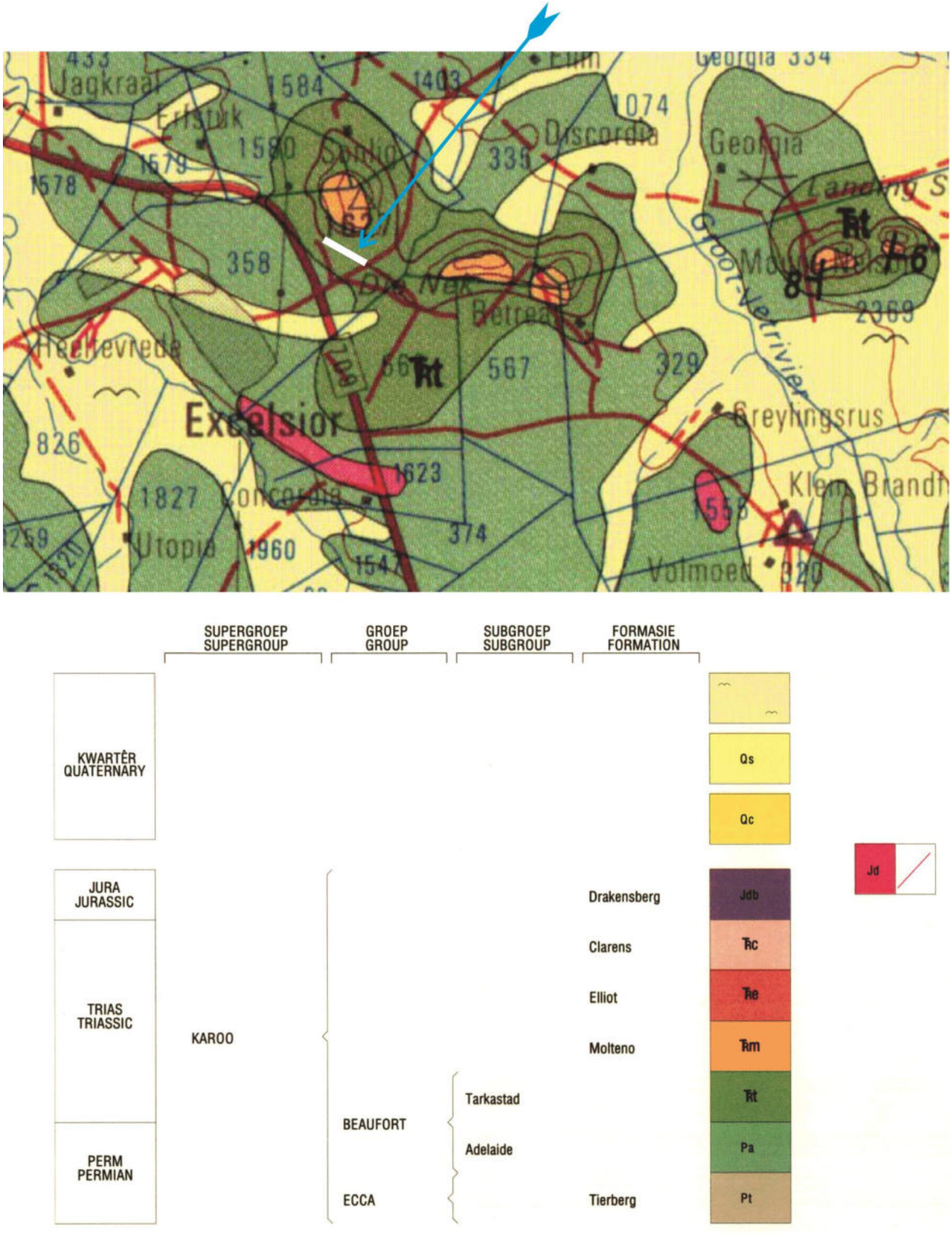

Figure 4. According to portion of 1:250 000 scale geological map 2826 Winburg, the study area is located within an outcrop area of the late Permian Katberg Formation of the Tarkastad Subgroup , *Trt* (Karoo Supergroup).

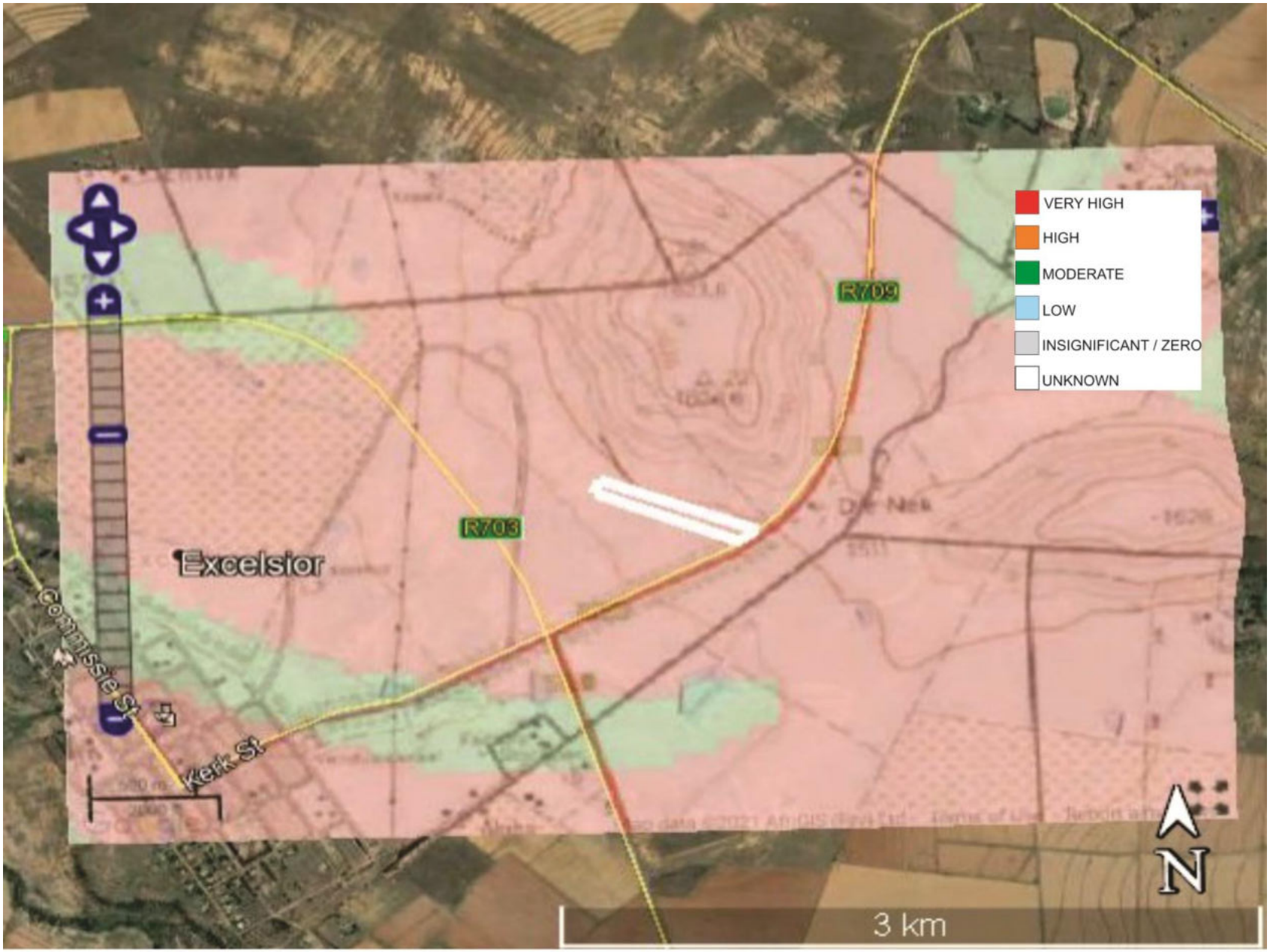

Figure 5. SAHRIS palaeosensitivity map overlay. Site marked by white polygon.

Figure 6. Aerial view of dolerite dyke (stippled line) traced out during survey.

Figure 7. Characteristic dolerite intrusive features observed within the study area.

ECOLOGICAL STUDY

ECOLOGICAL REPORT FOR THE BORROW PIT AT FARM 358 EXCELSIOR, FREE STATE

Prepared by: Ricus Nel, T- 083 279 5143
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41 Frans Kleynhans, Groenvlei, Bloemfontein

Environmental Management Group

July 2021

Specialist investigator: Mr R Nel (BSc Honours majoring in Botany (ecology))

Declaration of independence:

I, the above-mentioned specialist investigator responsible for conducting this particular specialist ecological study, declare that

- I consider myself bound to the rules and ethics of the South African Council for Natural Scientific Professions (SACNASP);
- At the time of conducting the study and compiling this report I did not have any interest, hidden or otherwise, in the proposed development, except for financial compensation for work done in a professional capacity;
- Work performed for this study was done in an objective manner. Even if this study results in views and findings that are not favourable to the client/applicant, I will not be affected in any manner by the outcome of any environmental process of which this report may form a part;
- I declare that there are no circumstances that may compromise my objectivity in performing this specialist investigation. I do not necessarily object to or endorse the proposed development, but aim to present facts, findings and recommendations based on relevant professional experience, and scientific data;
- I do not have any influence over decisions made by the governing authorities;
- I have the necessary qualifications and guidance from professional experts (registered Pr. Nat. Sci.) in conducting specialist reports relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity
- This document and all information contained herein are and will remain the intellectual property of Environmental Management Group. This document, in its entirety or any portion thereof, may not be altered in any manner or form, for any purpose without the specific and written consent of the respective specialist investigator.

Ricus Nel

To whom it may concern,

Review of specialist ecological assessment:

Of

ECOLOGICAL REPORT FOR THE BORROW PIT AT FARM 358 EXCELSIOR, FREE STATE, SE van Rooyen, member and principal consultant of Environmental Management Group (EMG) and registered professional scientists in the fields of ecological sciences, evaluated the ecological assessment of the specialist as mentioned above.

In general, criticism lodged against ecological studies includes poor use of relevant scientific literature, lack of or inadequate field surveys and associated data collection, poor use of regional information datasets, lacking general knowledge of the subject, failure to describe limitations or constraints on survey methodology, insufficient or inadequate data, vague generalisations with no indication of the relative importance of a particular component. Regarding the above criticism, none of it is relevant to the ecological assessment of the aforementioned report. It is concluded that the report complies with the general provincial requirements, and the content as discussed in the report is relevant and concise.

Regards

_____

SE van Rooyen,
Director Managing & Environmental Assessment Practitioner & Ecologist
(MSc. Cand.Sci.Nat.116554; IAIA Reg No. 5901)

1. Executive summary:

The proposed borrow pit is situated approximately two km east of Excelsior immediately north of the R709, at Lat: 28°55'47.52 "S, Long: 27° 5'0.43 "E. The borrow pit will be located close to the foot of a small mountain northeast of Excelsior (Figure 1) within Farm 358 Excelsior. The proposed site is currently being used as a communal grazing area. The overexploitation of the site for its grazing potential has left the area in a severely degraded state.

The site is marginally distributed over two distinct vegetation types, *viz*. Basotho Montane Shrubland (Gm5) and Eastern Free State Clay Grassland (Gm3) (Figure 3). The site's vegetation structure and composition are best described by the Eastern Free State Clay (Gm3) type.

Only two homogenous vegetation units could be described (Figure 2). The site is not adequately fenced off and is currently being used as a communal grazing area. The grazing intensity has led to much of the veld being trampled, causing significant sheet erosion and the proliferation of woody and spinescent elements (indicative of an overgrazed veld and bush encroachment).

During the site survey, several provincially protected species were logged. These are *Cussonia paniculata* (Mountain cabbage tree), *Aloe grandidentata* (Dwarf soap aloe), *Helichrysum nudifolium*, and *Olea europaea subsp. africana* (wild olive). None of these species require urgent conservation action as they all enjoy relatively wide distribution. However, this should not promote removing them without the relevant permits (DESTEA, 1969).

The site had very few signs of mammalian life. Although a comprehensive mammal survey was not conducted, signs and tracks of animals were recorded. Indications of mammalian life are represented by a few small burrows most likely occupied by *Cynictis penicillate* (Yellow mongoose) since a few individuals of this species were observed in the surrounding area. The proximity to urban development invites feral/ stray domestic animals such as dogs and cats. During the survey, two stray dogs were observed. These animals have most likely decimated the natural faunal community and might be responsible for the low faunal presence.

A biodiversity sensitivity rating was conducted to evaluate the current ecological condition and the site's sensitivity to development. The BSR evaluation concluded that the habitat is transformed due to unregulated grazing, illegal dumping, invasive species, and feral/stray animals; therefore, the site is acceptable for development.

An impact assessment was performed and resulted in an overall low impact significance score. Even though the site is located in an endangered vegetation type (DEA, 2016), the site's vegetation has been transformed and does not represent a pristine ecosystem which would be associated with a high conservation value. The outlying area does support aquatic and mountainous habitats; however, these are not included within the mining footprint and should not be affected. Owing to the site's high

level of disturbance originating from anthropogenic activities, unregulated grazing, and exotic species, the overall impact of the proposed development on this ecosystem will be low. With adequate mitigation measures, the impacts emanating from the development will be very low.

Contents

2. Introduction:

Ecological infrastructure refers to the natural functioning ecosystems which provide essential services to people. Examples of these ecosystems include healthy mountain catchments, rivers, wetlands, rangelands and coastal dunes (SANBI, 2014). An ecosystem functions as a collective of components, both living and non-living interacting with one another (Wohlitz, 2016). Ecosystem services include provisioning services (food, raw materials, freshwater), regulating services (climate and air quality, carbon sequestration, water purification), supporting services (habitats and genetic diversity), and cultural services (recreation, tourism and spiritual) (Costanza et al., 1997; Fy et al., 2015; Wohlits, 2016). Ecosystems can only provide these services as long as they are in a healthy state. Habitat fragmentation, pollution, erosion and unsustainable harvest are only a few anthropogenic activities which threaten healthy ecosystems.

In terms of biological diversity, South Africa ranks third in the world with a high level of endemism (found only in South Africa) (Hoveka et al., 2020). Because of this, South Africa's vegetation is highly localised and experiences a greater threat of extinction. Thus, it is our responsibility to protect South Africa’s rich biodiversity.

Despite the seeming homogeneity and low diversity of vegetation, an area may contain endangered and rare species. The presence of these red data species may make the development unfeasible at that specific location. If this occurs, the project should be moved to an alternative location or cease immediately.

Development is a necessity, especially for a developing country such as South Africa. New developments create job opportunities, increase capital growth, and overall create a better country. However, these developments should not come at the cost of pristine ecosystems as they produce invaluable services humans reap for free. For this reason, sustainable development practices should balance the need for development and the conservation of natural resources (Wohlitz, 2016).

The proposed borrow pit is situated approximately two km east of Excelsior immediately north of the R709, at Lat: 28°55'47.52"S, Long: 27° 5'0.43"E. The borrow pit will be located close to the foot of a small mountain northeast of Excelsior (Figure 1) within Farm 358 Excelsior. The proposed site is currently being used as a communal grazing area. The overexploitation of the site for its grazing potential has left the area in a degraded state.

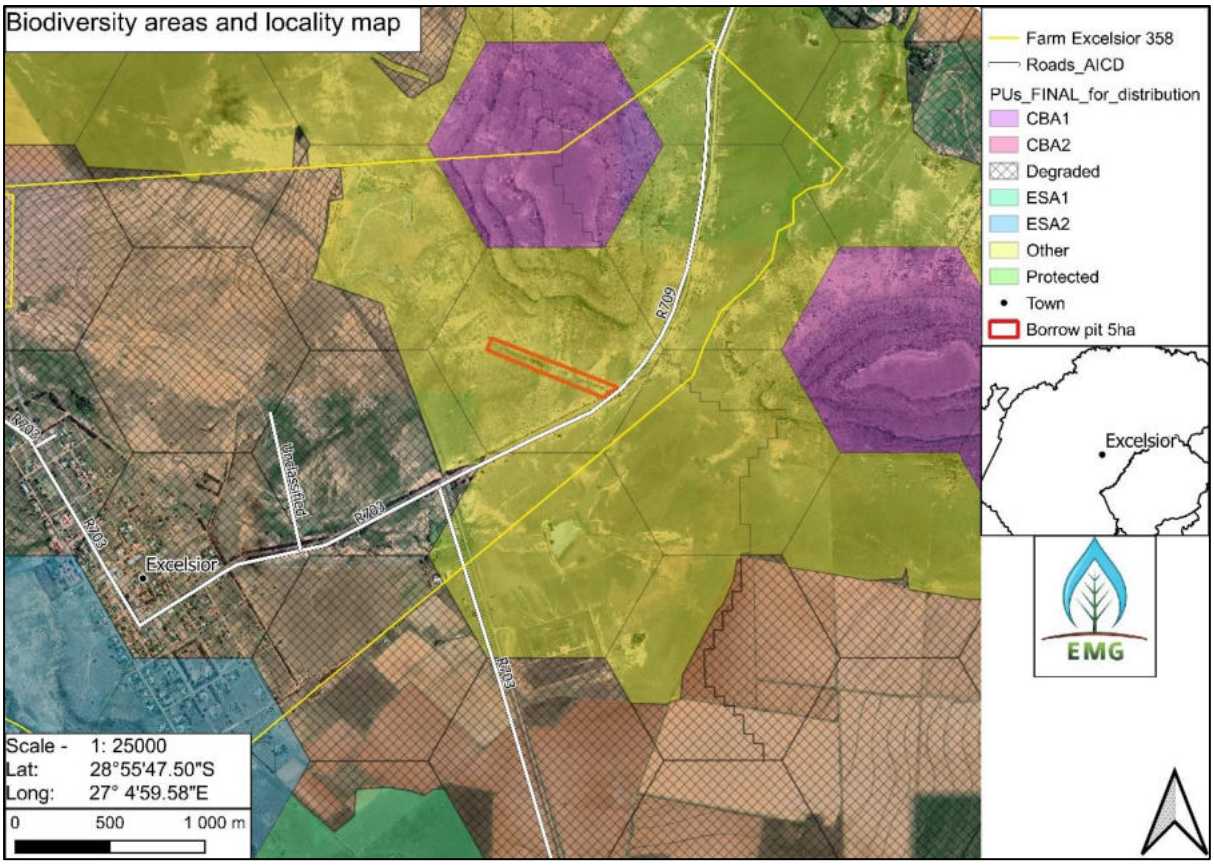

Figure 1 locality of the proposed 5ha borrow pit (RED) situated north east of Excelsior at the foot of a small mountain. The site is not indicated as an ecological support or critical biodiversity areas (Collins, 2015)

A site visit was conducted on the 2nd of July 2021. The proposed 5ha and the surrounding area was surveyed for one day. The survey had to be conducted in winter, which is not optimal for plant identification since many floral species only flower during the rainy season.

For the reasons mentioned above, it is necessary to conduct an ecological assessment to assess the possible environmental impacts generated by mining the 5ha borrow pit. The recommendations and mitigation measures generated in this report should be used to minimise the impact of the proposed development.

3. Scope and limitations of the study:

- Evaluating the present ecological functioning of the area within which the proposed development will take place.
- Identifying and assessing possible environmental impacts that the proposed development could generate.

3.1. Vegetation:

Vegetation related topics to be investigated include:

- The vegetation type within which the proposed development lies and the importance thereof.

- Assessing the overall ecosystem health in terms of its vegetation with emphasis on the level of disturbance (grazing- and anthropological impacts).
- Identification of the area's species composition with emphasis on dominant-, rare-, endangered- and protected species

3.2. Fauna:

Fauna related topics to be investigated include:

- A survey primarily concerned with visual observations of species and supporting evidence of their presence in a given region, such as burrows, excavations, animal tracks, dung, etc.
- A species list including both observed and probable species occurrence.

3.3. Limitations:

- Not all plants have the same flowering period, and thus it is likely that the survey could have occurred outside of the flowering period of a specific species.
- Some geophytic and succulent plants might have been overlooked due to their cryptic nature.
- For most species, especially grasses, inflorescences are vital for accurate identification. Due to the overgrazed state of the proposed site, identification of grass species was difficult.
- Some animal species exhibit a nocturnal and or shy habit and will most likely not be observed during the daytime.

4. Methodology:

4.1. Literature used for additional information:

Vegetation:

- Red Data List (Raymondo et al. 2009)
- Vegetation types (Mucina and Rutherford 2006; SANBI, 2006-2018)
- Field guides used for species identification (van Wyk and Malan, 1998; Botha, 2001; van Tooyen et al., 2001; van Wyk and van Wyk, 2013; van Oudtshoorn, 2014; Manning, 2019)

Terrestrial fauna:

- Field guides for species identification (Marais, 2004; Sinclair and Ryan, 2010)

4.2. Survey:

Before visiting the site, a desktop study commenced where the following information was determined:

- Vegetation type.
- Climatic conditions.
- Probable rare- endemic- and protected species lists.
- Various homogenous vegetation units in which surveying will commence.
- Probable environmental impacts of the proposed development.

The site survey was performed through transects. Plant species observed were recorded with particular emphasis on rare-, endemic-, protected- and dominant species. Attention was given to the current state of the environment regarding grazing impacts, anthropogenic disturbances, erosion and the presence of alien or invasive species. Animal species observed were taken note of, as well as the probability of other animal species' presence (dung, habitat requirements, excavations, animal tracks, burrows, and nests)

4.3. Assessment criteria:

Several assessment criteria were used to determine the overall status of the environment.

4.3.1. Vegetation characteristics:

The current state of the vegetation in terms of its species diversity, habitats sensitivity, and importance of the ecosystem.

Habitat diversity:

Greater species richness is usually promoted by an area with greater diversity in habitats that species can occupy.

Table 1 habitat diversity evaluation score sheet. Refer to table 11 for the overall BSR evaluation.

Criteria:	Score
High species richness with many fulfilled niches	(1)
Variety of species occupying a few niches	(2)
Few or a single species dominating an area	(3)

Rare and endangered floral species:

The presence or potential presence of a rare or endangered species on the site presents an ever-important role in the feasibility of the development.

Table 2 rare- and endangered floral species evaluation score sheet. Refer to table 11 for the overall BSR evaluation.

Criteria:	Score
Presence of or high likelihood of presence	(1)
Possible occurrence	(2)
Presence is highly unlikely	(3)

Ecological function:

Each ecosystem functions as an interconnected unit part of the greater system. Removing to many or critical units can result in an entire ecological breakdown of an area. However, the ecological importance of various areas can differ considerably.

Table 3 ecological function evaluation score sheet. Refer to table 11 for the overall BSR evaluation.

Criteria:	Score
Critical ecological function as part of the greater system	(1)
Moderate ecological function	(2)
No special ecological function (greater system will not fail if absent)	(3)

Conservation value:

The conservation value of an ecosystem is influenced by its natural/pristine condition, rehabilitation costs, and importance to the larger system's functioning.

Table 4 conservation value evaluation score sheet. Refer to table 11 for the overall BSR evaluation.

Criteria:	Score
Natural/ pristine condition (very valuable)	(1)
Fair to good condition i.t.o. its natural condition	(2)
Heavily transformed, degraded and not rare	(3)

4.3.2. Vegetation condition:

Comparison to an objectively good/ natural condition ecosystem. Veld management practices such as fire regime and grazing intensity can have a significant influence on vegetation condition.

Percentage ground cover:

Ground cover is influenced by climate and biophysical conditions such as overgrazing, frequent fires, anthropogenic activities.

Table 5 percentage ground cover evaluation score sheet. Refer to table 11 for the overall BSR evaluation.

Criteria:	Score
Good ground cover	(1)
Moderate ground cover (few patches of exposed soil)	(2)
Very poor ground cover (large areas of barren soil)	(3)

Vegetation structure:

A comparison between of various vegetation layers, i.e. the ratio between the top (trees/ tall shrubs), middle (shrubs) and lower (herbaceous/dwarf shrub) layers.

Table 6 vegetation structure evaluation score sheet. Refer to table 11 for the overall BSR evaluation.

Criteria:	Score
All layers present with their various age classes	(1)
Lower layer highly grazed while top layer unaffected	(2)
A mono layer dominating an area (presence of degradation notable)	(3)

Infestation of exotic and invasive plants:

Exotic/ alien species are those that are not native to South Africa, while invasive species are those that adversely affect the environment.

Table 7 Infestation of exotic and invasive plant species evaluation score sheet. Refer to table 11 for the overall BSR evaluation.

Criteria:	Score
No or a small presence of alien/invasive species	(1)
Moderate infestation by one or more alien/invasive species	(2)
Area with a very high presence of many alien/invasive species	(3)

Impact of grazing/ browsing:

The overall vegetation structure and vegetation condition is heavily influenced by the intensity of grazing and browsing.

Table 8 impact of grazing/ browsing evaluation score sheet. Refer to table 11 for the overall BSR evaluation.

Criteria:	Score
Very little or no signs of grazing/browsing	(1)
Some signs of grazing/browsing (browse lines, shrubs/trees with signs of browsing and grass with signs of grazing)	(2)
Very clear browse level in trees, shrubs heavily pruned and grass layer heavily grazed.	(3)

Erosion:

Signs of erosion is an indicator of environmental disturbance. The severity of erosion usually increases with a lack of ground cover.

Table 9 erosion evaluation score sheet. Refer to table 11 for the overall BSR evaluation.

Criteria:	Score
No or very little signs of erosion	(1)
Small erosion gullies or the presence of slight sheet erosion	(2)
High degree of gully erosion and/ or high degree of sheet erosion	(3)

4.3.3. Faunal characteristics:

Rare and endangered species:

The presence or potential presence of a rare or endangered species on the site presents an ever-important role in the feasibility of the development.

Table 10 rare and endangered faunal species evaluation score sheet. Refer to table 11 for the overall BSR evaluation.

Criteria:	Score
Presence of or high likelihood of presence	(1)
Possible occurrence	(2)
Presence is highly unlikely	(3)

4.4. Biodiversity sensitivity rating (BSR):

The summed scores for the environmental assessment criteria indicated above were used to determine the biodiversity sensitivity for the site. The BSR score is set at a maximum of 30 which strongly favours development's incentive, while a lower score closer to 0 indicates an ecosystem more valuable left undeveloped.

Table 11 biodiversity sensitivity rating evaluation

BSR	Environmental description according to the BSR	BSR score class
Ideal for development	The vegetation has been totally transformed or is in a highly degraded state. The area can no longer be regarded as being in a natural condition. The area generally consists of a very low species diversity, does not contain any species of concern and is heavily populated by invasive plants. This area has lost its inherent ecological function. The area has no conservation value, and rehabilitation potential is outweighed by the costs. This site is ideal for the proposed development.	29-30
Preferred for development	The vegetation is in an advanced degraded state, has a low species diversity and is reasonably populated by invasive species. The area's ecological function is severely affected, and it has inadequate conservation potential. The potential for successful rehabilitation is relatively low. The area is preferred for the proposed development.	26-28
Acceptable for development	Vegetation displays moderate levels of degradation and exhibits a medium level of species richness. No species of concern are present. The degree of infestation is controllable. The area's ecological function is still intact and may be affected by the proposed development's activities. Rehabilitation is possible and should be considered. The area's conservation value is regarded as low. The area is acceptable for development.	21-25
Not preferred for development	The area is in overall good condition. There are some indications of environmental disturbance. Species diversity is reasonably high, and species of concern may be present. The area's ecological function is intact, and minimal rehabilitation efforts are needed. The area is of medium conservation value. The area is not preferred for development.	11-20
Very sensitive not suitable for development	The area is in a pristine or near pristine condition with very few indications of disturbance. The area exhibits a very high species diversity along with several species of concern. The ecological function is very well intact, and the conservation value is very high. The area is susceptible and should be avoided for the proposed development.	0-10

5. Study area:

The proposed area for the borrow pit is located on Farm 358 Excelsior located approximately 2km northeast of Excelsior. The site is located in the Mantsopa local municipality, QDS 2927AC (Figure 1). This ecological report is focused on the floral and faunal characteristics, which the proposed development will influence.

5.1. Regional vegetation:

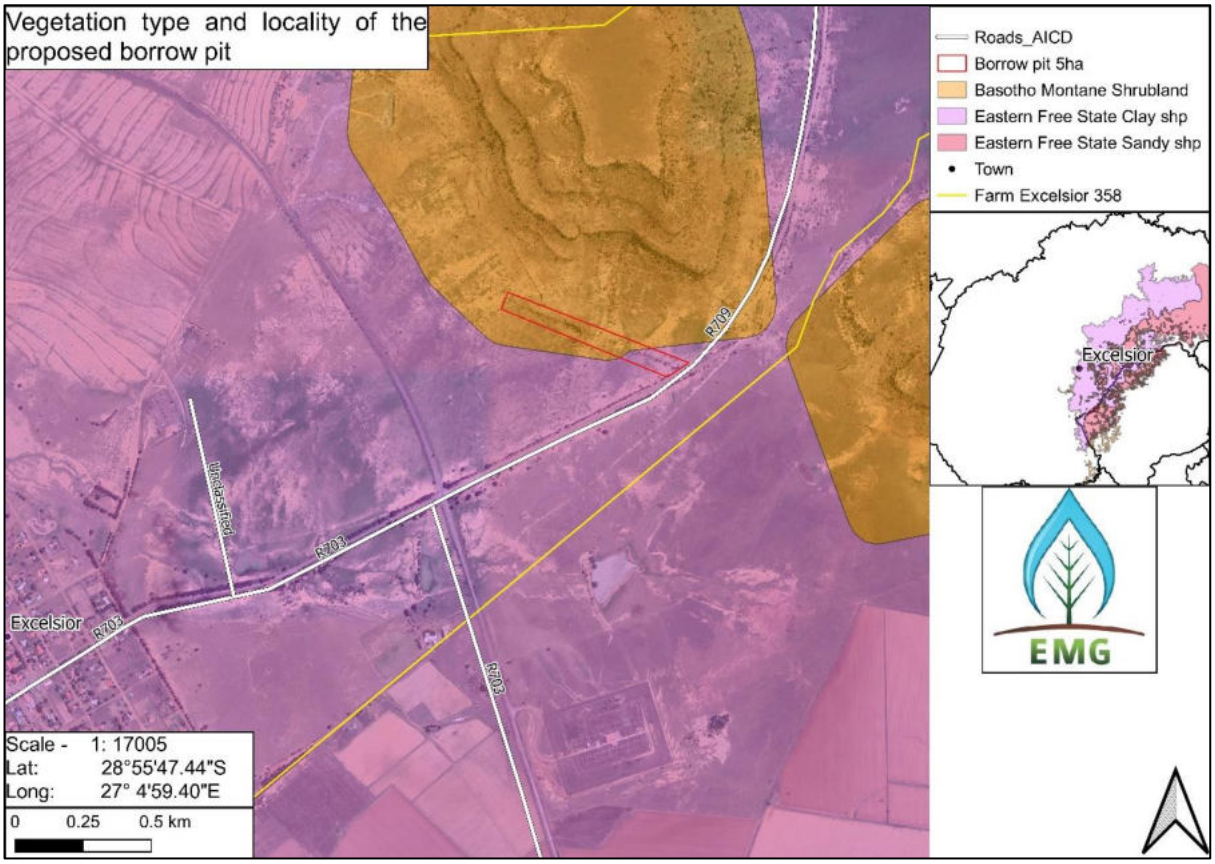

Figure 2 vegetation types of the surrounding area. The proposed site (Red) marginally crosses over two vegetation types, Gm5 (Orange) and Gm3 (Light pink).

The proposed 5ha borrow pit is situated within the Mesic Highveld Grassland bioregion (Gm). Gm is found primarily in the eastern highveld regions of South Africa (Mucina and Rutherford, 2006). Shrublands are especially common on shallow rocky outcrops where the geology creates arid habitat conditions. These xeric conditions are promoted by the shallow soils limiting water absorption (Mucina and Rutherford, 2006). According to the VegMap of South Africa (SANBI, 2018), both the Basotho Montane Shrubland (Gm5) and the Eastern Free State Clay Grassland (Gm3) are present in the study area (Figure 2). Both vegetation types require considerable conservation actions (Mucina and Rutherford, 2006; DEA, 2016). Gm5 is considered a vulnerable vegetation type with only 2% of the targeted 28% formally conserved. Gm3 requires an even greater conservation priority as it is an endangered vegetation type with roughly 7% formally conserved of the targeted 24%.

Gm3 is distributed mainly in the Free State province, with some parts stretching into the low-lying areas of Lesotho (Mucina and Rutherford, 2006). Most of Gm3 is distributed around the areas of Wepener in the south, Petrus Steyn in the north, Excelsior in the east. Gm3 is found mainly between 1380 and 1740 m.a.s.l. This vegetation type's topography is described as flat to slightly undulating (Mucina and Rutherford, 2006). The Northern region of Gm3 presents a higher occurrence of mudstones and sandstones of the Adelaide subgroup, while sediments of the Tarkastad subgroup is prevalent in the south. Sharp ridges/hills are formed by dolerite sills and dykes and weathering resistant sandstone outcrops. These outcrops create a broken landscape which often sustains Gm5 associated vegetation (Mucina and Rutherford, 2006). Gm3 experiences summer rainfall with a mean annual precipitation of around 630 mm. This vegetation unit experiences very cold winters and is regarded as one of the coldest regions within the Highveld.

The Basotho Montane Shrubland (Gm5) is mainly distributed in the Free State province, Lesotho and some of it extends into the west-facing foothills of KwaZulu-Natal province's mountains (Mucina and Rutherford, 2006). Gm5 is distributed on the slopes and hilltops south of Zastron (South), up to Thaba Nchu in the west, near Springfield in the North, and Harrismith in the far northeast. Most of Gm5 is distributed between 1480 and 1940 m.a.s.l. Gm5 is characterised by steep talus slopes and the kloofs of mesas. In areas with deeper soils, dense shrubland consisting of broad-leaved mesophyllous shrubs such as *Searsia erosa, Olea europaea subsp. Africana, Euclea crispa subsp. Crispa* and *Searsia burchellii* occur (Mucina and Rutherford, 2006). Variations in weathering rates due to variability in local climate have led to numerous terraces along the steep slopes. In some areas, shallow lying dolerite dykes presents through the sandstone. The Basotho Montane Shrubland's mean annual precipitation varies considerably owing to its wide distribution across the Mesic Grassland bioregion. Much of its rain is concentrated in the summer months and is conventional in nature. Gm5 receives more than 720 mm of mean annual precipitation, with areas in the north receiving around 630 mm and closer to the Maloti Mountain Range around 1400 mm (Mucina and Rutherford, 2006). The mean annual temperature is 13.7^{o}C with hot wet summers and generally cold dry winters.

6. Results:

A comprehensive species list is available in appendix 3

6.1. Floral survey:

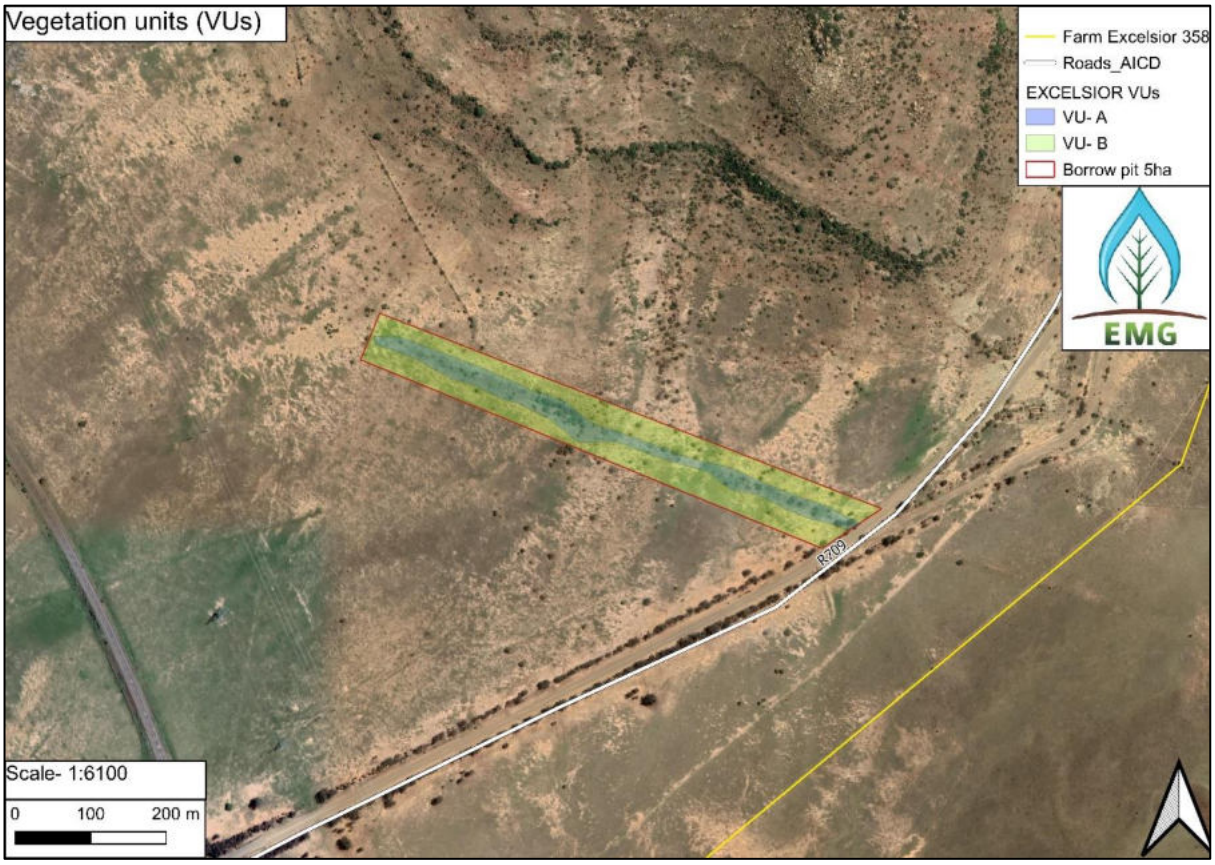

Figure 3 homogenous vegetation units found during the site visit on July 2nd 2021.

The site's linear formation does not allow a great diversity to be encapsulated in its width. Only two homogenous vegetation units could be described (Figure 3). The site is not adequately fenced off and is currently being used as a communal grazing area. The grazing intensity has led to much of the veld being trampled, causing significant sheet erosion and the proliferation of woody and spinescent elements (indicative of an overgrazed veld). Sparsely distributed clumps of climax grasses indicate remnants of a more pristine ecosystem. Rehabilitation through the natural process of succession might result in a climax community resembling its natural state. However, the site's proximity to surrounding urban development and the pressures of intense grazing makes this unlikely.

The site is marginally distributed over two distinct vegetation types, *viz* Basotho Montane Shrubland (Gm5) and Eastern Free State Clay Grassland (Gm3) (Figure 2). The site's vegetation structure and composition are best described by that of the Eastern Free State Clay (Gm3) type, and as such, the report will treat this site accordingly. During the site survey, several provincially protected species were logged. These are *Cussonia paniculata* (Mountain cabbage tree), *Aloe grandidentata* (Dwarf soap aloe) (Figure 6), *Helichrysum nudifolium*, *Olea europaea subsp. africana*(wild olive). None of these species requires urgent conservation consideration as they all enjoy relatively wide distribution. However, this should not promote removing them without the relevant permits (DESTEA, 1969).

6.2. VU-A:

VU-A is characterised by a broken herbaceous layer consisting mainly of sparsely distributed pioneering to sub-climax grasses such as *Aristida congesta subsp. barbicollis, Aristida diffusa* and *Chloris virgata*. The increased presence of woody and spinescent elements such as *Berkheya rigida, Berkheya onopordifodia, Seriphium plumosum,* and *Melolobium candicans* supports the claim of a disturbed veld and indicates low levels of bush encroachment (Avenant, 2015). VU-A presents many bare soil patches and considerable signs of erosion, most likely worsened by intense grazing (Figure 4). VU-A displayed a low species richness and owing to the intense grazing and considerable sheet erosion, it may be concluded that the site is no longer functioning as a healthy ecosystem. Bare soil patches are sparsely occupied by pioneering grass species such as *Aristida congesta* and *Chloris virgata*. Illegal dumping and harvesting trees for firewood both contribute to the site's degraded condition.

6.3. VU-B:

VU-B is represented by a linear distribution of tall shrubs and trees. This unit is characterised by a dense community of *Searsia lancea, S. buchellii, Grewia occidentalis* and *Euclea crispa*. Many trees have been harvested, most likely for firewood. Evidence of open fires scattered across the site supports the previous statement. Frequent open fires pose a significant threat to the ecosystem. This unit does not have a very well developed herbaceous layer since much of the lower vegetative layer is dominated by exotic species such as *Bidens pilosa, Tagetes minuta* and *Solanum lichstenii*. Other invasive species include *Verbena bonariensis, Cotoneaster franchetii, Pyracantha angustifolia* and *Opuntia ficus-indica*. These species pose a significant threat to South Africa's biodiversity and are all declared category 1b invaders.

6.4. Floral survey conclusion:

The site has experienced significant environmental disturbances such as tree harvesting for firewood, illegal dumping, overgrazing and considerable sheet erosion. The site is no longer in a pristine condition, and considering the high prevalence of exotic species, rehabilitation will be costly and unlikely through natural succession. In addition, windrows of *Eucalyptus camaldulensis* and *Eucalyptus sideroxylon* are located near the R709. These exotic trees pose a threat to mesic habitats and produce allelopathic compounds, limiting the establishment of native floral species (Hirch et al., 2019; CABI, 2021) (Figure 5). The *Eucalytpus spp.* are declared category 2 invasives seeing that they were planted as windrows (NEMBA, 2016). The site is located in the Eastern Free State Clay Grassland (Gm3), an endangered vegetation type (Mucina and Rutherford, 2006; DEA, 2016). In addition it is closely situated at the foot of a small mountain which hosts Gm5 (Vulnerable) vegetation. The formal conservation status of this site raises its conservation value considerably; however, due to the site's poor ecological condition and transfrormed state, it can not be considered to have a high conservation value. In addition, the site is not classified as any of the ecological support (ESA) or critical biodiversity areas (CBA) (Figure 1).

Several provincially protected species were logged during the survey. These species should not be unnecessarily removed, and the required permits obtained before the removal of these species occurs. Species with a higher potential for transplant success, such as *Aloe grandidentata* (Figure 6) should be removed and transplanted into a suitable habitat clear of any significant disturbance. A qualified individual should supervise the transplant of this species. It is possible that some sensitive species were overlooked due to the survey taking place out of their flowering season; however, owing to the site degraded condition, this is unlikely.

6.5. Faunal overview:

The site had very few signs of mammalian life. Although a comprehensive mammal survey was not conducted, signs and tracks of animals were recorded. Indications of mammalian life are represented by a few small burrows most likely occupied by *Cynictis penicillate* (Yellow mongoose) since a few individuals of this species were observed in the surrounding area. The proximity to urban development's invites feral/ stray domestic animals such as dogs and cats. During the survey, two stray dogs were observed. These animals have most likely decimated the natural faunal community and might be responsible for the low faunal presence.

The proposed borrow pit will transform a relatively small area of the site's vegetation and consequently habitat for fauna. It is possible that some faunal species were overlooked due to exhibiting a shy nature, nocturnal habit or burrowing habit. However, owing to the site's disturbed condition, the probability of finding sensitive and or red data species are unlikely. The site is adequately connected to other open systems, and the surrounding environment supports both mountainous and low-lying habitats. Most of the surrounding low-lying areas have been entirely transformed for crop cultivation (Figure 1). The mountainous areas may act as a refuge for sensitive species and should be avoided.

A reptile and mammal search on the Virtual Museum portal resulted in only a few red data mammal species for QDS 2927AC (FitzPatrick Institute of African Ornithology, 2021). The following red data species might occur within QDS 2927AC:

Felis nigripes Black-footed Cat

Otomys auratus Southern African Vlei Rat (Grassland type)

The occurrence probability of these species is relatively low due to the proximity to urban developments, which invite anthropogenic disturbances and stray/feral animals. Should any species of conservation concern be observed during mining, all disturbance activities should halt until a suitably qualified biologist is contracted and the appropriate mitigation measures performed.

6.6. Biodiversity sensitivity rating:

The vegetation is moderately disturbed due to intense grazing and anthropogenic activities. This has led to a low species richness, widespread presence of exotic species and the proliferation of woody and spinescent elements. No rare or

endangered species were recorded, and owing to the extensive human influence, it is unlikely that any such species will be present. Therefore, the BSR score concluded that the site is acceptable for development.

Table 12 final biodiversity sensitivity rating evaluation.

Vegetation characteristics:	**Score (1-3)**
Habitat diversity	2
Rare and endangered species	3
Ecological function	2
Conservation value	2
Vegetation condition:	
Percentage ground cover	2
Vegetation structure	2
Infestation of exotic and invasive plants	2
Impact of grazing/ browsing	3
Erosion	2
Faunal characteristics:	
Rare and endangered species	3
BSR total score:	**23**
Development preference rating	**Acceptable**

6.6.1. Habitat diversity and species richness:

The site consists mainly of a degraded grass layer with low species richness. The intense grazing has led to the promotion of woody and spinescent elements. The surrounding area does support aquatic and mountainous habitats; however, these are not included within the mining footprint.

6.6.2. Rare and endangered species:

The site survey did not result in the identification of any rare or endangered plant species. Due to the extensive presence of human activities and intense grazing, the probability of such species occurring on the site is relatively low. The site survey did, however, result in the logging of several provincially protected species. These are *Cussonia paniculata* (Mountain cabbage tree), *Aloe grandidentata* (Dwarf soap aloe), *Helichrysum nudifolium*, *Olea europaea subsp. africana* (wild olive) (DESTEA, 1969).

6.6.3. Ecological function:

The intense grazing, tree harvesting, and erosion have impeded this site's ecological function. However, it should be stressed that not all ecological function is lost in that the surrounding mesic and mountainous habitats will still function as refuges for

sensitive species. However, these areas will be excluded from the mining footprint and, owing to the site's low-lying locality, will not be affected by the development.

6.6.4. Conservation value:

The site consists of Eastern Free State Clay Grassland (Gm3), an endangered vegetation type (Mucina and Rutherford, 2006; DEA, 2016). This formal conservation status increases this area's conservation value considerably; however, the site cannot be considered to have the same conservation value due to the poor ecological function.

6.6.5. Percentage ground cover:

Intense grazing has severely impacted the site's vegetation. Intense grazing and trampling of vegetation by cattle have left many barren soil patches. The broken veld conditions are more susceptible to erosion. Numerous rill and sheet eroded patches present on-site supports the previous statement.

6.6.6. Vegetation structure:

Intense grazing has allowed the proliferation of woody and spinescent elements. Woody and spinescent elements are represented by *Melolobium candicans, Berkheya onopordifodia, B. rigida* and *Seriphium plumosum*.

6.6.7. Infestation of exotic and invasive plants:

The site is moderately infested with exotic and invasive species. These include several category 1b invasives such as *Cotoneaster franchetii, Pyracantha angustifolia, Argemone uchroleuca, Opuntia ficus-indica*. Other non-invasive weeds which still pose a significant threat to this ecosystem are *Tagetes minuta, Bidens bipinnata* and *Sonchus asper*. These species outcompete native species and pose a threat to the ecosystem.

6.6.8. Impact of grazing/ browsing:

The site is used as an unregulated communal grazing area. The intense grazing by cattle has left notable impacts on the environment. Soil erosion and selective grazing leading to the proliferation of woody and spinescent elements supports the previous claim.

6.6.9. Erosion:

Notable rill and sheet erosion is present across the site and the surrounding area.

6.6.10. Rare and endangered faunal species:

No rare or endangered faunal species were recorded during the site visit. Due to the transformed vegetation structure, which forms the habitat for faunal species and feral/stray animals, it is unlikely that any red list species would occur.

7. Anticipated impacts:

This project will result in an overall loss of biodiversity through habitat destruction and reduction of species diversity. The site is situated in the Eastern Free State Clay Grassland (Gm3), which is an endangered vegetation type (Mucina and Rutherford, 2006; DEA, 2016). The site's natural vegetation has been transformed by intense grazing and firewood harvesting. This has led to the proliferation of woody and spinescent elements which ultimately lowers species diversity. The site is located at the foot of a small mountain which hosts Gm5 associated vegetation. Gm3 is a vulnerable vegetation type (Mucina and Rutherford, 2006; DEA, 2016). The two rivers, Lengana and Groot vet are approximately 3-4 km from the proposed site and will experience very little, if any impacts from the mining. The overall environmental impact on vegetation will be low to moderate.

During the survey, several provincially protected flora were logged. These are *Cussonia paniculata* (Mountain cabbage tree), *Aloe grandidentata* (Dwarf soap aloe), *Helichrysum nudifolium* and *Olea europaea subsp. africana* (wild olive). None of these species requires urgent conservation consideration as they all enjoy relatively wide distribution. Uneccesary removal and doing so without the relevent permits should not be permited. The relevent permits should be obtained before removing any of these species (DESTEA, 1969).

7.1. Concerned ecological aspects:

Habitat loss and or fragmentation is a leading cause of the global biodiversity crisis. The removal of environmental units will lead to the destabilisation of the entire ecosystem and eventually ecological breakdown. The proposed development will result in an overall loss of habitat and have a moderate impact significance.

Table 13 ecological impact on habitat loss for fauna and flora assessed using table 18, appendix 1 and final evaluation form from table 19, appendix 2.

Concerned aspect:	Impact characteristic	Score
Habitat loss	Geographical extend	1
	Probability	4
	Duration	3
	Reversibility	3
	Cumulative impacts	2
	Intensity	3
	TOTAL	**39**
Significance rating	**Moderate**	

Indigenous vegetation has a far greater conservation value to exotic species. Indigenous species have adapted to the surrounding environment and have established many stable networks of energy transfer. The removal of indigenous species disrupts this balance which has formed over many years. The estimated impact on the surrounding transformed vegetation will thus be of a low degree.

Table 14 the anticipated impact on the loss of indigenous floral and faunal diversity assessed table 18, appendix 1 and final evaluation form from table 19, appendix 2.

Concerned aspect:	Impact characteristic	Score
Loss of indigenous floral and faunal diversity	Geographical extend	1
	Probability	4
	Duration	3
	Reversibility	3
	Cumulative impacts	3
	Intensity	2
	TOTAL	**28**
Significance rating	**Low**	

Protected species have been assigned protected status either nationally or provincially. These species are of unique conservation concern for many purposes. These include socioeconomic importance, scarcity, limited distribution and ecological significance. Removing these species should be avoided at all costs. If removal is unavoidable, the necessary permits should be acquired for their removal and translocation if possible. The proposed development may result in the removal of several provincially protected floras. These species enjoy a wide distribution across South Africa however this should not be a motive for their unnecessary removal.

Table 15 the anticipated impact on the loss of protected floral and faunal species assessed using table 18, appendix 1 and final evaluation form from table 19, appendix 2.

Concerned aspect:	**Impact characteristic**	**Score**
Loss of protected floral and faunal species	Geographical extend	1
	Probability	4
	Duration	4
	Reversibility	3
	Cumulative impacts	2
	Intensity	2
	TOTAL	**28**
Significance rating	**Low**	

8. Recommendations:

- Several provincially protected species were logged during the survey. Removal of these species should be reconsidered too only when necessary. Removal of these floras should only take place after the relevant permits are obtained.
- Care should be taken to not unnecessarily clear or destroy indigenous vegetation.
- All areas to be affected by the proposed development will be rehabilitated by indigenous vegetation.
- The post mined site should be revegetated, strictly using indigenous vegetation. Revegetation should be performed to minimise erosion.
- All stockpiles, construction vehicles, equipment and machinery should be situated away from the natural vegetation.
- No structures should be built outside the area demarcated for the development.
- Adequate monitoring of weed establishment and their continued eradication should be maintained during and after mining.
- The hunting, capturing and trapping of fauna should be prevented throughout the mining operations.
- Training of construction workers to recognise threatened animal species will reduce the probability of fauna being harmed unnecessarily.
- Any fauna that becomes trapped in the trenches or in any construction or operational related activity may not be harmed and must be rescued and relocated by an experienced person.
- All construction and maintenance vehicles must stick to properly demarcated and prepared roads. Off-road driving should be strictly prohibited.
- No dumping of any form is permitted.
- All construction-related waste/material should be appropriately disposed of after mining has ceased.

9. Discussion and conclusion:

The proposed site (covering 5ha) is marginally distributed over two distinct vegetation types, viz. Basotho Montane Shrubland (Gm5) and the Eastern Free State Clay Grassland (Gm3) (Figure 3). The site's vegetation is best described by that of the Eastern Free State Clay (Gm3) type, and as such, the report treated the site accordingly.

The site presented numerous woody and spinescent elements indicative of an overgrazed veld. The encroachment of *Seriphium plumosum*, *Chrysocoma ciliata,* and *Felicia filifolia* are known to cause considerable habitat transformation leading to loss of biodiversity via bush encroachment (Ward, 2009; Avenant, 2015; Hae, 2016). The site's proximity to Excelsior has invited feral/stray animals such as dogs and cats. It is assumed that these animals are partly responsible for the low faunal diversity.

A biodiversity sensitivity rating was conducted to evaluate the current ecological condition and the site's sensitivity to development. The BSR evaluation concluded that the habitat is relatively transformed due to unregulated grazing, illegal dumping, and feral/stray animals; thus, the site is acceptable for development.

An impact assessment was performed and resulted in an overall low impact significance score. Even though the site is located in Gm3, which is declared an endangered vegetation type (DEA, 2016), the site's vegetation has been severely transformed and does not represent a pristine ecosystem. The outlying area does support aquatic and mountainous habitats; however, these are not included within the mining footprint and should not be affected. Owing to the site's high level of disturbance originating from anthropogenic activities, unregulated grazing, and exotic species, the overall impact of the proposed development on this ecosystem will be low. With adequate mitigation measures, the impacts emanating from the development will be very low.

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11. Appendices

11.1. Appendix 1: Impact assessment evaluation form

Table 16 description of the rating system used to evaluate the possible impacts concerned with the proposed development.

Geographical extend: This describes the spatial reach an impact might have.		
Score		
1	Site specific	The impacts will only affect the specific site.
2	Local	The impacts will affect the local area or district.
3	Provincial	The impacts will be recognised across most of the province.
4	International/ national	Will affect the entire country or other countries.
Probability: This describes the probability that a specific environmental impact will occur.		
1	Unlikely	Less than 25% chance of occurrence.
2	Possible	Between 25-50% chance of occurrence.
3	Most likely	50-75% chance of occurrence.
4	Definite	Greater than 75% chance of occurrence.
Duration: This describes the amount of time an environment will be affected by the impact.		
1	Short term	The impact will disappear very quickly, either through mitigation or through natural processes. The impact should have disappeared within 1 year.
2	Medium term	The impact will endure for a short while after the construction processes and will be mitigated by either human intervention or natural processes. The impact should have disappeared between 2-10 years. .
3	Long term	The impact will persist through the construction phase and disappear by either human intervention or natural processes in 10-30 years.
4	Permanent	Mitigation either by man or natural processes is highly unlikely. The impact will have permanently affected the environment.
Reversibility: Describes the potential of an impact to be entirely reversed after development.		
1	Entirely reversable	The impact is entirely reversible and can be achieved with minor mitigation measures.
2	Possibly reversable	The impact might be reversible. Suitable mitigation measures will increase the chances of reversibility and should be considered.
3	Barely reversible	It is unlikely that the impact will be reversed. Extreme mitigation measures might increase the chances of successful reversibility.
4	Irreversible	The impact is irreversible. No mitigation measures can reverse the effects on the environment.

Cumulative impacts: Describes the cumulative impacts of the proposed development, i.t.o. the development process and all activities emanating from the operation of the facility.		
1	Very low cumulative impact	The impact will result in no or minimal cumulative effects.
2	Low cumulative impact	The impact will result in an overall low cumulative effect.
3	Moderate cumulative impact	The cumulative impacts will have moderate levels of impact.
4	High cumulative impact	The cumulative impact will result in high to very high environmental effects.
Intensity: Describes the severity of the impact on the environment		
1	Low	The impact's effect on the system will be hardly noticeable, if at all. Rehabilitation measures have to be in place if required.
2	Medium	The impact will have a recognisable effect on the environment. However, system functionality will still be present with negligible effects on ecosystem integrity. Rehabilitation measures have to be in place.
3	High	The impact will severely affect ecosystem integrity and function. Rehabilitation will be costly, and extreme mitigation measures have to be in place.
4	Very high	The impact will result in the entire ecological breakdown of the system or components thereof. Rehabilitation will be costly with minimal chances of success. Extreme mitigation measures must be in place.

11.2. Appendix 2: Impact significance on the environment

Impact significance describes the overall environmental impact resulting from the cumulation of impact characteristics. Significance gives a judgement of the effect a development will have on the environment. Significance is calculated as the total score for each criterion (geographical extend + probability + duration + reversibility + cumulative impacts) multiplied by the intensity. A greater significance score results in an overall greater environmental impact and should be avoided or allowed with extreme mitigation measures in place. A lower significance score results in an overall lesser environmental impact and may be allowed with very little or no mitigation measures needed.

Table 17 impact significance evaluation form

Score	Impact significance rating	Description
5-19	Very low	Impact significance is of a very low order. Development is acceptable
20-34	Low	Impact significance is of a low order ,and development is acceptable.
35-49	Moderate	The impact will be recognisable and may pose a problem to the development.
50-64	High	The impact is substantial and will significantly affect the environment. Development is unacceptable.
65-80	Very high	The impact is of the highest possible order and will cause irrefutable damage to the environment. Development unacceptable.

11.3. Appendix 3: Species list

Species indicated with an * are exotic.

Protected species are coloured orange and Red Listed species red.

Table 18 species logged during the site visit of 02 July 2021.

Family	Species name	Invasive category
Aizoaceae	Chasmatophyllum musculinum	
Aizoaceae	Crassula capitella	
Aizoaceae	Ruschia hamata	
Anacaradiaceae	Searsia lancea	
Anacardiaceae	Searsia burchellii	
Anacardiaceae	searsia erosa	
Apiaceae	Heteromorpha arborescens	
Araliacae	Cussonia paniculata	
Asparagaceae	Asparagus laricinus	
Asparagaceae	Asparagus suaveolens	
Asphodelaceae	Aloe grandidentata	
Asteraceae	*Bidens bipinnata	
Asteraceae	Berkheya onopordifodia	
Asteraceae	Berkheya rigida	
Asteraceae	Chrysocoma ciliata	
Asteraceae	Conyza bonariensis	
Asteraceae	Felicia muricata	
Asteraceae	Helichrysum nudifolium	
Asteraceae	Pseudognaphalium luteo-album	
Asteraceae	Seriphium plumosum	
Asteraceae	Tagetes minuta	
Boraginaceae	Ehretia rigida	
Cactaceae	*Echinopsis oxygona	
Cactaceae	*Opuntia ficus-indica	(1b)
Crassulaceae	Cotyledon orbiculata	
Ebenaceae	Diospyros austro-africana	
Ebenaceae	Euclea crispa	
Fabaceae	Indigofera nigromontana	
Fabaceae	Melolobium candicans	
Malvaceae	*Malva parviflora	
Malvaceae	Grewia occidentalis	
Myrtaceae	*Eucalyptus camaldulensis	(2)
Myrtaceae	*Eucalyptus sideroxylon	(2)
Oleaceae	Olea europaea subsp. africana	
Papaveraceae	*Argemone uchroleuca	(1b)
Poaceae	Aristida congesta	
Poaceae	Chloris virgata	

Poaceae	Cymbopogon pospischilii	
Poaceae	Eragrostis curvula	
Poaceae	Eragrostis lehmanniana	
Poaceae	Eragrostis obtusa	
Poaceae	Sporobolus fimbriatus	
Poaceae	Themeda triandra	
Pteridaceae	Cheilanthes eckloniana	
Rosaceae	*Cotoneaster franchetii	(1b)
Rosaceae	*Pyracantha angustifolia	(1b)
Rubiaceae	Anthospermum rigidum	
Santalaceae	Osyris lanceolata	
Solanaceae	Lycium cinereum	
Solanaceae	Solanum lichtensteinii	
Verbenaceae	*Verbena bonariensis	(1b)

11.4. Appendix 4: Pictures

Figure 5 overgrazing by cattle (seen in the background) has led to considerable veld degradation. Uncovered soil patches are an erosion risk and add to the degraded state.

Figure 4 considerable sheet erosion present on the site.

Figure 6 a cluster of *Aloe grandidentata* growing in a clearing

FEASIBILITY STUDY

ENVIRONMENTAL MANAGEMENT GROUP

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Selected Borrow Pits on Municipal Lands

LICENSING OF GRAVEL BORROW PITS IN THE MANTSOPA LOCAL MUNICIPALITY

Geological Investigation of Ladybrand, Hobhouse, Excelsior and Tweespruit in the Mantsopa Local Municipality

June 2021

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Introduction

This document aims to list all the findings from the submitted report (*LICENSING OF GRAVEL BORROW PITS IN THE MANTSOPA LOCAL MUNICIPALITY: Geological Investigation of Ladybrand, Hobhouse, Excelsior and Tweespruit in the Mantsopa Local Municipality Version 2)* on the 11th May 2021. What follows are the identified and recommended areas in each of the four towns on municipal land, which show preferable properties for the establishment of borrow pits. For a detailed photographic reference please refer to the original report.

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Ladybrand

The following dolerite locations are located on municipal owned land:

Name	Coordinates	Farm Name	Municipal Land (Y/N)
AREA 1	-29.217332°S 27.473351°E	Dorp Gronden Ladybrand 451/RE	Yes
Expected Material Quality	**Distance from Town**	**Comments**	
Dolerite G5 – G6	11 km	Could be accessed from the R26 but a new access road needs to be constructed.	

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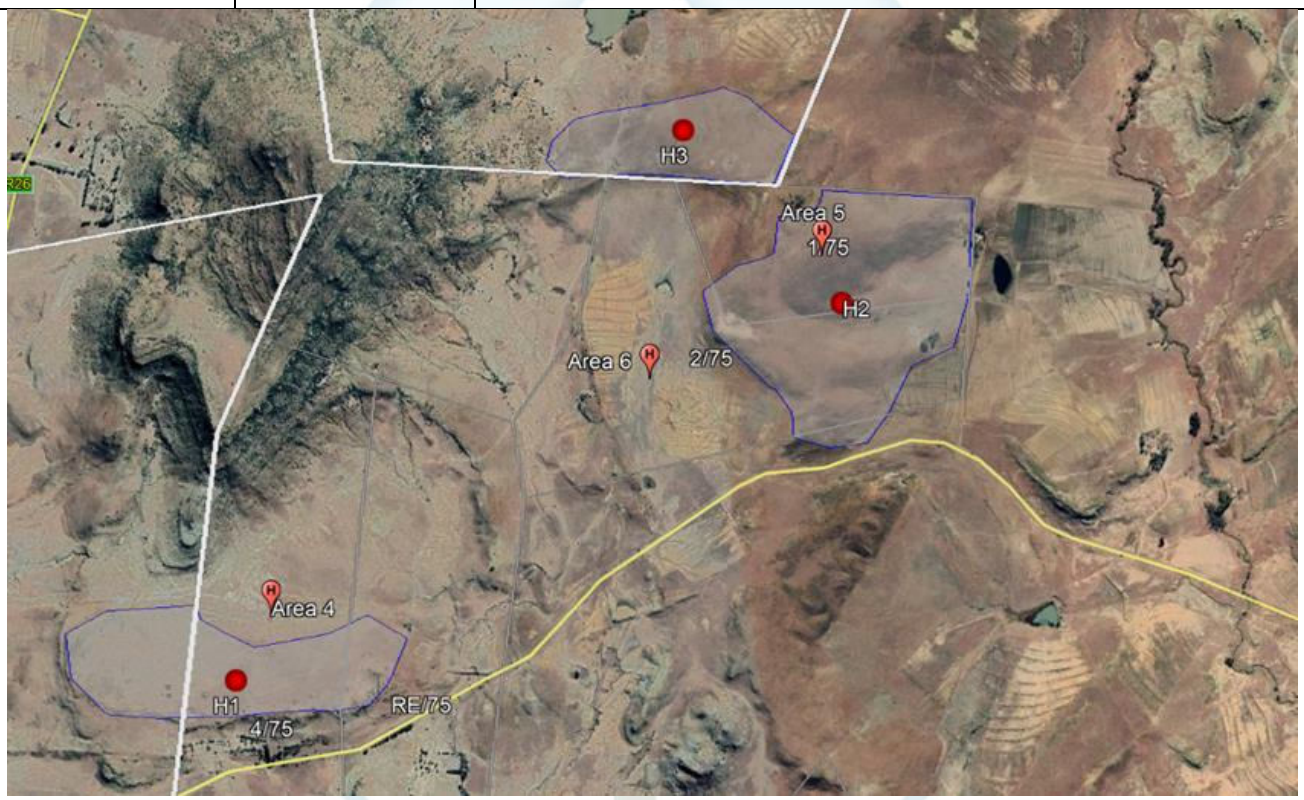
Hobhouse

The following dolerite locations are located on municipal owned land:

Name	**Coordinates**	**Farm Name**	**Municipal Land (Y/N)**
AREA H2 (Previous Study)	-29.504721°S 27.204248°E	Gorrastad 75/1,2,4	Yes
Expected Material Quality	**Distance from Town**	**Comments**	
Dolerite G5 – G6	6 km	A small access road needs to be constructed.	



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Excelsior

The following dolerite locations are located on municipal owned land:

Name	Coordinates	Farm Name	Municipal Land (Y/N)
AREA 2	-28.930791°S 27.086397°E	Excelsior 358/RE	Yes
Expected Material Quality	**Distance from Town**	**Comments**	
Dolerite G5 – G6	6.5 km	Resource is of limited extent	

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Tweespruit (Thaba Patchoa)

The following dolerite locations are located on municipal owned land:

No areas were identified on municipal land during the EMG feasibility study. It is recommended that the existing borrow pit, as brought to the attention of EMG by Mr Tsepo Selepe on the 7th June 2021, be used. The source is likely to be very low quality dolerite as numerous small borrow pits of low quality materials were opened next to the R 709 (in the immediate vicinity) leading to Thaba Patchoa from Tweespruit.

Name	**Coordinates**	**Farm Name**	**Municipal Land (Y/N)**
New area	-29.369998°S 27.104723°E	Mammas Hoek 802/RE	Yes
Expected Material Quality	**Distance from Town**	**Comments**	
Unknown. Probable low quality dolerite.	5.5 km	Not inspected during site feasibility study.	

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EARTHINVLAB

EARTH INVESTIGATION LABORATORIES
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P.O. Box 2856, Rosslyn, 0200
Tel: +27 (0)12 372 3023
Fax: +27 (0)86 241 3304
e-mail: admin@earthinv.co.za

TEST REPORT

REPORT # SL 05-27-04

CLIENT INFORMATION			
Client Name:	Environmental Management Group	**Client Number:**	247
Address:	41 Frans Kleinhans, Groenvlei,Bloemfontein	**Project Name:**	Free State Borrow Pit Investigation
Primary Contact Person:	CW Vermeulen	**Telephone Number:**	082 824 9308
Primary Contact email:	cwv@envmgp.com	**Fax Number:**	051 412 6351

SAMPLES/JOB INFORMATION			
Date Sampled:	15-Jun-21	**Date Received:**	15-Jun-21
Sampler:	Client	**Date Tested:**	17-Jun-21
Sample Location:	Borrow Pit Excel	**Date Reported:**	25-Jun-21
Sample Method:	TMH 5 MB 1	**Tests Conducted At:**	Kroonstad Laboratory
Sample Condition:		**Report Status:**	Final

TEST RESULTS SUMMARY

Test (s) Methods References	Test Method(s) Description (s)	Qty	Test Conducted by.
SANS 3001 - GR 1:2013	Wet preparation & particle size analysis	1	Kroonstad Laboratory
SANS 3001 - GR 10:2013	Determination of the one-point liquid limit, plastic limit, plasticity index & linear shrinkage	1	Kroonstad Laboratory
SANS 3001 - AG 20:2013	Determination of apparent bulk density and water absorption of aggregate particle retained on the 5 mm sieve for road construction	1	Kroonstad Laboratory
SANS 3001 - GR 30:2013	Determination of the max. dry density & opt. MC	1	Kroonstad Laboratory
SANS 3001 - GR 40:2013	Determination of the CBR	1	Kroonstad Laboratory
-			
-			
-			-

TEST RESULTS NOTES

Tests Deviations and Subcontracting - Test deviations indicated if any on the report and clearly communicated to Client.

Documents Reproduction - If a report is published or reproduced by the client, it will be done in full, without any omittance.

Report Status - Only final status results are to be good for publication.

Samples Received and Results Relation - Test results relate to sample received and to conditions thereof on receipt

Samples Retainment - If not specified by the Client, samples will be disposed off as per the Laboratories discretion

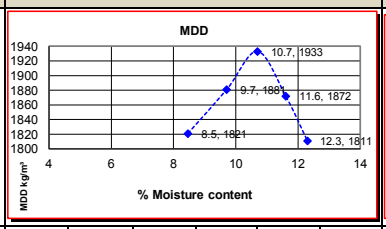
Opinions & Recommendations: Opinions & recommendations do not form part of the Labs accreditation schedule

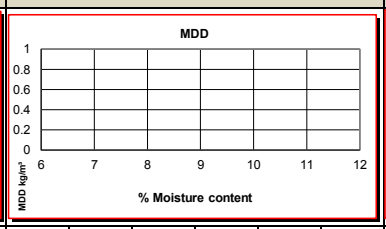
Earth Inv Lab

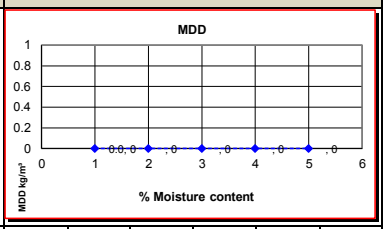
FINAL REPORT
(GRAD, ATT, MDD,CBR)

PROJECT:	Free State Borrow Pit Investigation		
REPORT #	SL 05-27-04		
SAMPLE #	1948		
POSITION:	Excel		
DEPTH:	0		
DATE:	17-Jun-21		
Description of Material	Light grey sandy gravel		

SIEVE ANALYSIS			
SIEVE SIZE (mm)			
% PASSING	100.0		
	75.0	100	
	63.0	100	
	50.0	91	
	37.5	70	
	28.0	60	
	20.0	54	
	14.0	48	
	5.0	40	
	2.0	37	
	0.425	34	
	0.075	14	
Grading Modulus (GM)		2.15	
SOIL MOTAR			
2.0 - 0.425		7	
0.425 - 0.250		4	
0.250 - 0.150		3	
0.150 - 0.075		2	
< 0.075		55	
ATTERBERG CONSTANTS			
Plasticity Index (PI)		4	
Linear Shrinkage (LS)		1.7	
Liquid Limit (LL)		19	
HRB Soil Classification		**A - 1 -b A - 2 - 4 0**	
TRH 14 Classification		**G7**	
COLTO Classification		**G7**	
MDD DATA			





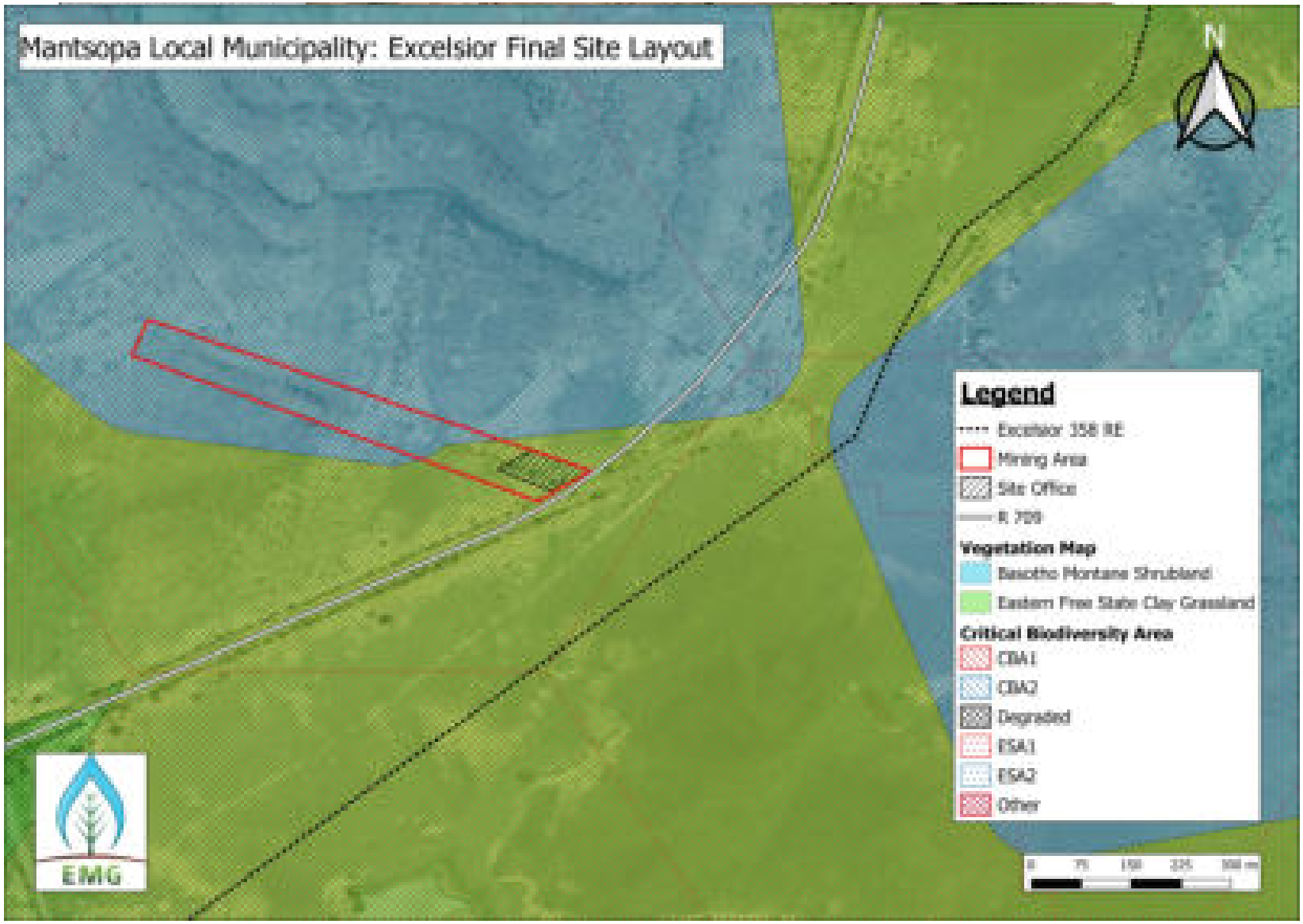


Wet Density (kg/m^3)	1975	2064	2140	2089	2038														
Dry Density(kg/m^3)	1821	1881	1933	1872	1811														
Moisture Content (%)	8.5	9.7	10.7	11.6	12.5														
MDD (kg/m^3)	1933		OMC %		10.7				OMC %						OMC%				
CBR DATA																			
Specimen	Specimen A		Specimen B		Specimen C														
Wet Density (kg/m^3)	2130		2025		1921														
Dry Density(kg/m^3)	1929		1824		1741														
Moisture Content (%)	10.4		11.0		10.3														
% Compaction Calculated	99.8		94.4		90.1														
CBR %	16.0		15.0		13.6														
% Swell Calculated	0.16		0.21		0.28														
Compaction %	100	98	97	95	93	90	100	98	97	95	93	90	100	98	97	95	93	90	
CBR Values	16	16	16	15	15	14													
Remarks:																			

Signed by:David Nkoane
Signed at:2021-06-30 17:36:43 +02:00
Reason:Technical Signatory

APPENDIX 7

Final Site Map


Mantsopa Local Municipality: Excelsior Final Site Layout
N
Legend
Excelsior 358 RE
Mining Area
Site Office
R 709
Vegetation Map
Basotho Montane Shrubland
Eastern Free State Clay Grassland
Critical Biodiversity Area
CBA1
CBA2
Degraded
ESA1
ESA2
Other
EMG

APPENDIX 8

FINANCIAL PROVISIONS QUANTUM CALCULATION

Identification of Closure Components for Excelsior 5 ha area					
\	Description	Site Specific Activities	Applicability of closure components		Motivation
			Open-Cast		
1	Dismantling of processing plant and related structures(including overland conveyors and power lines)	Removal of steel containers	YES	_	This activity will be the sole responsibility of the contractor. As this activity is part of rehabilitation the costs will be included in the financial provision.
		Removal of general waste			
		Labour Costs			
		Levelling of site			
2(A)	Demolition of steel buildings and structures	/	_	NO	No such infrastructure exisits or was used. Steel containers were used as office buildings.
2(B)	Demolition of reinforced concrete buildings and structures	/	_	NO	No such infrastructure exisits or was used. Steel containers were used as office buildings.
3	Rehabilitation of access roads	Hire of equipment (contractor has this equipment on site).	YES	_	200 m gravel access road will need to be rehabilitated.
		Fuel Costs			
		Ripping and Seeding			
		Labour Costs			
4(A)	Demolition and rehabilitation of electrified railway lines	/	_	NO	None such infratructure exists on site.
4(B)	Demolition and rehabilitation of non-electrified railwaylines	/	_	NO	None such infratructure exists on site.
5	Demolition of housing and facilities	/	_	NO	None such infratructure exists on site.
6	Opencast rehabilitation including final voids and ramps	/	_	NO	The strip mining activities will not exceed 5m in depth and thus no ramps or final voids will be present.
7	Sealing of shafts, adits and inclines	/	_	NO	No such infrastructure exisits or was used due to the shallow nature of the mining activities.
8(A)	Rehabilitation of overburden and spoils	Hire of equipment (contractor has this equipment on site).	YES	_	The desired sand which is extracted will range from 1 -2 m leaving spoils and overburden (undesirable sands and gravels) of around 4 m to be placed back into the voids.
		Fuel Costs			
		Labour Costs			

8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	/	_	NO	Not applicable to the operation
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	/	_	NO	Not applicable to the operation
9	Rehabilitation of subsided areas	/	_	NO	Rehabilitation will be shallow and overburden, spoils and topsoil will be levelled. Due to the shallow nature of rehabilitation no subsidance is predicted.
10	General surface rehabilitation, including grassing of all denuded areas	Ripping and Seeding Alien Vegetation Removal Fuel Costs Labour Costs	_	NO	Only levelling of the open cast borrow pit area will be required.
11	River diversions	/	_	NO	Not applicable to the operation
12	Fencing	/	YES	_	Fencing will be a permanent fixture before mining commences and after rehabilitation has been completed.
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	/	_	NO	Not applicable to the operation as not polluted or hazardous waste will be produced.
14	2 to 3 years of maintenance and aftercare	Annual Rehabilitation Monitoring Final Close Out Report	YES	_	The reports will compiled according to environmental regulations as well as the EMP and Rehabilitation Plan.

Final Closure Components for Excelsior 5 ha area							
Item	**Description**	**Activity Requirements**	**Units**	**Cost**	**Quantity**		**Total**
1	Dismantling of processing plant and related structures(including overland conveyors and power lines)	Removal of steel containers (including general waste)	day	R2 000.00	1		R2 000.00
		Fuel Costs	Litres	R17.20	50		R860.00
		Labour Costs	day	R200.00	4		R800.00
		Levelling of site	day	R2 000.00	1		R2 000.00
						Total 1:	**R5 660.00**
3	Rehabilitation of access roads	Equipment Costs	No costs will occur as contractor has equipment readily avaliable		0		R0.00
		Fuel Costs	Litres	R17.20	244		R4 196.80
		Labour Costs (Ripping and levelling)	day	R200.00	4		R800.00
						Total 2:	**R4 996.80**
8(A)	Rehabilitation of overburden and spoils	Hire of equipment (contractor has this equipment on site).	No costs will occur as contractor has equipment readily avaliable		0		R0.00
		Fuel Costs	Litres	R17.20	570		R9 804.00
		Labour Costs	day	R200.00	16		R3 200.00
						Total 3:	**R13 004.00**
12	Fencing	Material	per meter	R 20.00	300		R6 000.00
		Labour	day	R 200.00	2		R400.00
						Total 4:	**R6 400.00**
14	2 to 3 years of maintenance and aftercare	Rehabilitation Monitoring and Close Out	Fixed	R15 000.00	1		R15 000.00
						Total 5:	**R15 000.00**

SUB TOTAL 1 (Total 1 - 5)	**R45 060.80**
10 % Management and Contingency of SUB-TOTAL 1	R4 506.08
SUB-TOTAL 2	**R49 566.88**
VAT @ 15%	R7 435.03
GRAND TOTAL	**R57 001.91**

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FINANCIAL AND TECHNICAL ABILITY, EXCELSIOR 358 RE, EXCELSIOR, FREE STATE

19 July 2021

Department of Mineral Resources – Free State
The Strip, 314 C/O Stateway & Bok Street
WELKOM
9459
Telephone: (057) 391 1300
Email: Kalipa.Kewuti@dmre.gov.za

Attention: Ms Kalipa Kewuti

The applicant is an organ of state (Mantsopa Local Municipality), as such financial and technical ability cannot be submitted as part of the application.

This Mining Permit Application is lodged for the legal registration of a borrow pit to be used for road construction and maintenance of roads and infrastructure within Excelsior area. As such, the applicant will not actually extract material for the borrow pit themselves, but rather contracts will be awarded to successful bidders when road construction and maintenance projects are available. The contractor will then be responsible for the extraction of material as well as the rehabilitation of the borrow pit. The conditions and recommendation of the EMPr of this application will be imposed upon the contractor once a project has been awarded. It will then be the responsibility of the Municipality to ensure that the successful contractor adheres to the conditions of the EMPr and the Environmental Authorisation.

Due to the fact that the applicant is an organ of state, and that contractors will undergo a procurement process before appointment and before use of the borrow pit. The applicant can guarantee Financial and Technical Ability, since a contractor's Financial and Technical Ability will be a prerequisite for all contracts where the said borrow pit will be utilised.

Yours Faithfully

CW Vermeulen

Environmental Management Group.

APPENDIX 9

REHABILITATION AND CLOSURE PLAN

REHABILITATION AND CLOSURE PLAN

1. INTRODUCTION

Quarrying operations are finite economic activities, which is usually relatively short term. The long term environmental and social performance of a site is noticeable once mine closure and mine site operations have ceased, however the environmental, social and economic impacts are determined by the processes and procedures which occur during both the mining and mine closure phase.

The mine operator must perform progressive rehabilitation as material extraction is done. Progressive rehabilitation means rehabilitation done sequentially within a reasonable time after extraction of resources is complete. As one area of their mine is being extracted, rehabilitation must be completed in the areas where the mine reserves have been stopped or exhausted. Progressive rehabilitation is beneficial in many ways as it reduces the open areas within a mine, reduces soil erosion potential and reduces double-handling of soils and spoil material.

2. REGULATORY REQUIREMENTS AND SPECIAL CONDITIONS

The following key regulatory requirements and conditions were documented for closure in the environmental management program:

- Mineral and Petroleum Resources Development Act (Act 28 of 2002)
- Mine Safety and Health Act, 1996 (Act 29 of 1996)
- The National Water Act, 1998 (Act 36 of 1998)
- The Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983).
- National Environmental Management Act (Act 107 of 1998)

The summary of the regulatory requirements pertaining to closure mentioned in the Environmental Management Program are:

a) All waste to be disposed of at authorised disposal sites.
b) No ponding of water will be allowed to limit drainage disruption and the risk of groundwater pollution.
c) The mined areas are to be landscaped to a profile in line with the surroundings.
d) On completion of the mining process all topsoil should be spread back on disturbed surfaces to enable vegetation to grow again.

3. KEY OBJECTIVES OF CLOSURE

The closure management objectives take into account the existing environment, environmental impacts and the expectations at closure. To ensure that the closure objectives are informed by the type of environment, the anticipated impacts and damage at closure, the sensitivity of the area and expected post closure land use were taken into account. In doing so, principles of integrated environmental management were taken into account together with the principles of sustainable development. The closure objectives are:

- To create a post mining environment that eliminates unacceptable health hazards and ensures public safety.
- To leave the site in a stable, non-polluting and tidy condition with no remaining plant or infrastructure that is not required for post mining operational use.
- To minimise or eliminate the downstream environmental impacts on the ecosystem due to interruption of drainage once the mine operations cease.
- To rehabilitate the disturbed areas to an end land use similar to that prior to commencement of any mining activities as far possible; in this case grazing land.
- To establish a stable post-mining land surface which has been rehabilitated.

4. MECHANISMS FOR MONITORING COMPLIANCE

Effective monitoring, review and evaluation provide information on emerging issues, improve performance and ensure accountability of the closure activities. Photographs of the camp and office sites, before and during the mine operational period and after rehabilitation, shall be taken at selected fixed points and kept on record.

4.1. MONITORING

Successful monitoring delivers timely and relevant information that allows tracking of progress towards outcomes and allows adjustments to implementation arrangements as necessary. The day-to-day monitoring and verification that the EMPr and Closure and Rehabilitation Plan are being adhered to shall be undertaken by the Contactor or mine operator appointed by the Mantsopa local municipality.

4.2. REVIEWING AND AUDITING

An independent Environmental Control Official shall visit the site quarterly during the closure and rehabilitation process to ensure that the provision of closure and rehabilitations are being met. A report on non-conformances observed will be made and submitted to the applicant. Reviews of the closure plan and financial provisions will be made yearly to ensure that the plan is relevant and adequate.

5. LAND END –USE PLAN

The proposed mining area is located on farmland currently used primarily for grazing. At the end of the closure after vegetation has been re-established, the area will revert back to an open area grazing land.

6. TIME FOR IMPLEMENTING THE CLOSURE PLAN

The closure and rehabilitation activities are to be implemented immediately at the cessation of the extraction of quarry material from the proposed mine/quarry.

7. ENVIRONMENTAL RISK REPORT.

A risk assessment will be taken at the end of the mining period. The purpose of this risk assessment will identify the risks present at the closure of the mine/quarry, to evaluate them and have management measures in place so as to eliminate the risk or reduce the risks to levels that are in line with legal requirements, acceptable to the community and have long term sustainability.

8. FINAL ENVIRONMENTAL PERFORMANCE ASSESSMENT

A final environmental performance assessment is to be done at the end of the mining of the quarry. The scope of the performance assessment is to identify any deviation from the Environmental Management Program measures and any outstanding issues regarding the final rehabilitation of the mined site.

9. REHABILITATION MEASURES

9.1. PROGRESSIVE REHABILITATION

Mining is to be done in sections to allow progressive rehabilitation during mining to take place. If during mining of the quarry it is deemed that the mined section will no longer be mined again, then the area can be rehabilitated as after cessation of the mining of the section. The area is to be properly profiled and the sides sloped and smoothened. This is done in order to improve the visual impact of the area and to simplify the management of storm water runoff and improve slope safety. Top soil is to be put back on the disturbed surfaces to enable the re-vegetation process to take place.

9.2. REHABILITATION OF ACCESS ROADS

- Whenever the mine is suspended, cancelled or abandoned any access road or portions thereof, constructed by the holder of the environmental authorisation and which will no longer be required by the landowner, shall be removed and rehabilitated to the satisfaction of the owner.
- Any gate or fence erected by the appointed mine operator which is not required by the landowner/tenant, shall be removed and the situation restored to the pre-mine situation. However the pit fence should be left intact until all the vegetation has fully recovered on site and the area is safe.
- Roads shall be ripped or ploughed, and if necessary, appropriately fertilised (based on a soil analysis) to ensure the regrowth of vegetation. Imported road materials which may hamper regrowth of vegetation must be removed and disposed of in an approved manner prior to rehabilitation.

- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the soil must be analysed and any deleterious effects on the soil arising from the quarry, be corrected and the area be seeded with a seed mix which is similar with the vegetation of the area.

9.3. OFFICES, STORAGES AREA AND PLANT STRUCTURES

- On completion of operations, all buildings, structures or objects on the site shall be demolished and removed.
- Where office/camp sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- On completion of mine operations, the above areas shall be cleared of any contaminated soil, which must be disposed of through a licensed disposal facility or operator.
- All infrastructure, equipment, plant and other items used during the mining period will be removed from the site
- Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the mining area and disposed of at a registered waste disposal facility. It will not be permitted to be buried or burnt on the site.
- Photographs of the sites, before and during the mining and after rehabilitation, shall be taken at selected fixed points and kept on record.
- The surface shall then be ripped or ploughed and the topsoil previously stored shall be spread evenly to its original depth over the whole area. The area shall then be fertilised if necessary (based on a soil analysis).
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, there might be need for the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be re-seeded with a suitable vegetation seed mix that is matches the local flora.

9.4. REHABILITATION OF EXCAVATION AREAS

- Excavated areas should be kept in a safe and stable manner. No unstable block should be present. Reshaping of the excavated area may need to be done to ensure that this objective is reached.
- Preventative measures may be necessary during closure to construct adequate drainage structures including ditches and other structures to facilitate the movement of surface water and prevent damming. An assessment will need to be done when mining has ceased to determine if there is need for such measures. The objective of these measures is to avoid water build-up that affects the physical stability of the slopes and also interferes with the drainage of the whole area.
- The excavated area must serve as a final depositing area for the placement of overburden and un-used material.

- Rocks and coarse material removed from the excavation must be backfilled into the excavation. General waste and hazardous waste will not be permitted to be deposited in the excavations.
- Once excavation parts that can be filled have been refilled with overburden, rocks and coarse natural materials and profiled with acceptable contours and erosion control measures, the topsoil previously stored shall be returned to its original depth over the area.
- The area shall be fertilised if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, there may be need for the soil to be analysed and any deleterious effects on the soil arising from the quarry, be corrected and the area be seeded with a vegetation seed mix that matches the local indigenous flora.

The environment affected by the operations shall be rehabilitated, as far as is practicable, to its natural state or to a predetermined and agreed standard or land use which conforms with the concept of sustainable development. The affected environment shall be maintained in a stable condition that will not be detrimental to the safety and health of humans and animals and that will not pollute the environment or lead to the degradation thereof. The rehabilitation activities shall require the re-planting of vegetation in areas cleared for the mine activities. This will promote soil stability, improve the visual environment and provide faunal habitat into the operation stage.

10. MANAGING IMPACTS ARISING FROM UNDERTAKING CLOSURE ACTIVITIES

The undertaking of the closure and rehabilitation activities is not expected to generate additional impacts that are different from the ones generated during the operational stage of the mine. The impact mitigation and management measures that are provided in the environmental management program are deemed adequate to manage the impacts arising from the closure process itself. However in the event those additional new issues are noted, appropriate mitigation will be put in place to manage the impacts.

11. LONG TERM MANAGEMENT AND MAINTENANCE AFTER CLOSURE

No long term monitoring and maintenance is expected. There is no risk of acid mine drainage.

12. PUBLIC PARTICIPATION PROCESS FOR CLOSURE PLAN

The public participation process for the closure plan was done as part of the basic assessment process and the details are provided for in Appendix 3.

13. FINANCIAL PROVISIONS FOR CLOSURE

No financial provision will be submitted by the Mantsopa Local Municipality. The rehabilitation and the subsequent costs will all be the responsibility of the contractor, which will be overseen by an Environmental Compliance Officer and DMR.

14. CONCLUSION

Proper profiling of the disturbed areas and re-vegetation of the areas will result in proper rehabilitation of the mined areas. The closure plan serves to provide details of the closure activities to be undertaken based on the anticipated mode of operation of the mine/quarry. It is expected that adequate implementation of the closure activities as stated in this document will minimise the negative impacts of the mine/quarry on the environment and enable a self-sustaining ecosystem to be re-established. If during the closure stage any unanticipated aspects occur, these should be assessed immediately and adequate mitigation measure implemented to minimise their effect at and after closure.

APPENDIX 10

ENVIRONMENTAL MONITORING PLAN

ENVIRONMENTAL MONITORING PLAN

INTRODUCTION.

A number of potential environmental impacts, mitigation measures and environmental management controls are laid out in this document. The effective implementation and monitoring of the EMPr requires the involvement of several stakeholders, each fulfilling a different but vital role to ensure sound environmental management during the project life cycle. The key roles for the successful implementation of the mitigation of the project are the Applicant, the appointed contractor or operator of the mine and the independent environmental control officer.

The Applicant – Mantsopa Local Municipality.

It is the responsibility of the project applicant to ensure that the mitigation on all work is compliant with the requirements of the EMPr. The applicant shall ensure that competent people are employed on the project by its contractor. Where necessary a skills development program will be instituted to ensure that the required levels of competency are attained. The applicant should ensure that the selected contractor is able to adequately deal with the environmental challenges in this project.

The Appointed Contractor/ Operator

The contractor refers to the team/company appointed by the Applicant to undertake the developmental activities for the mine/quarry. The word contractor and quarry operator is used interchangeably in the document. The Contractor shall have the following responsibilities:

- To implement all provisions of the EMPr and ensure that the appropriate levels of measuring and monitoring are done.
- To ensure that all staff and sub-contractors are familiar with the EMPr and that duties and responsibilities of employees working on site include environmental responsibilities pertaining to the nature of their work.
- To make personnel aware of environmental issues and to ensure they show adequate consideration of the environmental aspects of the project.
- To report any incidents of non-compliance with the EMPr to the ECO and the applicant.

The Independent Environmental Control Officer (ECO)

In order to ensure compliance and ensure that adequate monitoring and auditing is done of the mining activities, the applicant shall appoint an independent Environmental Control Officer (ECO) to monitor the implementation of the recommendations made herein. The ECO must undertake monthly audits in respect of compliance with the EMPr and report to the applicant and the contractor/quarry operator if areas of non-conformance are identified. The ECO shall also inform the applicant and its contractors/quarry operators on any identified opportunities for improving environmental performance.

MONITORING MATRIX

The expected monitoring requirements are shown in the Table provided.

	ISSUE	MONITORING METHODOLOGY	MONITORING FREQUENCY	RESPONSIBILITY
A	**Social Issues**			
	Community Complaints	Recording No. Of complaints received	Monthly record of incidents	Contractor
	Fair Labour Recruitment	Recording Local Vs Migrant labour	Monthly key labour statistics	Contractor
B	**General Site Issues**			
	Location of parking, offices etc.	Visual check of site suitability	At start-up	Contractor
	Vegetation Clearance	Areas cleared	At start up, Ongoing during life of Mine (LOM)	Contractor
	Surface or gully erosion on site	Visual check of surfaces	Ongoing during LOM. Record NCs Monthly	Contractor
	Adequacy of fencing and beacons	Visual check of integrity of fencing	Ongoing during LOM. Record NCs Monthly	Contractor
	Suitability of storage areas for waste	Check no. of receptacles and bunding	Ongoing during LOM, Record NCs Monthly	Contractor
	Fire Breaks	Visual check	Ongoing during LOM, Record NCs Monthly	Contractor
	Proper functioning of sanitation facilities	Check that there is no overflows & effluent spillages	Ongoing during LOM, Record NCs Monthly	Contractor
	Control of Fires/Prevention of burning	Monitor incidences of non-compliance Check that firefighting equipment is serviced	Ongoing during LOM, Record NCs Monthly	Contractor
	Overall appearance of site/housekeeping	Visual check of litter and order	Ongoing during LOM, Record NCs Monthly	Contractor
C	**Worker conduct**			
	General environmental awareness training	Record people and issues trained	At recruitment and start-up, then as necessary Keep training records	Contractor
	Prohibition of hunting and gathering	Monitor incidences of non-compliance	Ongoing during LOM, Record NCs Monthly	Contractor
	Limitation of access to operational mine areas.	Monitor incidences of non-compliance	Ongoing during LOM, Record NCs Monthly	Contractor
D	**Equipment Maintenance**			
	Adequate Maintenance of Vehicles	Check compliance with schedule	Ongoing during LOM, Keep monthly maintenance records	Contractor
	Oil Leaks and spills clean-up	Monitor incidences of non-compliance	Ongoing during LOM, Record NCs Monthly	Contractor
	Excessive vehicular emissions control	Monitor incidences of non-compliance	Ongoing during LOM, Record NCs Monthly	Contractor

	ISSUE	MONITORING METHODOLOGY	MONITORING FREQUENCY	RESPONSIBILITY
E	**Material Storage**			Contractor
	Suitability of storage facilities	Record material usage Check receptacles and bunding integrity	Ongoing during LOM, Keep monthly usage records	Contractor
F	**Waste Management**			
	Efficiency of collection of waste streams	Record waste disposed	Ongoing during LOM, Record Monthly disposal	Contractor
	Adequacy of storage receptacles	Visual checks	Ongoing during LOM, Record NCs Monthly	Contractor
	Containment of liquid waste	Visual checks of leakages & bunding	Ongoing during LOM, Record NCs Monthly	Contractor
	General Cleanliness of area	Visual checks of no littering	Ongoing during LOM, Record NCs Monthly	Contractor
	Containment of contaminated waste	Visual check of bunding & receptacles	Ongoing during LOM, Record NCs Monthly	Contractor
G	**Excavations, Exposed Surfaces, screening**			
	Stability of slopes	Visual checks of cracks and failure signs	Ongoing during LOM, Record NCs Monthly	Contractor
	Safety signs and demarcations	Visual checks of integrity	Ongoing during LOM, Record NCs Monthly	Contractor
	Adequacy of site drainage	Check that storm water is moving freely	Ongoing during LOM, Record NCs Monthly	Contractor
	Dust Suppression on dust generating area	Check adequacy of water spraying	Ongoing during LOM, Record NCs Monthly	Contractor
	Surface erosion on site	Visual check of surfaces	Ongoing during LOM, Record NCs Monthly	Contractor
H	**Water**			
	Cleaning up of contaminated soils	Report incidences of non-conformances	Ongoing during LOM, Record NCs Monthly	Contractor
	Water Consumption at site	Report amount of water used	Ongoing during LOM, Record NCs Monthly	Contractor
I	**Drilling and Blasting**			
	Dust Suppression	Visual check before & after blasting Record key parameters	Ongoing during LOM, Record NCs Monthly	Contractor
	Warning of workers and public	Check signs and documents before blasting.	Ongoing during LOM, Record NCs Monthly	Contractor
J	**Final Rehabilitation**			
	Removal of infrastructure	Visual check of removal, Keep removal records	At decommissioning, Record of Disposal	Contractor
	Rehabilitation of access roads	Visual check	At decommissioning, Record NCs Monthly	Contractor

	ISSUE	MONITORING METHODOLOGY	MONITORING FREQUENCY	RESPONSIBILITY
	Removal of contaminated soils	Record disposal record	At decommissioning, Monthly disposal record	Contractor
	Reshaping of the quarry and stabilisation	Visual check	At decommissioning	Contractor
	Establishment of adequate drainage structure	Visual check of non-pooling	At decommissioning, Record NCs Monthly	Contractor
	Replanting with indigenous local species	Record areas planted	At decommissioning, Keep record of action done	Contractor
	Checking the re-vegetation efforts	Visual check	Quarterly thereafter	Contractor

APPENDIX 11

ENVIRONMENTAL AWARENESS PLAN

ENVIRONMENTAL AWARENESS AND TRAINING PLAN

1. Introduction

The successful implementation of the EMP is hinged on adequate environmental awareness training of employees. The workforce needs to understand their role in the achievement of the objectives specified in the EMPr. All operational staff should be provided with environmental awareness training and employees who require specialised training in line with the nature of their job should be provided with such training.

2. What the training and awareness should cover.

Mining employees and subcontractors are required to attend a site induction addressing environmental issues prior to commencing duties. Environmental content to be covered include:

- Making employees aware that everyone has a right to a clean environment and that everyone has a responsibility to protect the environment.
- Explanation of the importance of complying with the EMPr
- Discussion of the potential environmental impacts of mining activities and mitigation measures that must be implemented when carrying out activities
- Explanation of the management structure of individuals responsible for matters pertaining to the EMPr.
- Employees' roles and responsibilities, including emergency preparedness.
- Explanation of the specifics of the EMPr and its specification.

It is recommended that a short induction lecture on environmental awareness be done on all workers including contractors and casual workers who will work at the mine. The topics covered are to include the following environmental topics:

- Waste management -
- Artefacts
- Storage of hazardous materials
- Fires
- Importance of good house keeping
- Noise
- Importance of water conservation
- Dust management
- And emphasize importance of minimizing vegetation removal and rehabilitation

The training should include showing on the site area, areas where vegetation clearance is not to be done, showing the personnel No Go areas, locations for stockpiles and access roads to be used.

Training can be done either in a written or verbal format but will be in an appropriate format for the receiving audience. A record of people who have been trained and the training done shall be kept

3. Training on Emergencies.

All personnel should be trained on how emergencies on site will be handled.

- The contractor / quarry operator should identify all situations that can lead to emergency situations and provide response strategies. The situations should include fire and major chemical spill.
- Contact details of all departments/service providers to be contacted in case of an emergency shall be made available to employees.
- Equipment for dealing with emergencies such as spill kits, firefighting equipment, first aid boxes etc. shall be made available and personnel properly trained in its use.
- All staff on site should be trained on how to handle emergency situations and emergency drills/ rehearsals should be conducted periodically to ensure that staff is prepared.

APPENDIX 12

Property Title Deeds Details

358 WINBURG RD, P:0 (BLOEMFONTEIN)

Deeds Office Property Farm

Suite G01, Waterview 2, Waterview Close, Century City
Tel: +27 860 340 000
Website: https://www.searchworks.co.za

SEARCH INFORMATION

Summary

Search Type	DEEDS OFFICE PROPERTY FARM
Search Description	358 WINBURG RD, P:0 (BLOEMFONTEIN)
Reference	CHRISTIEN
Date	12/04/2021

FARM INFORMATION

Summary

Deeds Office	BLOEMFONTEIN
Property Type	FARM
Farm Name	EXCELSIOR
Farm Number	358
Portion Number	0 (REMAINING EXTENT)
Previous Description	-
Registration Division	WINBURG RD
Municipality	NOT AVAILABLE
Province	FREESTATE
Diagram Deed	G00/1875
Size	771.0415 DUM
LPI Code	F04200000000035800000

OWNER SUMMARY

Owner Name	ID / Reg. Number	Purchase Price	Purchase Date
MANTSOPA LOCAL MUNICIPALITY	-	CRT	UNKNOWN

OWNER INFORMATION

Owner 1 of 1

Owner Name	MANTSOPA LOCAL MUNICIPALITY
ID / Reg. Number	-
Owner Type	COMPANY
Title Deed	T1586/1913
Purchase Date	UNKNOWN
Registration Date	17/05/1913
Purchase Price	CRT
Multiple Owners	NO
Multiple Properties	NO
Share	-
Microfilm Reference No.	2003 03810065

ENDORSEMENT(S)

Document Number	Microfilm Reference Number	Institution	Value
EX232/2014	-	173/8/200/199	UNKNOWN
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I-1386/2020C	-	VA-PENDING T21227/09-20200601	UNKNOWN
I-2302/2008C	2008 0187 4188	T1586/1913	UNKNOWN
I-4324/2009C	-	-	UNKNOWN
K1438/1993S	-	-	UNKNOWN
K173/1989S	-	-	UNKNOWN
K354/1993S	-	-	UNKNOWN
K624/2016S	-	-	UNKNOWN
VA1155/2003	2003 03810060	MANTSOPA LOCAL MUNICIPALITY	UNKNOWN
VA1433/2009	-	MANTSOPA LOCAL MUNICIPALITY	UNKNOWN
VA2066/2016	-	MANTSOPA LOCAL MUNICIPALITY	UNKNOWN
VA546/1999	-	MANTSOPA LOCAL MUNICIPALITY	UNKNOWN
172/1968S	-	-	UNKNOWN
NOW EXCELSIOR	-	-	UNKNOWN
WINBURG RD,358	-	-	UNKNOWN

HISTORY INFORMATION

Document Number	Microfilm Reference Number	Owner	Value
No information available.			

INTERNAL ENQUIRY HISTORY

Company Name	Contact Person	Contact Number	E-mail Address	Enquiry Date
No information available.				

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Report Type	DEEDS OFFICE PROPERTY FARM

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COPY OF RESOLUTION, MAMMA HOEK 802, TWEESPRUIT, FREE STATE

19 July 2021

Department of Mineral Resources – Free State
The Strip, 314 C/O Stateway & Bok Street
WELKOM
9459
Telephone: (057) 391 1300
Email: Kalipa.Kewuti@dmre.gov.za

Attention: Ms Kalipa Kewuti

The property on which the proposed borrow pit will be situated (Mamma Hoek 802) is state owned land, as such no resolution is required. The applicant is an organ of state (Mantsopa Local Municipality)

Yours Faithfully

CW Vermeulen

Environmental Management Group.

APPENDIX 13

Legislative Context

NEMA Listing Notice 1, Activity No. 21, GNR 327 of 7 April 2017

NEMA Listing Notice 1, No. 27 of 327 of 7 April 2017

Mineral and Petroleum Resources Development Act, No. 28 of 2002 (as amended)

National Environmental Management Act, No. 107 of 1998 as amended