



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

DRAFT BASIC ASSESSMENT REPORT
and
DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT
for
IMERY'S REFRACTORY MINERALS SOUTH AFRICA: CAPE BENTONITE MINE
APPLICATION FOR AMENDMENT IN TERMS OF SECTION 102 OF THE MINERAL AND
PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (ACT 28 of 2002) AS
AMENDED: TO MINE FOR BENTONITE AND ZOELITE ON
ERF RE/1412 AND ERF 3264 (PREVIOUSLY ERF 1412)
HEIDELBERG, WESTERN CAPE

SUBMITTED FOR AMENDMENT OF 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: Imerys Refractory Minerals South Africa (Pty) Ltd t/a Cape Bentonite Mine

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DMR REFERENCE NUMBER: WC30/5/1/2/2/10076 MR-00108- MR/102

DATE: 27 July 2026

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.

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PART A

SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

a) Details of the EAP

i) Name and Contact Details of the EAP

Name of The Practitioner: Johmandie Pienaar
Tel No.: 072 240 3092
Fax No.: 086 435 4691
e-mail address: johmandie@enviro-eap.co.za

ii) Expertise of the EAP.

The qualifications of the EAP (with evidence).

Registered as a professional environmental assessment practitioner with EAPASA
Registration Nr. 2020/2326

Johmandie Pienaar (Giliomee) holds a Baccalaureus Technologiae Degree (Cum Laude) in Nature Conservation from the Cape Peninsula University of Technology and has also completed the following short courses at the Centre for Environmental Management:

- Implementing Environmental Management Systems (ISO 14001)(2009);
- Occupational Health and Safety Law for Managers (2010);
- Implementing an OHS Management System based on OHSAS 18001 (2010) and;
- Occupational Health and Safety Management System OHSAS 18001 Audit: A Lead Auditor Course Based on ISO 19011 and ISO 17021 (2011).
- Conduct Outcome Based Assessment (May 2015).

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

Johmandie has been involved in environmental management and assessment aspects since 2005 having worked for South African National Parks and then as an private Environmental Manager for an estate in the Swartland.

Since March 2009 Johmandie has been practicing as an Environmental Assessment Practitioner, as part of an environmental consultancy company, on several projects throughout South-Africa and mainly within the Western Cape.

Johmandie has also been involved in successfully compiling, coordinating and managing Basic Assessment Reports, Environmental Impact Assessments, Section 24G Applications, NEMA EIA Checklists, Environmental Management Programmes, Waste License Applications, Water Use License Applications, Mining Right and Prospecting Right Applications, Environmental Rehabilitation Plans, Baseline Biodiversity Surveys for numerous clients.

Johmandie has also conducted and completed numerous Environmental Control Officer jobs, and since 2011 been involved in Occupational Health and Safety Auditing, Managing and Training specializing in the auditing of construction sites and implementing and auditing Occupational Health and Safety Management Systems, and providing training on the implementation of Occupational Health and Safety Management System OHSAS 18001.
(Refer to **Appendix A** for EAP CV)

b) Location of the overall Activity.

Farm Name:	Remaining Extent of Erf 1412 and Erf 3264 (previously Erf 1412)
Application area (Ha)	<u>Total properties sizes:</u> Erf RE/1412 – 245ha Erf 3264 – 94ha <u>Total area of rehabilitated Authorised Quarries:</u> Phases 1-15: 16.63ha <u>Authorised Quarry Mined and Currently Under Rehabilitation:</u> Phase 20: 1ha <u>Authorised Quarries still to be mined:</u> Phase 16: 1ha Phase 17: 0.3ha Phase 18: 0.34ha Phase 19: 0.32ha Phase 21: 0.73 <u>Additional Quarries Proposed:</u> Phase 22: 1.49ha Phase 23: 1.24ha Phase 24: 0.7ha Phase 25: 0.78ha <u>Total Mining Activities Area: ±20 ha</u> (as located within the approved mining right property boundary of 349.6961ha) (includes all activities associated with the proposed bentonite mining such as any explorations required, site establishment, demarcations, excavations, any vehicular movements, access and internal roads, topsoil and overburden storage, implementation of rehabilitation measures etc.)
Magisterial district:	Swellendam (Heidelberg is the nearest town)
Middle Point (GPS Co-ordinates) of Property	34° 04' 20.43"S 20° 57' 02.44"E 34° 04' 38.29"S 20° 56' 59.79"E
Distance and direction from nearest town	The property is situated ±1.4km northwest of the town Heidelberg in the Western Cape and can be accessed via the R322 towards Barrydale. The Imerys/Cape Bentonite Mine processing plant is also located on the same property
21 digit Surveyor General Code for each farm portion	C07300030000141200000

c) Locality map
(show nearest town, scale not smaller than 1:250000)

See locality maps as attached under **Appendix B**

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

See locality maps as attached under **Appendix B**

(i) Listed and specified activities

A mining right for the property already exists and environmental authorisation also exists for the existing quarries already mined and rehabilitated on the property. The mining right and EA holder (Imerys Refractory Minerals SA) now proposes additional quarries to be mined on the property hence the requirement for a EA amendment and Section 102 amendment of the EMP and Mining Work Programme applications to include the additional areas to be mined on the property for which a mining right already exists.

NAME OF/DESCRIBE THE ACTIVITY	Aerial extent of the Activity Ha or m ²	APPLICABLE LISTING NOTICE (GNR 983, GNR 984 or GNR 985)	STATE THE DATE OF COMMENCEMENT OF EACH ACTIVITY
21D Any activity including the operation of that activity which requires an amendment or variation to a right or permit in terms of section 102 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity contained in this Listing Notice or in Listing Notice 3 of 2014, required for such amendment.	<u>Total properties sizes:</u> Erf RE/1412 – 245ha Erf 3264 – 94ha <u>Total area of rehabilitated Authorised Quarries:</u> Phases 1-15: 16.63ha <u>Authorised Quarry Mined and Currently Under Rehabilitation:</u> Phase 20: 1ha <u>Authorised Quarries still to be mined:</u> Phase 16: 1ha Phase 17: 0.3ha Phase 18: 0.34ha Phase 19: 0.32ha Phase 21: 0.73 <u>Additional Quarries Proposed:</u> Phase 22: 1.49ha Phase 23: 1.24ha Phase 24: 0.7ha Phase 25: 0.78ha <u>Total Mining Activities Area: ±20 ha</u> (includes all activities associated with the	GNR 983 (Listing Notice 1)	Mining of additional quarries proposed to commence once/if amended Environmental Authorisation is obtained

	proposed bentonite mining such as any explorations required, site establishment, demarcations, excavations, any vehicular movements, access and internal roads, topsoil and overburden storage, implementation of rehabilitation measures etc.)		
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(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)

Imerys Refractory Minerals South Africa (Pty) Ltd t/a Cape Bentonite Mine is an existing Bentonite and Zeolite mining company operating under an existing mining right on Erf RE/1412 and Erf 3264 (previously Erf 1412) Ref: WC30/5/1/2/2/10076MR.

The mining right was issued for Erf 1412 measuring 349.6961 hectares in extent. The current approved EA, EMP and MWP made provision for the mining of quarries/phases 1-21 of 20.32ha. To date a total of 16.63ha (Phases 1 -15) have already been mined and rehabilitated under the current mining right and is now part of annually cultivated agricultural land. Phase 20 – 1ha have also been mined but is still under rehabilitation. **The mining right holder has determined that there are additional viable bentonite and zeolite resources on the property and thereby proposes to apply for the amendment of the existing EA, EMP and MWP to include the following additional mining quarries/phases on completely transformed annually cultivated agricultural land as located within the approved mining right property boundary.**

Authorised quarries mined and rehabilitated:

- Quarries/phases 1-15 – 16.63ha

Authorised quarry mined and currently under rehabilitation:

- Quarry/phase 20 – 1ha

Authorised quarries still to be mined:

- Quarry/phase 16 – 1ha
- Quarry/phase 17 – 0.3ha
- Quarry/phase 18 – 0.34ha
- Quarry/phase 19 – 0.32ha
- Quarry/phase 21 – 0.73

Additional quarries proposed:

- Quarry/phase 22 – 1.49ha
- Quarry/phase 23 – 1.24ha
- Quarry/phase 24 – 0.7ha
- Quarry/phase 25 – 0.78ha

Total mining right activities area: 20ha (as located within the approved mining right property boundary of 349.6961ha)

(includes all activities associated with the proposed bentonite mining such as any explorations required, site establishment, demarcations, excavations, any vehicular movements, access and internal roads, topsoil and overburden storage, implementation of rehabilitation measures etc.)

Mining Method

Mining is conducted 'in-house' by means of excavators, front-end loaders and 15-ton dumper trucks. The mining method comprises of relatively shallow opencast quarrying. The topsoil and the overburden are removed and stockpiled separately along the perimeter of the quarry. As and when the bentonite is being mined, it is trucked to the Processing Plant at the head offices on Erf RE/1412, Heidelberg.

Overburden is mined in 20m wide and 3-4m thick benches to expose 3m of bentonite down-dip to be mined. This process is repeated until all bentonite is mined out. Through this process the quarry's depth will be a maximum of 30m deep, and no more than half of the quarry size will be open at a time.

Rehabilitation takes place on an ongoing basis as mining proceeds. As the quarry advances along strike, the overburden is progressively replaced to backfill the excavation. The backfilled area is then contoured to prevent erosion, which could be caused by rain and surface water flow. Finally the topsoil is then spread over the disturbed surface area to restore the land to its previous state.

The bentonite found on the mining area is emplaced as relatively thin seams of 1-4m thick. The topsoil is normally less than 30cm thick. Overburden consists of a sequence of siltstone with conglomerate lenses; the latter also form the footwall of the succession.

- **Infrastructure**

Access

No new roads would have to be constructed to provide access to the proposed mining areas. The mine area is accessed directly off existing farm roads. See below a map of the existing farm roads used to access the existing mining right areas and that will also be used to access the proposed additional mining areas on Erf RE/1412 and Erf 3264 (previously Erf 1412).

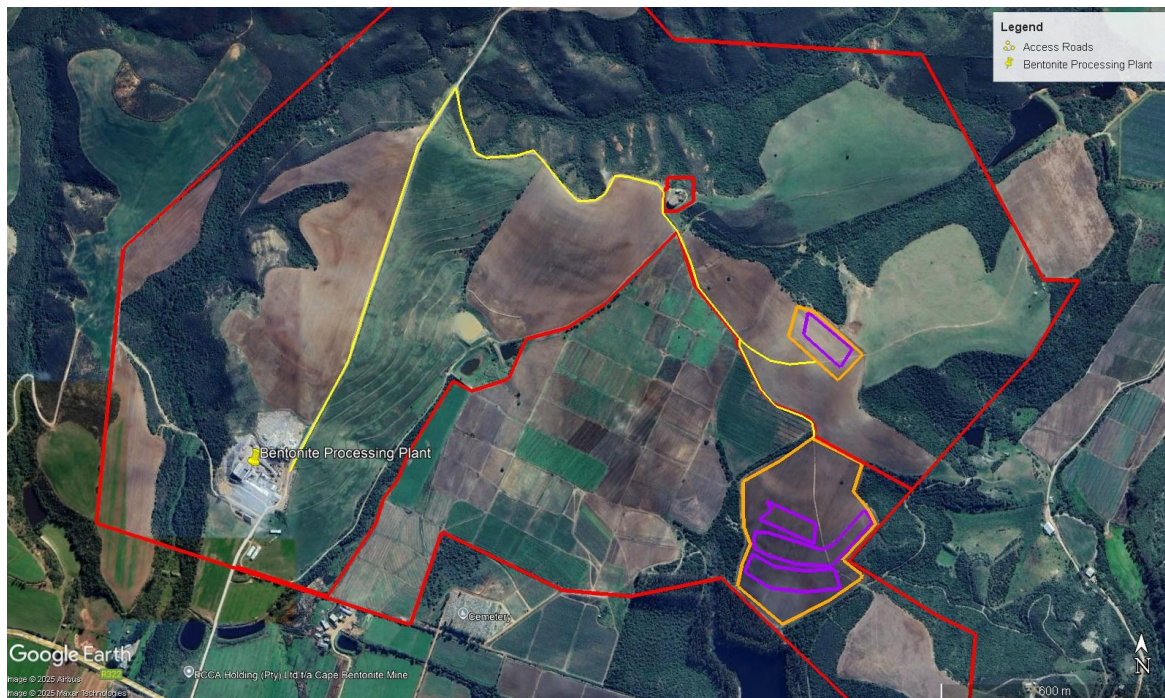


Fig 1: Existing farm roads route to be used from additional mining areas proposed on the Erf RE/1412 and Erf 3264 (previously Erf 1412) to the processing plant located on the same property.

Site infrastructure & equipment

There will be no site buildings located at the mine site. Site infrastructure would be restricted to a chemical toilet and waste bin. All areas used for the location of facilities at the site would be subject to the rehabilitation programme outlined for the mine area. On site equipment would be minimal, comprised mainly of an excavator, loader and dump trucks for the transport of material.

Management of water & protection of watercourses

The excavated mine areas may result in the accumulation of water. Measures would need to be taken during mining operations to manage any accumulation of water and associated erosion. This will include the installation of a range of erosion control measures to prevent the concentration of runoff and concomitant erosion. Generic and site-specific guidance in this regard is provided in the EMP and storm water management plan.

- **Site preparation**

Site preparation would involve removal and storage of topsoil from the area to be mined. Generic and site-specific guidance in this regard is provided in the EMP.

- **Site operation**

Details for development of the mine are provided in the mining work programme. Conceptually, the mining would entail the following:

Mining method

Mining is conducted 'in-house' by means of excavators, front-end loaders and 15-ton dumper trucks. The mining method comprises of relatively shallow opencast quarrying. The topsoil and the overburden are removed and stockpiled separately along the perimeter of the quarry. As and when the bentonite is being mined, it is trucked to the Processing Plant at the head offices on Erf RE/1412, Heidelberg.

Overburden is mined in 20m wide and 3-4m thick benches to expose 3m of bentonite down-dip to be mined. This process is repeated until all bentonite is mined out. Through this process the quarry's depth will be a maximum of 30m deep, and no more than half of the quarry size will be open at a time.

Rehabilitation takes place on an ongoing basis as mining proceeds. As the quarry advances along strike, the overburden is progressively replaced to backfill the excavation. The backfilled area is then contoured to prevent erosion, which could be caused by rain and surface water flow. Finally the topsoil is then spread over the disturbed surface area to restore the land to its previous state.

The bentonite found on the mining area is emplaced as relatively thin seams of 1-4m thick. The topsoil is normally less than 30cm thick. Overburden consists of a sequence of siltstone with conglomerate lenses; the latter also form the footwall of the succession.

The proposed phases/quarries are indicated on the Mine Layout Plan as attached under **Appendix B**.

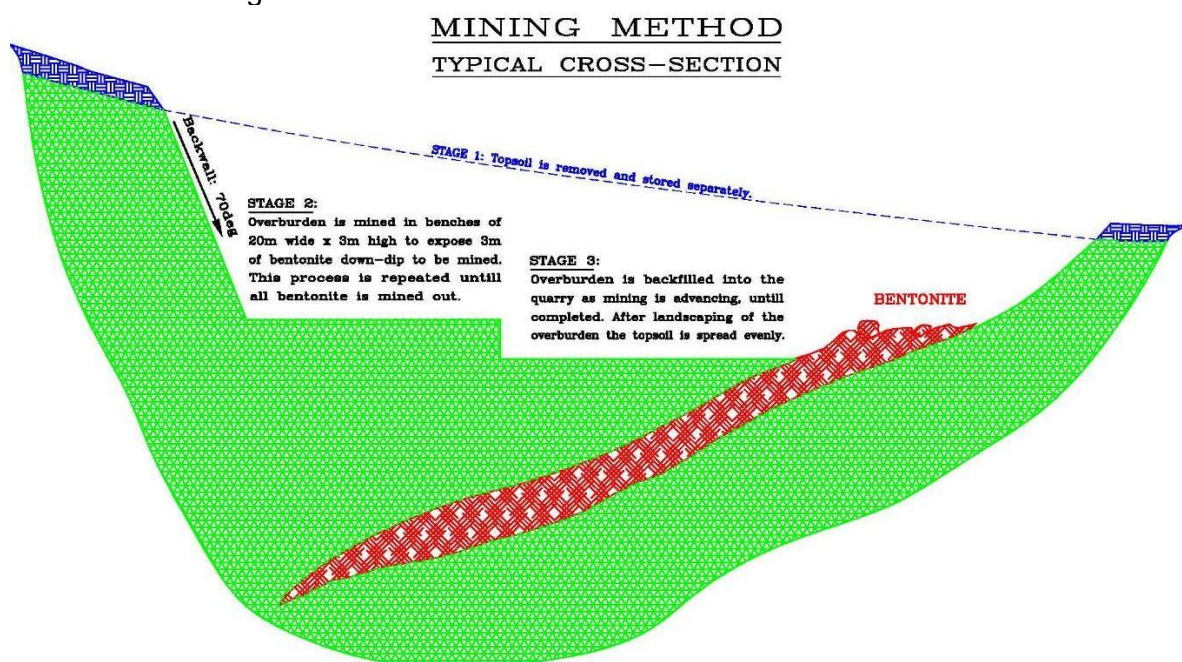
Mining Method Phases:

Phase 1 entails the removal and stockpiling of top soil and overburden material for later rehabilitation purposes. Topsoil and overburden materials are removed and stockpiled separately adjacent to the proposed mining area on already ploughed and cultivated land and protected from potential erosion.

Phase 2 entails mining the bentonite materials.

Phase 3 entails the rehabilitation of the area mined.

Also refer to mining method illustration below:



Transport

Excavated material would be transported via dump truck on the existing road infrastructure.

- **Decommissioning**

During decommissioning, the working area will be rehabilitated as per the approach outlined in the closure/rehabilitation plan. It is important to recognise that the applicant and mining right holder's liability for the site persists until such time as a Closure Certificate has been issued by the DMR.

e) **Policy and Legislative Context**

f) APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.
g) (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)		(E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)
Minerals and Petroleum Resources Development Act (No 28 of 2002) and National Environmental Management Act, 1998 (Act No. 107 of 1998) [NEMA] and relevant regulations	Sections 38 to 47 of MPRDA S24(1) of NEMA S28(1) of NEMA	An application for Environmental Authorisation and EMP amendment submitted to the DMR. Draft BAR submitted to the DEA&DP: Land Management for comments.
Western Cape Land Use Planning Act, 2014 (Act No. 3 of 2014).	Local municipality	Temporary wayleave application for Agricultural Zoning to Mining to be applied for at the local municipality once/if EA is obtained.
National Heritage Resources Act 25 of 1999 [NHRA]	-	Notice of Intent to Develop submitted to Heritage Western Cape – No HIA required confirmed.
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [NEMWA] and relevant regulations	-	Draft BAR submitted to the DEA&DP: Waste Management and DEA&DP: Pollution and Chemical Management for comments.
National Environmental Management: Biodiversity Act 10 of 2004 [NEMBA] and relevant regulations	-	Terrestrial, plant and animal impact statements provided and specialist findings informed the preferred layout and mitigation measures incorporated into the EMP requirements. Draft BAR submitted to CapeNature for comments.
National Environmental Management: Air Quality Act, 39 of 2004 [NEMAQA] and Relevant Regulations	-	No air emissions license is required for this project. The legislation has been considered

		and potential dust impacts mitigation measures have been incorporated into the EMPr requirements.
National Water Act, 1998 (Act No. 36 of 1998) [NWA] and relevant regulations	Section 21 – Water Use Activities	Aquatic Impact statement provided. Draft BAR submitted to the BGCMA to determine applicability of Section 21 of the NWA
Conservation of Agricultural Resources Act, 43 of 1983 [CARA]	-	Agricultural Impact Assessment provided. Draft BAR submitted to the Western Cape Department of Agriculture and national Department of Agriculture, Forestry and Fisheries for comments. All impacted areas to be rehabilitated to current status quo of previously cultivated agricultural land.
National Health Act, 61 of 2003; Constitution of the Republic of South Africa, 1996	-	All potential health impacts to be identified and assessed in the impact assessment – associated mitigation measures incorporated into the EMPr.
Fencing Act, 31 of 1963	-	NA
National Veld and Forest Fire Act 101 of 1998 [NVFFA]	-	NA
Environment Conservation Act, 73 of 1989, Western Cape Noise Control Regulations	-	All potential noise impacts identified and assessed in the impact assessment – associated mitigation measures incorporated into the EMPr.
National Forests Act, 84 of 1998	-	NA
Hazardous Substances Act, 15 of 1973	-	All potential hazardous substances impacts assessed in the impact assessment – associated mitigation measures incorporated into the EMPr.
National Environmental Management: Protected Areas Act 57 of 2003	-	NA
Mine Health and Safety Act, 1996 (Act No. 29 of 1996)	-	All mining activities to adhere to Mine Health and Safety Act requirements at all times – as per EMPr requirements.
Compensation for Occupational Injuries and Diseases Act 130 of 1993	-	All mining activities to adhere to Compensation for Occupational Injuries and Diseases Act requirements at all times – as per EMPr requirements.

Basic Conditions of Employment Act 75 of 1997	-	All requirements to be adhered to during mining activities – as per EMPr requirements.
Labour Relations Act 66 of 1995	-	All requirements to be adhered to during mining activities – as per EMPr requirements.

POLICY/ GUIDELINES	ADMINISTERING AUTHORITY
Hessequa Municipality SDF	Hessequa Municipality
Hessequa Municipality Town planning regulations	Hessequa Municipality
Guideline on Public Participation	Department of Mineral Resources and Environmental Affairs
Guidelines on Alternatives	Department of Mineral Resources and Environmental Affairs
Guideline on Need and desirability	Department of Mineral Resources and Environmental Affairs
Guideline for Environmental Management Plans (EMP's)	Department of Mineral Resources and Environmental Affairs
PGWC Urban Edge Guidelines	Western Cape Department of Environmental Affairs and Development Planning
PGWC SDF	Western Cape Department of Environmental Affairs and Development Planning

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).

Imerys Refractory Minerals South Africa (Pty) Ltd t/a Cape Bentonite Mine is an existing Bentonite and Zeolite mining company operating on various farms in close proximity to the towns of Heidelberg and Riversdale that fall within the Hessequa Local Municipality and Garden Route District Municipality in the Western Cape Province.

Cape Bentonite Mine already has an existing Bentonite and Zeolite mining company operating under an existing mining right on Erf RE/1412 and Erf 3264 (previously Erf 1412) Ref: WC30/5/1/2/2/10076MR.

A total of 16.63ha (Phase 1 -15) have already been mined and rehabilitated under the current mining right and is part of annually cultivated agricultural land. The mining right holder has determined that there are additional viable bentonite and zeolite resources on the property and thereby proposes to apply for additional quarries on completely transformed annually cultivated agricultural land.

The mine provides direct employment for at least 54 local persons and compensation to the landowner. The operation further creates indirect employment opportunities in equipment supply industries, transport and bentonite mining, and the mining environment.

Also refer to **Appendix G1** Geological and Socio-economic Motivation Report.

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

- **Preferred site alternative**

Erf RE/1412 and Erf 3264 (previously Erf 1412) is the only proposed property alternative considered as this is where existing bentonite and zeolite mining right is operating and viable resources are available based on the findings of the mine geologist whom identified more viable bentonite and zeolite deposits locations on the property and are therefore the only feasible and reasonable location alternatives considered. Also refer to **Appendix G1 Geological and Socio-economic Motivation Report**.

- **Preferred activity alternative**

No activity alternatives other than the no go option were considered or assessed. The applicant identified this area for bentonite and zeolite mining purposes as it is located on a property where similar mining activities is already taking place and because it is within the approved mining right area. The method of bentonite and zeolite mining is singular and the same methods previously used on site will be used at the proposed additional mining areas.

- **Preferred technology alternative**

No technology alternatives exist. The method of bentonite mining is singular. Plant equipment (excavator and dump trucks) is used to remove and transport the bentonite materials from the mine area as per the proposed mining methods described.

- **No-go/No-mining alternative**

The No-Go option will result in the site remaining as it is presently, cultivated and grazed agricultural lands. The mine provides direct employment for at least 54 local persons and compensation to the landowner. The operation further creates indirect employment opportunities in equipment supply industries, transport and bentonite mining, and the mining environment. Seeing that all potential impacts as identified and assessed is expected to be mitigated to an acceptable level without causing significant detrimental harm to the natural and social environment the socio-economic benefits of the proposed bentonite mining will outweigh the potential negative impacts on the environment if specialist and EMP recommendations are effectively implemented.

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

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

i) Details of the development footprint alternatives considered.

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

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

(a) Location alternatives – Erf RE/1412 and Erf 3264 (previously Erf 1412) is the only proposed property alternative considered as this is where existing bentonite and zeolite mining right is operating and viable resources are available based on the findings of the mine geologist whom identified more viable bentonite and zeolite deposits locations on the

property and are therefore the only feasible and reasonable location alternatives considered.. Also refer to Appendix G1 Geological and Socio-economic Motivation Report. Also refer to **Appendix G1** Geological and Socio-economic Motivation Report. Therefore no other reasonable or feasible alternative other than the no-go/no-mining alternative was assessed.

(b) Activity alternatives- No activity alternatives other than the no go option were considered or assessed. The applicant identified this area for bentonite and zeolite mining purposes as it is located on a property where similar mining activities is already taking place and because it is within the approved mining right area. The method of bentonite and zeolite mining is singular and the same methods previously used on site will be used at the proposed additional mining areas. Therefore, no other reasonable or feasible activity alternative other than the no-go/no-mining alternative was assessed.

(c) Layout alternatives – Layout alternative 1 has been considered and assessed by the specialists. The proposed layout has been informed by specialist's recommendations and aims to avoid any sensitive environmental features i.e. indigenous vegetation areas, watercourses etc. The layout alternative 1 as presented by the applicant and assessed by the specialists were concluded to be the only reasonable and feasible alternative available to avoid sensitive environmental features and still allow mining of viable bentonite and zeolite deposits and was therefore the only layout alternative assessed.

(d) Technology alternatives – No technology alternatives exist. The method of bentonite mining is singular. Plant equipment (excavator and dump trucks) is used to remove and transport the bentonite materials from the mine area as per the proposed mining methods described in the MWP. Therefore, no other reasonable or feasible technology alternative other than the no-go/no-mining alternative was assessed

(e) Operational alternatives – No operational alternatives exist. The method of bentonite and zeolite mining is singular and is described in mining work programme. Refer to Appendix D: Mining Work Programme. Therefore, no other reasonable or feasible operational alternative other than the no-go/no-mining alternative was assessed.

(f) The No-Go/No-Mining Option- The No-Go option will result in the site remaining as it is presently, cultivated and grazed agricultural lands. The mine provides direct employment for at least 54 local persons and compensation to the landowner. The operation further creates indirect employment opportunities in equipment supply industries, transport and bentonite mining, and the mining environment. Seeing that all potential impacts as identified and assessed is expected to be mitigated to an acceptable level without causing significant detrimental harm to the natural and social environment the socio-economic benefits of the proposed bentonite mining will outweigh the potential negative impacts on the environment if specialist and EMP recommendations are effectively implemented.

ii) Details of the Public Participation Process Followed

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

Also Refer to **Appendix C** for proof of PPP conducted.

This section of the report is included in compliance with the Regulations. Public participation is an integral part of the EIA process and affords potentially interested and potentially

affected parties (I&APs) an opportunity to participate in the EIA process, or to comment on any aspect of the development proposals.

Other relevant considerations regarding the public participation process being undertaken for this project are that:

- The public participation process being undertaken for this project complies with the requirements of the Regulations.
- The description of the public participation process included in sections below itemises the steps and actions undertaken.

THE FOLLOWING PUBLIC PARTICIPATION PROCESS WAS AND WILL BE CONDUCTED:

Notification to I&APs

Potential I&AP's are notified about the project in the following manner (this is in compliance with Regulation 41 of GN R982):

- Fixing notice boards at the boundary of the property in compliance with Regulation 41 of GN R982.
- Written notifications are sent via registered post to potential I&APs (i.e. landowner, direct neighbours etc.) inviting them to register and give comments on the proposed development within 30 days from the date which appears on the notice. These notifications are in line with the requirements of the Regulations.
- Placing an advertisement in a local newspaper of the notice in compliance with the Regulations.

All potential I&APs were afforded the opportunity (within a 30 day period) to register for the project. All registered I&APs will be informed of further activities regarding the project.

Public Meetings, Workshops and Pre-application Meetings

No public meetings, workshops and pre-application meetings have been held thus far and none was requested.

Availability of the Draft Basic Assessment Report

As per the requirements of Regulation 43 of GN R982, the Draft Basic Assessment Report (BAR) will be made available to all relevant state departments and all registered I&APs for a 30 day commenting period.

The Draft BAR will be included for statutory comment with the written notice as sent to the commenting organs of state for a 30 day commenting period. Electronic copies (CDs) will be made available to any department or I&AP on request.

The Draft Basic Assessment Report will be provided to the following Key Departments for consideration/comments:

- Department of Mineral and Petroleum Resources
- Breede-Gouritz Catchment Management Agency
- CapeNature Scientific Services
- DEA&DP: Development Facilitation
- DEA&DP: Land Management
- DEA&DP: Pollution & Chemical Management
- DEA&DP: Waste Management
- DEA&DP: Planning

- DEA&DP: Air Quality Management
- Department of Agriculture -Western Cape
- National Department of Agriculture, Forestry and Fisheries
- Garden Route District Municipality
- Heritage Western Cape: A Notice of Intent to Develop was also submitted to HWC
- Simon van der Stel Foundation Southern Cape
- Hessequa Municipality
- National Nuclear Regulator
- Gouritz Cluster Biosphere Reserve
- Department of Land Affairs: Land Claims
- Western Cape Department of Health
- Department of Transport and Public Works
- SANRAL
- Transnet
- Eskom
- Raad van Overberg Water

Proof of delivery and document placement are attached to the final BAR.

Comments received are responded to as per the requirements of regulations. The comments and response report as well as all comments received is attached to the final BAR under Appendix C.

The Final BAR Phase

Once all comments have been received, the BAR will be finalised taking into account the comments and submitted to the competent authority for a decision.

Decision and Appeal Period

Once the DMR have reviewed the Final BAR and are satisfied that it contains sufficient information to make an informed decision, the DMR will use the information contained within the BAR to determine the environmental acceptability of the proponent's preferred options. A decision on the applications and associated reports will be made by the DMR based on the findings of the BAR.

Following the issuing of the decision, all key department and registered I&APS will be notified and afforded the opportunity to appeal the decision to the MEC of the DMR in terms of the NEMA.

Proof of the Public Participation Process conducted/to be conducted will be attached to the Final BAR under Appendix C.

iii) Summary of issues raised by I&APs

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

Interested and Affected Parties		Date	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Comments Received			
<u>AFFECTED PARTIES</u>		All comments received during the review periods of the draft basic assessment report as well as responses provided will be captured and recorded within this Comments and Response Report table.			
Landowner	X				
Arista Trust Boerdery PO Box 384 Heidelberg 6665	-	Signed landowner's consent has been included in the under Appendix C. Notice sent 22/05/2025, no comments received to date.			
Louwrens van Deventer Familie Trust PO Box 299		Signed landowner's consent has been			

Heidelberg 6665		included in the under Appendix C. Notice sent 22/05/2025, no comments received to date.			
Lawful occupier/s of the land	NA				
No lawful or unlawful occupiers present on proposed mining areas	-				
Landowners or lawful occupiers on adjacent properties	X				
HESSEQUA MUNICIPALITY		Notice sent 22/05/2025, no comments received to date.			
GS & JC BOERDERY (PTY) LTD	•	Notice sent 22/05/2025, no comments received to date.			
JAA LAZENBY	•	Notice sent 23/01/2022, no comments received to date.			
STEPHEN KEYSER FAMILIE TRUST	•	Notice sent 22/05/2025, no comments received to date.			

RAAD VAN OVERBERG WATER	•	Notice sent 22/05/2025, no comments received to date.			
E NAPIER	•	Notice sent 22/05/2025, no comments received to date.			
CITRIMEL PROP (PTY) LTD	•	Notice sent 22/05/2025, no comments received to date.			
Local and District Municipalities	X				
Hessequa Municipality municipal manager on behalf of municipal council	-	Notice of Draft BAR for comments to be sent.			
Garden Route District Municipality	-	Notice of Draft BAR for comments to be sent.			
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA etc)	X				
Breede-Gouritz Catchment Management	-	Notice of Draft BAR			

Agency		for comments to be sent.			
CapeNature	-	Notice of Draft BAR for comments to be sent.			
Heritage Western Cape	-	A Notice of Intent to Development was submitted to the HWC on 14/05/2025. HWC reply of the NID was received 27/05/2025	NOTIFICATION OF INTENT TO DEVELOP: PROPOSED AMENDMENT OF MINING RIGHT (10076MR) ON ERVEN RE/1412 AND 3264, HEIDELBERG, WESTERN CAPE, SUBMITTED IN TERMS OF SECTION 38(8) OF THE NATIONAL HERITAGE RESOURCES ACT (ACT 25 OF 1999) The matter above has reference. Heritage Western Cape is in receipt of your application for the above matter received. This matter was discussed at the Heritage Officers Meeting (HOMS) held on 26 May 2025. You are hereby notified that, since there is no reason to believe that the proposed amendment of mining right (10076MR) on Erven RE/1412 and 3264, Heidelberg, Western Cape will have an impact on heritage resources, no further action under Section 38 of the National Heritage Resources Act (Act 25 of 1999) is required. The Heritage Western Cape Chance Finds Protocol must be included the EA, EMP, or any other form of potential approval. However, should any heritage resources, including evidence of graves and human	No further action required under Section 38 of the National Heritage Resources Act (Act 25 of 1999) noted. Chance fossil finds and mitigation measures included as part of EMP requirements.	Part B: EMP

			burials, archaeological material and paleontological material be discovered during the execution of the activities above, all works must be stopped immediately, and Heritage Western Cape must be notified without delay. This letter does not exonerate the applicant from obtaining any necessary approval from any other applicable statutory authority. HWC reserves the right to request additional information as required. Should you have any further queries, please contact the official above and quote the case number.		
Simon van der Stel Foundation Southern Cape	-	Notice of Draft BAR for comments to be sent.			
Department of Agriculture (Provincial)	-	Notice of Draft BAR for comments to be sent.	•		
Department of Agriculture, Forestry and Fisheries	-	Notice of Draft BAR for comments to be sent.			
Department of Transport and Public Works	-	Notice of Draft BAR for comments to be sent.			
Communities	X				

Municipal Council to be consulted on behalf of Heidelberg Community	-	Notice of Draft BAR for comments to be sent.			
Dept. Land Affairs	X				
Department of Land Affairs: Land Claims		Notice of Draft BAR for comments to be sent.			
Traditional Leaders	NA				
Western Cape Dept. Environmental Affairs and Development Planning	X				
Directorate: Development Management		Notice of Draft BAR for comments to be sent.			
Directorate: Development Facilitation	-	Notice of Draft BAR for comments to be sent.			
Directorate: Pollution and Chemical Management	-	Notice of Draft BAR for comments to be sent.			
Directorate: Waste Management	-	Notice of Draft BAR for comments to be sent.			
Directorate: Air Quality Management	-	Notice of Draft BAR			

		for comments to be sent.			
Other Competent Authorities affected	NA	Comments to be requested			
<u>OTHER AFFECTED PARTIES</u>					
Department of Health		Notice of Draft BAR for comments to be sent.			
National Nuclear Regulator		Notice of Draft BAR for comments to be sent.			
Raad van Overberg Water		Notice of Draft BAR for comments to be sent.			
<u>REGISTERED INTERESTED PARTIES</u>					
None to date					

iv) The Environmental attributes associated with the alternatives.

(The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)

(1) Baseline Environment

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

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

Geographical, Physical and Biological Characteristics

The farm is characterised by its undulating landscape with associated steep slopes, drainage lines and gorges which limits the extent of cultivation to moderate slopes and flat lying areas.

Secondary non-perennial drainage lines are present throughout the relevant property along steep slopes and gorges due to the undulating nature of the landscape. Man-made gravel dams are also present within the drainage line areas. The only surface water run-off that is occasionally present in the drainage lines is storm water runoff during heavy rains. Several secondary non-perennial drainage lines with associated man-made and natural dams occurs throughout the property which drains mainly from north to south and eventually feeds into the Duiwenhoks tributary within Heidelberg. There are no remaining untransformed drainage lines on the proposed mining expansion areas withing the previously cultivated land.

Similar mining activities have taken place on the property and the water table has not been reached and is therefore expected to be lower than the proposed maximum depth of 30m. The actual depths of the groundwater table on the relevant property is unknown as no active boreholes occur on the proposed mining areas, or on nearby properties or surrounds. Due to the general >30m depth groundwater table average and low yields in the Heidelberg/Riversdale region groundwater is an unused resource in the region and according to the Water Research Commission, the probability of drilling an successful borehole according to accessibility is less than 40% while, such a borehole will only have a 10-20% chance of delivering 2L/s. The proposed mining activities is therefore not expected to have any significant detrimental impacts on the geohydrological dynamics and/or groundwater quality/table of the site.

Soil and Geology: On a regional level the site geology is derived from the Bokkeveld group as part of Worcester Normal Fault of the Cape Fold Belt Area. On a local level the site geology consists mainly of volcanic sedimentary deposit in the early Cretaceous layers composed of continental layers from Alluvial to Siltstones and Lacustine.

The study area lies within the East Coast Renosterveld bioregion (Mucina & Rutherford 2006). This bioregion has a moderately distinct flora, and high numbers of plant Species of Conservation Concern, with the main pressures being extensive habitat loss, due mainly to agriculture, followed by alien invasive vegetation, quarrying and urbanisation, and habitat modification due to lack of appropriate fire regimes. Critically Endangered - Eastern Ruens Shale Renosterveld is the main indigenous vegetation type mapped as occurring within the remaining undeveloped areas adjacent to the proposed additional quarries.

Most of the drainage lines with their associated wetland characteristics are in a moderate to good condition as they are located within the “klowe” too steep to plough and surrounded by indigenous vegetation remnants which also remains because the areas are too steep to plough for cultivation. The proposed mining expansion areas does not fall within any mapped non-perennial drainage lines nor within any mapped NFEPA wetland areas.

From the site survey conducted and historical google earth map images it is evident that all of the proposed mining areas have been annually cultivated for several years. No natural, near natural or rehabilitating indigenous vegetation remnants are located on the proposed mining expansion areas except for one individual Milkwood tree recorded which must be demarcated beforehand and may not be impacted upon. As per the 2023 Western Cape Biodiversity Spatial Plan (WCBSP) none of the proposed mining activities expansion areas are earmarked as CBA or ESA.

The proposed access roads that will be used during mining activities are also located on existing farm access roads and no new access roads may or will be created during the proposed mining activities.

Also refer to specialists statements under Appendix E.

Socio-Economic Characteristics

Mining and prospecting operations are located within the Hessequa Municipality jurisdiction as part of the Garden Route District Municipality.

Population - 53 096

Households – 15 613

With a population of 53 030 in 2019, the Hessequa municipal area is the second least populated municipality in the Garden Route District (GRD). This total is expected to decrease to 52 981 in 2020 and even further to 52 918 in 2021, but will increase to 53 096 in 2023, equating to an average annual growth rate of 0.3 per cent across this period. The average annual growth of the GRD and Western Cape is respectively 0.8 and 1.8 per cent.

Between 2019 and 2025, the largest population growth is projected in the aged cohort which is projected to grow at an annual average rate of 2.6 per cent. This increase, coupled with the limited population growth in the working age cohorts will result in higher dependency ratio towards 2025. A higher dependency ratio implies greater pressure on social systems, health and education.

Household size refers to the number of people per household. The number of persons per household is estimated at 3.4 in 2019 and is projected to stabilise at 3.3 in the three outer years. It is worth noting that although the number of households in the Hessequa municipal area are increasing, the actual size of households is ever so slightly trending downwards. This potentially implies an inflow of young professionals (either single, as couples or with small family groupings) into the area in search of job opportunities. Other contributing factors include, but are not limited to, lower fertility rates, occurrences of divorce, ageing population, etc.

Education:

Learner enrolment within Hessequa municipal area increased from 8 566 learners in 2016 to 8 706 learners in 2017, but then decreased to 8 682 learners in 2018. This reflect an annual average rate of 0.7 per cent between 2016 and 2018. The average annual growth for the Garden Route District (GRD) as a whole will be 0.8 per cent across the reference period.

For 2018, the learner-teacher ratio within Hessequa municipal area is recorded at 26.9, lower than the teacher learner ratio in the GRD (28.7) and in the Western Cape (28.8). The learner-teacher ratio for the Hessequa municipal area is the lowest within the GRD.

The learner retention rate within Hessequa municipal area regressed from 69.8 per cent in 2016 to 64.4 per cent in 2017, but improved to 69.0 per cent in 2018. This reflects that 31.0 per cent

of the learners who registered in Grade 10 in the Hessequa municipal area drop out of school before reaching Grade 12.

The number of schools within the Hessequa municipal changed from 21 public schools in 2016 to 19 public schools in 2017 and 2018. The Hessequa and Knysna municipal areas have the same number of schools in 2018 (19 each), despite Hessequa have substantially fewer learners, therefore explaining the low learner-teacher ratio in Hessequa.

A total of 60.0 per cent of all schools in the Western Cape are no-fee schools. The proportion of no-fee schools within the Hessequa municipal area decreased from 66.7 per cent in 2016 to 63.2 per cent in both 2017 and 2018.

The availability of library facilities within schools contribute towards narrowing the academic attainment gap by allowing students access to information which is in turn directly linked to improved education outcomes. As mentioned previously, there were 19 schools in the Hessequa municipal area in 2018, of which the minority (7 schools; 36.8 per cent) were equipped with libraries.

The matric pass rate within Hessequa municipal area regressed notably between 2016 (93.6 per cent) and 2017 (87.4 per cent) and further decreased to 84.7 per cent in 2018. Similarly, the matric pass rate for the GRD decreased from 85.7 per cent in 2016 to 82.0 in 2017 before dropping off further to 81.3 per cent towards 2018.

Health:

In 2018, there were a total of 9 primary healthcare clinics (PHC) in the Hessequa municipal area – 3 fixed and 6 mobile facilities. In addition, there is one district hospital, 6 antiretroviral treatment clinics/sites and 11 tuberculosis clinics/sites.

In 2018, Hessequa only had 1 ambulance for every 10 000 inhabitants. It is worth noting that this number only refers to Provincial ambulances and excludes all private service providers.

The number of clients (patients) registered for antiretroviral treatment (ART) for AIDS treatment in the Hessequa municipal area increased from 824 patients in 2017/18 to 872 in 2018/19. The number of new clients starting ART treatment decreased from 121 in 2017/18 to 96 in 2018/19.

Tuberculosis accounted for 7.6 per cent of the premature deaths in the Province in 2016. The number of registered TB patients within the Hessequa municipal area increased from 377 in 2016/17 to 409 in 2017/18 before dropping off to 355 in 2018/19. The 355 registered TB patients received treatment at 11 TB clinics/treatment sites.

The immunisation coverage rate for children under the age of one within the Hessequa municipal area increased slightly from 79.0 per cent in 2017/18 to 79.8 per cent in 2018/19. This rate is higher than the GRD immunisation rate of 65.7 per cent. In 2018/19, one in 100 000 children under five years of age of 5 years in the municipal area was malnourished. This compares favourably with the 1.5 per cent average for the GRD. The neonatal mortality rate (NMR) (deaths per 1 000 live births before 28 days of life) indicates improvement in new-born health outcomes from 6.7 deaths in 2017/18 to 3.1 in 2018/19 within the area. A total of 14.1 per cent of all babies born in facilities in the municipal area in 2018/19 weighed less than 2 500 grams, this is an improvement from 16.6 per cent in 2017/18.

The maternal mortality rate (MMR) within the Hessequa municipal area is zero deaths per 100 000 live births in 2017/18 and 2018/19. The delivery rate to women under 20 years of age in the municipal area is 20.2 per cent in 2018/19 compared to 18.7 per cent in 2017/18. This could be

correlated to the dropout rates in the area. The termination of pregnancy rate is also recorded at zero. A low termination rate is strongly associated with a decrease in unwanted pregnancies which in turn attests of improved family planning and access to health care services (for example, access to contraception, sexual education programmes, counselling etc.).

Poverty:

Real GDP per capita (constant prices) for the Hessequa municipal area was R44 619 in 2018, lower than the District's GDP (R49 546) and significantly lower than the Western Cape average (R60 079).

The Hessequa municipal area has a Gini-coefficient of 0.564 in 2018, the lowest in the GRD. Income inequality has however been on the rise in the municipal area between 2012 and 2018.

An overall improvement in human development is observed across the entire Western Cape with HDI levels increasing in 2012, 2015 and 2018. In 2018, the HDI score for the Hessequa municipal area was 0.710 which is on par to the District's HDI (0.713), but below that of the overall Western Cape (0.730).

Basic Service Delivery:

In 2016, there were a total of 17 371 households within the Hessequa municipal area of which 95.8 per cent had access to housing in the form of a formal dwelling. Households across the municipal area enjoyed high access levels to sanitation and electricity at a rate above the GRD average. Water access levels and refuse removal are however low in comparison to the GRD average.

Access to decent formal housing is regarded as a basic human right and an important indicator of the level of human development within an economy. Above table present a more recent picture of the different types of dwellings for households living within the Hessequa municipal area in 2018 (Quantec Research, 2018). Approximately 90.2 per cent of households reside in a house or brick structure on a separate stand or yard. A total of 797 (4.5 per cent)) households still reside in informal dwellings or shacks.

In 2018, solid waste services represented the largest number of consumer units at 15 873. This was followed closely by water at 15 651. Electricity and sanitation services had 15 609 and 15 571 consumer units respectively. The relatively lower number of consumer units for electricity can be attributed to the fact that certain areas receiving these services fall outside of the jurisdiction of the various local municipalities.

According to Statistics South Africa, in 2017 most municipalities classified an indigent household as a family earning a combined income of less than R3 200 per month. In 2018, the Hessequa municipal area had a total of 5 179 indigent households, 216 less than the previous year of which all had access to fee basic services such as water, electricity, sanitation and solid waste management.

Safety and Security:

According to the official 2018/19 crime statistics, the Western Cape murder rate increased by 4.4. per cent between 2017/18 and 2018/19. In comparison, the murder rate decreased within the Hessequa municipal area – the number of murders per 100 000 people in the municipal area decreased by 25.0 per cent from 20 in 2017/18 to 15.

The actual number of reported sexual offences in the Hessequa municipal area decreased between 2017/18 and 2018/19 as well as in the Western Cape as a whole across the reference period. The sexual offences crime rate for the Hessequa municipal area decreased slightly from

93 reported cases per 100 000 people in 2017/18 to 90 in 2018/19 (3.2 per cent decrease). The number of reported occurrences per 100 000 people in the GRD also increased from 168 in 2017/18 to 172 in 2018/19 (2.4 per cent increase).

Although there was an improvement between 2017/18 and 2018/19, the Western Cape still has the highest drug-related crime rate in the country at 1 203 reported incidents per 100 000 in 2018/19. The drug-related crime rate within the Hessequa municipal area decreased significantly from 2 474 reported incidents per 100 000 people in 2017/18 to 1 556 in 2018/19, a 37.1 per cent drop. Similarly, the drug-related crime rate decreased in the District between 2017/18 and 2018/19 by 31.2 per cent per 100 000 people.

The number of reported cases of driving under the influence (DUI) of alcohol or drugs per 100 000 people within the Hessequa municipal area increased by 6.2 per cent from 194 incidences in 2017/18 to 206 in 2018/19. The DUI rate across the GRD increased from 279 incidences in 2017/18 to 284 in 2018/19 (1.8 per cent).

The 2018/19 crime statistics indicate that residential burglaries per 100 000 people in the Western Cape decreased from 644 in 2017/18 to 583 in 2018/19 (9.5 per cent decrease). Despite a decrease in the actual number of reported cases of residential burglaries in the GRD, the rate per 100 000 slightly increased. However, Hessequa experienced a sharp rise in residential burglaries, up by 16.4 per cent from 568 cases per 100 000 people in 2017/18 to 661 cases in 2018/19.

The number of road user fatalities in Hessequa municipal area improved from 28 in 2017 to 17 in 2018 (39.3 per cent decrease). In comparison, the number of fatalities across the broader GRD region decreased by 3.6 per cent from 137 in 2017 to 132 in 2018.

Economic Sector Performance:

The total GDPR for Hessequa amounted to R3.819 billion in 2017 with economic activity mostly focussed within the tertiary sector (R2.497 million; 65.4 per cent). The overall economy grew by 2.4 per cent between 2008 and 2017. In more recent times (2014 – 2018e) economic growth in the municipal area slowed to 1.4 per cent. In turn, the District grew by 1.0 per cent between 2014 and 2018. Hessequa GDPR growth is estimated at 0.4 per cent in 2018.

The primary sector is almost exclusively supported by the agriculture, forestry and fishing sector which contributed 12.0 per cent (R458.6 million) to total GDPR in 2017. However, the agriculture, forestry and fishing sector experienced negative growth rates, dropping to 0.7 per cent between 2014 – 2018 mainly due to the impact of the drought.

The secondary sector contributed 22.3 per cent (R851.3 million) to total GDPR in 2017 and maintained an average 1.5 per cent growth rate between 2008 and 2017. There was positive growth within the manufacturing sector (3.1 per cent); however, there was weak performance in the construction (0.1 per cent) and electricity, gas and water sectors (-4.2 per cent) sectors. In more recent times (2014 – 2018) the construction sector and electricity, gas and water sectors continue to contract.

The tertiary sector contributed 65.4 per cent (R2.497 billion) to total GDPR in 2017 and maintained an average 2.8 per cent growth rate between 2008 and 2017. There was strong growth within the finance, insurance, real estate & business services sector (3.5 per cent); Transport, storage communication (3.1 per cent) and wholesale & retail trade, catering & accommodation (2.4 per cent). This was followed by general government and community, social & personal services at 2.1 and 1.9 per cent respectively.

Labour and Employment:

Hessequa contributed 24 792 jobs to formal and informal employment in the GRD in 2017. Employment in Hessequa was in 2017 mostly concentrated within the wholesale and retail trade, catering and accommodation (25.7 per cent; 6 379), finance, insurance, real estate & business services (14.4 per cent; 3 559) and the community, social & personal services (13.5 per cent; 3 336) sectors. Collectively, these three sectors contribute 53.6 per cent to total employment in the municipal area.

Between 2008 and 2017, a net total of 1 848 jobs were created in Hessequa – notable job creation in the wholesale and retail trade, catering and accommodation (1 734), and finance, insurance, real estate & business services (1 502) sectors. Job losses were reported in the agriculture, forestry and fishing sector (2 054) between this period. Job losses in the agriculture, forestry and fishing sector can mostly be attributed to the impact of the drought, but other factors such as mechanisation also come into play.

In 2017, Hessequa's labour force mostly consisted of semi-skilled (41.6 per cent) and low-skilled (36.7 per cent) workers. The skilled category (4.0 per cent) grew notably faster than the semi-skilled (3.0 per cent) and the low-skilled categories (2.1 per cent) between 2014 and 2018. Evidently, the demand for skilled labour is on the rise which implies the need to capacitate and empower low-skilled and semi-skilled workers.

Unemployment in Hessequa (7.0 per cent) is far below that of the GRD as a whole (15.2 per cent) and the Provincial average (17.7 per cent) in 2018. This estimate is based on the narrow definition of unemployment i.e. the percentage of people that are able to work, but unable to find employment. In turn, the broad definition generally refers to people that are able to work, but not actively seeking employment.

In 2018, the trade deficit in the Hessequa region deepened further. The municipal region's trade deficit of R95.9 million was driven by a sharp increase in imported manufactured goods. While the agriculture, forestry and fishing sector registered a surplus of R11.7 million, this amount was able to offset only 10.0 per cent of the trade deficit registered by the manufacturing sector (R107.7 million) in 2018.

Imports in 2018 were dominated by the manufacturing sector. With a value of R122.6 million, the manufacturing sector accounted for 100.0 per cent of imports into the municipal area. Conversely, the sectoral distribution of exports in the region is spread between agriculture, forestry and fishing and manufacturing. With a value of R26.6 million in 2018, the manufacturing sector accounted for 55.9 per cent of total exports, with the agricultural sector accounting for the remaining 44.1 per cent. This is a clear indication that the municipal area is importing goods primarily for manufacturing purposes.

Information obtained from the Socio-economic Profile of Hessequa Municipality for 2019 (Western Cape Government Provincial Treasury)

Cultural Characteristics

See Notice of Intent to Develop as submitted to Heritage Western Cape under Appendix E. It is not expected that the activities will have any impacts on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 nor impact on any building or structure older than 60 years in any way. Heritage Western Cape record of decision confirmed no heritage impact assessment required for proposed mining amendment and expansion activities.

(b) Description of the current land uses.

LAND USE OF THE SITE

Untransformed area	Low density residential	Medium density residential	High density residential
Informal residential	Heavy industrial	Tourism & Hospitality facility	Dam or reservoir
Old age home	Airport	Filling station	Nature conservation area
Retail	Commercial & warehousing	Light industrial	Medium industrial
Power station	Office/consulting room	Military or police base/station/compound	Casino/entertainment complex
Open cast mine	Underground mine	Spoil heap or slimes dam	Quarry, sand or borrow pit
Hospital/medical center	School	Tertiary education facility	Church
Sewage treatment plant	Train station or shunting yard	Railway line	Major road (4 lanes or more)
Harbour	Sport facilities	Golf course	Polo fields
Landfill or waste treatment site	Plantation	Agriculture X	River, stream or wetland
Mountain, koppie or ridge	Museum	Historical building	Graveyard
Archaeological site			
Other land uses (describe):			

Provide a description:

The proposed mining activities area are proposed on transformed previously cultivated agricultural land.

LAND USE CHARACTER OF SURROUNDING AREA

Highlight the current land uses and/or prominent features that occur within +/- 500m radius of the site and neighbouring properties if these are located beyond 500m of the site.

Untransformed area X	Low density residential X	Medium density residential	High density residential
Informal residential	Heavy industrial	Tourism & Hospitality facility	Man-made Farm Dam X or reservoir
Old age home	Airport	Filling station	Nature conservation area
Retail	Commercial & warehousing	Light industrial	Medium industrial
Power station	Office/consulting room	Military or police base/station/compound	Casino/entertainment complex
Open cast mine	Underground mine	Spoil heap or slimes dam	Quarry X, sand or borrow pit
Hospital/medical center	School	Tertiary education facility	Church

Sewage treatment plant	Train station or shunting yard	Railway line	Major road (4 lanes or more)
Harbour	Sport facilities	Golf course	Polo fields
Landfill or waste treatment site	Plantation	Agriculture X	River, stream, wetland or drainage line X
Mountain, koppie or ridge	Museum	Historical building	Graveyard
Archaeological site			
Other land uses (describe):			

Provide a description:

Within a 500m radius of the proposed mining areas lies farm houses, cultivated agricultural land, indigenous vegetation areas, existing bentonite and zeolite quarry areas and processing plant, non-perennial drainage lines due to the undulating nature of the property, man-made dams and natural dams and koppies/hills.

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

The only "infrastructure" on site is informal gravel roads and farm fencing of agricultural lands.

GRADIENT OF THE SITE

Indicate the general gradient of the sites (highlight the appropriate box).

Flat	Flatter than 1:10	1:10 to 1:4	Steeper than 1:4
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LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site (highlight the appropriate box(es)).

Ridgeline	Plateau	Side slope of hill/ mountain	Closed valley	Open valley	Plain	Undulating plain/low hills	Dune	Sea-front
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GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on or near any of the following (highlight the appropriate boxes)?

Shallow water table (less than 1.5m deep)	YES	NO	UNSURE
Seasonally wet soils (often close to water bodies)	YES	NO	UNSURE
Unstable rocky slopes or steep slopes with loose soil	YES	NO	UNSURE
Dispersive soils (soils that dissolve in water)	YES	NO	UNSURE
Soils with high clay content	YES	NO	UNSURE
Any other unstable soil or geological feature	YES	NO	UNSURE
An area sensitive to erosion	YES	NO	UNSURE
An area adjacent to or above an aquifer.	YES	NO	UNSURE
An area within 100m of the source of surface water	YES	NO	UNSURE

Please indicate the type of geological formation underlying the site.

Granite	Shale	Sandstone	Quartzite	Dolomite	Dolorite	Other (describe)
Please provide a description.						

On a regional level the site geology is derived from the Bokkeveld group as part of Worcester Normal Fault of the Cape Fold Belt Area.

On a local level the site geology consists mainly of volcanic sedimentary deposit in the early Cretaceous layers composed of continental layers from Alluvial to Siltstones and Lacustine

SURFACE WATER

Indicate the surface water present on and or adjacent to the site and alternative sites (highlight the appropriate boxes)?

Perennial River	YES	NO	UNSURE
Non-Perennial River	YES	NO	UNSURE
Permanent Wetland	YES	NO	UNSURE
Seasonal Wetland	YES	NO	UNSURE
Artificial Wetland	YES	NO	UNSURE
Estuarine / Lagoonal wetland	YES	NO	UNSURE

Please provide a description.

Surface water features identified on the property include secondary drainage lines, man-made and natural dams with associated wetland characteristics mostly connected to remaining indigenous remnants, also classified as Critical Biodiversity Areas ("CBA") and National Wetland Freshwater Ecosystems Priority Areas ("NFEPA").

Similar mining activities is already taking place on the property and the water table has not been reached and is therefore lower than the proposed maximum depth of 30m. The actual depths of the groundwater table on the relevant property is unknown as no active boreholes occur on the proposed mining areas, or on nearby properties or surrounds. Due to the general >30m depth groundwater table average and low yields in the Heidelberg/Riversdale region groundwater is an unused resource in the region and according to the Water Research Commission, the probability of drilling an successful borehole according to accessibility is less than 40% while, such a borehole will only have a 10-20% chance of delivering 2L/s. The proposed mining activities is therefore not expected to have any significant detrimental impacts on the geohydrological dynamics and/or groundwater quality/table of the site.

Mining activities are however not proposed within any of the remaining watercourses/wetland areas and with the implementation of sufficient stormwater management berms directing the flow of stormwater around the quarry areas and into the natural flow path feeding the surrounding river system the mining activities will not have an significant detrimental impact on hydrological processes of the site and surrounds.

Also refer to specialists' assessments/statements under Appendix E.

BIODIVERSITY

Highlight the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category).

Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	The mining sites are only proposed on completely transformed annually cultivated agricultural lands and roads to

				be used are along existing farm roads.
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Highlight and describe the habitat condition on site.

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing/harvesting regimes etc.)
Natural	0%	Mining activities are only proposed on transformed previously cultivated and grazed agricultural lands.
Near Natural (includes areas with low to moderate level of alien invasive plants)	0%	
Degraded (includes areas heavily invaded by alien plants)	0%	
Transformed (includes cultivation, dams, urban, plantation, roads, etc.)	100%	

Complete the table to indicate:

- (i) the type of vegetation, including its ecosystem status, present on the site; and
- (ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		Aquatic Ecosystems							
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical	Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline		
	Endangered								
	Vulnerable								
	Least/Not Threatened	YES	NO	UNSURE	YES	NO	YES	NO	

Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

Aquatic Specialist Statement - It was observed that the proposed mining expansion activities areas falls within agricultural land currently being used for annual crop cultivation and livestock grazing (sheep and cattle). The specialist agrees with the Low Aquatic Sensitivity rating given to the proposed mining expansion areas by the DEA Screening Tool in terms of the current land use.

Several non-perennial secondary drainage lines are located throughout the property due to the undulating nature of the topography. Most of the drainage lines with their associated wetland characteristics are in a moderate to good condition as they are located within the "klowe" too

steep to plough and surrounded by indigenous vegetation remnants which also remains because the areas are too steep to plough for cultivation. The proposed mining expansion areas does not fall within any mapped non-perennial drainage lines nor within any mapped NFEPA wetland areas.

Mining activities have already been taking place on the property for many years and the water table has never been reached and is therefore lower than the proposed maximum depth of 30m. The actual depths of the groundwater table on the relevant properties are unknown as no active boreholes occur on the proposed mining areas, or on nearby properties or surrounds. Due to the general >30m depth groundwater table average and low yields in the Heidelberg/Riversdale region groundwater is an unused resource in the region and according to the Water Research Commission, the probability of drilling an successful borehole according to accessibility is less than 40% while, such a borehole will only have a 10-20% chance of delivering 2L/s. The proposed mining activities is therefore not expected to have any significant detrimental impacts on the geohydrological dynamics and/or groundwater quality/table of the site.

Terrestrial Biodiversity Specialist Statement - Conservation value and sensitivity (terms which are often used interchangeably in ecological assessments) of habitats are a product of species diversity, plant community composition, rarity of habitat, degree of habitat degradation, rarity of species, ecological viability and connectivity, vulnerability to impacts, and reversibility of threats (which in this case generally refers to the rehabilitation potential of the habitat; high sensitivity habitats having low rehabilitation potential). Sensitive environmental features that were identified on the property include natural and near natural indigenous vegetation remnants which exists throughout the property and consists mainly of Critically Endangered - Eastern Ruens Shale Renosterveld also identified as Terrestrial Critical Biodiversity Areas ("CBA") as according to the Fine Scale Planning ("FSP") for Hessequa. The primary reason for selection of these areas as terrestrial and/or aquatic CBAs and/or ESAs is that it helps meet the national conservation target for threatened vegetation types, and ancillary reasons are that it offers opportunities for continuation of ecological connectivity especially related to the hydrological connectivity of the drainage lines. These areas also potentially provide habitats for indigenous animal species of which may also include plant SCC.

It was observed that the proposed mining expansion activities areas falls within agricultural land currently being used for annual crop cultivation and livestock grazing (sheep and cattle). The only plant SCC recorded within the cultivated agricultural lands within close proximity to the mining activities areas was milkwood trees (*Sideroxylon inerme*) which is not endangered but is a Protected Tree species. One individual *Sideroxylon inerme* (Milkwood) tree was recorded within the cultivated agricultural land within close proximity to where mining expansion activities Phases 22-24 are proposed, this tree must be demarcated and may not be impacted upon by any mining activities.

Although no other plant or animal SCC were recorded within the proposed mining areas on the property it is most likely that plant and animal SCC's occur within the un-ploughed "Klowses"/gorges with relatively intact remaining indigenous vegetation areas as part of Critically Endangered - Eastern Ruens Shale Renosterveld. With implementation of proper no-go area buffers and stormwater management measures it is not expected that the mining activities will have any significant detrimental impacts on the indigenous vegetation remnants adjacent to the proposed mining areas.

The proposed mining expansion areas are not located on any mapped terrestrial CBA or ESA areas. Some of the access roads to be used crosses terrestrial CBAs, but these are existing farm roads which will remain and used as is during the proposed mining activities and maintained as per current farming practices.

Also refer to specialist assessments/statements available under Appendix E.

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

Refer to Appendix B.

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

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

Risk Assessment

Risk no.	Category	Risk Name	Probability	Consequence	Risk Value (AXB)																			
					Low Risk					Medium Risk					High Risk									
					0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	Health and Safety	Risk of public injury/death due mining operations	1	4																				
2		Risk of injury/ death to livestock and natural fauna due to mining operations	1	3																				
3		Risk of public & animal injury/ death due to drowning in poorly drained mining area	1	4																				
4		Risk of injury/ death to workers due to unsafe working conditions	2	4																				
5		Risk to passing traffic due poor visibility, operation of large plant, unsafe mining development adjacent to road and/ or lack of adequate traffic safety measures	1	4																				
6	Technical	Risk of substandard material quality and non-optimal exploitation of resource due to poor planning and/ or implementation of mining plan	0	0																				
7	Natural Environm ent	Risk of negative visual aesthetics experienced by public due to scarring, scale, location in sensitive environment, dumping and/ or abandonment of plant	1	1																				

Impacts that may result from the mining activities during the operational phase briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the proposed mining activities.

POTENTIAL IMPACTS ON GEOGRAPHICAL AND PHYSICAL ASPECTS

Nature of impact: Increased dust levels			
Discussion: Excavation activities and material hauling may create an increase in dust levels. When the topsoil is removed there may be an increase in windblown dust due to un-stabilised soil. Material hauling with trucks to and from the processing plant along gravel roads may also lead to an increase in dust levels on surrounding areas.			
Cumulative impacts: The potential for dust nuisance due to vegetation clearing and mining activities such as truck movements to and from the processing plant is not expected to be more significant than the potential dust nuisance that is created during the ploughing of agricultural land; and it is not anticipated that the impact will be high if mitigation measures are implemented.			
Mitigation: • Reduce drop height of material to a minimum. • Area will be mined in phases to reduce the barren areas. • Temporarily halt material handling in extreme windy conditions. • Use non-potable water (if available) to dampen bare soil areas if required to mitigate windblown dust. • A speed limit of 30km/hour will be displayed and enforced through a fining system. • All vehicle drivers entering the site will be informed of the speed limit. • The requirement of additional dust suppression measures to be implemented must be determined through a dust monitoring programme or fugitive dust control plan to limit the emission of particulate matter.			
Layout Alternative 1			No Go option
	Without Mitigation	With Mitigation	
Extent	2	1	Not Applicable (No mining activities to take place during the No-Go Alternative)
Duration	5	2	
Magnitude	2	2	
Probability	4	2	
Significance	36-Medium	10-Low	
Status	Medium negative significance if not mitigated	Low negative significance if mitigated	
Reversibility	100%		
Irreplaceable loss of resources	2- Partly Replaceable		
Can impacts be mitigated?	2-Partly		

Nature of potential impact:

Potential erosion due to proposed mining activities along steep slopes

Discussion:

Proposed mining activities may cause erosion on the site and surrounds due to excavation

of agricultural land, topsoil and overburden storage etc. which in turn may lead to increase in surface water runoff speed. Therefore site specific storm water management measures must be incorporated into the proposed mining activities layout, to direct storm water runoff away from the proposed quarry; topsoil and overburden stockpiles but still draining into adjacent non-perennial drainage lines as according to current status quo.

Cumulative impacts:

Erosion of the excavation areas, topsoil and overburden storage areas, roads and surrounding environments.

Mitigation:

- Visually inspect mining area boundaries, exposed surfaces, overburden and top soil stockpiles for signs of erosion.
- If erosion channels are discovered the mine must determine the cause of erosion and implement erosion rectification and prevention measures to rehabilitate eroded areas and prevent future erosion.
- Rehabilitate and reinstate engineered constructed contours as soon as a phase is complete.
- Undertake mining activities only in identified and specifically demarcated areas as proposed and in phases. Rehabilitating/filling excavations as soon as possible to prevent accumulation of stormwater.
- Implement erosion and storm water runoff management measures as according to EMP requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage areas.

Layout Alternative 1			No Go option
	Without Mitigation	With Mitigation	
Extent	2	1	Not Applicable (No mining activities to take place during the No-Go Alternative)
Duration	3	1	
Magnitude	6	2	
Probability	4	2	
Significance	44 – Medium	8 - Low	
Status	Medium Negative Significance without Mitigation	Low negative significance if mitigated	
Reversibility	100% Reversible		
Irreplaceable loss of resources	2-Partial loss of resources but can be rehabilitated		
Can impacts be mitigated?	1 – Can be completely mitigated		

Nature of impact:

Emissions

Discussion:

Vehicles and machinery on the site will produce tailpipe emissions.

Cumulative impacts:

This will contribute to atmospheric pollution.

Mitigation:

- Vehicles and machinery will be maintained to minimize emissions. A log book will be filled in to keep a record of all maintenance problems encountered and mitigation measures implemented to resolve the problem.
- Vehicles and machinery emitting excessive emissions will be stopped immediately and not allowed to operate until the necessary repairs have been made.

Layout Alternative 1			No Go option
	Without Mitigation	With Mitigation	
Extent	2	1	Not Applicable (No mining activities to take place during the No-Go Alternative)
Duration	2	2	
Magnitude	6	2	
Probability	2	2	
Significance	20 – Low	10 - Low	
Status	Low negative significance if not mitigated	Low negative significance if mitigated	
Reversibility	0%		
Irreplaceable loss of resources	1-No		
Can impacts be mitigated?	2-Partly		

Nature of impact:

Mining activities can result in increased sediment loads in water resources.

Discussion:

Mining activities can impact negatively upon the surface and groundwater resources on and adjacent to the sites.

Cumulative impacts:

Loss or pollution of surface and ground water resources.

This will lead to higher sediment and solute content of water leaving the area, thus lowering water quality in the area.

Mitigation:

- Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the indigenous vegetation surrounding the non-perennial drainage lines on site must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO).
- Minimize sediment load in the water by stripping a maximum of 10 meters ahead of the mining face and only moving the material once it needs to be processed or onto the intended topsoil stockpiles on the edge of all current and future mining areas. Monitor for erosion. Should erosion be present, undertake mitigation measures to rectify and prevent further erosion.
- All roads need to be maintained and monitored. Visible signs of possible erosion must be immediately rehabilitated.
- All storm water falling outside the mine property must be diverted around the mine. This forms part of the Storm Water Management Measures and part of the EMP.

Layout Alternative 1			No Go option
	Without Mitigation	With Mitigation	
Extent	2	1	Not Applicable (No mining activities to take place during the No-Go Alternative)
Duration	2	1	
Magnitude	6	2	
Probability	4	2	
Significance	40 - Medium	8 - Low	
Status	Medium negative significance if not	Low negative significance if	

	mitigated	mitigated	
Reversibility	100%		
Irreplaceable loss of resources	1-Will not be lost if mitigation measures are implemented		
Can impacts be mitigated?	1 – Can be completely mitigated		

Nature of potential impact:

Impact of proposed mining activities on groundwater resources and non-perennial drainage lines as associated with mapped NFEPA's

Discussion:

Sensitive environmental and landscape features identified on the property include secondary and primary non-perennial drainage lines also classified as National Freshwater Ecosystems Priority Areas ("NFEPA").

The proposed mining activities will however not have any significant detrimental impacts on these sensitive environmental and landscape features as it is recommended that mining activities are restricted to the completely transformed cultivated agricultural areas in-between and adjacent to these features.

To prevent potential edge effects a buffer area of at least 8m as measured from the edge of the sensitive environmental and landscape features and located on completely transformed cultivated land must be maintained throughout the mining activities phase. The proposed buffer areas may only be used as roads and for stormwater management and no other activities associated with the proposed mining of the site may occur within the buffer areas.

Mining activities have already been taking place on the property for many years and the water table has never been reached and is therefore lower than the proposed maximum depth of 30m. The actual depths of the groundwater table on the relevant properties are unknown as no active boreholes occur on the proposed mining areas, or on nearby properties or surrounds. Due to the general >30m depth groundwater table average and low yields in the Heidelberg/Riversdale region groundwater is an unused resource in the region and according to the Water Research Commission, the probability of drilling an successful borehole according to accessibility is less than 40% while, such a borehole will only have a 10-20% chance of delivering 2L/s. The proposed mining activities is therefore not expected to have any significant detrimental impacts on the geohydrological dynamics and/or groundwater quality/table of the site. However, if any groundwater is reached during the proposed mining activities on site, mining of that area must immediately be ceased, the Environmental Control Officer must be informed and the area must be rehabilitated to prevent any potential detrimental impact on the groundwater resource.

Cumulative impacts:

Disturbance and transformation of adjacent drainage lines and or degradations of groundwater resources during mining activities.

Mitigation:

- Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the undisturbed indigenous vegetation areas and non-perennial drainage lines must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and for stormwater management i.e. stormwater berms and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). Refer to the proposed no-go area map below.
- Visually inspect mining area boundaries, exposed surfaces, overburden and top soil stockpiles for signs of erosion.

- If erosion channels are discovered the mine must determine the cause of erosion and implement erosion rectification and prevention measures to rehabilitate eroded areas and prevent future erosion.
- Rehabilitate and reinstate engineered constructed contours as soon as a phase is complete.
- Undertake mining activities only in identified and specifically demarcated areas as proposed and in phases. Rehabilitating/filling excavations as soon as possible to prevent accumulation of stormwater.
- Implement erosion and storm water runoff management measures as according to EMP requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage areas.
- Minimize sediment load in the water by stripping a maximum of 10 meters ahead of the mining face and only moving the material once it needs to be processed or onto the intended topsoil stockpiles on the edge of all current and future mining areas. Monitor for erosion. Should erosion be present, undertake mitigation measures to rectify and prevent further erosion.
- Use existing access roads and all roads need to be maintained as is and monitored. Visible signs of possible erosion must be immediately rehabilitated.
- All storm water falling outside the mine property must be diverted around the mine.
- No drainage line or wetland areas edges may be disturbed or impacted upon by the proposed activities.
- If any groundwater is reached during the proposed mining activities on site, mining of that area must immediately be ceased, the Environmental Control Officer must be informed and the area must be rehabilitated to prevent any potential detrimental impact on the groundwater resource.
- All measures should be put in place to ensure proper post-mining rehabilitation of affected areas, to as close to the original condition as possible.
- No pollution of surface water or ground water resources may occur due to activities on the property. Oil spillages from vehicles on site must be controlled to prevent pollution of water resources.

Layout Alternative 1			No Go option
	Without Mitigation	With Mitigation	
Extent	2	1	Not Applicable (No mining activities to take place during the No-Go Alternative)
Duration	5	1	
Magnitude	10	2	
Probability	5	2	
Significance	85 - High	8 - Low	
Status	High Negative Significance without Mitigation	Low negative significance if mitigated	
Reversibility	100% Reversible		
Irreplaceable loss of resources	1-Will not be lost if mitigation measures are implemented		
Can impacts be mitigated?	1 – Can be completely mitigated		

Nature of impact:

The trapping of all storm water within excavations on the mine area

Discussion:

The trapping of all storm water within excavations on the property for process purposes may

reduce the amount of water available to downstream users. The possible impacts of lack of storm water management include the reduction in available catchment water for downstream users; and the possible mingling of clean water with muddy mine water.

Cumulative impacts:

The reduction in available catchment water for downstream users.

Mitigation:

- All storm water falling outside the mine property must be diverted around the mine.
- The mine will maintain the storm water diversion channels created along the perimeter of the mine property. The intention of the channels is to ensure water from outside the property is diverted around the quarry.

Layout Alternative 1			No Go option
	Without Mitigation	With Mitigation	
Extent	2	1	Not Applicable (No mining activities to take place during the No-Go Alternative)
Duration	2	2	
Magnitude	6	2	
Probability	4	2	
Significance	40 - Medium	10 - Low	
Status	Medium negative significance if not mitigated	Low negative significance if mitigated	
Reversibility	100%		
Irreplaceable loss of resources	1-Will not be lost if mitigation measures are implemented		
Can impacts be mitigated?	1 – Can be completely mitigated		

Nature of impact:

Waste from chemical toilets and litter

Discussion:

There are no daily negative impacts associated with the enclosed chemical toilets provided. The possible negative impacts associated with chemical toilets are due to accidents. A leaking chemical toilet could cause soil pollution, as well as ground and surface water pollution in storm events. Litter will be taken off site daily by the operators.

Cumulative impacts:

Only in extreme cases where multiple leaks occur will environmental pollution occur. Litter will cause nuisance if not removed daily.

Mitigation:

- The toilets are serviced when needed and emptied when almost full.
- If a leak occurs the correct emergency procedure is to be followed (see EMP).
- Litter will be collected and removed from site by the operator on a daily basis.
- Chemical toilets must not be placed within no-go or associated buffer areas.

Layout Alternative 1			No Go option
	Without Mitigation	With Mitigation	
Extent	2	1	Not Applicable (No mining activities to take place during the No-Go Alternative)
Duration	2	1	
Magnitude	6	0	
Probability	3	0	
Significance	30-Medium	-	
Status	Medium negative significance if not	Low negative significance if	

	mitigated	mitigated	
Reversibility	100%		
Irreplaceable loss of resources	1-Will not be lost if mitigation measures are implemented		
Can impacts be mitigated?	1 – Can be completely mitigated		

Nature of impact: Hydrocarbon spill			
Discussion: There is the potential for hydrocarbon to spill or leak from the following sources: Haul vehicles, excavator, front end loader, pickup trucks and during minor service activities undertaken on the site.			
Cumulative impacts: Pollution of soil, potential pollution of surface water run-off, potential pollution of ground water if the spill is not cleaned up. The significance of the associated impacts will be dependent on the scale of the spill.			
Mitigation: - Any mine vehicle which is leaking hydrocarbons (e.g. petrol, diesel or oil) will be serviced in a concreted workshop to repair the leak. If it is not possible to repair the leak immediately, a drip tray will be placed under the leak to trap any spillages. The content of the drip trays will be decanted into an old oil drum for removal from the site to a hazardous waste handling facility. - Hydrocarbon spillages are to be cleaned up immediately. - The mine will also maintain a store of suitable absorbent material, suitable bioremediation substance and a spill kit. All incidences/ spillages are to be recorded in an incident log book. Contaminated soil must go to Vissershok Hazardous Landfill site.			
Layout Alternative 1		No Go option	
	Without Mitigation	With Mitigation	
Extent	2	1	Not Applicable (No mining activities to take place during the No-Go Alternative)
Duration	2	1	
Magnitude	6	2	
Probability	3	2	
Significance	30-Medium	8-Low	
Status	Medium negative significance if not mitigated	Low negative significance if mitigated	
Reversibility	100% Reversible		
Irreplaceable loss of resources	1-Will not be lost if mitigated		
Can impacts be mitigated?	1 – Can be completely mitigated		

Nature of impact: Fire	
Discussion: There is the potential for fire to occur on the site. Veld fires can occur across the vegetated areas of the property.	

Cumulative impacts:

Negative impacts associated with fires include:
smoke emission, loss of flora and fauna, loss of crops, hazard to human life and health, damage to infrastructure

Mitigation:

- All employees will be trained on fire safety and on how to reduce the probability of a fire spreading out of control.
- Anyone who observes a fire must report it immediately to the fire protection agency/ fire brigade and their supervisor/ mine manager.
- Vehicles must be parked in an area with no vegetation if a fire occurs.

Layout Alternative 1		No Go option
	Without Mitigation	
Extent	3	1
Duration	1	1
Magnitude	8	2
Probability	3	2
Significance	36- Medium	8 - Low
Status	Medium negative significance if not mitigated	Low negative significance if mitigated
Reversibility	100%	Not Applicable (No mining activities to take place during the No-Go Alternative)
Irreplaceable loss of resources	1-Will not be lost if mitigation measures are implemented	
Can impacts be mitigated?	2 – Partly	

POTENTIAL IMPACTS ON BIOLOGICAL ASPECTS

Nature of impact:

Introduction of declared weed species

Discussion:

Declared weeds may be transported onto the site and spread to surrounding areas. This may have management and cost impacts on the property. Introduction of alien plant species via vehicular traffic is an important aspect that needs to be considered. Alien grass seeds for example may become attached to vehicles and be transported to site. Without monitoring and control this could become problematic.

Cumulative impacts:

Loss of potential biodiversity and ecosystems due to the spread of invader plants.

Mitigation:

- Alien invasive and weed vegetation monitoring and removal must be undertaken annually during mining and for at least a year after mining activities have ceased on disturbed areas or until the landowner starts with the annual cultivation activities on the affected land. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology depending on the contract agreement that the applicant has with the landowner. All invasive alien species as listed by the Conservation of Agricultural Resources Act (CARA) must be removed during these surveys. Declared weeds and aliens must be removed before annual seeding.
- Only use topsoil as derived and conserved from the proposed mining area to be rehabilitated after mining activities have ceased on the property.
- Every landowner has a legal obligation in terms of the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) and the National Environmental Management:

Biodiversity Act, 2004 (Act No. 10 of 2004) to control and eradicate alien invasive vegetation on his/her property			
Layout Alternative 1			No Go option
	Without Mitigation	With Mitigation	
Extent	2	1	Not Applicable (No mining activities to take place during the No-Go Alternative)
Duration	5	1	
Magnitude	6	2	
Probability	4	2	
Significance	52- Medium	8-Low	
Status	Medium negative significance if not mitigated	Low negative significance if mitigated	
Reversibility	100%		
Irreplaceable loss of resources	1-Will not be lost		
Can impacts be mitigated?	1-Yes, by implementing an alien eradication plan and continuing monitoring of alien regrowth		

Nature of impact:
Impact on the naturally occurring fauna and avifauna present in the area
Discussion:
No red data fauna species were identified during the survey. The proposed development will not impact on any known conservation worthy species or their habitat.
Cumulative impacts:
Loss of indigenous fauna species habitat.
Mitigation:
- At least three bird species of conservation concern are known to occur in the general area and habitat present on site (cultivated grainlands with renosterveld patches), namely Blue Crane (<i>Anthropoides paradiseus</i>), Denham's Bustard (<i>Neotis denhami</i>) and Black Harrier (<i>Circus maurus</i>). Mining activity should not proceed if there are Blue Cranes or Denham's Bustard breeding within the footprint or immediate surroundings. If a breeding pair is encountered, the mining should only proceed after the chick fledging. - Mining activities must be limited to identified and demarcated annually cultivated agricultural land and only existing roads may be used. - Remove and conserve topsoil layer and overburden material for rehabilitation after mining activities have ceased - Invasive vegetation to be removed during mining activities to be disposed of at landfill site in such a manner that seeds must not be able to spread from the disposal site or during transportation. - No trapping or hunting of any fauna or avifauna species may take place on the property. - Any tortoises or fauna or avifauna species present on the site when excavations are taking place must be safely moved to adjacent areas not to be impacted by the mining activities. - No disturbance should be allowed within the remaining indigenous vegetation areas outside of the proposed mining activity areas and existing access roads. This includes no excavations; no storage of topsoil, overburden or bentonite stockpiles, no new or widened roads, and all forms of temporary disturbance. If indigenous vegetation areas are disturbed they must be immediately rehabilitated with indigenous vegetation areas under guidance of suitably qualified rehabilitation

specialist.

- No natural vegetation areas edges may be cleared or impacted upon by the proposed mining activities.
- Implement erosion and storm water runoff management measures to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds.
- Backfill mined areas as soon as possible after mining completion with onsite excavated material.
- Only use topsoil and excavated material as derived and conserved from the proposed mining site to backfill and rehabilitate impacted areas.
- Monitor rehabilitated areas for signs of erosion for at least a year after rehabilitation and implement erosion rectification and prevention measures as and if required.
- Alien invasive and weed vegetation monitoring and removal must be undertaken for at least a year after mining activities have ceased and the site has been rehabilitated This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology.

Layout Alternative 1			No Go option
	Without Mitigation	With Mitigation	
Extent	2	1	Not Applicable (No mining activities to take place during the No-Go Alternative)
Duration	2	1	
Magnitude	6	2	
Probability	2	1	
Significance	20- Low	4- Low	
Status	Low negative significance if not mitigated	Low negative significance if mitigated	
Reversibility	100%		
Irreplaceable loss of resources	1-Will not be lost		
Can impacts be mitigated?	2-Yes, partly		

Nature of impact:

Impact of proposed mining activities on terrestrial indigenous vegetation also as associated with mapped terrestrial CBAs.

Discussion:

Indigenous vegetation remnants are present throughout the surrounding areas of the proposed mining areas on cultivated agricultural land. To prevent any potential impacts on these remnants mitigation measures must be implemented throughout the proposed mining activities.

Cumulative impacts:

Proposed mining activities may have the following cumulative impacts on surrounding indigenous vegetation areas –

- Erosion within indigenous flora areas due to increased storm water runoff created by adjacent mining materials stockpiles
- Driving of mining vehicles outside of demarcated areas within indigenous vegetation areas will lead to a loss in vegetation species.
- Loss of indigenous vegetation areas due to mining excavations too close to the edge of indigenous vegetation areas

Mitigation:

- At least three bird species of conservation concern are known to occur in the general

area and habitat present on site (cultivated grainlands with renosterveld patches), namely Blue Crane (*Anthropoides paradiseus*), Denham's Bustard (*Neotis denhami*) and Black Harrier (*Circus maurus*). Mining activity should not proceed if there are Blue Cranes or Denham's Bustard breeding within the footprint or immediate surroundings. If a breeding pair is encountered, the mining should only proceed after the chick fledging.

- Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the indigenous vegetation surrounding the non-perennial drainage lines on site must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). No disturbance should be allowed within the drainage lines and remaining indigenous vegetation areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance. No excavation or stockpiling is allowed within the buffer areas. Should any evidence be observed that the mining activities are impacting negatively on any indigenous vegetation areas (and drainage lines) the ECO must recommend mitigation measures to be implemented to prevent further degradation and rectify impacts.
- Mining activities must be limited to identified and demarcated annually cultivated agricultural land and only existing roads may be used.
- The individual milkwood trees that were recorded adjacent to proposed mining activity areas within the cultivated areas must be demarcated within a 5m buffer radius before any mining activities occurs within a 50m range of the trees and must remain demarcated throughout the applicable mining area's operational and rehabilitation phases. Demarcation can be removed when implementation of the applicable mining area's rehabilitation measures has been completed.
- Remove and conserve topsoil layer and overburden material for rehabilitation after mining activities have ceased. Topsoil and overburden materials must be stored separately adjacent to the mining areas on cultivated land with effective storm water runoff and erosion prevention measures to be implemented in order to protect the materials for rehabilitation.
- Alien invasive and weed vegetation monitoring and removal must be undertaken annually during mining and for at least a year after mining activities have ceased on disturbed areas or until the landowner starts with the annual cultivation activities on the affected land. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology depending on the contract agreement that the applicant has with the landowner. All invasive alien species as listed by the Conservation of Agricultural Resources Act (CARA) must be removed during these surveys. Declared weeds and aliens must be removed before annual seeding.
- Invasive vegetation to be removed during mining activities to be disposed of at landfill site in such a manner that seeds must not be able to spread from the disposal site or during transportation.
- No trapping or hunting of any fauna or avifauna species may take place on the property.
- Any tortoises or fauna or avifauna species present on the site when excavations are taking place must be safely moved to adjacent areas not to be impacted by the mining activities.
- No disturbance should be allowed within the remaining indigenous vegetation areas outside of the proposed mining activity areas and existing access roads. This includes no excavations; no storage of topsoil, overburden or bentonite stockpiles, no new or widened roads, and all forms of temporary disturbance. If indigenous vegetation areas are disturbed they must be immediately rehabilitated with indigenous vegetation areas under guidance of suitably qualified rehabilitation specialist.
- No natural vegetation areas edges may be cleared or impacted upon by the proposed mining activities.
- Implement erosion and storm water runoff management measures as according to EMP

and stormwater management plan requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage areas.

- As the excavation of the quarry advances the stored overburden material must be replaced to backfill the excavations. The backfilled area must then be contoured according to existing surrounding contours of the cultivated land to prevent erosion. After contouring has been completed the stored topsoil material must be spread over the backfilled area. Only use topsoil as derived and conserved from the proposed mining area to be rehabilitated after mining activities have ceased on the property. The topsoil must not be compacted after spreading to allow the disturbed area to be restored. The site must be monitored regularly (at least 6 monthly and after heavy rains) and all signs of erosion immediately rectified and alien vegetation removed to prevent potential siltation, erosion and alien encroachment of natural areas and drainage lines.
- The project implementation process should be subject to standard Environmental Management Programme (EMP) prescripts and conditions and only proceed under supervision of a competent and diligent Environmental Control Officer, both during the operational/excavation and rehabilitation phases.

Layout Alternative 1		No Go option	
	Without Mitigation	With Mitigation	
Extent	2	1	Not Applicable (No mining activities to take place during the No-Go Alternative)
Duration	5	2	
Magnitude	10	4	
Probability	5	4	
Significance	85 - High	28 - Low	
Status	High negative significance if not mitigated	Low negative significance if mitigated	
Reversibility	100%		
Irreplaceable loss of resources	1-Will not be lost		
Can impacts be mitigated?	1- Can be completely mitigated		

POTENTIAL IMPACTS ON SOCIO-ECONOMIC ASPECTS

Nature of impact:

Sustained jobs

Discussion:

The continued employment of at least 54 local residents in the area will be ensured if the continued supply of bentonite mining material is ensured by approving the application.

Cumulative impacts:

The continued employment of at least 54 local residents in the area will be ensured

Mitigation:

Implement proposed mining activities

Layout Alternative 1		No Go option	
	Without Mitigation	With Mitigation	Without Mitigation
Extent	High Positive – Sustained jobs for local communities		High Negative – Not authorising proposed mining expansion will lead
Duration			
Magnitude			

Probability		to shortening of the mine lifespan which in turn will lead to loss of existing jobs.
Significance		
Status		
Reversibility		
Irreplaceable loss of resources		
Can impacts be mitigated?		

Nature of impact:

Increased traffic due to the mining activities requiring various vehicles to come onto and leave the site.

Discussion:

The mining machinery will only have a traffic impact on delivery to and collection from the site and seeing as there is already existing active quarry on the property where the mining activities are to take place the potential traffic impacts is therefore regarded as negligible. Making use of existing roads will cause deterioration and potential dust generation and noise generation and safety concerns for surrounding residents.

Cumulative impacts:

Because the property already has existing mining right areas which operated for several years the additional proposed mining areas will make use of the same R322 road to haul the deliveries to the processing plant on Erf 1412 near Heidelberg with the same amount of trips and machinery expected as previously used therefore it is not expected that the proposed activities will have any significant additional cumulative traffic impacts on the site or surrounds.

Mitigation:

- A speed limit of 30km/hour will be displayed and enforced through a fining system. All vehicle drivers entering the site will be informed of the speed limit. Speed limit will also be applicable when delivery trucks drive through areas where farm yard and housing is next to the road.
- The applicant will be responsible for upkeep and repair of farm roads used during mining activities to the satisfaction of the landowner.

Layout Alternative 1			No Go option
	Without Mitigation	With Mitigation	
Extent	3	3	Not Applicable (No mining activities to take place during the No-Go Alternative)
Duration	2	2	
Magnitude	4	2	
Probability	4	3	
Significance	36- Medium	21- Low	
Status	Medium negative significance if not mitigated	Low negative significance if mitigated	
Reversibility	100%		
Irreplaceable loss of resources	1-Will not be lost		
Can impacts be mitigated?	2- Can be partly mitigated		

Nature of impact:

Mining of agricultural land

Discussion:

The only significant agricultural impact is likely to occur only on the mining site. There may be some dust deposition on surrounding farmland, but that can be managed so as not to cause a reduction in agricultural production potential. There will be a temporary cessation of agricultural production for the duration of mining activity on the site, but the potential impact of concern is a reduction in the long-term agricultural production potential of the site. The total size of the additional quarries is 1.09 hectares.

Cumulative impacts:

The cumulative impact of a development is the impact that development will have when its impact is added to the incremental impacts of other past, present, or reasonably foreseeable future activities that will affect the same environment.

Agricultural land throughout South Africa is under inevitable pressure from various non-agricultural land uses, including mining and urban expansion. The potential cumulative agricultural impact of importance is a regional loss of future agricultural production potential. This cumulative impact is significant. However, provided that rehabilitation is effectively implemented, the assessed development will not contribute to the cumulative impact. The cumulative agricultural impact of the proposed development with effective rehabilitation is therefore assessed here as being of low significance and therefore as acceptable.

Mitigation:

Although there is likely to be some reduction in yields from the rehabilitated land in the first few seasons after rehabilitation due to reduced biological activity in the topsoil, yields are likely to be restored within approximately four years.

The following is the sequence of recommended rehabilitation steps:

1. Prevent dust by means of damping down surfaces when required.
2. Prevent erosion by means of temporary banks and ditches that will direct run-off water. Any occurrences of erosion must be attended to immediately and the erosion control at that point must be amended to prevent further erosion from occurring there.
3. Because of the challenge of the very thin topsoil that naturally occurs in the area, double stripping is essential. The thin topsoil gets easily diluted and contaminated by the underlying subsoil, during the mining and stockpiling process. Any lack of topsoil at the surface after rehabilitation is a serious problem that will have a significant, on-going, detrimental effect on crop performance. Topsoil must be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes.
4. Double stripping is a rehabilitation technique that is recommended by the Chamber of Mines. It involves stripping a layer of topsoil, and then a second additional layer below the topsoil. These two layers are stockpiled separately and during rehabilitation are spread separately on the surface in their original sequence. In other words, the subsoil layer is spread immediately on top of the profiled overburden, and the topsoil layer is then spread on top of that. The recommended stripping depths on Erf 3264 are 40cm for the topsoil and then a further 35cm for the subsoil. The recommended stripping depths on Erf RE1412 are 20cm for the topsoil and then a further 35 cm for the subsoil. All overburden is stripped and stockpiled separately from both the topsoil and subsoil stockpiles.
5. Topsoil stockpiles should be protected against losses by water and wind erosion. Stockpiles should be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants on the stockpiles will help to prevent erosion. Stockpiles should be no more than 2 metres high.
6. Overburden must be backfilled into the mined-out pit.
7. After mining and backfilling of overburden, any steep slopes must be reduced to a minimum and profiled to blend with the surrounding topography. A slope, even if minimal, must be ensured across all rehabilitated quarry areas so that they are naturally free draining.

8. The stockpiled subsoil must then be evenly spread and smoothed across the backfilled overburden. The depth should be monitored during spreading to ensure that coverage is even.
9. Thereafter, the stockpiled topsoil must be evenly spread and smoothed across the subsoil. The depth should be monitored during spreading to ensure that coverage is even.
10. Any parts of the existing contour bank system that has been disturbed must be re-established to the same specifications (height, slope, distance apart) as prior to disturbance, and the integrity of the entire system must be returned to full functionality.
11. Soil sampling and chemical correction should be done following the re-spreading of the topsoil. Combined, representative samples should be taken from across the site to a depth of 15cm. Soil chemical deficiencies must be corrected, based on these samples. A chemical analysis from an agricultural laboratory will include a recommendation of the appropriate quantities of chemical ameliorants (for example lime, phosphate etc) that should be applied to optimize the soil chemistry for the relevant crop. Pre-mining soil chemistry is not important. What is important is to ensure that the rehabilitated soil is optimized to within the norms for the relevant crop.
12. Sow a crop in the first season of the rehabilitated soil that is a hardy, annual crop that is sown primarily for soil stabilisation and biomass and not necessarily for economic production (eg korog). It should be dosed with a high level of nitrogen (N), phosphorus (P) and potassium (K) fertiliser in order to maximise vegetative growth and therefore biomass production (both above and below ground). High nitrogen will encourage high biomass production. The amount of required fertiliser will therefore be a higher level of fertilisation than would be determined for economic viability in terms of input costs versus production. The increased fertilisation costs should therefore be borne by the mine's rehabilitation budget, and not by the farmer.
13. Monitoring: it is impossible, by way of a soil analysis, to evaluate, with any degree of certainty, whether a significantly disturbed soil will support crop growth or not. The final proof of effective rehabilitation must always be in the reaction of the crop that is planted on the rehabilitated soil. If the crop grows adequately, then the soil is effectively rehabilitated. If it does not, then the soil is not effectively rehabilitated. The best way to test this is to sow a crop across the boundary between the rehabilitated land and the undisturbed soil. The reaction of the crop will very obviously demonstrate a problem and a difference, if there is one.

Layout Alternative 1			No Go option	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Extent	2	1	Not Applicable (No mining activities to take place during the No-Go Alternative)	
Duration	5	2		
Magnitude	10	3		
Probability	5	5		
Significance	85 - High	30 -		
Status	High Negative significance if not mitigated	Low Negative significance if mitigated		
Reversibility	100% Reversible			
Irreplaceable loss of resources	1-Will not be lost if mitigated			
Can impacts be mitigated?	2 – Can be partly mitigated			

POTENTIAL IMPACTS ON CULTURAL-HISTORICAL ASPECTS

Nature of impact: The potential impact of the proposed development on archaeological, paleontological and heritage remains			
Discussion: No significant heritage features were found on site by the specialists.			
Cumulative impacts: Loss of burials, fossils or other historical material. Future mining of bentonite horizons associated with lacustrine facies within the central portion of the Kirkwood Formation may well expose fossiliferous horizons of palaeontological interest that should be recorded and judiciously sampled by a professional palaeontologist, together with relevant sedimentological data. I			
Mitigation: - Should any burials, fossils or other historical material be encountered during excavations, work must cease immediately and HWC must be contacted. - In the case of any significant fossil finds exposed by mining operations in this region (e.g. vertebrate teeth, bones, crustaceans, insects, burrows, petrified wood), these should be safeguarded - preferably in situ - and reported by the ECO as soon as possible to Heritage Western Cape (3rd Floor Protea Assurance Building, 142 Longmarket Street, Green Market Square, Cape Town 8000. Private Bag X9067, Cape Town 8001. Tel: 021 483 5959 Email: ceoheritage@westerncape.gov.za), so that appropriate mitigation (i.e. recording, sampling or collection) by a palaeontological specialist can be considered and implemented before rehabilitation of the quarry takes place. These recommendations are summarized in the appended Chance Finds Protocol and has been incorporated into the Environmental Management Programme (EMPr) for the proposed mining project.			
Layout Alternative 1			No Go option
	Without Mitigation	With Mitigation	
Extent	2	1	Not Applicable (No mining activities to take place during the No-Go Alternative)
Duration	5	1	
Magnitude	10	2	
Probability	5	2	
Significance	85 - High	8 - Low	
Status	High Negative significance if not mitigated	Low negative significance if mitigated	
Reversibility	0% reversibility – once the historical features are destroyed, it cannot be recovered.		
Irreplaceable loss of resources	3- Yes, completely irreplaceable		
Can impacts be mitigated?	1- Can be completely mitigated		

POTENTIAL NOISE IMPACTS

Nature of impact: Noise due to mining machinery, trucks and people on site
Discussion: Mining machinery may cause noise disturbance to the directly adjacent land users/ owners. It is not anticipated that the noise will be considerable and will only be temporary. There is no residential areas close by and as such the noise impact will not be significant.

Cumulative impacts:

Noise due to mining activities may cause a nuisance to adjacent landowners.

Mitigation:

- No activities that may generate noise levels above the legal limit in terms of the Environmental Conservation Act, Western Cape Noise regulations will be conducted.
- Machinery and vehicles should be regularly maintained to prevent excessive noise.
- All machinery and work activities must adhere to the requirements of the noise regulations.

Layout Alternative 1			No Go option
	Without Mitigation	With Mitigation	
Extent	2	2	Not Applicable (No mining activities to take place during the No-Go Alternative)
Duration	2	2	
Magnitude	2	2	
Probability	1	1	
Significance	6- Low	6-Low	
Status	Low negative significance if not mitigated	Low negative significance if mitigated	
Reversibility	This will not be a long term impact nor will it have an impact on the natural processes. It is thus 100% reversible.		
Irreplaceable loss of resources	1- No resources will be lost.		
Can impacts be mitigated?	1- Can be completely mitigated		

POTENTIAL VISUAL IMPACTS

Nature of impact:

A negative visual impact due to the creation of excavation pits.

Discussion:

Transformation of landscape/topography of the sites will be temporary only during mining excavations and will not have a significant impact on visual aspects of the area as the mining sites are not visible from any main tourism routes and will be located in agricultural areas already impacted upon by surrounding mining sites. Topsoil and overburden materials are stored and replaced as mining activities proceeds and therefore landscape/topography is returned to previous state once mining activities have been completed.

Cumulative impacts:

Unsightly mine site.

Mitigation:

- Proposed mining activities must be limited to development footprint site.
- Rehabilitation of site when mining process complete.

Renhabilitation take when mining process complete.			
Layout Alternative 1		No Go option	
	Without Mitigation	With Mitigation	
Extent	1	1	Not Applicable (No mining activities to take place during the No-Go Alternative)
Duration	5	2	
Magnitude	2	2	
Probability	2	2	
Significance	16-Low	10 - Low	

Status	Low negative significance if not mitigated	Low negative significance if mitigated	
Reversibility	This will not be a long term impact nor will it have an impact on the natural processes. It is thus 100% reversible.		
Irreplaceable loss of resources	1- No resources will be lost.		
Can impacts be mitigated?	1- Can be completely mitigated		

Impacts that may result from the decommissioning/closure/rehabilitation phase briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the decommissioning/closure/rehabilitation phase.

Nature of impact: Rehabilitation of agricultural land
Discussion: The baseline production potential is suitability for cropping. The amount of potential decrease is estimated at a 10 to 40% reduction in year 1 which will decrease to zero within 4 years, provided that rehabilitation is effectively implemented. Detailed recommendations for soil rehabilitation are provided. Ensuring a surface cover of topsoil is by far the most critical step of successful soil rehabilitation. Because of the challenge of the very thin topsoil that naturally occurs on site, double stripping is essential for effective rehabilitation.
Cumulative impacts: With effectively implemented rehabilitation, the overall negative agricultural impact of the development (loss of future agricultural production potential) is assessed as being of low significance and as acceptable. However, with poorly implemented rehabilitation, the overall negative agricultural impact of the development is assessed as being of high significance
Mitigation: Mine management must be held accountable for well managed and effective implementation of all the recommended rehabilitation steps above. The specific, measurable rehabilitation outcomes against which the effectiveness of completed rehabilitation must be measured are: 1. That the topography and surface have been smoothed sufficiently to allow cultivation; that topsoil has been spread on the surface across all areas from which topsoil was stripped, to a minimum depth of 20 cm; 2. That topsoil has been spread on the surface across all areas from which topsoil was stripped, to a minimum depth of 40 cm on Erf 3264 and 20 cm on Erf RE1412; 3. That no saline material from depth within the mining excavation occurs at less than 50 cm depth in the rehabilitated soil profile. Correctly and well implemented double stripping, as recommended in the Agricultural Statement, will ensure this. 4. That the entire disturbed area is free draining and that no ponding of water at the surface occurs. 5. That the pre-mining contour banks have been re-established to suitable specifications (height, slope, distance apart) at least as intensive as prior to disturbance, and that the integrity of the contour bank system as a whole is in place. 6. That there is no visible erosion across the area, or down-slope of it as a result of mining, and that no part of the area has been left unacceptably vulnerable to erosion. 7. That the soil chemistry, including pH, salinity, and phosphorus levels have been optimised for small grain production. 8. That a cover crop has been established, provided with a high level of nitrogen fertilisation, and

grows successfully across the entire area disturbed by mining activities and that it shows no significant difference in performance when sown across the boundary between disturbed and undisturbed land.

Layout Alternative 1			No Go option	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Extent	2	1	Not Applicable (No mining activities to take place during the No-Go Alternative)	
Duration	5	2		
Magnitude	10	3		
Probability	5	5		
Significance	85 - High	30 -		
Status	High Negative significance if not mitigated	Low Negative significance if mitigated		
Reversibility	100% Reversible			
Irreplaceable loss of resources	1-Will not be lost if mitigated			
Can impacts be mitigated?	2 – Can be partly mitigated			

Nature of impact:

Loss of socio-economic benefits to the local communities of Heidelberg and Riversdale

Discussion:

If there are no other viable bentonite mining sites remaining with the areas of Heidelberg and Riversdale Cape Bentonite Mine operations can potentially cease which will have a significant detrimental impact on the socio-economic aspects of the local communities.

Cumulative impacts:

If Cape Bentonite Mine operations cease at least 54 local workers will lose their jobs, landowners whom are paid for areas to be mined will lose income, Social Labour Plans Program which provides funding to several local organisations will be stopped and generally less income and employment opportunities that the mine provided will be available.

Mitigation:

Additional viable bentonite deposits must be sourced and authorised to ensure sustainability of the Cape Bentonite Mine operations.

Layout Alternative 1			No Go option
	Without Mitigation	With Mitigation	
Extent	3	-	Not Applicable (No mining activities to take place during the No-Go Alternative)
Duration	5	-	
Magnitude	10	1	
Probability	5	1	
Significance	90-High	1-Low	
Status	High significance if not mitigated	No significance if mitigated	
Reversibility	100% reversibility		
Irreplaceable loss of resources	-		

Can impacts be mitigated?	1 – Can be completely mitigated	
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vi) **Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;**

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

RISK REGISTER

The risk assessment tool is founded upon a risk register, comprised of 26 potential risks, covering the full range of activities associated with the identification, planning, operation and closure of the proposed bentonite quarry. These risks are divided into the following logical structure of risk categories:

- Health and safety risks (5);
- Technical risks (1);
- Natural environment risks (7);
- Built environment risks (5);
- Economic risks (1); and
- Legal and authorisation risks (7).

Category	Number	Issue / Risk Event
Health & Safety	1	Risk of public injury/death due mining operations
	2	Risk of injury/ death to livestock and natural fauna due to mining operations
	3	Risk of public injury/ death due to drowning in poorly drained mining area
	4	Risk of injury/ death to workers due to unsafe working conditions
	5	Risk to passing traffic due poor visibility, operation of large plant, unsafe mining development adjacent to road and/ or lack of adequate traffic safety measures
Technical	6	Risk of substandard material quality and non-optimal exploitation of resource due to poor planning and/ or implementation of mining plan
Natural Environment	7	Risk of negative visual aesthetics experienced by public due to scarring, scale, location in sensitive environment, dumping and/ or abandonment of plant
	8	Risk of instability, slippage and failure of re-vegetation due to steep slopes and/ or erosion
	9	Risk of sedimentation to watercourse or water bodies due to steep slope and/ or erosion
	10	Risk of environmental degradation due to illegal dumping, unplanned or uncontrolled spoiling and/ or <i>ad hoc</i> mining
	11	Risk of spread of alien/ invasive vegetation due to disturbance caused by mining
	12	Risk of spreading fire due to inadequate fire planning and implementation
	13	Risk of nuisance to flora and fauna due to noise and dust generation
Built Environment	14	Risk of nuisance to neighbours and lands due to dust and noise generation

	15	Risk of direct and indirect damage to heritage resources/ significance due to poor planning and implementation of mining plan
	16	Risk of loss of access to property due to operation of heavy plant
	17	Risk of permanent loss of land use potential due to poor operation and abandonment of mining area
	18	Risk of damage to service infrastructure due to proximity of services
Economic	19	Risk of increased operation/ rehabilitation costs and lost opportunity due to poor operation
Legal and Authorisation	20	Risk of legal action due to the failure to comply with the requirements of the Mine Health
	21	Risk of prosecution or stop works order from authority due to lack of authorisation
	22	Risk of legal action, prohibition of access or compensation claim by landowner due to failure to formally secure property and agree on conditions of use, and/ or due to irresponsible operation/ abandonment of the mining area
	23	Risk of legal action or compensation claim by third party due to irresponsible operation/abandonment of the mining area
	24	Risk of not obtaining closure certification from DMR due to absence of extent authorization for mining area, failure to satisfy the conditions attached to any authorisation and/ or failure to achieve satisfactory rehabilitated state for mining area
	25	Risk of unregulated removal of materials by unauthorised third party due to uncontrolled access
	26	Risk of uncontrolled development of mining area, with attendant risks, due to formally shared liability Act

Risk Management

The utilisation of materials sources is in essence about the management of assets and risk, and hence, the approach adopted for the compilation of the EMP is founded on a risk management philosophy. Risk management is best described as the process of measuring/ assessing risk and then developing strategies to address the identified risks. As such, it represents a logical and systematic approach to the identification, analysis, assessment, treatment, monitoring, and communication of the risks inherent to the use of material sources.

The risk assessment tool presented here is based upon the International Organisation for Standardisation (ISO), ISO 31000:2009 Risk Management – Principles and Guidelines, and represents a systematic and proven process consisting of the following key steps (refer to Figure 1.1)

- Establish the context to clarify the scope of the risk assessment process;
- Identify the potential risks;
- Evaluate the identified risks to determine the probability of a risk occurring and its consequence;
- Map the identified risks to compared them against criteria for treatment; and
- Develop appropriate risk treatments or mitigation measures.

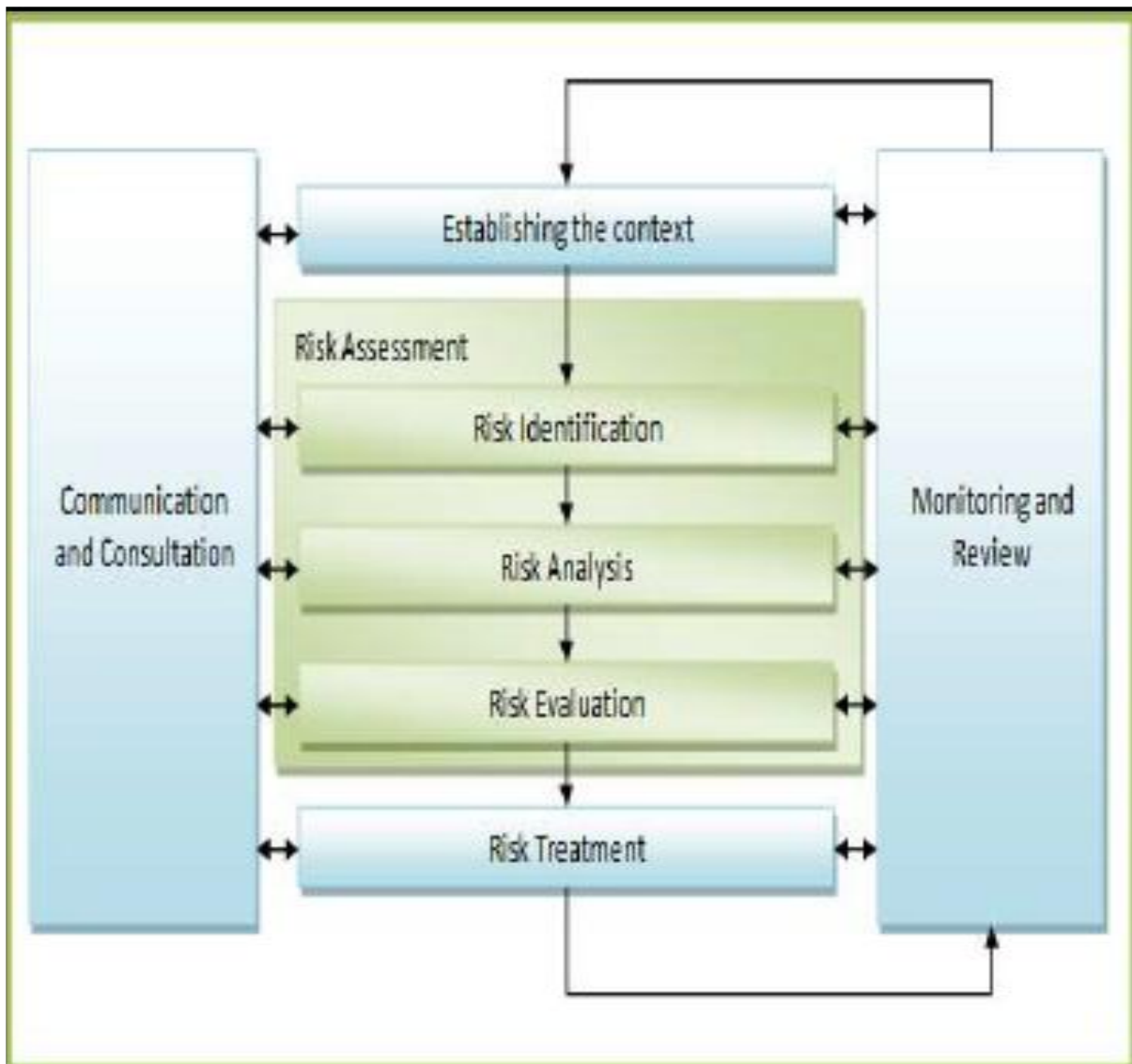


Figure 1.1.

In terms of the M&PRDA, the mining right holder liability for a particular material source persists until such time as a Closure Certificate has been issued by DMR. An advantage of the risk assessment approach detailed here is that it links in well with the legal requirements related to closure, specifically the requirements for the completion of an Environmental Risk Report as part of closure applications.

- **Risk probability**

Risk probability refers to the likelihood of an event occurring. It is important to evaluate this likelihood in the context of the anticipated use of the bentonite mine and with the anticipated controls in place. In other words, this is the likelihood that, under the anticipated mining conditions, the event described in the risk register will occur at some time in the future. It is evaluated on a semi-quantitative scale of 0 to 5, modified from the AS/ NZ 4360: 1995 Standard:

Rating Description

- 0-Impossible
- 1-Unlikely
- 2-Possible

- 3-Probable
- 4-Highly Probable
- 5-Almost Certain

The risk assessment tool includes a guideline for the determination of risk probability. The risk assessor is required to be familiar with, and refer to this guideline to inform the selection of the risk probability.

- **Risk consequence**

Risk consequence refers to the magnitude of the consequences, should the risk event occur. It is evaluated on a scale of 0 to 4, modified from the AS/ NZ 4360: 1995 Standard:

Rating Description

- 0-Insignificant
- 1-Minor
- 2-Moderate
- 3-Major
- 4-Catastrophic

The risk assessment tool includes a guideline for the determination of risk consequences. The risk assessor is required to be familiar with, and refer to this guideline to inform the selection of the risk consequence. The consequences of certain of the risks in the risk register can be predetermined to an extent. For example, the consequence of an injury or death of a person falling down a steep slope will never be “insignificant”. Rather, it will always have a “major” or “catastrophic” consequence. In such cases, the risk evaluation sheet is blanked out for inapplicable selections. This reduces the degree of subjectivity of the evaluation and streamlines the process.

Mapping of risk

The total elimination of all risks is typically not financially or technically feasible. A degree of risk will always exist and the intention of risk management is to reduce that risk in a systematic and cost effective manner. It is therefore important that the treatment of risks is undertaken by prioritising and addressing risk in a systematic manner. This is the role of risk mapping. The mapping of risks enables not only the comparative assessment of different material sources in terms of risk, but also facilitates the visualisation of the relative levels of different risks within a specific mine area. As such, it is an invaluable tool in the identification and prioritisation of risk treatments.

For the risk mapping tool, a simplistic approach is adopted to the mapping of risk. For each identified risk, a risk score is determined based on the product of risk probability and risk consequence. So for example where a risk is probable (probability rating of 3) and has a moderate consequence (consequence rating of 2), its risk score would be 6 (3 x 2). The resultant risk scores can be utilised in one of two ways:

- All risk scores for a particular site (i.e. the individual risk scores for each of the 26 identified risks) can be summed to give a total risk score for that mine area. This value can then be used to identify and prioritise high risk material sources for treatment; and
- For a specific mine the risk score for each risk can be used to identify the most significant risks within that site and prioritise their treatments.

The risk assessment tool utilised for the current investigation includes a graphic risk-mapping instrument to guide the identification and prioritisation of risk treatments within specific material sources. This instrument distinguishes between high, medium and low risk, defined as follows:

- **High risk:** Risk events falling into this class, are high probability of occurring with major to catastrophic consequences under the current status quo. These risks require urgent and immediate attention to either reduce the probability of occurrence, consequences of occurrence or both to acceptable levels.
- **Medium risk:** Risk events falling into this class require active management and mitigation to reduce their probability of occurrence, consequences of occurrence or both to acceptable levels.
- **Low risk:** Risk events falling into this class do not necessarily require mitigation, however on-going monitoring is required to ensure that they do not later move into the medium or high risk class as a result of changing circumstances.

It is important to emphasise that the risk assessment tool represents a semi-quantitative approach. The numerical values simply aid in the integration of the various variables comprising risk (viz. risk probability and consequence) and facilitate the interpretation and prioritisation of this risk. The risk values are not absolute and are thus not meaningful beyond the comparative assessment reflected in the EMP. The objective is simply to produce a more detailed prioritisation than is usually achieved in pure qualitative analysis, not to suggest any realistic values for risk such as presented in a truly quantitative analysis.

Treatment of risk

As outlined previously, the total elimination of all risk is typically not economically feasible and it is thus important that the treatment of risk be undertaken by prioritising and addressing high and medium risk issues in their order of significance. The intention of the risk management effort is to focus attention on what matters most. In many instances, the treatment of one particular risk will have a positive effect (reduction of risk) on a number of other risk events. A range of mechanisms exist for the treatment of risk, viz. transferring the risk, avoiding the risk, mitigating the risk or accepting the consequences of a particular risk. The approach to risk treatment will vary depending on the stage at which the risk assessment process is being undertaken, viz. feasibility versus planning versus operation versus closure.

Feasibility stage

(Proposed mining activities falls within the feasibility stage as described below.)

The focus of the feasibility stage is to identify suitable material sources, viz. bentonite or zeolite mine that contain adequate reserves of appropriate material, which can be mined in a sustainable manner. Accordingly, the key question during the feasibility stage is “Should a particular area be utilised or not?” In informing this decision, the risk assessment process should be utilised to identify sites where:

- Specific high risks render the use of the site unacceptable; or
- The combined effects of a number of medium and low risks render the use of the site unacceptable.

In exceptional circumstance, particularly where material sources in a particular area are in short supply, it may be decided to utilise a site despite of the findings of the risk assessment. In this situation, the risk assessment would guide the planning for this site.

Below is the assessment methodology utilized in determining the significance of the potential mining activities impacts as identified, and where applicable the possible alternatives, on the biophysical and socio-economic environment. The methodology is broadly consistent to that described in DEA’s Guideline Document on the EIA Regulations

(1998).

ASSESSMENT METHODOLOGY

This section outlines the methodology used to assess the significance of the potential environmental impacts. For each impact, the EXTENT (spatial scale), MAGNITUDE (size or degree scale) and DURATION (time scale) are used to ascertain the SIGNIFICANCE of the impact, firstly in the case of no mitigation and then with the most effective mitigation measure(s) in place. The mitigation described in the EMP represents the full range of plausible and pragmatic measures *but does not necessarily imply that they should or will all be implemented*.

Assessment criteria for the evaluation of impacts

CRITERIA	CATEGORY	DESCRIPTION
Extent or spatial influence of impact	Regional	Beyond a 20 km radius of the site
	Local	Within a 20 km radius of the centre of the site
	Site specific	On site or within 100 m of the site
Magnitude of impact (at the indicated spatial scale)	High	Natural and/ or social functions and/ or processes are <i>severely</i> altered
	Medium	Natural and/ or social functions and/ or processes are <i>notably</i> altered
	Low	Natural and/ or social functions and/ or processes are <i>slightly</i> altered
	Very Low	Natural and/ or social functions and/ or processes are <i>negligibly</i> altered
	Zero	Natural and/ or social functions and/ or processes remain <i>unaltered</i>
Duration of impact	Mining period	Up to 60 months
	Medium Term	Up to 10 years after mining
	Long Term	More than 10 years after mining

The SIGNIFICANCE of an impact is derived by taking into account the temporal and spatial scales and magnitude. The means of arriving at the different significance ratings is explained in the following table.

Definition of significance ratings

SIGNIFICANCE RATINGS	LEVEL OF CRITERIA REQUIRED
High	- High magnitude with a regional extent and long term duration - High magnitude with either a regional extent and medium term duration or a local extent and long term duration - Medium magnitude with a regional extent and long term duration
Medium	- High magnitude with a local extent and medium term duration - High magnitude with a regional extent and mining period or a site specific extent and long term duration - High magnitude with either a local extent and mining period duration or a site specific extent and medium term duration - Medium magnitude with any combination of extent and duration except site specific and mining period or regional and long term - Low magnitude with a regional extent and long term duration

Low	• High magnitude with a site specific extent and mining period duration • Medium magnitude with a site specific extent and mining period duration • Low magnitude with any combination of extent and duration except site specific and mining period or regional and long term • Very low magnitude with a regional extent and long term duration
Very low	• Low magnitude with a site specific extent and mining period duration • Very low magnitude with any combination of extent and duration except regional and long term
Neutral	• Zero magnitude with any combination of extent and duration

Once the significance of an impact has been determined, the PROBABILITY of this impact occurring as well as the CONFIDENCE in the assessment of the impact would be determined using the rating systems outlined in below respectively. It is important to note that the significance of an impact should always be considered in concert with the probability of that impact occurring.

Probability ratings		Criteria	
Definite		>95% chance of impact occurring.	
Probable		5 – 95% chance of impact occurring.	
Unlikely		<5% chance of impact occurring.	
Confidence ratings	Criteria		
Certain	Wealth of information on and sound understanding of the environmental factors potentially influencing the impact.		
Sure	Reasonable amount of useful information on and relatively sound understanding of the environmental factors potentially influencing the impact.		
Unsure	Limited useful information on and understanding of the environmental factors potentially influencing this impact.		
Criteria	Description		
Nature	a description of what causes the effect, what will be affected, and how it will be affected.		
	Type	Score	Description
Extent (E)	None (No)	1	Footprint
	Site (S)	2	On site or within 100 m of the site
	Local (L)	3	Within a 20 km radius of the centre of the site
	Regional (R)	4	Beyond a 20 km radius of the site
	National (Na)	5	Crossing provincial boundaries or on a national / land wide scale
Duration (D)	Short term (S)	1	0 – 1 years
	Short to medium (S-M)	2	2 – 5 years
	Medium term (M)	3	5 – 15 years
	Long term (L)	4	> 15 years
	Permanent(P)	5	Will not cease
Magnitude (M)	Small (S)	0	will have no effect on the environment
	Minor (Mi)	2	will not result in an impact on processes
	Low (L)	4	will cause a slight impact on processes
	Moderate (Mo)	6	processes continuing but in a modified way

	High (H)	8	processes are altered to the extent that they temporarily cease
	Very high (VH)	10	results in complete destruction of patterns and permanent cessation of processes.
Probability (P) the likelihood of the impact actually occurring. Probability is estimated on a scale, and a score assigned	Very improbable (VP)	1	probably will not happen
	Improbable (I)	2	some possibility, but low likelihood
	Probable (P)	3	distinct possibility
	Highly probable (HP)	4	most likely
	Definite (D)	5	impact will occur regardless of any prevention measures
Significance (S)	Determined through a synthesis of the characteristics described above: S = (E+D+M) x P Significance can be assessed as low, medium or high		
Low: < 30 points:	The impact would not have a direct influence on the decision to develop in the area		
Medium: 30 – 60 points:	The impact could influence the decision to develop in the area unless it is effectively mitigated		
High: > 60 points:	The impact must have an influence on the decision process to develop in the area		
No significance	When no impact will occur or the impact will not affect the environment		
Status	Positive (+)		Negative (-)
The degree to which the impact can be reversed	Completely reversible (R)	90-100%	The impact can be mostly to completely reversed with the implementation of the correct mitigation and rehabilitation measures.
	Partly reversible (PR)	6-89%	The impact can be partly reversed providing that mitigation measures as stipulated in the EMP are implemented and rehabilitation measures are undertaken
	Irreversible (IR)	0-5%	The impact cannot be reversed, regardless of the mitigation or rehabilitation measures taking place
The degree to which the impact may cause irreplaceable loss of resources	Resource will not be lost (R)	1	The resource will not be lost or destroyed provided that mitigation and rehabilitation measures as stipulated in the EMP are implemented
	Resource may be partly destroyed (PR)	2	Partial loss or destruction of the resources will occur even though all management and mitigation measures as stipulated in the EMP are implemented
	Resource cannot be replaced (IR)	3	The resource cannot be replaced no matter which management or mitigation measures are implemented.
The degree to which the impact can be mitigated	Completely mitigatable (CM)	1	The impact can be completely mitigated providing that all management and mitigation measures as stipulated in the EMP are implemented
	Partly mitigatable (PM)	2	The impact cannot be completely mitigated even though all management and mitigation measures as stipulated in the EMP are implemented. Implementation of these measures will provide a measure of mitigatability

	Un-mitigatable (UM)	3	The impact cannot be mitigated no matter which management or mitigation measures are implemented.
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vii) The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected.

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

Location and layout alternatives – Erf RE/1412 and Erf 3264 (previously erf 1412) was the only location alternative considered. This is the only feasible and reasonable locality alternative because this is where the viable bentonite deposits are located on the property as determined by the mine geologist. The proposed mining areas on completely transformed cultivated agricultural land are informed by the specialists recommendations. (Refer to Appendix B for proposed mining areas layout plans)

Significant positive impact/s:

- No significant negative impacts expected on any terrestrial or aquatic indigenous vegetation areas nor on drainage lines, wetlands, CBAs, ESAs or NFEPA's.
- Increasing operational lifespan of Cape Bentonite Mine ensuring income for at least 54 local residents from the area employed by Cape Bentonite Mine, compensation for landowner and support of local suppliers; if additional viable bentonite and zeolite deposits are discovered and confirmed.

Significant negative impact/s:

- Temporary loss of agricultural land for agricultural activities.

The No-Go Option The No-Go/no-mining option will result in the site remaining as it is presently, cultivated and grazed agricultural lands. The socio-economic benefits of the proposed bentonite mining outweigh the potential negative impact on the environment if specialist and EMP recommendations are effectively implemented.

Significant positive impact/s:

- Current agricultural activities taking place on site to continue as is.

Significant negative impact/s:

- High quality bentonite and zeolite deposits as located on transformed agricultural land not mined which in turn leads to loss of local community income and decrease of operational lifespan of Imerys Refractory Minerals SA operations.

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

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

Refer to Part A h) v) above for risk and impact assessments and associated mitigation measures proposed.

ix) Motivation where no alternative sites were considered.

Erf RE/1412 and Erf 3264 (previously erf 1412) was the only location alternative considered. This is the only feasible and reasonable locality alternative because this is where the viable bentonite deposits are located on the property as determined by the mine geologist. The proposed mining areas on completely transformed cultivated agricultural land are informed by the specialists recommendations.

x) Statement motivating the alternative development location within the overall site.

The proposed layout is informed by the specialists recommendations and all proposed mining activities areas are to be located outside of any indigenous terrestrial or aquatic vegetation areas and drainage lines, must not impact on any water courses/wetlands and will be restricted to transformed cultivated agricultural land.

The potential impacts identified must be adequately managed and effectively mitigated through the implementation of the recommendations outlined in any specialists studies as well as an site specific Environmental Management Programme (EMP).

- 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.)**

All significant environmental, cultural and socio-economic features applicable to the site were identified and informed the preferred activity, location and layout as proposed. The preferred mining activities, location and layout was assessed against the no go option of the site remaining as is.

Mining Operational Phase

Most of the potential negative impacts are rated as medium which can be mitigated to a low status. The potential impacts rated as medium before mitigation measures are implemented includes potential mining impacts such as – Increased dust levels; Potential erosion due to proposed mining activities along steep slopes; Mining activities can result in increased sediment loads in water resources; The trapping of all storm water within excavations on the mine area; Waste from chemical toilets and litter; Hydrocarbon spill; Fire; Introduction of declared weed species; Increased traffic due to the mining activities requiring various vehicles to come onto and leave the site;

Potential negative impacts rated as high before mitigation and low after mitigation includes - Impact of proposed mining activities on groundwater resources, secondary drainage lines mapped NFEPA's; Impact of proposed mining activities on terrestrial indigenous vegetation areas as associated with mapped terrestrial CBA's; The potential impact of the proposed development on archaeological, paleontological and heritage remains; Mining of agricultural land (can be mitigated to a low significance negative impact).

Potential negative impacts rated as low before and after mitigation includes – Emissions; Impact on the naturally occurring fauna and avifauna present in the area; Noise due to mining machinery, trucks and people on site; A negative visual impact due to the creation of excavation pits.

Potential positive impacts which also outweighs the potential negative impacts is related to ongoing socio-economic benefits to the local communities of Heidelberg and Riversdale due to extension of the lifespan of Cape Bentonite Mine.

All the potential negative impacts with their mitigation measures are included and described in the EMP.

Mine Decommissioning/Closure/Rehabilitation Phase

The potential impacts of decommissioning the mine include: Soil erosions; Alien vegetation encroachment; Depressions left in the landscape; Unfertile soil not suitable for agricultural

cultivation. The site will be rehabilitated after mine closure and this is detailed in the EMP and closure plan.

A very significant and high potential negative impact during the decommissioning phase is the potential loss of socio-economic benefits to the local communities of Heidelberg and Riversdale. This can be mitigated by sourcing and authorising additional viable bentonite deposits to ensure sustainability of the Cape Bentonite Mine operations.

It was concluded by the EAP that the proposed development will not have a significant negative environmental impact if proposed mitigation measures are implemented and it was recommended that the Environmental Management Programme be adhered to accordingly.

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 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. Mining, 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
Excavations, loading, hauling, transport and roads	Increased dust levels	Natural Environment, road users and nearby residents	Operational, Decommissioning/Closure/ Rehabilitation	36-Medium	• Reduce drop height of material to a minimum. • Area will be mined in phases to reduce the barren areas. • Temporarily halt material handling in extreme windy conditions. • Use water (preferably non-potable if available) to dampen bare soil areas if required to mitigate windblown dust. • A speed limit of 30km/hour will be displayed and enforced through a fining system. • All vehicle drivers entering the site will be informed of the speed limit.	10-Low

					• The requirement of additional dust suppression measures to be implemented must be determined through a dust monitoring programme or fugitive dust control plan to limit the emission of particulate matter.	
All activities associated with proposed mining	Mining activities (i.e. The site preparation and removal of topsoil) will cause a disturbance and this disturbance, unless carefully managed, could spread as a result thereof. Soil erosion can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should rains fall during mining. Loss of stockpiled topsoil and overburden material.	Natural and agricultural resources	Operational, Decommissioning/Closure/ Rehabilitation	44-Medium	• Visually inspect mining area boundaries, exposed surfaces, overburden and top soil stockpiles for signs of erosion. • If erosion channels are discovered the mine must determine the cause of erosion and implement erosion rectification and prevention measures to rehabilitate eroded areas and prevent future erosion. • Rehabilitate and reinstate engineered constructed contours as soon as a phase is complete. • Undertake mining activities only in identified and specifically demarcated areas as proposed and in phases. Rehabilitating/filling excavations as soon as possible to prevent accumulation of stormwater. • Implement erosion and storm water runoff management measures as according to EMP requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage	8-Low

					areas.	
Mine vehicles/machinery	Vehicles and machinery on the site will produce tailpipe emissions leading to air pollution	Natural resources	Operational, Decommissioning/Closure/ Rehabilitation	20-Low	- Vehicles and machinery will be maintained to minimize emissions. A log book will be filled in to keep a record of all maintenance problems encountered and mitigation measures implemented to resolve the problem. - Vehicles and machinery emitting excessive emissions will be stopped immediately and not allowed to operate until the necessary repairs have been made.	10- Low
All activities associated with proposed mining	Mining activities can result in increased sediment loads in water resources	Natural and agricultural resources	Operational, Decommissioning/Closure/ Rehabilitation	40 – Medium	- Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the indigenous vegetation surrounding the non-perennial drainage lines on site must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). - Minimize sediment load in the water by stripping a maximum of 10 meters ahead of the mining face and only moving the material once it needs to be processed or onto the intended topsoil stockpiles on the edge of all current and future mining areas.	8 – Low

					Monitor for erosion. Should erosion be present, undertake mitigation measures to rectify and prevent further erosion. • All roads need to be maintained and monitored. Visible signs of possible erosion must be immediately rehabilitated. • All storm water falling outside the mine property must be diverted around the mine. This forms part of the Storm Water Management Measures and part of the EMPr.	
All activities associated with proposed mining	Mining activities can impact on adjacent water resources i.e. secondary drainage lines and dams with associated wetland characteristics and aquatic vegetation as associated with mapped NFEPAs and aquatic CBAs and ESAs	Natural and agricultural resources	Operational, Decommissioning/Closure/ Rehabilitation	85-High	• Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the undisturbed indigenous vegetation areas and non-perennial drainage lines must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and for stormwater management i.e. stormwater berms and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). Refer to the proposed no-go area map below. • Visually inspect mining area boundaries, exposed surfaces, overburden and top soil stockpiles for signs of erosion. • If erosion channels are discovered the mine must	8-Low

					determine the cause of erosion and implement erosion rectification and prevention measures to rehabilitate eroded areas and prevent future erosion. • Rehabilitate and reinstate engineered constructed contours as soon as a phase is complete. • Undertake mining activities only in identified and specifically demarcated areas as proposed and in phases. Rehabilitating/filling excavations as soon as possible to prevent accumulation of stormwater. • Implement erosion and storm water runoff management measures as according to EMP requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage areas. • Minimize sediment load in the water by stripping a maximum of 10 meters ahead of the mining face and only moving the material once it needs to be processed or onto the intended topsoil stockpiles on the edge of all current and future mining areas. Monitor for erosion. Should erosion be present, undertake mitigation measures to rectify and prevent further erosion. • Use existing access roads and all	
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					roads need to be maintained as is and monitored. Visible signs of possible erosion must be immediately rehabilitated. • All storm water falling outside the mine property must be diverted around the mine. • No drainage line or wetland areas edges may be disturbed or impacted upon by the proposed activities. • If any groundwater is reached during the proposed mining activities on site, mining of that area must immediately be ceased, the Environmental Control Officer must be informed and the area must be rehabilitated to prevent any potential detrimental impact on the groundwater resource. • All measures should be put in place to ensure proper post-mining rehabilitation of affected areas, to as close to the original condition as possible. • No pollution of surface water or ground water resources may occur due to activities on the property. Oil spillages from vehicles on site must be controlled to prevent pollution of water resources.	
Excavations	The trapping of storm water within excavations on the mine area	Natural and agricultural resources	Operational, Decommissioning/Closure/Rehabilitation	40 – Medium	• All storm water falling outside the mine property must be diverted around the mine. • The mine will maintain the storm water diversion channels	10 – Low

					created along the perimeter of the mine property. The intention of the channels is to ensure water from outside the property is diverted around the quarry.	
Chemical toilets and litter	Pollution and nuisance due to leakage etc.	Natural and agricultural resources	Operational, Decommissioning/Closure/ Rehabilitation	30-Medium	• The toilets are serviced when needed and emptied when almost full. • If a leak occurs the correct emergency procedure is to be followed (see EMP). • Litter will be collected and removed from site by the operator on a daily basis. • Chemical toilets must not be placed within no-go or associated buffer areas..	0-No significance
Mine vehicles/machinery	Ground and/or water pollution and loss of natural and agricultural resources due to a hydrocarbon spillage	Natural and agricultural resources	Operational, Decommissioning/Closure/ Rehabilitation	30-Medium	• Any mine vehicle which is leaking hydrocarbons (e.g. petrol, diesel or oil) will be serviced in a concreted workshop to repair the leak. If it is not possible to repair the leak immediately, a drip tray will be placed under the leak to trap any spillages. The content of the drip trays will be decanted into an old oil drum for removal from the site to a hazardous waste handling facility. • Hydrocarbon spillages are to be cleaned up immediately. • The mine will also maintain a store of suitable absorbent material, suitable bioremediation substance and a spill kit. All incidences/ spillages are to be recorded in an incident log book. Contaminated soil must go to	8 – Low

					Visser'shok Hazardous Landfill site.	
All activities associated with proposed mining	Fire can cause habitat or crop destruction	Natural and agricultural resources	Operational, Decommissioning/Closure/ Rehabilitation	36- Medium	- All employees will be trained on fire safety and on how to reduce the probability of a fire spreading out of control. - Anyone who observes a fire must report it immediately to the fire protection agency/ fire brigade and their supervisor/ mine manager. - Vehicles must be parked in an area with no vegetation if a fire occurs.	8 – Low
All activities associated with proposed mining	Declared weeds may be transported onto the site and spread to surrounding areas. This may lead to habitat destruction and increased management costs.	Natural and agricultural resources	Operational, Decommissioning/Closure/ Rehabilitation	52- Medium	- Alien invasive and weed vegetation monitoring and removal must be undertaken annually during mining and for at least a year after mining activities have ceased on disturbed areas or until the landowner starts with the annual cultivation activities on the affected land. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology depending on the contract agreement that the applicant has with the landowner. All invasive alien species as listed by the Conservation of Agricultural Resources Act (CARA) must be removed during these surveys. Declared weeds and aliens must be removed before annual seeding. - Only use topsoil as derived and conserved from the proposed mining area to be rehabilitated	8-Low

					after mining activities have ceased on the property. • Every landowner has a legal obligation in terms of the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) and the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) to control and eradicate alien invasive vegetation on his/her property	
All activities associated with proposed mining	Natural fauna and avifauna habitat destruction and disturbance	Natural resources	Operational, Decommissioning/Closure/ Rehabilitation	20- Low	• At least three bird species of conservation concern are known to occur in the general area and habitat present on site (cultivated grainlands with renosterveld patches), namely Blue Crane (<i>Anthropoides paradiseus</i>), Denham's Bustard (<i>Neotis denhami</i>) and Black Harrier (<i>Circus maurus</i>). Mining activity should not proceed if there are Blue Cranes or Denham's Bustard breeding within the footprint or immediate surroundings. If a breeding pair is encountered, the mining should only proceed after the chick fledging. • Mining activities must be limited to identified and demarcated annually cultivated agricultural land and only existing roads may be used. • Remove and conserve topsoil layer and overburden material for rehabilitation after mining activities have ceased	4- Low

					• Invasive vegetation to be removed during mining activities to be disposed of at landfill site in such a manner that seeds must not be able to spread from the disposal site or during transportation. • No trapping or hunting of any fauna or avifauna species may take place on the property. • Any tortoises or fauna or avifauna species present on the site when excavations are taking place must be safely moved to adjacent areas not to be impacted by the mining activities. • No disturbance should be allowed within the remaining indigenous vegetation areas outside of the proposed mining activity areas and existing access roads. This includes no excavations; no storage of topsoil, overburden or bentonite stockpiles, no new or widened roads, and all forms of temporary disturbance. If indigenous vegetation areas are disturbed they must be immediately rehabilitated with indigenous vegetation areas under guidance of suitably qualified rehabilitation specialist. • No natural vegetation areas edges may be cleared or impacted upon by the proposed mining activities. • Implement erosion and storm water runoff management measures to prevent (or if	
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					prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds. • Backfill mined areas as soon as possible after mining completion with onsite excavated material. • Only use topsoil and excavated material as derived and conserved from the proposed mining site to backfill and rehabilitate impacted areas. • Monitor rehabilitated areas for signs of erosion for at least a year after rehabilitation and implement erosion rectification and prevention measures as and if required. • Alien invasive and weed vegetation monitoring and removal must be undertaken for at least a year after mining activities have ceased and the site has been rehabilitated This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology.	
All activities associated with proposed mining	Mining activities can impact on terrestrial indigenous vegetation remnants associated with mapped terrestrial CBAs	Natural resources	Operational, Decommissioning/Closure/ Rehabilitation	85-High	• At least three bird species of conservation concern are known to occur in the general area and habitat present on site (cultivated grainlands with renosterveld patches), namely Blue Crane (<i>Anthropoides paradiseus</i>), Denham's Bustard (<i>Neotis denhami</i>) and Black Harrier (<i>Circus maurus</i>). Mining activity should not proceed if	28-Low

					there are Blue Cranes or Denham's Bustard breeding within the footprint or immediate surroundings. If a breeding pair is encountered, the mining should only proceed after the chick fledging. Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the indigenous vegetation surrounding the non-perennial drainage lines on site must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). No disturbance should be allowed within the drainage lines and remaining indigenous vegetation areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance. No excavation or stockpiling is allowed within the buffer areas. Should any evidence be observed that the mining activities are impacting negatively on any indigenous vegetation areas (and drainage lines) the ECO must recommend mitigation	
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					measures to be implemented to prevent further degradation and rectify impacts. • Mining activities must be limited to identified and demarcated annually cultivated agricultural land and only existing roads may be used. • The individual milkwood trees that were recorded adjacent to proposed mining activity areas within the cultivated areas must be demarcated within a 5m buffer radius before any mining activities occurs within a 50m range of the trees and must remain demarcated throughout the applicable mining area's operational and rehabilitation phases. Demarcation can be removed when implementation of the applicable mining area's rehabilitation measures has been completed. • Remove and conserve topsoil layer and overburden material for rehabilitation after mining activities have ceased. Topsoil and overburden materials must be stored separately adjacent to the mining areas on cultivated land with effective storm water runoff and erosion prevention measures to be implemented in order to protect the materials for rehabilitation. • Alien invasive and weed vegetation monitoring and	
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					removal must be undertaken annually during mining and for at least a year after mining activities have ceased on disturbed areas or until the landowner starts with the annual cultivation activities on the affected land. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology depending on the contract agreement that the applicant has with the landowner. All invasive alien species as listed by the Conservation of Agricultural Resources Act (CARA) must be removed during these surveys. Declared weeds and aliens must be removed before annual seeding. • Invasive vegetation to be removed during mining activities to be disposed of at landfill site in such a manner that seeds must not be able to spread from the disposal site or during transportation. • No trapping or hunting of any fauna or avifauna species may take place on the property. • Any tortoises or fauna or avifauna species present on the site when excavations are taking place must be safely moved to adjacent areas not to	
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					be impacted by the mining activities. • No disturbance should be allowed within the remaining indigenous vegetation areas outside of the proposed mining activity areas and existing access roads. This includes no excavations; no storage of topsoil, overburden or bentonite stockpiles, no new or widened roads, and all forms of temporary disturbance. If indigenous vegetation areas are disturbed they must be immediately rehabilitated with indigenous vegetation areas under guidance of suitably qualified rehabilitation specialist. • No natural vegetation areas edges may be cleared or impacted upon by the proposed mining activities. • Implement erosion and storm water runoff management measures as according to EMP and stormwater management plan requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage areas. • As the excavation of the quarry advances the stored	
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					overburden material must be replaced to backfill the excavations. The backfilled area must then be contoured according to existing surrounding contours of the cultivated land to prevent erosion. After contouring has been completed the stored topsoil material must be spread over the backfilled area. Only use topsoil as derived and conserved from the proposed mining area to be rehabilitated after mining activities have ceased on the property. The topsoil must not be compacted after spreading to allow the disturbed area to be restored. The site must be monitored regularly (at least 6 monthly and after heavy rains) and all signs of erosion immediately rectified and alien vegetation removed to prevent potential siltation, erosion and alien encroachment of natural areas and drainage lines. The project implementation process should be subject to standard Environmental Management Programme (EMP) prescripts and conditions and only proceed under supervision of a competent and diligent Environmental Control Officer, both during the operational/excavation and rehabilitation phases.	
Sustained jobs	The continued	Socio-	Operational Phase	Positive – No mitigation required		

	employment of at least 54 local residents in the area will be ensured	economic Impacts				
Loading, hauling and transport	Increased traffic due to the mining activities requiring various vehicles to come onto and leave the site.	Socio Economic Impacts	Operational, Decommissioning/Closure/ Rehabilitation	36 -Medium	- A speed limit of 30km/hour will be displayed and enforced through a fining system. All vehicle drivers entering the site will be informed of the speed limit. Speed limit will also be applicable when delivery trucks drive through areas where farm yard and housing is next to the road. - The applicant will be responsible for upkeep and repair of farm roads used during mining activities to the satisfaction of the landowner.	21– Low
All activities associated with proposed mining	Mining on agricultural land	Socio Economic Impacts and agricultural resources impacts	Operational Phase	85- High	The following is the sequence of recommended rehabilitation steps: 1. Prevent dust by means of damping down surfaces when required. 2. Prevent erosion by means of temporary banks and ditches that will direct run-off water. Any occurrences of erosion must be attended to immediately and the erosion control at that point must be amended to prevent further erosion from occurring there. 3. Because of the challenge of the very thin topsoil that naturally occurs in the area, double stripping is essential. The thin topsoil gets easily diluted and contaminated by the underlying subsoil, during the mining and	25- Low

					stockpiling process. Any lack of topsoil at the surface after rehabilitation is a serious problem that will have a significant, on-going, detrimental effect on crop performance. Topsoil must be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes. 4. Double stripping is a rehabilitation technique that is recommended by the Chamber of Mines. It involves stripping a layer of topsoil, and then a second additional layer below the topsoil. These two layers are stockpiled separately and during rehabilitation are spread separately on the surface in their original sequence. In other words, the subsoil layer is spread immediately on top of the profiled overburden, and the topsoil layer is then spread on top of that. 2. The recommended stripping depths on Erf 3264 are 40cm for the topsoil and then a further 35cm for the subsoil. The recommended stripping depths on Erf RE1412 are 20cm for the topsoil and then a further 35 cm for the subsoil. All overburden is stripped and stockpiled separately from both the topsoil and subsoil stockpiles.. 5. Topsoil stockpiles should be	
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					protected against losses by water and wind erosion. Stockpiles should be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants on the stockpiles will help to prevent erosion. Stockpiles should be no more than 2 metres high. 6. Overburden must be backfilled into the mined-out pit. 7. After mining and backfilling of overburden, any steep slopes must be reduced to a minimum and profiled to blend with the surrounding topography. A slope, even if minimal, must be ensured across all rehabilitated quarry areas so that they are naturally free draining. 8. The stockpiled subsoil must then be evenly spread and smoothed across the backfilled overburden. The depth should be monitored during spreading to ensure that coverage is even. 9. Thereafter, the stockpiled topsoil must be evenly spread and smoothed across the subsoil. The depth should be monitored during spreading to ensure that coverage is even. 10. Any parts of the existing contour bank system that has been disturbed must be re-established to the same specifications (height, slope, distance apart) as prior to disturbance, and the integrity of the entire system	
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					must be returned to full functionality. 11. Soil sampling and chemical correction should be done following the re-spreading of the topsoil. Combined, representative samples should be taken from across the site to a depth of 15cm. Soil chemical deficiencies must be corrected, based on these samples. A chemical analysis from an agricultural laboratory will include a recommendation of the appropriate quantities of chemical ameliorants (for example lime, phosphate etc) that should be applied to optimize the soil chemistry for the relevant crop. Pre-mining soil chemistry is not important. What is important is to ensure that the rehabilitated soil is optimized to within the norms for the relevant crop. 12. Sow a crop in the first season of the rehabilitated soil that is a hardy, annual crop that is sown primarily for soil stabilisation and biomass and not necessarily for economic production (eg korog). It should be dosed with a high level of nitrogen (N), phosphorus (P) and potassium (K) fertiliser in order to maximise vegetative growth and therefore biomass production (both above and below ground). High nitrogen will encourage high biomass	
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					production. The amount of required fertiliser will therefore be a higher level of fertilisation than would be determined for economic viability in terms of input costs versus production. The increased fertilisation costs should therefore be borne by the mine's rehabilitation budget, and not by the farmer. 13. Monitoring: it is impossible, by way of a soil analysis, to evaluate, with any degree of certainty, whether a significantly disturbed soil will support crop growth or not. The final proof of effective rehabilitation must always be in the reaction of the crop that is planted on the rehabilitated soil. If the crop grows adequately, then the soil is effectively rehabilitated. If it does not, then the soil is not effectively rehabilitated. The best way to test this is to sow a crop across the boundary between the rehabilitated land and the undisturbed soil. The reaction of the crop will very obviously demonstrate a problem and a difference, if there is one.	
Excavations	Heritage Resources Impacts	The potential impact of the proposed development on archaeological, paleontological and heritage	Operational Phase	85-High	• Should any burials, fossils or other historical material be encountered during mining, work must cease immediately and HWC must be contacted. • In the case of any significant fossil finds exposed by mining	8 – Low

		remains			operations in this region (e.g. vertebrate teeth, bones, crustaceans, insects, burrows, petrified wood), these should be safeguarded - preferably in situ - and reported by the ECO as soon as possible to Heritage Western Cape (3rd Floor Protea Assurance Building, 142 Longmarket Street, Green Market Square, Cape Town 8000. Private Bag X9067, Cape Town 8001. Tel: 021 483 5959 Email: ceoheritage@westerncape.gov.za), so that appropriate mitigation (i.e. recording, sampling or collection) by a palaeontological specialist can be considered and implemented before rehabilitation of the quarry takes place. These recommendations are summarized in the appended Chance Finds Protocol and has been incorporated into the Environmental Management Programme (EMPr) for the proposed mining project	
All activities associated with proposed mining	Noise impacts	Noise due to mining machinery, trucks and people on site	Operational, Decommissioning/Closure/ Rehabilitation	6 - Low	- No activities that may generate noise levels above the legal limit in terms of the Environmental Conservation Act, Western Cape Noise regulations will be conducted. - Machinery and vehicles should be regularly maintained to prevent excessive noise. - All machinery and work activities must adhere to the requirements of the noise regulations.	6-Low

All activities associated with proposed mining	Visual impact and Sense of Place	A negative visual impact due to the creation of excavation pits.	Operational Phase	16 - Low	- Proposed mining activities must be limited to development footprint site. - Rehabilitation of site when mining process complete.	10 – Low
Decommissioning/ rehabilitation of mine	Rehabilitation of agricultural land	Agricultural resources	Decommissioning/ Rehabilitation Phase	85-High	Mine management must be held accountable for well managed and effective implementation of all the recommended rehabilitation steps above. The specific, measurable rehabilitation outcomes against which the effectiveness of completed rehabilitation must be measured are: 1. That the topography and surface have been smoothed sufficiently to allow cultivation; that topsoil has been spread on the surface across all areas from which topsoil was stripped, to a minimum depth of 20 cm; 2. That topsoil has been spread on the surface across all areas from which topsoil was stripped, to a minimum depth of 40 cm on Erf 3264 and 20 cm on Erf RE1412. 3. That no saline material from depth within the mining excavation occurs at less than 50 cm depth in the rehabilitated soil profile. Correctly and well implemented double stripping, as recommended in the Agricultural Statement, will ensure this. 4. That the entire disturbed area is free draining and that no ponding of water at the surface occurs. 5. That the pre-mining contour	30-Low

					banks have been re-established to suitable specifications (height, slope, distance apart) at least as intensive as prior to disturbance, and that the integrity of the contour bank system as a whole is in place. 6. That there is no visible erosion across the area, or down-slope of it as a result of mining, and that no part of the area has been left unacceptably vulnerable to erosion. 7. That the soil chemistry, including pH, salinity, and phosphorus levels have been optimised for small grain production. 8. That a cover crop has been established, provided with a high level of nitrogen fertilisation, and grows successfully across the entire area disturbed by mining activities and that it shows no significant difference in performance when sown across the boundary between disturbed and undisturbed land.	
Decommissioning of mine	Socio Economic impacts	Loss of socio-economic benefits to the local communities of Heidelberg and Riversdale	Decommissioning Phase	90-High	• Additional viable bentonite deposits must be sourced and authorised to ensure sustainability of the Cape Bentonite Mine operations. • Alternatively the mine company must assist the employees as far as possible to find alternative employment opportunities before mining operations are complete.	1-Low

Refer to section v) above for the supporting impact assessment conducted by the EAP

k) Summary of specialist reports.

The table below indicates the specialist assessments identified by the DEA screening tool report and reasons/motivation for the specialist assessment to be conducted or not to be conducted as provided by the EAP as per the site sensitivity verification report:

Specialist Report Identified	Reason/s for the Assessment to be Conducted or Not to be Conducted (as provided by the EAP)
1. Agricultural Impact Assessment	The screening tool classifies the assessed footprint as being entirely very high agricultural sensitivity. The very high sensitivity classification by the screening tool is due to irrigated crop status. This assessment confirms the very high agricultural sensitivity classification of the mining areas on Erf 3264 by the screening tool. It disputes the very high agricultural sensitivity classification of the mining areas on Erf RE1412 by the screening tool and verifies that site as being of high agricultural sensitivity because of its assessed cropping potential. The focus of an agricultural assessment for mining is to determine whether or not the proposed mining will cause a significant, long-term reduction in agricultural production potential. Agricultural Impact Assessment conducted.
2. Landscape/Visual Impact Assessment	Not required. • All bentonite and zeolite mining activities are proposed on annually cultivated and ploughed agricultural lands. No undisturbed or rehabilitating land is to be impacted upon by the proposed mining activities therefore no pristine landscapes will be visually disturbed. • Mining activities proposed adjacent to and within properties where mining activities has already taken place in the past and disturbed areas are to be rehabilitated to cultivated land once mining is completed. • The proposed mining activities are temporary, takes place in phases and rehabilitation of the site to previous cultivated agricultural land happens immediately after mining is completed returning it to its previous visual state. The mining is also conducted in phases so mining of all proposed phases will

	not all happen simultaneously. • Temporary mining activities as proposed will not be visible from any major tourist route.
3. Archaeological and Cultural Heritage Impact Assessment	Notice of Intent submitted to Heritage Western Cape, no HIA required.
4. Palaeontological Impact Assessment	Notice of Intent submitted to Heritage Western Cape, no HIA required.
5. Terrestrial Biodiversity Impact Assessment	The proposed mining activities areas are to be restricted to completely transformed cultivated land therefore no indigenous vegetation or natural animal habitat will be disturbed during the proposed mining activities and mining activities has already taken place on the property for several years and been successfully rehabilitated to its previous status quo of cultivated agricultural land. A Terrestrial impact statement conducted.
6. Aquatic Biodiversity Impact Assessment	Aquatic features of the site are limited to non-perennial drainage lines and man-made dams as found in the gorges/"klowe" of the property too steep to plough for cultivation, only flowing during heavy rains. Mining activities are proposed on annually cultivated agricultural land. No drainage lines that have not been completely transformed by agricultural cultivation remains on the proposed mining areas. Aquatic impact statement conducted.
7. Hydrology Assessment	Mining activities are not proposed on any significant hydrological features i.e. within drainage lines or watercourses and stormwater are to be managed in accordance with stormwater management plan and environmental management programme. Stormwater will be directed to flow into its existing flow paths around the mining areas so as not to have any detrimental impacts on the hydrology of the site and surrounds. Aquatic impact statement conducted.
8. Noise Impact Assessment	Not required – No activities that will generate noise levels above the legal limit for rural areas in terms of the Environmental Conservation Act, Western Cape Noise regulations will be conducted.
9. Radioactivity Impact Assessment	Not required – there is no radioactive resources on the property nor within close proximity to the property that will be impacted upon by the proposed mining activities.
10. Traffic Impact Assessment	Not required – traffic impacts are expected to be the same as per mining operations that has already taken place and no use of public roads is proposed and mining traffic will only be temporary.

11. Geotechnical Assessment	Not required – it has already been determined through previous and ongoing mining operations taking place on the site that the bentonite and zeolite resources are present.
12. Climate Impact Assessment	Not required – the proposed additional quarries on cultivated agricultural lands is not to such a scale that it is expected to have any climate impacts.
13. Health Impact Assessment	Not required- to date there has been no indication that the previous mining activities has had any detrimental health impacts and proposed additional quarries is not expected to lead to any such significant health impacts.
14. Socio-economic Assessment	Not required – landowners consent has already been obtained for mining activities as proposed and proposed additional quarries within an is just a continuation of the ongoing mining activities hence it is not expected to lead to any significant socio-economic impacts.
15. Ambient Air Quality Impact Assessment	Not required – the proposed additional quarries on cultivated agricultural lands is not proposed at such a scale that it is expected to have any ambient air quality impacts.
16. Seismicity Assessment	Not required –current and proposed mining activities not expected to have any impacts on the frequency or distribution of earthquakes likely to take place within the area as this is also not an area known for active seismic activities.
17. Plant Species Assessment	The proposed mining areas are to be restricted to completely transformed cultivated land therefore no indigenous vegetation or habitat will be disturbed during the proposed mining activities; a Plant Species Impact Statement conducted.
18. Animal Species Assessment	Phased mining activities has been taking place on the property for several years. The proposed additional mining activities area and most of the property is annually cultivated and therefore it is not expected to be home to animal species of conservation concern. However, due to remaining indigenous remnants throughout the property indigenous animal species may be impacted upon by the proposed mining activities therefore an Animal Species Impact Statement conducted.

Refer to Appendix G5 for the complete DEA Screening Tool Report and Site Sensitivity Verification Report as compiled by the EAP.

Confirmed additional specialist assessments/inputs obtained:

- Terrestrial Biodiversity Impact Compliance Statement
- Aquatic Biodiversity Impact Compliance Statement
- Fauna Impact Compliance Statement
- Plant Impact Compliance Statement
- Agricultural Impact Assessment

(This table below 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.
Agricultural Impact Assessment Johann Lanz October 2025	RECOMMENDED MITIGATION AND REHABILITATION PLAN A very important factor affecting the success of rehabilitation, and consequently the significance of direct impacts, is the level of care that is taken to rehabilitate effectively. This is dependent on the level of environmental management of all mining activities that can impact on rehabilitation, both during the mining process and during the rehabilitation phase. The following is the sequence of recommended rehabilitation steps: 1. Prevent dust by means of damping down surfaces when required. 2. Prevent erosion by means of temporary banks and ditches that will direct run-off water. Any occurrences of erosion must be attended to immediately and the erosion control at that point must be amended to prevent further erosion from occurring there. 3. Because of the challenge of the very thin topsoil that naturally occurs in the area, double stripping is essential. The thin topsoil gets easily diluted and contaminated by the underlying subsoil, during the mining and stockpiling process. Any lack of topsoil at the surface after rehabilitation is a serious problem that will have a significant, on-going, detrimental effect on crop performance. Topsoil must be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes.	X (All specialist recommendations have been included in potential impact mitigation measures and EMPr requirements)	Part A – i) and j) Part B – Environmental Management Programme Report Also refer to Appendix E for a copy of the specialist report.

	4. Double stripping is a rehabilitation technique that is recommended by the Chamber of Mines. It involves stripping a layer of topsoil, and then a second additional layer below the topsoil. These two layers are stockpiled separately and during rehabilitation are spread separately on the surface in their original sequence. In other words, the subsoil layer is spread immediately on top of the profiled overburden, and the topsoil layer is then spread on top of that. The recommended stripping depths on Erf 3264 are 40cm for the topsoil and then a further 35cm for the subsoil. The recommended stripping depths on Erf RE1412 are 20cm for the topsoil and then a further 35 cm for the subsoil. All overburden is stripped and stockpiled separately from both the topsoil and subsoil stockpiles. 5. Topsoil stockpiles should be protected against losses by water and wind erosion. Stockpiles should be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants on the stockpiles will help to prevent erosion. Stockpiles should be no more than 2 metres high. 6. Overburden must be backfilled into the mined-out pit. 7. After mining and backfilling of overburden, any steep slopes must be reduced to a minimum and profiled to blend with the surrounding topography. A slope, even if minimal, must be ensured across all rehabilitated quarry areas so that they are naturally free draining. 8. The stockpiled subsoil must then be evenly spread and smoothed across the backfilled overburden. The depth should be monitored during spreading to ensure that coverage is even. 9. Thereafter, the stockpiled topsoil must be evenly spread and smoothed across the subsoil. The depth should be monitored during spreading to ensure that coverage is even. 10. Any parts of the existing contour bank system that has been disturbed must be re-established to the same specifications (height, slope, distance apart) as prior to disturbance, and the integrity of the entire system must be returned to full functionality. 11. Soil sampling and chemical correction should be done following the re-spreading of the topsoil. Combined, representative samples should be taken from across the site to a depth of 20cm. Soil chemical deficiencies must be corrected, based on these samples. A chemical analysis from an agricultural laboratory will include a recommendation of the appropriate quantities of chemical ameliorants (for example lime, phosphate etc) that should be applied to optimize the soil chemistry for the relevant crop. Pre-mining soil chemistry is not important. What is important is to ensure that the rehabilitated soil is optimized to within the norms for the relevant crop. 12. Sow a crop in the first season of the rehabilitated soil that is a hardy, annual crop that		
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	is sown primarily for soil stabilisation and biomass and not necessarily for economic production (eg korog). It should be dosed with a high level of nitrogen (N), phosphorus (P) and potassium (K) fertiliser in order to maximise vegetative growth and therefore biomass production (both above and below ground). High nitrogen will encourage high biomass production. The amount of required fertiliser will therefore be a higher level of fertilisation than would be determined for economic viability in terms of input costs versus production. The increased fertilisation costs should therefore be borne by the mine's rehabilitation budget, and not by the farmer. 13. Monitoring: it is impossible, by way of a soil analysis, to evaluate, with any degree of certainty, whether a significantly disturbed soil will support crop growth or not. The final proof of effective rehabilitation must always be in the reaction of the crop that is planted on the rehabilitated soil. If the crop grows adequately, then the soil is effectively rehabilitated. If it does not, then the soil is not effectively rehabilitated. The best way to test this is to sow a crop across the boundary between the rehabilitated land and the undisturbed soil. The reaction of the crop will very obviously demonstrate a problem and a difference, if there is one. CONCLUSION Despite some climate and soil constraints (limited rainfall and shallow soils), the site is of high enough agricultural potential to be suitable for viable, rainfed field crop and irrigated crop production of the crops that have been grown on site and are cultivated in the surrounding area (rotations of oats, wheat, canola, and lucern plus irrigated vegetables and orchards). The screening tool classifies the assessed footprint as being entirely very high agricultural sensitivity. The very high sensitivity classification by the screening tool is due to irrigated crop status. This assessment confirms the very high agricultural sensitivity classification of the mining areas on Erf 3264 by the screening tool. It disputes the very high agricultural sensitivity classification of the mining areas on Erf RE1412 by the screening tool and verifies that site as being of high agricultural sensitivity because of its assessed cropping potential. The focus of an agricultural assessment for mining is to determine whether or not the proposed mining will cause a significant, long-term reduction in agricultural production potential. A reduction in agricultural production potential results from the integrated effect of a number of different mechanisms, the most important of which, on this site, is loss of topsoil. All of these mechanisms can be mitigated and managed so that the land is rehabilitated to its pre-mining agricultural potential. However, this is only possible if a high degree of rehabilitation management is applied throughout the mining and rehabilitation processes.		
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	There is a risk that the rehabilitation falls short of this standard, with the result that the long-term agricultural potential of the land is compromised. The total size of the additional mining areas is 12.8 hectares. The baseline production potential is suitability for cropping. The amount of potential decrease is estimated at a 10 to 40% reduction in year 1 which will decrease to zero within 4 years, provided that rehabilitation is effectively implemented. Detailed recommendations for soil rehabilitation are provided. Ensuring a surface cover of topsoil is by far the most critical step of successful soil rehabilitation. Because of the challenge of the very thin topsoil that naturally occurs on site, double stripping is essential for effective rehabilitation. With effectively implemented rehabilitation, the overall negative agricultural impact of the development (loss of future agricultural production potential) is assessed as being of low significance and as acceptable. However, with poorly implemented rehabilitation, the overall negative agricultural impact of the development is assessed as being of high significance. The conclusion of this assessment on the acceptability of the proposed development is therefore subject to the following conditions: Mine management must be held accountable for well managed and effective implementation of all the recommended rehabilitation steps above. The specific, measurable rehabilitation outcomes against which the effectiveness of completed rehabilitation must be measured are: 1. that the topography and surface have been smoothed sufficiently to allow cultivation; 2. that topsoil has been spread on the surface across all areas from which topsoil was stripped, to a minimum depth of 40 cm on Erf 3264 and 20 cm on Erf RE1412; 3. That no saline material from depth within the mining excavation occurs at less than 50 cm depth in the rehabilitated soil profile. Correctly and well implemented double stripping, as recommended in the Agricultural Statement, will ensure this. 4. that the entire disturbed area is free draining and that no ponding of water at the surface occurs. 5. That the pre-mining contour banks have been re-established to suitable specifications (height, slope, distance apart) at least as intensive as prior to disturbance, and that the integrity of the contour bank system as a whole is in place. 6. That there is no visible erosion across the area, or down-slope of it as a result of mining, and that no part of the area has been left unacceptably vulnerable to erosion. 7. That the soil chemistry, including pH, salinity, and phosphorus levels have been		
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	optimised for small grain production. 8. That a cover crop has been established, provided with a high level of nitrogen fertilisation, and grows successfully across the entire area disturbed by mining activities and that it shows no significant difference in performance when sown across the boundary between disturbed and undisturbed land.		
Terrestrial Animal Compliance Statement Nicolaas Hanekom May 2025	WHERE REQUIRED, PROPOSED IMPACT MANAGEMENT ACTIONS AND OUTCOMES OR ANY MONITORING REQUIREMENTS FOR INCLUSION IN THE EMPR Mining can have both direct and indirect impacts on animal species of the development sites and surrounds. Direct impacts are those that destroys indigenous animal species habitats. Indirect impacts are those that may overtime lead to degradation or transformation of indigenous animal species habitats such as erosion. The proposed mining activities can have the following potential impacts on indigenous animal species of the site and surrounds: • Habitat destruction or degradation • Disturbance during breeding season • Physical death of species The following impact management measures must be implemented and included in the EMPr, and should they be implemented the proposed mining expansion activities should not have any significant negative impacts on any indigenous animal present on the site or surrounds: • At least three bird species of conservation concern are known to occur in the general area and habitat present on site (cultivated grainlands with renosterveld patches), namely Blue Crane (<i>Anthropoides paradiseus</i>), Denham's Bustard (<i>Neotis denhami</i>) and Black Harrier (<i>Circus maurus</i>). Mining activity should not proceed if there are Blue Cranes or Denham's Bustard breeding within the footprint or immediate surroundings. If a breeding pair is encountered, the mining should only proceed after the chick fledging. • Mining activities must be limited to identified and demarcated annually cultivated agricultural land and only existing roads may be used. • Remove and conserve topsoil layer and overburden material for rehabilitation after mining activities have ceased • Invasive vegetation to be removed during mining activities to be disposed of at landfill	X (All specialist recommendations have been included in potential impact mitigation measures and EMPr requirements)	Part A – i) and j) Part B – Environmental Management Programme Report Also refer to Appendix E for a copy of the specialist report.

	site in such a manner that seeds must not be able to spread from the disposal site or during transportation. • No trapping or hunting of any fauna or avifauna species may take place on the property. • Any tortoises or fauna or avifauna species present on the site when excavations are taking place must be safely moved to adjacent areas not to be impacted by the mining activities. • No disturbance should be allowed within the remaining indigenous vegetation areas outside of the proposed mining activity areas and existing access roads. This includes no excavations; no storage of topsoil, overburden or bentonite stockpiles, no new or widened roads, and all forms of temporary disturbance. If indigenous vegetation areas are disturbed they must be immediately rehabilitated with indigenous vegetation areas under guidance of suitably qualified rehabilitation specialist. • No natural vegetation areas edges may be cleared or impacted upon by the proposed mining activities. • Implement erosion and storm water runoff management measures to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds. • Backfill mined areas as soon as possible after mining completion with onsite excavated material. • Only use topsoil and excavated material as derived and conserved from the proposed mining site to backfill and rehabilitate impacted areas. • Monitor rehabilitated areas for signs of erosion for at least a year after rehabilitation and implement erosion rectification and prevention measures as and if required. • Alien invasive and weed vegetation monitoring and removal must be undertaken for at least a year after mining activities have ceased and the site has been rehabilitated. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology.		
Aquatic Biodiversity Compliance Statement Nicolaas Hanekom May 2025	WHERE REQUIRED, PROPOSED IMPACT MANAGEMENT ACTIONS AND OUTCOMES OR ANY MONITORING REQUIREMENTS FOR INCLUSION IN THE EMPR Mining can have both direct and indirect impacts on aquatic features of the site and surrounds. Direct impacts are those that pollute or transform groundwater or surface water resources. Indirect impacts are those that may overtime lead to degradation or transformation of aquatic features such as erosion.	X (All specialist recommendations have been included in potential impact mitigation measures and EMPr requirements)	Part A – i) and j) Part B – Environmental Management Programme Report Also refer to

	The proposed mining activities can have the following potential impacts on aquatic features of the site and surrounds: • Erosion • Groundwater pollution • Increased sediment loads • Surface water resources pollution • Transformation and degradation The following impact management measures must be implemented and included in the EMP, and should they be implemented the proposed mining expansion activities should not have any significant negative impacts on any aquatic features present on the site or surrounds: • Visually inspect mining area boundaries, exposed surfaces, overburden and top soil stockpiles for signs of erosion. • If erosion channels are discovered the mine must determine the cause of erosion and implement erosion rectification and prevention measures to rehabilitate eroded areas and prevent future erosion. • Rehabilitate and reinstate engineered constructed contours as soon as a phase is complete. • Undertake mining activities only in identified and specifically demarcated areas as proposed and in phases. Rehabilitating/filling excavations as soon as possible to prevent accumulation of stormwater. • Implement erosion and storm water runoff management measures as according to EMP requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage areas. • Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the indigenous vegetation surrounding the non-perennial drainage lines on site must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). • Minimize sediment load in the water by stripping a maximum of 10 meters ahead of the mining face and only moving the material once it needs to be processed or onto the intended topsoil stockpiles on the edge of all current and future mining areas. Monitor for erosion. Should erosion be present, undertake mitigation measures to rectify and prevent further erosion. • Use existing access roads and all roads need to be maintained as is and monitored.		Appendix E for a copy of the specialist report.
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	Visible signs of possible erosion must be immediately rehabilitated. • All storm water falling outside the mine property must be diverted around the mine. • No drainage line or wetland areas edges may be disturbed or impacted upon by the proposed activities. • If any groundwater is reached during the proposed mining activities on site, mining of that area must immediately be ceased, the Environmental Control Officer must be informed and the area must be rehabilitated to prevent any potential detrimental impact on the groundwater resource. • All measures should be put in place to ensure proper post-mining rehabilitation of affected areas, to as close to the original condition as possible. • No pollution of surface water or ground water resources may occur due to activities on the property. Oil spillages from vehicles on site must be controlled to prevent pollution of water resources.		
Terrestrial Plant Compliance Statement Nicolaas Hanekom May 2025	WHERE REQUIRED, PROPOSED IMPACT MANAGEMENT ACTIONS AND OUTCOMES OR ANY MONITORING REQUIREMENTS FOR INCLUSION IN THE EMPR Mining can have both direct and indirect impacts on plant species of the development sites and surrounds. Direct impacts are those that destroys indigenous plant species. Indirect impacts are those that may overtime lead to degradation or transformation of indigenous plant species habitats such as erosion and alien vegetation encroachment. The proposed mining activities can have the following potential impacts on indigenous plant species of the site and surrounds: • Destruction/removal of indigenous vegetation due to clearance and erosion. • Degradation of adjacent indigenous vegetation areas due to alien vegetation encroachment. The following impact management measures must be implemented and included in the EMPr, and should they be implemented the proposed mining expansion activities should not have any significant negative impacts on any indigenous plant species on the site or surrounds: • Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the indigenous vegetation surrounding the non-perennial drainage lines on site must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and no other activities associated with the proposed mining of the site may occur within the buffer areas.	X (All specialist recommendations have been included in potential impact mitigation measures and EMPr requirements)	Part A – i) and j) Part B – Environmental Management Programme Report Also refer to Appendix E for a copy of the specialist report.

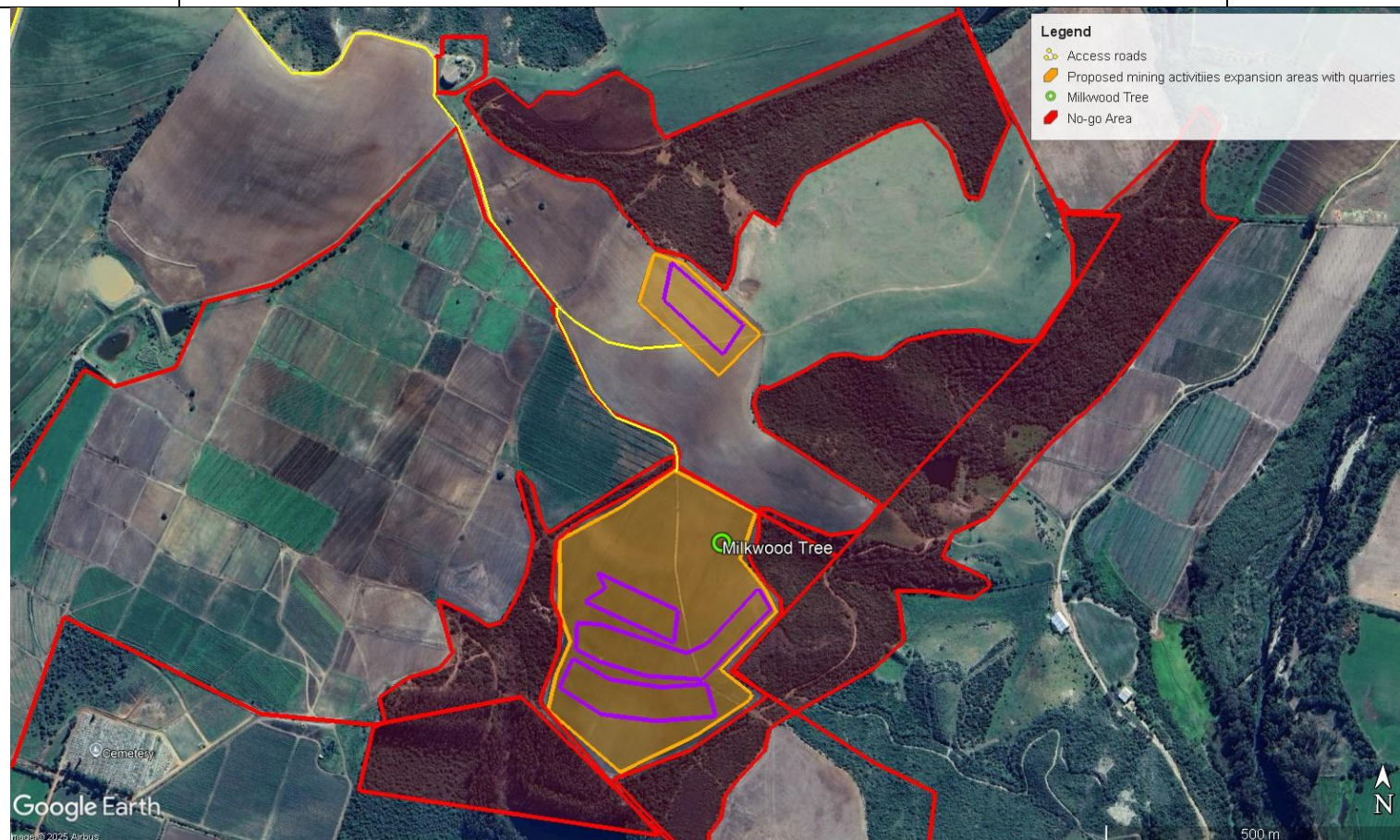
	Demarcation method to be approved by an Environmental Control Officer (ECO). No disturbance should be allowed within the drainage lines and remaining indigenous vegetation areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance. No excavation or stockpiling is allowed within the buffer areas. Should any evidence be observed that the mining activities are impacting negatively on any indigenous vegetation areas (and drainage lines) the ECO must recommend mitigation measures to be implemented to prevent further degradation and rectify impacts. • The individual milkwood trees that were recorded adjacent to proposed mining activity areas within the cultivated areas must be demarcated within a 5m buffer radius before any mining activities occurs within a 50m range of the trees and must remain demarcated throughout the applicable mining area's operational and rehabilitation phases. Demarcation can be removed when implementation of the applicable mining area's rehabilitation measures has been completed. • Alien invasive and weed vegetation monitoring and removal must be undertaken annually during mining and for at least a year after mining activities have ceased on disturbed areas or until the landowner starts with the annual cultivation activities on the affected land. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology depending on the contract agreement that the applicant has with the landowner. All invasive alien species as listed by the Conservation of Agricultural Resources Act (CARA) must be removed during these surveys. Declared weeds and aliens must be removed before annual seeding. • Remove and conserve topsoil layer and overburden material for rehabilitation after mining activities have ceased. Topsoil and overburden materials must be stored separately adjacent to the mining areas on cultivated land with effective storm water runoff and erosion prevention measures to be implemented in order to protect the materials for rehabilitation. • Implement erosion and storm water runoff management measures as according to EMP and stormwater management plan requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage areas. • As the excavation of the quarry advances the stored overburden material must be replaced to backfill the excavations. The backfilled area must then be contoured according to existing surrounding contours of the cultivated land to prevent erosion. After contouring has been completed the stored topsoil material must be spread over the backfilled area. Only use topsoil as derived and conserved from the proposed		
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	mining area to be rehabilitated after mining activities have ceased on the property. The topsoil must not be compacted after spreading to allow the disturbed area to be restored. The site must be monitored regularly (at least 6 monthly and after heavy rains) and all signs of erosion immediately rectified and alien vegetation removed to prevent potential siltation, erosion and alien encroachment of natural areas and drainage lines. • No disturbance should be allowed within the remaining indigenous vegetation areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance. No natural vegetation areas edges may be cleared or impacted upon by the proposed mining activities and no mining machinery may enter any indigenous vegetation areas outside of existing access roads to be used. • The project implementation process should be subject to standard Environmental Management Programme (EMP) prescripts and conditions and only proceed under supervision of a competent and diligent Environmental Control Officer, both during the operational/excavation and rehabilitation phases.		
Terrestrial Biodiversity Compliance Statement Nicolaas Hanekom May 2025	WHERE REQUIRED, PROPOSED IMPACT MANAGEMENT ACTIONS AND OUTCOMES OR ANY MONITORING REQUIREMENTS FOR INCLUSION IN THE EMPR Mining can have both direct and indirect impacts on terrestrial biodiversity of the development sites and surrounds. Direct impacts are those that destroys indigenous plant and animal species. Indirect impacts are those that may overtime lead to degradation or transformation of indigenous species habitats such as erosion and alien vegetation encroachment. The proposed mining activities can have the following potential impacts on terrestrial biodiversity of the site and surrounds: • Destruction/removal of indigenous vegetation due to clearance and erosion. • Degradation of adjacent indigenous vegetation areas due to alien vegetation encroachment. • Fauna habitat destruction or degradation • Disturbance of fauna during breeding season • Physical death of fauna species The following impact management measures must be implemented and included in the EMPr, and should they be implemented the proposed mining expansion activities should not have any significant negative impacts on any sensitive terrestrial biodiversity features on the site or surrounds:	X (All specialist recommendations have been included in potential impact mitigation measures and EMPr requirements)	Part A – i) and j) Part B – Environmental Management Programme Report Also refer to Appendix E for a copy of the specialist report.

	• At least three bird species of conservation concern are known to occur in the general area and habitat present on site (cultivated grainlands with renosterveld patches), namely Blue Crane (<i>Anthropoides paradiseus</i>), Denham's Bustard (<i>Neotis denhami</i>) and Black Harrier (<i>Circus maurus</i>). Mining activity should not proceed if there are Blue Cranes or Denham's Bustard breeding within the footprint or immediate surroundings. If a breeding pair is encountered, the mining should only proceed after the chick fledging. • Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the indigenous vegetation surrounding the non-perennial drainage lines on site must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). No disturbance should be allowed within the drainage lines and remaining indigenous vegetation areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance. No excavation or stockpiling is allowed within the buffer areas. Should any evidence be observed that the mining activities are impacting negatively on any indigenous vegetation areas (and drainage lines) the ECO must recommend mitigation measures to be implemented to prevent further degradation and rectify impacts. • Mining activities must be limited to identified and demarcated annually cultivated agricultural land and only existing roads may be used. • The individual milkwood trees that were recorded adjacent to proposed mining activity areas within the cultivated areas must be demarcated within a 5m buffer radius before any mining activities occurs within a 50m range of the trees and must remain demarcated throughout the applicable mining area's operational and rehabilitation phases. Demarcation can be removed when implementation of the applicable mining area's rehabilitation measures has been completed. • Remove and conserve topsoil layer and overburden material for rehabilitation after mining activities have ceased. Topsoil and overburden materials must be stored separately adjacent to the mining areas on cultivated land with effective storm water runoff and erosion prevention measures to be implemented in order to protect the materials for rehabilitation. • Alien invasive and weed vegetation monitoring and removal must be undertaken annually during mining and for at least a year after mining activities have ceased on disturbed areas or until the landowner starts with the annual cultivation activities on the affected land. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology depending on the contract		
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	agreement that the applicant has with the landowner. All invasive alien species as listed by the Conservation of Agricultural Resources Act (CARA) must be removed during these surveys. Declared weeds and aliens must be removed before annual seeding. • Invasive vegetation to be removed during mining activities to be disposed of at landfill site in such a manner that seeds must not be able to spread from the disposal site or during transportation. • No trapping or hunting of any fauna or avifauna species may take place on the property. • Any tortoises or fauna or avifauna species present on the site when excavations are taking place must be safely moved to adjacent areas not to be impacted by the mining activities. • No disturbance should be allowed within the remaining indigenous vegetation areas outside of the proposed mining activity areas and existing access roads. This includes no excavations; no storage of topsoil, overburden or bentonite stockpiles, no new or widened roads, and all forms of temporary disturbance. If indigenous vegetation areas are disturbed they must be immediately rehabilitated with indigenous vegetation areas under guidance of suitably qualified rehabilitation specialist. • No natural vegetation areas edges may be cleared or impacted upon by the proposed mining activities. • Implement erosion and storm water runoff management measures as according to EMP and stormwater management plan requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage areas. • As the excavation of the quarry advances the stored overburden material must be replaced to backfill the excavations. The backfilled area must then be contoured according to existing surrounding contours of the cultivated land to prevent erosion. After contouring has been completed the stored topsoil material must be spread over the backfilled area. Only use topsoil as derived and conserved from the proposed mining area to be rehabilitated after mining activities have ceased on the property. The topsoil must not be compacted after spreading to allow the disturbed area to be restored. The site must be monitored regularly (at least 6 monthly and after heavy rains) and all signs of erosion immediately rectified and alien vegetation removed to prevent potential siltation, erosion and alien encroachment of natural areas and drainage lines. • The project implementation process should be subject to standard Environmental		
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	Management Programme (EMP) prescripts and conditions and only proceed under supervision of a competent and diligent Environmental Control Officer, both during the operational/excavation and rehabilitation phases.		



Specialist proposed no-go: Proposed mining expansion activities areas (orange) on annually cultivated land and no-go areas (as outlined in red) on Erf 1412 and Erf 3264. The green circle in the cultivated land of the proposed mining activities expansion area is the individual Milkwood tree which may not be impacted upon. See specialist report/s attached under **Appendix E**.

I) Environmental impact statement

i. Summary of the key findings of the environmental impact assessment;

The objective of an EIA, in this case a basic assessment, is to find the alternative having the least negative environmental impact and which best benefits society. The assessment and evaluation of potential impacts associated with the proposed development was undertaken in an iterative manner, to inform proactively the 'shaping' of the optimum development proposal. Specialists and key stakeholders were involved in the impact assessment process to identify and assess potential impacts of the proposed development.

Imerys Refractory Minerals South Africa (Pty) Ltd t/a Cape Bentonite Mine is an existing Bentonite and Zeolite mining company operating under an existing mining right on Erf RE/1412 and Erf 3264 (previously Erf 1412) Ref: WC30/5/1/2/2/10076MR.

A total of 16.63ha (Phase 1 -15) have already been mined and rehabilitated under the current mining right and is part of annually cultivated agricultural land. The mining right holder has determined that there are additional viable bentonite and zeolite resources on the property and thereby proposes to apply for the following additional mining activities on completely transformed annually cultivated agricultural land.

Authorised mining right areas remaining and additional quarries proposed:

Authorised quarry mined and currently under rehabilitation:

- Quarry/phase 20 – 1ha

Authorised quarries still to be mined:

- Quarry/phase 16 – 1ha
- Quarry/phase 17 – 0.3ha
- Quarry/phase 18 – 0.34ha
- Quarry/phase 19 – 0.32ha
- Quarry/phase 21 – 0.73

Additional quarries proposed:

- Quarry/phase 22 – 1.49ha
- Quarry/phase 23 – 1.24ha
- Quarry/phase 24 – 0.7ha
- Quarry/phase 25 – 0.78ha

Total mining right activities area: 20ha

(includes all activities associated with the proposed bentonite mining such as any explorations required, site establishment, demarcations, excavations, any vehicular movements, access and internal roads, topsoil and overburden storage, implementation of rehabilitation measures etc.)

The study area lies within the East Coast Renosterveld bioregion (Mucina & Rutherford 2006). This bioregion has a moderately distinct flora, and high numbers of plant Species of Conservation Concern, with the main pressures being extensive habitat loss, due mainly to agriculture, followed by alien invasive vegetation, quarrying and urbanisation, and habitat modification due to lack of appropriate fire regimes. Critically Endangered - Eastern Ruens Shale Renosterveld is the main indigenous vegetation type mapped as occurring within the remaining undeveloped areas adjacent to the proposed additional quarries.

Most of the drainage lines with their associated wetland characteristics are in a moderate to good condition as they are located within the “klowe” too steep to plough and surrounded by indigenous vegetation remnants which also remains because the areas are too steep to plough for cultivation. The proposed mining expansion areas does not fall within any mapped non-perennial drainage lines nor within any mapped NFEPA wetland areas.

From the site survey conducted and historical google earth map images it is evident that all of the proposed mining areas have been annually cultivated for several years. No natural, near natural or rehabilitating indigenous vegetation remnants are located on the proposed mining expansion areas except for one individual Milkwood tree recorded which must be demarcated beforehand and may not be impacted upon. As per the 2023 Western Cape Biodiversity Spatial Plan (WCBSP) none of the proposed mining activities expansion areas are earmarked as CBA or ESA.

The proposed access roads that will be used during mining activities are also located on existing farm access roads and no new access roads may or will be created during the proposed mining activities.

Similar mining activities have already been conducted on the property and the water was not reached and is therefore lower than the proposed maximum depth of 30m. The actual depths of the groundwater table on the relevant properties are unknown as no active boreholes occur on the proposed mining areas, or on nearby properties or surrounds. Due to the general >30m depth groundwater table average and low yields in the Heidelberg/Riversdale region groundwater is an unused resource in the region and according to the Water Research Commission, the probability of drilling an successful borehole according to accessibility is less than 40% while, such a borehole will only have a 10-20% chance of delivering 2L/s. The proposed mining activities is therefore not expected to have any significant detrimental impacts on the geohydrological dynamics and/or groundwater quality/table of the site. However, if any groundwater is reached during the proposed mining activities on site, mining of that area must immediately be ceased, the Environmental Control Officer must be informed and the area must be rehabilitated to prevent any potential detrimental impact on the groundwater resource.

An 8m buffer area in-between any excavations and the edge of indigenous vegetation areas as present along the existing edge of the cultivated agricultural lands is proposed to ensure protection and maintain current ecological functioning of associated runoff areas/drainage lines. The only activities allowed within the proposed 8m buffer areas, as measured from the edge of the indigenous vegetation areas along the edge of the cultivated lands, are continued use as informal gravel roads or for placement of storm water berms (no excavations or trenching allowed).

Mining is conducted ‘in-house’ by means of excavators, front-end loaders and 15-ton dumper trucks. The mining method comprises of relatively shallow opencast quarrying. The topsoil and the overburden are removed and stockpiled separately along the perimeter of the quarry. As and when the bentonite is being mined, it is trucked to the Processing Plant at the head offices on Erf RE/1412, Heidelberg.

Overburden is mined in 20m wide and 3-4m thick benches to expose 3m of bentonite down-dip to be mined. This process is repeated until all bentonite is mined out. Through this process the quarries depth will be a maximum of 30m deep, and no more than half of the quarry size will be open at a time.

Rehabilitation takes place on an ongoing basis as mining proceeds. As the quarry advances along strike, the overburden is progressively replaced to backfill the excavation. The backfilled area is then contoured to prevent erosion, which could be caused by rain and surface water flow. Finally the topsoil is then spread over the disturbed surface area to restore the land to its previous state.

The bentonite found on the mining area is emplaced as relatively thin seams of 1-4m thick. The topsoil is normally less than 30cm thick. Overburden consists of a sequence of siltstone with conglomerate lenses; the latter also form the footwall of the succession.

Potential significant direct impacts occur primarily during the mining excavation stage, and the nature of these impacts is temporary loss of agricultural land and potential erosion of proposed mining areas and surrounding indigenous vegetation areas. The extent in this case is local. Indirect impacts occur mostly during the rehabilitation phase and in this case the nature would vary from the introduction of alien vegetation to partial disruption of ecological and agricultural processes due to the effects of the alien species, erosion of rehabilitated areas or depressions left in the landscape. The extent of the indirect impacts in this case is local. All measures to be implemented before, during and after mining to mitigate potential impacts are included in the EMP.

In terms of potential environmental impacts and alternatives assessed by the EAP and associated specialists the proposed layout was considered suitable for bentonite and zeolite mining and the potential impacts identified would be adequately managed and effectively mitigated through the implementation of the recommendations outlined in this report as well as the proposed Environmental Management Programme (EMP).

The mine provides direct employment for at least 54 local persons and compensation to the landowner. The operation further creates indirect employment opportunities in equipment supply industries, transport and bentonite mining, and the mining environment.

It was concluded that the proposed development will not have a significant negative environmental impact and that the socio-economic benefits of the proposed bentonite mining outweigh the potential negative impact on the environment if specialist and EMP recommendations are effectively implemented.

No fatal flaws were identified during the assessment that will lead to unacceptable environmental degradation during the proposed mining activities.

(ii) Final Site Map

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

Refer to maps attached under **Appendix B**

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

All significant environmental, cultural and socio-economic features applicable to the site were identified and informed the preferred activity, location and layout as proposed. The preferred activities, location and layout was assessed against the no go option of the site remaining as is.

Mining Operational Phase

Most of the potential negative impacts are rated as medium which can be mitigated to a low status. The potential impacts rated as medium before mitigation measures are implemented includes potential mining impacts such as – Increased dust levels; Potential erosion due to proposed mining activities along steep slopes; Mining activities can result in increased sediment loads in water resources; The trapping of all storm water within excavations on the mine area; Waste from chemical toilets and litter; Hydrocarbon spill; Fire; Introduction of declared weed species; Increased traffic due to the mining activities requiring various vehicles to come onto and leave the site;

Potential negative impacts rated as high before mitigation and low after mitigation includes - Impact of proposed mining activities on groundwater resources, secondary drainage lines and mapped NFEPA's; Impact of proposed mining activities on terrestrial indigenous vegetation areas as associated with mapped terrestrial CBAs; The potential impact of the proposed development on archaeological, paleontological and heritage remains; Mining of agricultural land.

Potential negative impacts rated as low before and after mitigation includes – Emissions; Impact on the naturally occurring fauna and avifauna present in the area; Noise due to mining machinery, trucks and people on site; A negative visual impact due to the creation of excavation pits.

Potential positive impacts which also outweighs the potential negative impacts is related to ongoing socio-economic benefits to the local communities of Heidelberg and Riversdale due to extension of the lifespan of Cape Bentonite Mine.

All the potential negative impacts with their mitigation measures are included and described in the EMP.

Mine Decommissioning/Closure/Rehabilitation Phase

The potential impacts of decommissioning the mine include: Soil erosions; Alien vegetation encroachment; Depressions left in the landscape; Unfertilised soil not suitable for agricultural cultivation. The site will be rehabilitated after mine closure and this is detailed in the EMP and closure plan.

A very significant and high potential negative impact during the decommissioning phase is the potential loss of socio-economic benefits to the local communities of Heidelberg and Riversdale. This can be mitigated by sourcing and authorising additional viable bentonite deposits to ensure sustainability of the Cape Bentonite Mine operations.

It was concluded by the EAP that the proposed development will not have a significant negative environmental impact if proposed mitigation measures are implemented and it was recommended that the Environmental Management Programme be adhered to accordingly.

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

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 EMP as well as for inclusion as conditions of authorisation.

The National Environmental Management Laws Amendment Act 25 of 2014 and Section 38 of the MPRDA stipulated that the general objectives of integrated environmental management must be applied in accordance with NEMA and this will include the

assessment and management of impacts identified as part of the EIA process. The following are proposed impact management mitigation measures to be implemented for each potential impact identified and assessed:

Mining Operational Phase -

Increased dust levels

- Reduce drop height of material to a minimum.
- Area will be mined in phases to reduce the barren areas.
- Temporarily halt material handling in extreme windy conditions.
- Use water (preferably non-potable if available) to dampen bare soil areas if required to mitigate windblown dust.
- A speed limit of 30km/hour will be displayed and enforced through a fining system.
- All vehicle drivers entering the site will be informed of the speed limit.
- The requirement of additional dust suppression measures to be implemented must be determined through a dust monitoring programme or fugitive dust control plan to limit the emission of particulate matter.

Potential erosion of the site and surrounds due to proposed mining activities along steep slopes

- Visually inspect mining area boundaries, exposed surfaces, overburden and top soil stockpiles for signs of erosion.
- If erosion channels are discovered the mine must determine the cause of erosion and implement erosion rectification and prevention measures to rehabilitate eroded areas and prevent future erosion.
- Rehabilitate and reinstate engineered constructed contours as soon as a phase is complete.
- Undertake mining activities only in identified and specifically demarcated areas as proposed and in phases. Rehabilitating/filling excavations as soon as possible to prevent accumulation of stormwater.
- Implement erosion and storm water runoff management measures as according to EMP requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage areas.

Emissions - Vehicles and machinery on the site will produce tailpipe emissions causing air pollution

- Vehicles and machinery will be maintained to minimize emissions. A log book will be filled in to keep a record of all maintenance problems encountered and mitigation measures implemented to resolve the problem.
- Vehicles and machinery emitting excessive emissions will be stopped immediately and not allowed to operate until the necessary repairs have been made.

Increased sediment loads in water resources if disturbed areas are eroded

- Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the indigenous vegetation surrounding the non-perennial drainage lines on site must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO).
- Minimize sediment load in the water by stripping a maximum of 10 meters ahead of the mining face and only moving the material once it needs to be processed or onto the intended topsoil stockpiles on the edge of all current and future mining areas. Monitor for

erosion. Should erosion be present, undertake mitigation measures to rectify and prevent further erosion.

- All roads need to be maintained and monitored. Visible signs of possible erosion must be immediately rehabilitated.
- All storm water falling outside the mine property must be diverted around the mine. This forms part of the Storm Water Management Measures and part of the EMP.

Impact of proposed mining activities on groundwater resources, secondary drainage associated with mapped NFEPAs

- Where no existing gravel roads exist as buffer areas an 8m buffer area as measured from the edge of the undisturbed indigenous vegetation areas and non-perennial drainage lines must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and for stormwater management i.e. stormwater berms and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). Refer to the proposed no-go area map below.
- Visually inspect mining area boundaries, exposed surfaces, overburden and top soil stockpiles for signs of erosion.
- If erosion channels are discovered the mine must determine the cause of erosion and implement erosion rectification and prevention measures to rehabilitate eroded areas and prevent future erosion.
- Rehabilitate and reinstate engineered constructed contours as soon as a phase is complete.
- Undertake mining activities only in identified and specifically demarcated areas as proposed and in phases. Rehabilitating/filling excavations as soon as possible to prevent accumulation of stormwater.
- Implement erosion and storm water runoff management measures as according to EMP requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage areas.
- Minimize sediment load in the water by stripping a maximum of 10 meters ahead of the mining face and only moving the material once it needs to be processed or onto the intended topsoil stockpiles on the edge of all current and future mining areas. Monitor for erosion. Should erosion be present, undertake mitigation measures to rectify and prevent further erosion.
- Use existing access roads and all roads need to be maintained as is and monitored. Visible signs of possible erosion must be immediately rehabilitated.
- All storm water falling outside the mine property must be diverted around the mine.
- No drainage line or wetland areas edges may be disturbed or impacted upon by the proposed activities.
- If any groundwater is reached during the proposed mining activities on site, mining of that area must immediately be ceased, the Environmental Control Officer must be informed and the area must be rehabilitated to prevent any potential detrimental impact on the groundwater resource.
- All measures should be put in place to ensure proper post-mining rehabilitation of affected areas, to as close to the original condition as possible.
- No pollution of surface water or ground water resources may occur due to activities on the property. Oil spillages from vehicles on site must be controlled to prevent pollution of water resources.

Trapping of Stormwater

- All storm water falling outside the mine property must be diverted around the mine.

- The mine will maintain the storm water diversion channels created along the perimeter of the mine property. The intention of the channels is to ensure water from outside the property is diverted around the quarry.

Pollution and Nuisance due to Leakage and Litter

- The toilets are serviced when needed and emptied when almost full.
- If a leak occurs the correct emergency procedure is to be followed (see EMP).
- Litter will be collected and removed from site by the operator on a daily basis.
- Chemical toilets must not be placed within no-go or associated buffer areas..

Hydrocarbon Spillage

- Any mine vehicle which is leaking hydrocarbons (e.g. petrol, diesel or oil) will be serviced in a concreted workshop to repair the leak. If it is not possible to repair the leak immediately, a drip tray will be placed under the leak to trap any spillages. The content of the drip trays will be decanted into an old oil drum for removal from the site to a hazardous waste handling facility.
- Hydrocarbon spillages are to be cleaned up immediately.
- The mine will also maintain a store of suitable absorbent material, suitable bioremediation substance and a spill kit. All incidences/ spillages are to be recorded in an incident log book. Contaminated soil must go to Vissershok Hazardous Landfill site.

Fire

- All employees will be trained on fire safety and on how to reduce the probability of a fire spreading out of control.
- Anyone who observes a fire must report it immediately to the fire protection agency/ fire brigade and their supervisor/ mine manager.
- Vehicles must be parked in an area with no vegetation if a fire occurs.

Alien Vegetation Encroachment

- Alien invasive and weed vegetation monitoring and removal must be undertaken annually during mining and for at least a year after mining activities have ceased on disturbed areas or until the landowner starts with the annual cultivation activities on the affected land. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology depending on the contract agreement that the applicant has with the landowner. All invasive alien species as listed by the Conservation of Agricultural Resources Act (CARA) must be removed during these surveys. Declared weeds and aliens must be removed before annual seeding.
- Only use topsoil as derived and conserved from the proposed mining area to be rehabilitated after mining activities have ceased on the property.
- Every landowner has a legal obligation in terms of the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) and the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) to control and eradicate alien invasive vegetation on his/her property

Impact on Natural Fauna and Avifauna and Their Habitats

- At least three bird species of conservation concern are known to occur in the general area and habitat present on site (cultivated grainlands with renosterveld patches), namely Blue Crane (*Anthropoides paradiseus*), Denham's Bustard (*Neotis denhami*) and Black Harrier (*Circus maurus*). Mining activity should not proceed if there are Blue Cranes or Denham's Bustard breeding within the footprint or immediate surroundings. If a breeding pair is encountered, the mining should only proceed after the chick fledging.
- Mining activities must be limited to identified and demarcated annually cultivated agricultural land and only existing roads may be used.
- Remove and conserve topsoil layer and overburden material for rehabilitation after mining activities have ceased

- Invasive vegetation to be removed during mining activities to be disposed of at landfill site in such a manner that seeds must not be able to spread from the disposal site or during transportation.
- No trapping or hunting of any fauna or avifauna species may take place on the property.
- Any tortoises or fauna or avifauna species present on the site when excavations are taking place must be safely moved to adjacent areas not to be impacted by the mining activities.
- No disturbance should be allowed within the remaining indigenous vegetation areas outside of the proposed mining activity areas and existing access roads. This includes no excavations; no storage of topsoil, overburden or bentonite stockpiles, no new or widened roads, and all forms of temporary disturbance. If indigenous vegetation areas are disturbed they must be immediately rehabilitated with indigenous vegetation areas under guidance of suitably qualified rehabilitation specialist.
- No natural vegetation areas edges may be cleared or impacted upon by the proposed mining activities.
- Implement erosion and storm water runoff management measures to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds.
- Backfill mined areas as soon as possible after mining completion with onsite excavated material.
- Only use topsoil and excavated material as derived and conserved from the proposed mining site to backfill and rehabilitate impacted areas.
- Monitor rehabilitated areas for signs of erosion for at least a year after rehabilitation and implement erosion rectification and prevention measures as and if required.
- Alien invasive and weed vegetation monitoring and removal must be undertaken for at least a year after mining activities have ceased and the site has been rehabilitated This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology.

Impact of proposed mining activities on terrestrial indigenous vegetation also as associated with mapped terrestrial CBAs

- At least three bird species of conservation concern are known to occur in the general area and habitat present on site (cultivated grainlands with renosterveld patches), namely Blue Crane (*Anthropoides paradiseus*), Denham's Bustard (*Neotis denhami*) and Black Harrier (*Circus maurus*). Mining activity should not proceed if there are Blue Cranes or Denham's Bustard breeding within the footprint or immediate surroundings. If a breeding pair is encountered, the mining should only proceed after the chick fledging.
- Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the indigenous vegetation surrounding the non-perennial drainage lines on site must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). No disturbance should be allowed within the drainage lines and remaining indigenous vegetation areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance. No excavation or stockpiling is allowed within the buffer areas. Should any evidence be observed that the mining activities are impacting negatively on any indigenous vegetation areas (and drainage lines) the ECO must recommend mitigation measures to be implemented to prevent further degradation and rectify impacts.
- Mining activities must be limited to identified and demarcated annually cultivated agricultural land and only existing roads may be used.
- The individual milkwood trees that were recorded adjacent to proposed mining activity areas within the cultivated areas must be demarcated within a 5m buffer radius before any mining activities occurs within a 50m range of the trees and must remain demarcated throughout the applicable mining area's operational and rehabilitation phases.

Demarcation can be removed when implementation of the applicable mining area's rehabilitation measures has been completed.

- Remove and conserve topsoil layer and overburden material for rehabilitation after mining activities have ceased. Topsoil and overburden materials must be stored separately adjacent to the mining areas on cultivated land with effective storm water runoff and erosion prevention measures to be implemented in order to protect the materials for rehabilitation.
- Alien invasive and weed vegetation monitoring and removal must be undertaken annually during mining and for at least a year after mining activities have ceased on disturbed areas or until the landowner starts with the annual cultivation activities on the affected land. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology depending on the contract agreement that the applicant has with the landowner. All invasive alien species as listed by the Conservation of Agricultural Resources Act (CARA) must be removed during these surveys. Declared weeds and aliens must be removed before annual seeding.
- Invasive vegetation to be removed during mining activities to be disposed of at landfill site in such a manner that seeds must not be able to spread from the disposal site or during transportation.
- No trapping or hunting of any fauna or avifauna species may take place on the property.
- Any tortoises or fauna or avifauna species present on the site when excavations are taking place must be safely moved to adjacent areas not to be impacted by the mining activities.
- No disturbance should be allowed within the remaining indigenous vegetation areas outside of the proposed mining activity areas and existing access roads. This includes no excavations; no storage of topsoil, overburden or bentonite stockpiles, no new or widened roads, and all forms of temporary disturbance. If indigenous vegetation areas are disturbed they must be immediately rehabilitated with indigenous vegetation areas under guidance of suitably qualified rehabilitation specialist.
- No natural vegetation areas edges may be cleared or impacted upon by the proposed mining activities.
- Implement erosion and storm water runoff management measures as according to EMP and stormwater management plan requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage areas.
- As the excavation of the quarry advances the stored overburden material must be replaced to backfill the excavations. The backfilled area must then be contoured according to existing surrounding contours of the cultivated land to prevent erosion. After contouring has been completed the stored topsoil material must be spread over the backfilled area. Only use topsoil as derived and conserved from the proposed mining area to be rehabilitated after mining activities have ceased on the property. The topsoil must not be compacted after spreading to allow the disturbed area to be restored. The site must be monitored regularly (at least 6 monthly and after heavy rains) and all signs of erosion immediately rectified and alien vegetation removed to prevent potential siltation, erosion and alien encroachment of natural areas and drainage lines.
- The project implementation process should be subject to standard Environmental Management Programme (EMP) prescripts and conditions and only proceed under supervision of a competent and diligent Environmental Control Officer, both during the operational/excavation and rehabilitation phases.

Increased Traffic

- A speed limit of 30km/hour will be displayed and enforced through a fining system. All vehicle drivers entering the site will be informed of the speed limit. Speed limit will also be applicable when delivery trucks drive through areas where farm yard and housing is next to the road.
- The applicant will be responsible for upkeep and repair of farm roads used during mining activities to the satisfaction of the landowner.

Mining on Agricultural Land

The following is the sequence of recommended rehabilitation steps:

1. Prevent dust by means of damping down surfaces when required.
2. Prevent erosion by means of temporary banks and ditches that will direct run-off water. Any occurrences of erosion must be attended to immediately and the erosion control at that point must be amended to prevent further erosion from occurring there.
3. Because of the challenge of the very thin topsoil that naturally occurs in the area, double stripping is essential. The thin topsoil gets easily diluted and contaminated by the underlying subsoil, during the mining and stockpiling process. Any lack of topsoil at the surface after rehabilitation is a serious problem that will have a significant, on-going, detrimental effect on crop performance. Topsoil must be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes.
4. Double stripping is a rehabilitation technique that is recommended by the Chamber of Mines. It involves stripping a layer of topsoil, and then a second additional layer below the topsoil. These two layers are stockpiled separately and during rehabilitation are spread separately on the surface in their original sequence. In other words, the subsoil layer is spread immediately on top of the profiled overburden, and the topsoil layer is then spread on top of that. The recommended stripping depths on Erf 3264 are 40cm for the topsoil and then a further 35cm for the subsoil. The recommended stripping depths on Erf RE1412 are 20cm for the topsoil and then a further 35 cm for the subsoil. All overburden is stripped and stockpiled separately from both the topsoil and subsoil stockpiles.
5. Topsoil stockpiles should be protected against losses by water and wind erosion. Stockpiles should be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants on the stockpiles will help to prevent erosion. Stockpiles should be no more than 2 metres high.
6. Overburden must be backfilled into the mined-out pit.
7. After mining and backfilling of overburden, any steep slopes must be reduced to a minimum and profiled to blend with the surrounding topography. A slope, even if minimal, must be ensured across all rehabilitated quarry areas so that they are naturally free draining.
8. The stockpiled subsoil must then be evenly spread and smoothed across the backfilled overburden. The depth should be monitored during spreading to ensure that coverage is even.
9. Thereafter, the stockpiled topsoil must be evenly spread and smoothed across the subsoil. The depth should be monitored during spreading to ensure that coverage is even.
10. Any parts of the existing contour bank system that has been disturbed must be re-established to the same specifications (height, slope, distance apart) as prior to disturbance, and the integrity of the entire system must be returned to full functionality.
11. Soil sampling and chemical correction should be done following the re-spreading of the topsoil. Combined, representative samples should be taken from across the site to a depth of 15cm. Soil chemical deficiencies must be corrected, based on these samples. A chemical analysis from an agricultural laboratory will include a recommendation of the appropriate quantities of chemical ameliorants (for example lime, phosphate etc) that should be applied to optimize the soil chemistry for the relevant crop. Pre-mining soil chemistry is not important. What is important is to ensure that the rehabilitated soil is optimized to within the norms for the relevant crop.
12. Sow a crop in the first season of the rehabilitated soil that is a hardy, annual crop that is sown primarily for soil stabilisation and biomass and not necessarily for economic production (eg korog). It should be dosed with a high level of nitrogen (N), phosphorus (P) and potassium (K) fertiliser in order to maximise vegetative growth and therefore biomass production (both above and below ground). High nitrogen will encourage high biomass production. The amount of required fertiliser will therefore be a higher level of fertilisation than would be determined for economic viability in terms of input costs versus production.

The increased fertilisation costs should therefore be borne by the mine's rehabilitation budget, and not by the farmer.

13. Monitoring: it is impossible, by way of a soil analysis, to evaluate, with any degree of certainty, whether a significantly disturbed soil will support crop growth or not. The final proof of effective rehabilitation must always be in the reaction of the crop that is planted on the rehabilitated soil. If the crop grows adequately, then the soil is effectively rehabilitated. If it does not, then the soil is not effectively rehabilitated. The best way to test this is to sow a crop across the boundary between the rehabilitated land and the undisturbed soil. The reaction of the crop will very obviously demonstrate a problem and a difference, if there is one.

Heritage Resources Impacts

- Should any burials, fossils or other historical material be encountered during mining, work must cease immediately and HWC must be contacted.
- In the case of any significant fossil finds exposed by mining operations in this region (e.g. vertebrate teeth, bones, crustaceans, insects, burrows, petrified wood), these should be safeguarded - preferably in situ - and reported by the ECO as soon as possible to Heritage Western Cape (3rd Floor Protea Assurance Building, 142 Longmarket Street, Green Market Square, Cape Town 8000. Private Bag X9067, Cape Town 8001. Tel: 021 483 5959 Email: ceoheritage@westerncape.gov.za), so that appropriate mitigation (i.e. recording, sampling or collection) by a palaeontological specialist can be considered and implemented before rehabilitation of the quarry takes place. These recommendations are summarized in the appended Chance Finds Protocol and has been incorporated into the Environmental Management Programme (EMPr) for the proposed mining project.

Noise Impacts

- No activities that may generate noise levels above the legal limit in terms of the Environmental Conservation Act, Western Cape Noise regulations will be conducted.
- Machinery and vehicles should be regularly maintained to prevent excessive noise.
- All machinery and work activities must adhere to the requirements of the noise regulations.

Visual Impacts

- Proposed mining activities must be limited to development footprint site.
- Rehabilitation of site when mining process complete.

Decommissioning/Rehabilitation Phase –

Rehabilitation of Agricultural Land

Mine management must be held accountable for well managed and effective implementation of all the recommended rehabilitation steps above. The specific, measurable rehabilitation outcomes against which the effectiveness of completed rehabilitation must be measured are:

1. That the topography and surface have been smoothed sufficiently to allow cultivation;
2. That topsoil has been spread on the surface across all areas from which topsoil was stripped, to a minimum depth of 40 cm on Erf 3264 and 20 cm on Erf RE1412
3. That no saline material from depth within the mining excavation occurs at less than 50 cm depth in the rehabilitated soil profile. Correctly and well implemented double stripping, as recommended in the Agricultural Statement, will ensure this.
4. That the entire disturbed area is free draining and that no ponding of water at the surface occurs.
5. That the pre-mining contour banks have been re-established to suitable specifications (height, slope, distance apart) at least as intensive as prior to disturbance, and that the integrity of the contour bank system as a whole is in place.
6. That there is no visible erosion across the area, or down-slope of it as a result of mining, and that no part of the area has been left unacceptably vulnerable to erosion.

7. That the soil chemistry, including pH, salinity, and phosphorus levels have been optimised for small grain production.
8. That a cover crop has been established, provided with a high level of nitrogen fertilisation, and grows successfully across the entire area disturbed by mining activities and that it shows no significant difference in performance when sown across the boundary between disturbed and undisturbed land.

Socio Economic Impacts i.e. Job Loss

- Additional viable bentonite deposits must be sourced and authorised to ensure sustainability of the Cape Bentonite Mine operations.
- Alternatively the mine company must assist the employees as far as possible to find alternative employment opportunities before mining operations are complete.

n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

The mining company must appoint a suitably qualified ECO who will be responsible for ensuring compliance with the requirements of the EA and EMP during the proposed mining activities. The ECO must have at least five years of experience in environmental management and must be familiar with the environmental conditions of the area.

The ECO must:

- Inspect the site and record compliance with the EA and EMP;
- Inform key, on-site staff of their roles and responsibilities in terms of the EA and EMP;
- Ensure that all activities on site are undertaken in accordance with the EA and EMP;
- Immediately notify the mining company of any non-compliance with the EA or EMP, or any other issues of environmental concern; and

All specialist recommendations must be adhered to.

All EMP requirements must be adhered to.

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

(Which relate to the assessment and mitigation measures proposed)

EAP has no detailed knowledge of bentonite and zeolite deposits and distributions other than information as provided by Cape Bentonite Mine. Only knowledgeable on potential impacts of mining activities on the environment and the associated ecological and biodiversity aspects. In undertaking the investigation and compiling this report, the following has been assumed:

- The information provided by the client, engineers and specialists is accurate and unbiased;
- The scope of this investigation is to assess the direct and cumulative environmental impacts associated with the proposed mining activities.

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

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

The EAP is of the opinion that the environmental authorisation should be issued.

The property already has an active mining right for bentonite and zeolite mining activities, the proposed mining expansion sites are to be located on cultivated agricultural lands considered suitable for bentonite and zeolite mining and the potential impacts identified would be adequately managed and effectively mitigated through the implementation of the recommendations outlined in this report as well as the proposed Environmental Management Programme (EMP).

It was concluded that the proposed activities will not have an unacceptable significant negative environmental impact on the environment if specialist and EMP recommendations are effectively implemented.

No fatal flaws were identified during the assessment that will lead to unacceptable environmental degradation during proposed mining activities.

ii. Conditions that must be included in the authorisation

The mining company must appoint a suitably qualified ECO who will be responsible for ensuring compliance with the requirements of the EA and EMP during the proposed mining activities. The ECO must have at least five years of experience in environmental management and must be familiar with the environmental conditions of the area.

The ECO must:

- Inspect the site and record compliance with the EA and EMP;
- Inform key, on-site staff of their roles and responsibilities in terms of the EA and EMP;
- Ensure that all activities on site are undertaken in accordance with the EA and EMP;
- Immediately notify the mining company of any non-compliance with the EA or EMP, or any other issues of environmental concern; and

All specialist recommendations must be adhered to.

All EMP requirements must be adhered to.

q) Period for which the Environmental Authorisation is required.

It is expected that mining activities will begin within one year of obtaining environmental authorisation. Mining activities are expected to take approximately 5 years. The Environmental authorization should be valid for 5 years.

r) Undertaking

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

Yes, it is confirmed that the undertaking is provided and included at the end of the EMP.

s) Financial Provision

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

i. Explain how the aforesaid amount was derived.

At a rate of R 213 184/ha, the estimate global cost for the rehabilitation of the quarries still to be rehabilitated of 7.9ha will be R1 684 153.60.

Take note: The above mentioned proposed rehabilitation cost is only an estimate, in terms of section 1 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) a holder “in relation to a prospecting right, **mining right**, mining permit, retention

permit, exploration right, production right, reconnaissance permit or technical co-operation permit, means the person to whom such right or permit has been granted or such person's successor in title." Therefore the holder of the mining right will remain financially responsible for implementing rehabilitation measures until the set rehabilitation objectives have been met no matter the final costs.

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

The client has confirmed that this amount can be provided for from the operating expenditure.

t) Specific Information required by the competent Authority

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

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

Please refer to the impact tables above for more detail. The proposed zeolite and bentonite mining activities will not have any significant detrimental impacts on the socio-economic conditions of the local landowners, residence or communities as assessed.

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** and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6 and 2.12. herein).

Notice of Intent to Develop submitted to Heritage Western. HWC confirmed no HIA required. However, the Fossil Finds Procedures must be implemented on site and should any heritage resources, including evidence of graves and human burials, archaeological material and paleontological material be discovered during the execution of the activities above, all works must be stopped immediately, and Heritage Western Cape must be notified without delay. The HWC Fossil finds procedure have been included in the EMPr.

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 EIA Regulations, 2014 require that all EIA processes must identify and describe "alternatives to the proposed activity that are feasible and reasonable". Different types or categories of alternatives can be identified, e.g. location alternatives, type of activity, design or layout alternatives, technology alternatives and operational alternatives. The "No-Go" or "No Project" alternative must also be considered. Please refer to the sections above for detailed assessment of the preferred site alternative and no go option assessments.

In the case of the proposed bentonite and zeolite mining activities on Erf RE/1412 and Erf 3264, the identification of feasible alternatives is severely constrained by a number of factors, including:

- The location of the viable bentonite and zeolite deposits on completely transformed and cultivated agricultural land.
- The specific mining footprints within the application property must take into account environmental constraints and significant landscape features as identified by the ecological specialist during the preliminary planning phase.
- The willingness of the landowner to allow mining activities.
- The proposed mining areas will be mined using accepted bentonite and zeolite mining methods with the least potential environmental impacts and therefore no technology or process alternatives are considered.

A number of alternatives have however, been considered during preliminary planning phase. These alternatives, as well as reasons for their exclusion from further consideration, are summarised here. Mining layouts taking environmental sensitivities into account were considered within the proposed property. The proposed mining areas were identified using the pre-mining land capability, as per the South African Chamber of Mines (1991,) guidelines summarised below.

Criteria for wetland

Land with organic soils or supporting hygrophilous vegetation where soil and vegetation processes are water determined.

Criteria for arable/cultivation land

Land that does not qualify as a wetland.

The soil is readily permeable to a depth of 750 mm.

The soil has a pH value of between 4.0 and 8.4.

The soil has a low salinity and SAR.

The soil has less than 10% (by volume) rocks or pedocrete fragments larger than 100 mm in the upper 750 mm.

Has a slope (in percent) and erodibility factor (K) such that their product is <2.0

Occurs under a climate of crop yields that are at least equal to the current national average for these crops.

Criteria for grazing land

Land that does not qualify as wetland or arable land.

Has soil, or soil-like material, permeable to roots of native plants, that is more than 250 mm thick and contains less than 50 % by volume of rocks or pedocrete fragments larger than 100 mm.

Supports, or is capable of supporting, a stand of native or introduced grass species, or other forage plants utilisable by domesticated livestock or game animals on a commercial basis.

Criteria for wilderness land

Land that does not qualify as wetland, arable land or grazing land

Location alternatives – Erf RE/1412 and Erf 3264 (previously Erf 1412) is the only proposed property alternative considered as this is where existing bentonite and zeolite mining right is operating and viable resources are available based on the findings of the mine geologist whom identified more viable bentonite and zeolite deposits locations on the property and are therefore the only feasible and reasonable location alternatives considered.. Also refer to Appendix G1 Geological and Socio-economic Motivation Report. Also refer to **Appendix G1** Geological and Socio-economic Motivation Report. Therefore no

other reasonable or feasible alternative other than the no-go/no-mining alternative was assessed.

Activity alternatives- No activity alternatives other than the no go option were considered or assessed. The applicant identified this area for bentonite and zeolite mining purposes as it is located on a property where similar mining activities is already taking place and because it is within the approved mining right area. The method of bentonite and zeolite mining is singular and the same methods previously used on site will be used at the proposed additional mining areas. Therefore, no other reasonable or feasible activity alternative other than the no-go/no-mining alternative was assessed.

Layout alternatives – Layout alternative 1 has been considered and assessed by the specialists. The proposed layout has been informed by specialist's recommendations and aims to avoid any sensitive environmental features i.e. indigenous vegetation areas, watercourses etc. The layout alternative 1 as presented by the applicant and assessed by the specialists were concluded to be the only reasonable and feasible alternative available to avoid sensitive environmental features and still allow mining of viable bentonite and zeolite deposits and was therefore the only layout alternative assessed.

Technology alternatives – No technology alternatives exist. The method of bentonite mining is singular. Plant equipment (excavator and dump trucks) is used to remove and transport the bentonite materials from the mine area as per the proposed mining methods described in the MWP. Therefore, no other reasonable or feasible technology alternative other than the no-go/no-mining alternative was assessed

Operational alternatives – No operational alternatives exist. The method of bentonite and zeolite mining is singular and is described in mining work programme. Refer to Appendix D: Mining Work Programme. Therefore, no other reasonable or feasible operational alternative other than the no-go/no-mining alternative was assessed.

The No-Go/No-Mining Option- The No-Go option will result in the site remaining as it is presently, cultivated and grazed agricultural lands. The mine provides direct employment for at least 54 local persons and compensation to the landowner. The operation further creates indirect employment opportunities in equipment supply industries, transport and bentonite mining, and the mining environment. Seeing that all potential impacts as identified and assessed is expected to be mitigated to an acceptable level without causing significant detrimental harm to the natural and social environment the socio-economic benefits of the proposed bentonite mining will outweigh the potential negative impacts on the environment if specialist and EMP recommendations are effectively implemented.

No other alternatives were assessed as no feasible or reasonable alternative exists. Only the proposed development or the no-go option is suitable.

PART B
DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT
(December 2025)

COMPLIANCE OF THIS EMP_r WITH THE REQUIREMENTS OUTLINED IN SECTION 24N(2) & (3) OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO 107 OF 1998 AS AMENDED):

(2) The environmental management programme must contain-

(a) information on any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified in a report contemplated in subsection 24(1A), including environmental impacts or objectives in respect of-

- (i) planning and design;
- (ii) pre-construction and construction activities;
- (iii) the operation or undertaking of the activity in question;
- (iv) the rehabilitation of the environment; and
- (v) closure, if applicable;

Refer to Part B: EMP 1) d) Table iv) Impacts to be mitigated in their respective phases

(b) details of-

- (i) the person who prepared the environmental management programme; and
(Refer to Chapter 1 of the EMP_r)
- (ii) the expertise of that person to prepare an environmental management programme;
(Refer to Chapter 1 of the EMP_r)

Refer to Part B: EMP 1) a) Details of the EAP

(c) a detailed description of the aspects of the activity that are covered by the environmental management programme;

Refer to Part B: EMP 1) b) Description of the Aspects of the Activity

(d) information identifying the persons who will be responsible for the implementation of the measures contemplated in paragraph (a);

Refer to Part B: EMP 1) p) General Environmental Management Guidelines to be implemented during the Proposed Mining Activities

(e) information in respect of the mechanisms proposed for monitoring compliance with the environmental management programme and for reporting on the compliance;

Refer to Part B: EMP 1) g)- l) Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including

- (f) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and

Refer to Appendix F: Mining Closure/Rehabilitation Plan of the BAR as attached

- (g) a description of the manner in which it intends to-

- or (i) modify, remedy, control or stop any action, activity or process that causes pollution or environmental degradation;

Refer to Part B: EMP 1) d) Table iv) Impacts to be mitigated in their respective phases

- (ii) remedy the cause of pollution or degradation and migration of pollutants; and

Refer to Part B: EMP 1) d) Table iv) Impacts to be mitigated in their respective phases

- (iii) comply with any prescribed environmental management standards or practices.

Refer to Part B: EMP 1) d) Table iv) Impacts to be mitigated in their respective phases

- (3) The environmental management programme must, where appropriate-

- (a) set out time periods within which the measures contemplated in the environmental management programme must be implemented;

Refer to Part B: EMP 1) d) Table iv) Impacts to be mitigated in their respective phases

- (b) contain measures regulating responsibilities for any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of prospecting or mining operations or related mining activities which may occur inside and outside the boundaries of the prospecting area or mining area in question; and

Refer to Part B: EMP 1) d) Table iv) Impacts to be mitigated in their respective phases

- (c) develop an environmental awareness plan describing the manner in which-

- (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and

Refer to Part B: EMP 1) m) Environmental Awareness Plan

- (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment.

Refer to Part B: EMP 1) d) Table iv) Impacts to be mitigated in their respective phases and p) General Environmental Management Guidelines to be implemented during the Proposed mining Activities

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 3 a) herein as required).

It is confirmed that the details and expertise of the EAP are already provided under Part A: BAR, Section 3 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 3 h) herein as required).

It is confirmed that the requirements to describe the aspects of the activity that are covered by the EMP are already provided under Part A: BAR, section 3 h).

Imerys Refractory Minerals South Africa (Pty) Ltd t/a Cape Bentonite Mine is an existing Bentonite and Zeolite mining company operating under an existing mining right on Erf RE/1412 and Erf 3264 (previously Erf 1412) Ref: WC30/5/1/2/2/10076MR.

A total of 16.63ha (Phase 1 -15) have already been mined and rehabilitated under the current mining right and is part of annually cultivated agricultural land. The mining right holder has determined that there are additional viable bentonite and zeolite resources on the property and thereby proposes to apply for the following additional mining activities on completely transformed annually cultivated agricultural land.

Authorised mining right areas remaining and additional quarries proposed:

Authorised quarry mined and currently under rehabilitation:

- Quarry/phase 20 – 1ha

Authorised quarries still to be mined:

- Quarry/phase 16 – 1ha
- Quarry/phase 17 – 0.3ha
- Quarry/phase 18 – 0.34ha
- Quarry/phase 19 – 0.32ha
- Quarry/phase 21 – 0.73

Additional quarries proposed:

- Quarry/phase 22 – 1.49ha
- Quarry/phase 23 – 1.24ha
- Quarry/phase 24 – 0.7ha
- Quarry/phase 25 – 0.78ha

Total mining right activities area: 20ha

(includes all activities associated with the proposed bentonite mining such as any explorations required, site establishment, demarcations, excavations, any vehicular movements, access and internal roads, topsoil and overburden storage, implementation of rehabilitation measures etc.)

- **Infrastructure**

Access

No new roads would have to be constructed to provide access to the proposed mining areas. The mine area is accessed directly off existing farm roads. See below a map of the existing farm roads used to access the existing mining right areas and that will also be used to access the proposed additional mining areas on Erf RE/1412 and Erf 3264 (previously Erf 1412).

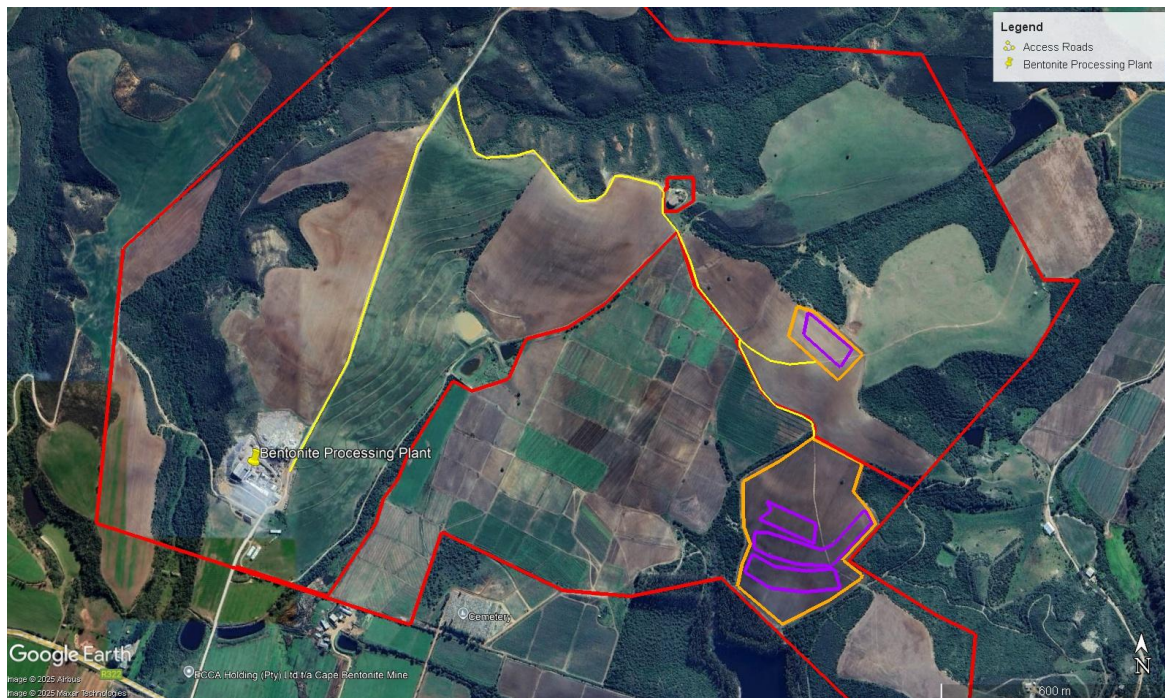


Fig 1: Existing farm roads route to be used from additional mining areas proposed on the Erf RE/1412 and Erf 3264 (previously Erf 1412) to the processing plant located on the same property.

Site infrastructure & equipment

There will be no site buildings located at the mine site. Site infrastructure would be restricted to a chemical toilet and waste bin. All areas used for the location of facilities at the site would be subject to the rehabilitation programme outlined for the mine area. On site equipment would be minimal, comprised mainly of an excavator, loader and dump trucks for the transport of material.

Management of water & protection of watercourses

The excavated mine areas may result in the accumulation of water. Measures would need to be taken during mining operations to manage any accumulation of water and associated erosion. This will include the installation of a range of erosion control measures to prevent the concentration of runoff and concomitant erosion. Generic and site-specific guidance in this regard is provided in the EMP and storm water management plan.

- **Site preparation**

Site preparation would involve removal and storage of topsoil from the area to be mined. Generic and site-specific guidance in this regard is provided in the EMP.

- **Site operation**

Details for development of the mine are provided in the mining work programme. Conceptually, the mining would entail the following:

Mining method

Mining is conducted 'in-house' by means of excavators, front-end loaders and 15-ton dumper trucks. The mining method comprises of relatively shallow opencast quarrying. The topsoil and the overburden are removed and stockpiled separately along the perimeter of the quarry. As and when the bentonite is being mined, it is trucked to the Processing Plant at the head offices on Erf RE/1412, Heidelberg.

Overburden is mined in 20m wide and 3-4m thick benches to expose 3m of bentonite down-dip to be mined. This process is repeated until all bentonite is mined out. Through this process the quarry's depth will be a maximum of 30m deep, and no more than half of the quarry size will be open at a time.

Rehabilitation takes place on an ongoing basis as mining proceeds. As the quarry advances along strike, the overburden is progressively replaced to backfill the excavation. The backfilled area is then contoured to prevent erosion, which could be caused by rain and surface water flow. Finally the topsoil is then spread over the disturbed surface area to restore the land to its previous state.

The bentonite found on the mining area is emplaced as relatively thin seams of 1-4m thick. The topsoil is normally less than 30cm thick. Overburden consists of a sequence of siltstone with conglomerate lenses; the latter also form the footwall of the succession.

The proposed phases/quarries are indicated on the Mine Layout Plan as attached under **Appendix B**.

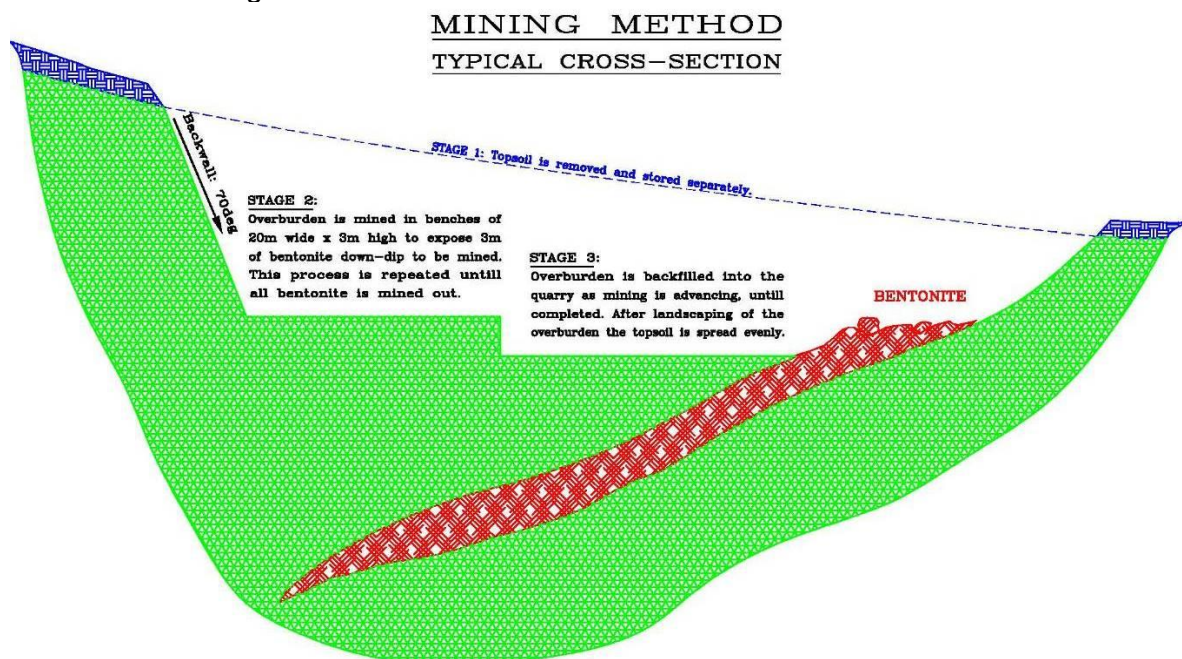
Mining Method Phases:

Phase 1 entails the removal and stockpiling of top soil and overburden material for later rehabilitation purposes. Topsoil and overburden materials are removed and stockpiled separately adjacent to the proposed mining area on already ploughed and cultivated land and protected from potential erosion.

Phase 2 entails mining the bentonite materials.

Phase 3 entails the rehabilitation of the area mined.

Also refer to mining method illustration below:



Transport

Excavated material would be transported via dump truck on the existing road infrastructure.

- **Decommissioning**

During decommissioning, the working area will be rehabilitated as per the approach outlined in the closure/rehabilitation plan. It is important to recognise that the applicant and mining right holder's liability for the site persists until such time as a Closure Certificate has been issued by the DMR.

c) Composite Map

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

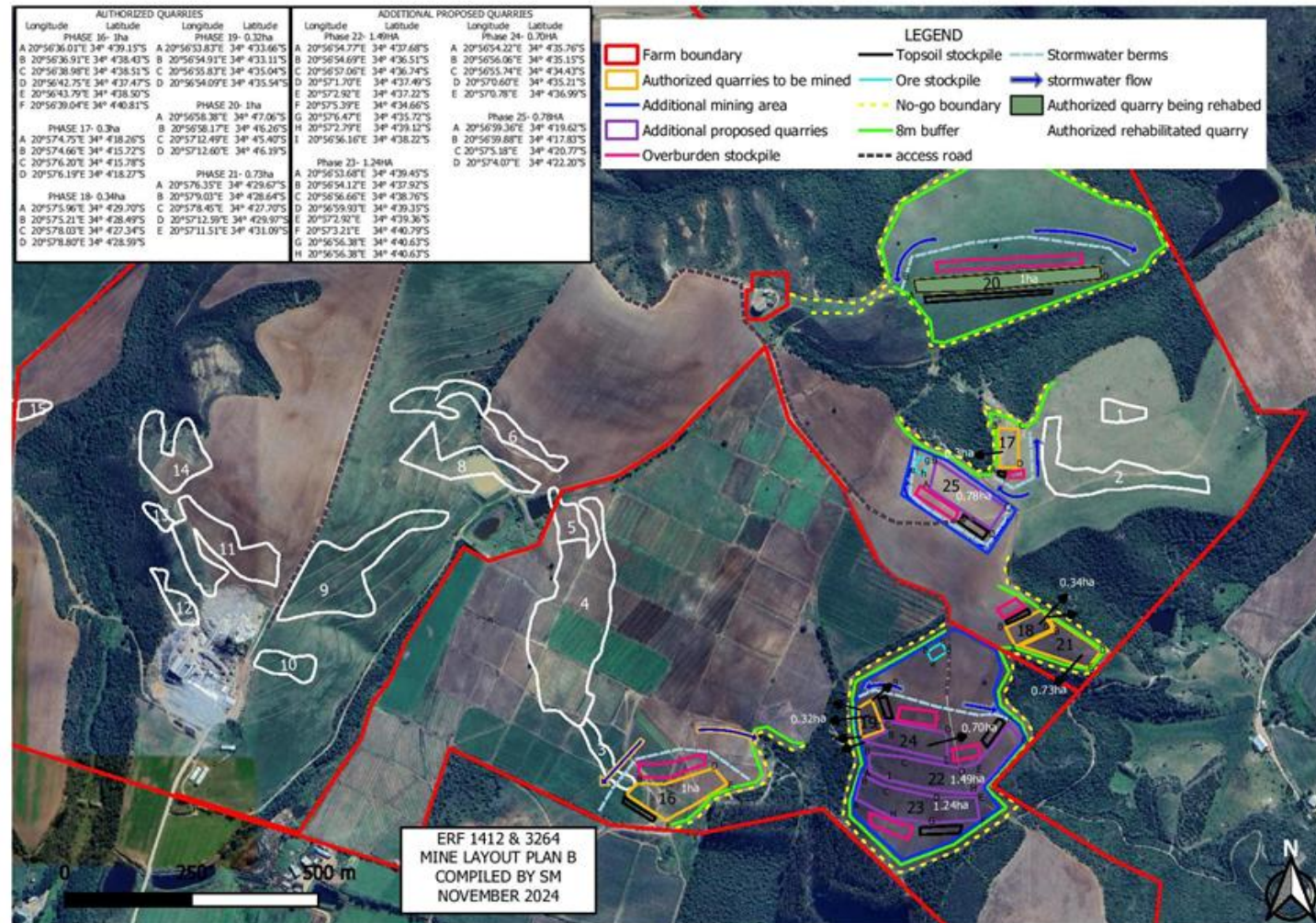


Fig.2: Proposed amended mining layout map for Erf RE1412 and Erf 3264 (previously Erf 1412) indicating proposed additional quarries within approved mining right property.

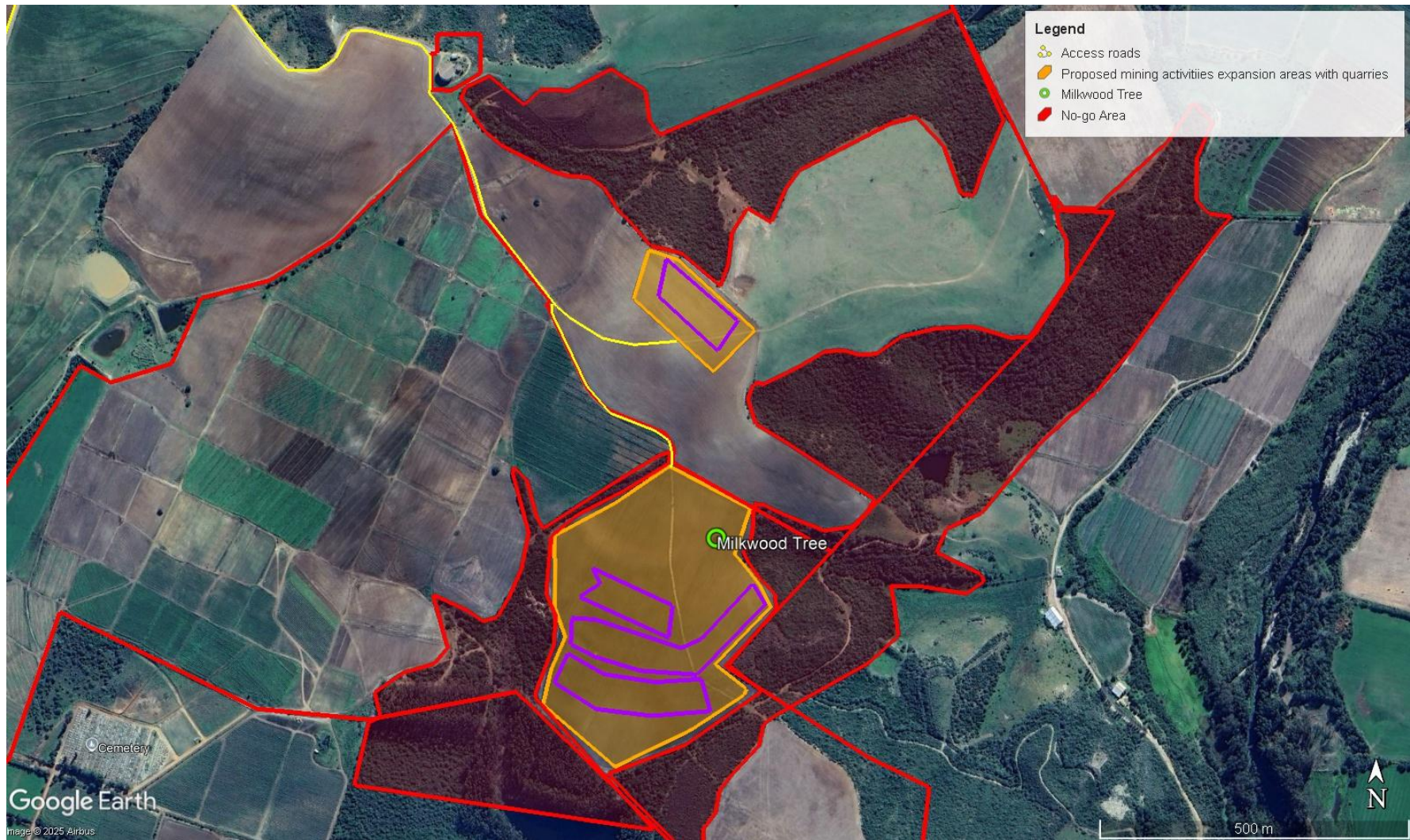


Fig 3: Proposed mining expansion activities areas (orange) on annually cultivated land and no-go areas (as outlined in red) on Erf 1412 and Erf 3264. The green circle in the cultivated land of the proposed mining activities expansion area is the individual Milkwood tree which may not be impacted upon

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)

Main closure/rehabilitation objectives are to rehabilitate all mining activities area on transformed cultivated agricultural land to previous agricultural potential/state. This includes proposed additional mining areas as well as current active mining areas on cultivated agricultural land.

If during the mining activities any indigenous vegetation areas or associated watercourse areas within the No-Go Areas are impacted upon by the mining activities these areas must be rehabilitated immediately and prevention measures must be put in place to prevent re-occurrence. Depending on the extent and type of impacts that occurred a qualified Environmental Control Officer must recommend and supervise rehabilitation measures that must be implemented. A suitable specialist must also be appointed to assess the impact/s on the affected environment within the No-Go area and provide suitable rehabilitation measures to be implemented. The ECO must consult with the specialist when determining rehabilitation and prevention measures that must be implemented. Only vegetation indigenous to the applicable area and suitable for the specific impacted site must be used for rehabilitation of any impacted indigenous vegetation areas. After rehabilitation measures have been implemented the specialist must inspect the rehabilitated areas and if successful provide written confirmation to the ECO that all impacted indigenous vegetation areas and/or associated watercourse areas within the No-Go Areas have been successfully rehabilitated, or if not successful must provide further rehabilitation recommendations which must be implemented. The mining company will be responsible for the rehabilitation on these areas until written confirmation has been obtained from the specialist that the impacted sites have been successfully rehabilitated. Specialist rehabilitation progress reports and/or written confirmation of successful rehabilitation must be appended to the ECO inspection reports to be submitted to the competent authority with the annual environmental compliance audit reports.

Double stripping. Double stripping is a rehabilitation technique that is recommended by the Chamber of Mines (2007). It involves stripping a layer of topsoil, and then a second additional layer below the topsoil. Both of these layers are stockpiled separately and during rehabilitation are spread on the surface in their original sequence. In other words, the subsoil layer is spread immediately on top of the profiled overburden, and the topsoil layer is then spread on top of that. The recommended stripping depths on Erf 3264 are 40cm for the topsoil and then a further 35cm for the subsoil. The recommended stripping depths on Erf RE1412 are 20cm for the topsoil and then a further 35 cm for the subsoil. All overburden is stripped and stockpiled separately from both the topsoil and subsoil stockpiles.

Topsoil and overburden materials must be stored separately adjacent to the mining areas with effective storm water runoff and erosion prevention measures to be implemented in order to protect the materials. Topsoil stockpiles should be protected against losses by water and wind erosion. The establishment of plants on the stockpiles will help to prevent erosion. Stockpiles should be no more than 2 metres high. The mining plan should be such that topsoil is stockpiled for the minimum possible time by rehabilitating different mining blocks progressively as the mining process continues.

As the excavation of the quarry advances the stored overburden material must be replaced to backfill the excavations. The backfilled area must then be contoured according to existing surrounding contours of the cultivated land to prevent erosion. A slope, even if minimal,

must be ensured across all rehabilitated quarry areas so that they are naturally free draining.

The stockpiled subsoil must then be evenly spread and smoothed across the backfilled overburden. The depth should be monitored during spreading to ensure that coverage is even.

Thereafter, the stockpiled topsoil must be evenly spread and smoothed across the subsoil. The depth should be monitored during spreading to ensure that coverage is even. The topsoil must not be compacted after spreading to allow the disturbed area to be restored for agricultural use. As far as possible topsoil spreading should be done just before the winter season should the landowner want to plant a cover crop so that it can be seeded and established during the winter rains and to control erosion on the newly spread topsoil. Any parts of the existing contour bank system that has been disturbed must be re-established to the same specifications (height, slope, distance apart) as prior to disturbance, and the integrity of the entire system must be returned to full functionality.

To ensure minimum impact on drainage, it is important that no surface depressions are left after mining. In other words the surface slope must be maintained throughout, including through the edge of the mined area. Surface depressions will result in ponding of water on the surface and accumulation of excess moisture in depression areas. There is sufficient slope and elevation in the proposed mining area to avoid the creation of depressions, provided that mining depths are controlled to ensure the maintenance of a slope. No compaction in the soil should remain after rehabilitation. Compaction will impede water movement through the soil profile. Where previously present erosion contours must be reinstated during rehabilitation.

If ripping is required to loosen compaction, this should be done to a depth of at least 30cm, and in such a way that no mixing of the subsoil into the topsoil layer occurs. Any chemical ameliorants should be spread on the soil before loosening or ploughing or should be done as part of the farmer's planting program.

Alien invasive and weed vegetation monitoring and removal must be undertaken annually during mining on the disturbed sites and for at least a year after mining activities have ceased on disturbed areas or until the landowner starts with the annual cultivation activities on the affected land. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology depending on the contract agreement that the applicant has with the landowner. All invasive alien species as listed by the Conservation of Agricultural Resources Act (CARA) must be removed during these surveys. Declared weeds and aliens must be removed before annual seeding.

Soil sampling and chemical correction should be done following the re-spreading of the topsoil. Combined, representative samples should be taken from across the site to a depth of 15cm. Soil chemical deficiencies must be corrected, based on these samples. A chemical analysis from an agricultural laboratory will include a recommendation of the appropriate quantities of chemical ameliorants (for example lime, phosphate etc) that should be applied to optimize the soil chemistry for the relevant crop. Pre-mining soil chemistry is not important. What is important is to ensure that the rehabilitated soil is optimized to within the norms for the relevant crop.

Sow a crop in the first season of the rehabilitated soil that is a hardy, annual crop that is sown primarily for soil stabilisation and biomass and not necessarily for economic production (eg korog). It should be dosed with a high level of nitrogen (N), phosphorus (P) and potassium (K) fertiliser in order to maximise vegetative growth and therefore biomass production (both above and below ground). High nitrogen will encourage high biomass production. The amount of required fertiliser will therefore be a higher level of fertilisation

than would be determined for economic viability in terms of input costs versus production. The increased fertilisation costs should therefore be borne by the mine's rehabilitation budget, and not by the farmer.

The site must be monitored regularly (at least 6 monthly and after heavy rains) and all signs of erosion immediately rectified to prevent potential siltation and erosion of natural areas and drainage lines.

It is impossible, by way of a soil analysis, to evaluate, with any degree of certainty, whether a significantly disturbed soil will support crop growth or not. The final proof of effective rehabilitation must always be in the reaction of the crop that is planted on the rehabilitated soil. If the crop grows adequately, then the soil is effectively rehabilitated. If it does not, then the soil is not effectively rehabilitated. The best way to test this is to sow a crop across the boundary between the rehabilitated land and the undisturbed soil. The reaction of the crop will very obviously demonstrate a problem and a difference, if there is one. When no evidence of erosion and alien vegetation encroachment are visible and similar successful crop production is reached as before mining activities commenced or similar to adjacent areas not previously mined the mined areas can be considered as successfully rehabilitated.

The mine permit/right holder commits to post-closure maintenance during rehabilitation of the site until the time of receipt of a closure certificate for all the impacted mining areas.

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

NA. The activity will not require any water for its operation.

iii) Has a water use licence been applied for?

Neither applicable nor required.

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.
Agricultural Impact Assessment Johann Lanz October 2025	RECOMMENDED MITIGATION AND REHABILITATION PLAN A very important factor affecting the success of rehabilitation, and consequently the significance of direct impacts, is the level of care that is taken to rehabilitate effectively. This is dependent on the level of environmental management of all mining activities that can impact on rehabilitation, both during the mining process and during the rehabilitation phase. The following is the sequence of recommended rehabilitation steps: 1. Prevent dust by means of damping down surfaces when required. 2. Prevent erosion by means of temporary banks and ditches that will direct run-off water. Any occurrences of erosion must be attended to immediately and the erosion control at that point must be amended to prevent further erosion from occurring there. 3. Because of the challenge of the very thin topsoil that naturally occurs in the area, double stripping is essential. The thin topsoil gets easily diluted and contaminated by the underlying subsoil, during the mining and stockpiling process. Any lack of topsoil at the surface after rehabilitation is a serious problem that will have a significant, on-going, detrimental effect on crop performance. Topsoil must be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes. 4. Double stripping is a rehabilitation technique that is recommended by the Chamber of Mines. It involves stripping a layer of topsoil, and then a second additional layer below the topsoil. These two	X (All specialist recommendations have been included in potential impact mitigation measures and EMP requirements)	Part A – i) and j) Part B – Environmental Management Programme Report Also refer to Appendix E for a copy of the specialist report.

	layers are stockpiled separately and during rehabilitation are spread separately on the surface in their original sequence. In other words, the subsoil layer is spread immediately on top of the profiled overburden, and the topsoil layer is then spread on top of that. The recommended stripping depths on Erf 3264 are 40cm for the topsoil and then a further 35cm for the subsoil. The recommended stripping depths on Erf RE1412 are 20cm for the topsoil and then a further 35 cm for the subsoil. All overburden is stripped and stockpiled separately from both the topsoil and subsoil stockpiles. 5. Topsoil stockpiles should be protected against losses by water and wind erosion. Stockpiles should be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants on the stockpiles will help to prevent erosion. Stockpiles should be no more than 2 metres high. 6. Overburden must be backfilled into the mined-out pit. 7. After mining and backfilling of overburden, any steep slopes must be reduced to a minimum and profiled to blend with the surrounding topography. A slope, even if minimal, must be ensured across all rehabilitated quarry areas so that they are naturally free draining. 8. The stockpiled subsoil must then be evenly spread and smoothed across the backfilled overburden. The depth should be monitored during spreading to ensure that coverage is even. 9. Thereafter, the stockpiled topsoil must be evenly spread and smoothed across the subsoil. The depth should be monitored during spreading to ensure that coverage is even. 10. Any parts of the existing contour bank system that has been disturbed must be re-established to the same specifications (height, slope, distance apart) as prior to disturbance, and the integrity of the entire system must be returned to full functionality. 11. Soil sampling and chemical correction should be done following the re-spreading of the topsoil. Combined, representative samples should be taken from across the site to a depth of 20cm. Soil chemical deficiencies must be corrected, based on these		
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	samples. A chemical analysis from an agricultural laboratory will include a recommendation of the appropriate quantities of chemical ameliorants (for example lime, phosphate etc) that should be applied to optimize the soil chemistry for the relevant crop. Pre-mining soil chemistry is not important. What is important is to ensure that the rehabilitated soil is optimized to within the norms for the relevant crop. 12. Sow a crop in the first season of the rehabilitated soil that is a hardy, annual crop that is sown primarily for soil stabilisation and biomass and not necessarily for economic production (eg korog). It should be dosed with a high level of nitrogen (N), phosphorus (P) and potassium (K) fertiliser in order to maximise vegetative growth and therefore biomass production (both above and below ground). High nitrogen will encourage high biomass production. The amount of required fertiliser will therefore be a higher level of fertilisation than would be determined for economic viability in terms of input costs versus production. The increased fertilisation costs should therefore be borne by the mine's rehabilitation budget, and not by the farmer. 13. Monitoring: it is impossible, by way of a soil analysis, to evaluate, with any degree of certainty, whether a significantly disturbed soil will support crop growth or not. The final proof of effective rehabilitation must always be in the reaction of the crop that is planted on the rehabilitated soil. If the crop grows adequately, then the soil is effectively rehabilitated. If it does not, then the soil is not effectively rehabilitated. The best way to test this is to sow a crop across the boundary between the rehabilitated land and the undisturbed soil. The reaction of the crop will very obviously demonstrate a problem and a difference, if there is one. CONCLUSION Despite some climate and soil constraints (limited rainfall and shallow soils), the site is of high enough agricultural potential to be suitable for viable, rainfed field crop and irrigated crop production of the crops that		
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	have been grown on site and are cultivated in the surrounding area (rotations of oats, wheat, canola, and lucern plus irrigated vegetables and orchards). The screening tool classifies the assessed footprint as being entirely very high agricultural sensitivity. The very high sensitivity classification by the screening tool is due to irrigated crop status. This assessment confirms the very high agricultural sensitivity classification of the mining areas on Erf 3264 by the screening tool. It disputes the very high agricultural sensitivity classification of the mining areas on Erf RE1412 by the screening tool and verifies that site as being of high agricultural sensitivity because of its assessed cropping potential. The focus of an agricultural assessment for mining is to determine whether or not the proposed mining will cause a significant, long-term reduction in agricultural production potential. A reduction in agricultural production potential results from the integrated effect of a number of different mechanisms, the most important of which, on this site, is loss of topsoil. All of these mechanisms can be mitigated and managed so that the land is rehabilitated to its pre-mining agricultural potential. However, this is only possible if a high degree of rehabilitation management is applied throughout the mining and rehabilitation processes. There is a risk that the rehabilitation falls short of this standard, with the result that the long-term agricultural potential of the land is compromised. The total size of the additional mining areas is 12.8 hectares. The baseline production potential is suitability for cropping. The amount of potential decrease is estimated at a 10 to 40% reduction in year 1 which will decrease to zero within 4 years, provided that rehabilitation is effectively implemented. Detailed recommendations for soil rehabilitation are provided. Ensuring a surface cover of topsoil is by far the most critical step of successful soil		
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	rehabilitation. Because of the challenge of the very thin topsoil that naturally occurs on site, double stripping is essential for effective rehabilitation. With effectively implemented rehabilitation, the overall negative agricultural impact of the development (loss of future agricultural production potential) is assessed as being of low significance and as acceptable. However, with poorly implemented rehabilitation, the overall negative agricultural impact of the development is assessed as being of high significance. The conclusion of this assessment on the acceptability of the proposed development is therefore subject to the following conditions: Mine management must be held accountable for well managed and effective implementation of all the recommended rehabilitation steps above. The specific, measurable rehabilitation outcomes against which the effectiveness of completed rehabilitation must be measured are: 1. that the topography and surface have been smoothed sufficiently to allow cultivation; 2. that topsoil has been spread on the surface across all areas from which topsoil was stripped, to a minimum depth of 40 cm on Erf 3264 and 20 cm on Erf RE1412; 3. That no saline material from depth within the mining excavation occurs at less than 50 cm depth in the rehabilitated soil profile. Correctly and well implemented double stripping, as recommended in the Agricultural Statement, will ensure this. 4. that the entire disturbed area is free draining and that no ponding of water at the surface occurs. 5. That the pre-mining contour banks have been re-established to suitable specifications (height, slope, distance apart) at least as intensive as prior to disturbance, and that the integrity of the contour bank system as a whole is in place. 6. That there is no visible erosion across the area, or down-slope of		
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	it as a result of mining, and that no part of the area has been left unacceptably vulnerable to erosion. 7. That the soil chemistry, including pH, salinity, and phosphorus levels have been optimised for small grain production. 8. That a cover crop has been established, provided with a high level of nitrogen fertilisation, and grows successfully across the entire area disturbed by mining activities and that it shows no significant difference in performance when sown across the boundary between disturbed and undisturbed land.		
Terrestrial Animal Compliance Statement Nicolaas Hanekom May 2025	WHERE REQUIRED, PROPOSED IMPACT MANAGEMENT ACTIONS AND OUTCOMES OR ANY MONITORING REQUIREMENTS FOR INCLUSION IN THE EMPR Mining can have both direct and indirect impacts on animal species of the development sites and surrounds. Direct impacts are those that destroys indigenous animal species habitats. Indirect impacts are those that may overtime lead to degradation or transformation of indigenous animal species habitats such as erosion. The proposed mining activities can have the following potential impacts on indigenous animal species of the site and surrounds: • Habitat destruction or degradation • Disturbance during breeding season • Physical death of species The following impact management measures must be implemented and included in the EMPr, and should they be implemented the proposed mining expansion activities should not have any significant negative impacts on any indigenous animal present on the site or surrounds: • At least three bird species of conservation concern are known to occur in the general area and habitat present on site (cultivated grainlands with renosterveld patches), namely Blue Crane	X (All specialist recommendations have been included in potential impact mitigation measures and EMPr requirements)	Part A – i) and j) Part B – Environmental Management Programme Report Also refer to Appendix E for a copy of the specialist report.

	(<i>Anthropoides paradiseus</i>), Denham's Bustard (<i>Neotis denhami</i>) and Black Harrier (<i>Circus maurus</i>). Mining activity should not proceed if there are Blue Cranes or Denham's Bustard breeding within the footprint or immediate surroundings. If a breeding pair is encountered, the mining should only proceed after the chick fledging. • Mining activities must be limited to identified and demarcated annually cultivated agricultural land and only existing roads may be used. • Remove and conserve topsoil layer and overburden material for rehabilitation after mining activities have ceased • Invasive vegetation to be removed during mining activities to be disposed of at landfill site in such a manner that seeds must not be able to spread from the disposal site or during transportation. • No trapping or hunting of any fauna or avifauna species may take place on the property. • Any tortoises or fauna or avifauna species present on the site when excavations are taking place must be safely moved to adjacent areas not to be impacted by the mining activities. • No disturbance should be allowed within the remaining indigenous vegetation areas outside of the proposed mining activity areas and existing access roads. This includes no excavations; no storage of topsoil, overburden or bentonite stockpiles, no new or widened roads, and all forms of temporary disturbance. If indigenous vegetation areas are disturbed they must be immediately rehabilitated with indigenous vegetation areas under guidance of suitably qualified rehabilitation specialist. • No natural vegetation areas edges may be cleared or impacted upon by the proposed mining activities. • Implement erosion and storm water runoff management measures to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds. • Backfill mined areas as soon as possible after mining completion with onsite excavated material. • Only use topsoil and excavated material as derived and		
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	conserved from the proposed mining site to backfill and rehabilitate impacted areas. • Monitor rehabilitated areas for signs of erosion for at least a year after rehabilitation and implement erosion rectification and prevention measures as and if required. • Alien invasive and weed vegetation monitoring and removal must be undertaken for at least a year after mining activities have ceased and the site has been rehabilitated This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology.		
Aquatic Biodiversity Compliance Statement Nicolaas Hanekom May 2025	WHERE REQUIRED, PROPOSED IMPACT MANAGEMENT ACTIONS AND OUTCOMES OR ANY MONITORING REQUIREMENTS FOR INCLUSION IN THE EMPR Mining can have both direct and indirect impacts on aquatic features of the site and surrounds. Direct impacts are those that pollute or transform groundwater or surface water resources. Indirect impacts are those that may overtime lead to degradation or transformation of aquatic features such as erosion. The proposed mining activities can have the following potential impacts on aquatic features of the site and surrounds: • Erosion • Groundwater pollution • Increased sediment loads • Surface water resources pollution • Transformation and degradation The following impact management measures must be implemented and included in the EMPr, and should they be implemented the proposed mining expansion activities should not have any significant negative impacts on any aquatic features present on the site or surrounds: • Visually inspect mining area boundaries, exposed surfaces, overburden and top soil stockpiles for signs of erosion.	X (All specialist recommendations have been included in potential impact mitigation measures and EMPr requirements)	Part A – i) and j) Part B – Environmental Management Programme Report Also refer to Appendix E for a copy of the specialist report.

	• If erosion channels are discovered the mine must determine the cause of erosion and implement erosion rectification and prevention measures to rehabilitate eroded areas and prevent future erosion. • Rehabilitate and reinstate engineered constructed contours as soon as a phase is complete. • Undertake mining activities only in identified and specifically demarcated areas as proposed and in phases. Rehabilitating/filling excavations as soon as possible to prevent accumulation of stormwater. • Implement erosion and storm water runoff management measures as according to EMP requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage areas. • Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the indigenous vegetation surrounding the non-perennial drainage lines on site must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). • Minimize sediment load in the water by stripping a maximum of 10 meters ahead of the mining face and only moving the material once it needs to be processed or onto the intended topsoil stockpiles on the edge of all current and future mining areas. Monitor for erosion. Should erosion be present, undertake mitigation measures to rectify and prevent further erosion. • Use existing access roads and all roads need to be maintained as is and monitored. Visible signs of possible erosion must be immediately rehabilitated. • All storm water falling outside the mine property must be diverted around the mine. • No drainage line or wetland areas edges may be disturbed or		
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	impacted upon by the proposed activities. • If any groundwater is reached during the proposed mining activities on site, mining of that area must immediately be ceased, the Environmental Control Officer must be informed and the area must be rehabilitated to prevent any potential detrimental impact on the groundwater resource. • All measures should be put in place to ensure proper post-mining rehabilitation of affected areas, to as close to the original condition as possible. • No pollution of surface water or ground water resources may occur due to activities on the property. Oil spillages from vehicles on site must be controlled to prevent pollution of water resources.		
Terrestrial Plant Compliance Statement Nicolaas Hanekom May 2025	WHERE REQUIRED, PROPOSED IMPACT MANAGEMENT ACTIONS AND OUTCOMES OR ANY MONITORING REQUIREMENTS FOR INCLUSION IN THE EMPR Mining can have both direct and indirect impacts on plant species of the development sites and surrounds. Direct impacts are those that destroys indigenous plant species. Indirect impacts are those that may overtime lead to degradation or transformation of indigenous plant species habitats such as erosion and alien vegetation encroachment. The proposed mining activities can have the following potential impacts on indigenous plant species of the site and surrounds: • Destruction/removal of indigenous vegetation due to clearance and erosion. • Degradation of adjacent indigenous vegetation areas due to alien vegetation encroachment. The following impact management measures must be implemented and included in the EMPr, and should they be implemented the proposed mining expansion activities should not have any significant negative impacts on any indigenous plant species on the site or surrounds:	X (All specialist recommendations have been included in potential impact mitigation measures and EMPr requirements)	Part A – i) and j) Part B – Environmental Management Programme Report Also refer to Appendix E for a copy of the specialist report.

	• Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the indigenous vegetation surrounding the non-perennial drainage lines on site must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). No disturbance should be allowed within the drainage lines and remaining indigenous vegetation areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance. No excavation or stockpiling is allowed within the buffer areas. Should any evidence be observed that the mining activities are impacting negatively on any indigenous vegetation areas (and drainage lines) the ECO must recommend mitigation measures to be implemented to prevent further degradation and rectify impacts. • The individual milkwood trees that were recorded adjacent to proposed mining activity areas within the cultivated areas must be demarcated within a 5m buffer radius before any mining activities occurs within a 50m range of the trees and must remain demarcated throughout the applicable mining area's operational and rehabilitation phases. Demarcation can be removed when implementation of the applicable mining area's rehabilitation measures has been completed. • Alien invasive and weed vegetation monitoring and removal must be undertaken annually during mining and for at least a year after mining activities have ceased on disturbed areas or until the landowner starts with the annual cultivation activities on the affected land. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology depending on the contract agreement that the applicant has with the landowner. All invasive alien species as listed by the Conservation of Agricultural Resources Act (CARA) must be removed during these surveys. Declared weeds and		
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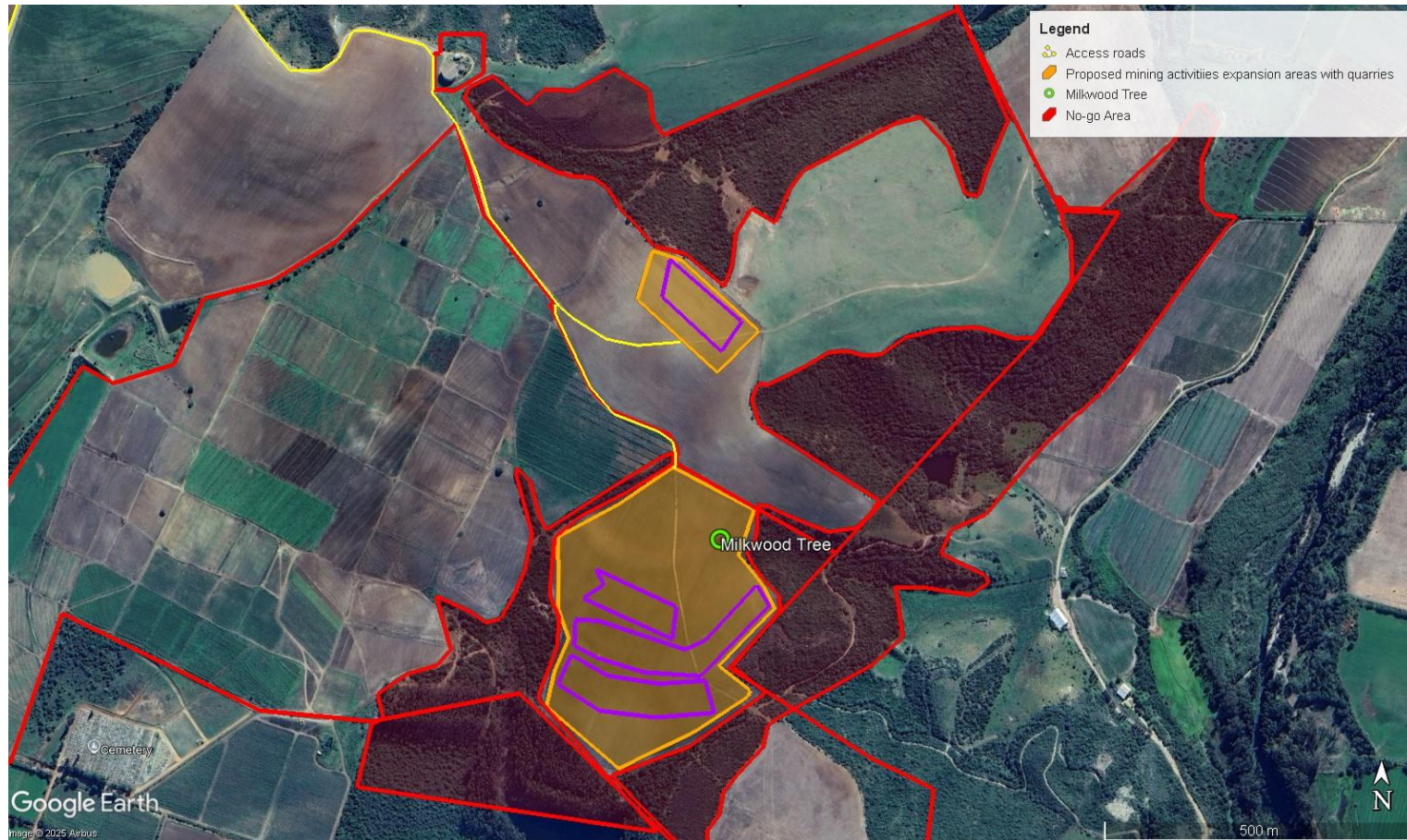
	aliens must be removed before annual seeding. • Remove and conserve topsoil layer and overburden material for rehabilitation after mining activities have ceased. Topsoil and overburden materials must be stored separately adjacent to the mining areas on cultivated land with effective storm water runoff and erosion prevention measures to be implemented in order to protect the materials for rehabilitation. • Implement erosion and storm water runoff management measures as according to EMP and stormwater management plan requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage areas. • As the excavation of the quarry advances the stored overburden material must be replaced to backfill the excavations. The backfilled area must then be contoured according to existing surrounding contours of the cultivated land to prevent erosion. After contouring has been completed the stored topsoil material must be spread over the backfilled area. Only use topsoil as derived and conserved from the proposed mining area to be rehabilitated after mining activities have ceased on the property. The topsoil must not be compacted after spreading to allow the disturbed area to be restored. The site must be monitored regularly (at least 6 monthly and after heavy rains) and all signs of erosion immediately rectified and alien vegetation removed to prevent potential siltation, erosion and alien encroachment of natural areas and drainage lines. • No disturbance should be allowed within the remaining indigenous vegetation areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance. No natural vegetation areas edges may be cleared or impacted upon by the proposed mining activities and no mining machinery may enter any indigenous vegetation areas outside of existing access roads to be used. • The project implementation process should be subject to standard Environmental Management Programme (EMP) prescripts and		
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	conditions and only proceed under supervision of a competent and diligent Environmental Control Officer, both during the operational/excavation and rehabilitation phases.		
Terrestrial Biodiversity Compliance Statement Nicolaas Hanekom May 2025	WHERE REQUIRED, PROPOSED IMPACT MANAGEMENT ACTIONS AND OUTCOMES OR ANY MONITORING REQUIREMENTS FOR INCLUSION IN THE EMPR Mining can have both direct and indirect impacts on terrestrial biodiversity of the development sites and surrounds. Direct impacts are those that destroys indigenous plant and animal species. Indirect impacts are those that may overtime lead to degradation or transformation of indigenous species habitats such as erosion and alien vegetation encroachment. The proposed mining activities can have the following potential impacts on terrestrial biodiversity of the site and surrounds: • Destruction/removal of indigenous vegetation due to clearance and erosion. • Degradation of adjacent indigenous vegetation areas due to alien vegetation encroachment. • Fauna habitat destruction or degradation • Disturbance of fauna during breeding season • Physical death of fauna species The following impact management measures must be implemented and included in the EMPr, and should they be implemented the proposed mining expansion activities should not have any significant negative impacts on any sensitive terrestrial biodiversity features on the site or surrounds: • At least three bird species of conservation concern are known to occur in the general area and habitat present on site (cultivated grainlands with renosterveld patches), namely Blue Crane (<i>Anthropoides paradiseus</i>), Denham's Bustard (<i>Neotis denhami</i>) and Black Harrier (<i>Circus maurus</i>). Mining activity should not proceed if there are Blue Cranes or Denham's Bustard breeding	X (All specialist recommendations have been included in potential impact mitigation measures and EMPr requirements)	Part A – i) and j) Part B – Environmental Management Programme Report Also refer to Appendix E for a copy of the specialist report.

	within the footprint or immediate surroundings. If a breeding pair is encountered, the mining should only proceed after the chick fledging. • Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the indigenous vegetation surrounding the non-perennial drainage lines on site must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). No disturbance should be allowed within the drainage lines and remaining indigenous vegetation areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance. No excavation or stockpiling is allowed within the buffer areas. Should any evidence be observed that the mining activities are impacting negatively on any indigenous vegetation areas (and drainage lines) the ECO must recommend mitigation measures to be implemented to prevent further degradation and rectify impacts. • Mining activities must be limited to identified and demarcated annually cultivated agricultural land and only existing roads may be used. • The individual milkwood trees that were recorded adjacent to proposed mining activity areas within the cultivated areas must be demarcated within a 5m buffer radius before any mining activities occurs within a 50m range of the trees and must remain demarcated throughout the applicable mining area's operational and rehabilitation phases. Demarcation can be removed when implementation of the applicable mining area's rehabilitation measures has been completed. • Remove and conserve topsoil layer and overburden material for rehabilitation after mining activities have ceased. Topsoil and overburden materials must be stored separately adjacent to the mining areas on cultivated land with effective storm water runoff		
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	and erosion prevention measures to be implemented in order to protect the materials for rehabilitation. • Alien invasive and weed vegetation monitoring and removal must be undertaken annually during mining and for at least a year after mining activities have ceased on disturbed areas or until the landowner starts with the annual cultivation activities on the affected land. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology depending on the contract agreement that the applicant has with the landowner. All invasive alien species as listed by the Conservation of Agricultural Resources Act (CARA) must be removed during these surveys. Declared weeds and aliens must be removed before annual seeding. • Invasive vegetation to be removed during mining activities to be disposed of at landfill site in such a manner that seeds must not be able to spread from the disposal site or during transportation. • No trapping or hunting of any fauna or avifauna species may take place on the property. • Any tortoises or fauna or avifauna species present on the site when excavations are taking place must be safely moved to adjacent areas not to be impacted by the mining activities. • No disturbance should be allowed within the remaining indigenous vegetation areas outside of the proposed mining activity areas and existing access roads. This includes no excavations; no storage of topsoil, overburden or bentonite stockpiles, no new or widened roads, and all forms of temporary disturbance. If indigenous vegetation areas are disturbed they must be immediately rehabilitated with indigenous vegetation areas under guidance of suitably qualified rehabilitation specialist. • No natural vegetation areas edges may be cleared or impacted upon by the proposed mining activities. • Implement erosion and storm water runoff management measures as according to EMP and stormwater management plan requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds;		
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	and any storm water runoff from the mining areas and topsoil and overburden storage areas. • As the excavation of the quarry advances the stored overburden material must be replaced to backfill the excavations. The backfilled area must then be contoured according to existing surrounding contours of the cultivated land to prevent erosion. After contouring has been completed the stored topsoil material must be spread over the backfilled area. Only use topsoil as derived and conserved from the proposed mining area to be rehabilitated after mining activities have ceased on the property. The topsoil must not be compacted after spreading to allow the disturbed area to be restored. The site must be monitored regularly (at least 6 monthly and after heavy rains) and all signs of erosion immediately rectified and alien vegetation removed to prevent potential siltation, erosion and alien encroachment of natural areas and drainage lines. • The project implementation process should be subject to standard Environmental Management Programme (EMP) prescripts and conditions and only proceed under supervision of a competent and diligent Environmental Control Officer, both during the operational/excavation and rehabilitation phases.		



Specialist proposed no-go: Proposed mining expansion activities areas (orange) on annually cultivated land and no-go areas (as outlined in red) on Erf 1412 and Erf 3264. The green circle in the cultivated land of the proposed mining activities expansion area is the individual Milkwood tree which may not be impacted upon

iv) Impacts to be mitigated in their respective phases

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

ACTIVITIES	PHASE	SIZE AND SCALE of disturbance	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
(E.g. For prospecting - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc. E.g. For mining,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	(of operation in which activity will take place. State; Planning and design, Pre-Mining' Mining, Operational, Rehabilitation, Closure, Post closure).	(volumes, tonnages and hectares or m²)	(describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	(A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:-.. Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
All activities associated with proposed mining impacting on agricultural land	Before commencement ,during operational phase and rehabilitation/closure	7.9ha (Total quarries size to be rehabilitated)	The following is the sequence of recommended rehabilitation steps: 1. Prevent dust by means of damping down surfaces when required. 2. Prevent erosion by means of temporary banks and ditches that will direct run-off water. Any occurrences of erosion must be attended to immediately and the erosion control at that point must be amended to prevent further erosion from occurring there.	Conservation of Agricultural Resources Act, 43 of 1983	Before commencement of mining activities, during operational phase and rehabilitation/closure phase.

			3. Because of the challenge of the very thin topsoil that naturally occurs in the area, double stripping is essential. The thin topsoil gets easily diluted and contaminated by the underlying subsoil, during the mining and stockpiling process. Any lack of topsoil at the surface after rehabilitation is a serious problem that will have a significant, on-going, detrimental effect on crop performance. Topsoil must be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes. 4. Double stripping is a rehabilitation technique that is recommended by the Chamber of Mines. It involves stripping a layer of topsoil, and then a second additional layer below the topsoil. These two layers are stockpiled separately and during rehabilitation are spread separately on the surface in their original sequence. In other words, the subsoil layer is spread immediately on top of the profiled overburden, and the topsoil layer is then spread on top of that. The recommended stripping depths on Erf 3264 are		
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			40cm for the topsoil and then a further 35cm for the subsoil. The recommended stripping depths on Erf RE1412 are 20cm for the topsoil and then a further 35 cm for the subsoil. All overburden is stripped and stockpiled separately from both the topsoil and subsoil stockpiles. 5. Topsoil stockpiles should be protected against losses by water and wind erosion. Stockpiles should be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants on the stockpiles will help to prevent erosion. Stockpiles should be no more than 2 metres high. 6. Overburden must be backfilled into the mined-out pit. 7. After mining and backfilling of overburden, any steep slopes must be reduced to a minimum and profiled to blend with the surrounding topography. A slope, even if minimal, must be ensured across all rehabilitated quarry areas so that they are naturally free draining. 8. The stockpiled subsoil must then be evenly spread and smoothed across the		
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			backfilled overburden. The depth should be monitored during spreading to ensure that coverage is even. 9. Thereafter, the stockpiled topsoil must be evenly spread and smoothed across the subsoil. The depth should be monitored during spreading to ensure that coverage is even. 10. Any parts of the existing contour bank system that has been disturbed must be re-established to the same specifications (height, slope, distance apart) as prior to disturbance, and the integrity of the entire system must be returned to full functionality. 11. Soil sampling and chemical correction should be done following the re-spreading of the topsoil. Combined, representative samples should be taken from across the site to a depth of 15cm. Soil chemical deficiencies must be corrected, based on these samples. A chemical analysis from an agricultural laboratory will include a recommendation of the appropriate quantities of chemical ameliorants (for example lime, phosphate etc) that should be applied to optimize the soil		
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			chemistry for the relevant crop. Pre-mining soil chemistry is not important. What is important is to ensure that the rehabilitated soil is optimized to within the norms for the relevant crop. 12. Sow a crop in the first season of the rehabilitated soil that is a hardy, annual crop that is sown primarily for soil stabilisation and biomass and not necessarily for economic production (eg korog). It should be dosed with a high level of nitrogen (N), phosphorus (P) and potassium (K) fertiliser in order to maximise vegetative growth and therefore biomass production (both above and below ground). High nitrogen will encourage high biomass production. The amount of required fertiliser will therefore be a higher level of fertilisation than would be determined for economic viability in terms of input costs versus production. The increased fertilisation costs should therefore be borne by the mine's rehabilitation budget, and not by the farmer. 13. Monitoring: it is impossible, by way of a soil analysis, to evaluate, with any degree of		
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			certainty, whether a significantly disturbed soil will support crop growth or not. The final proof of effective rehabilitation must always be in the reaction of the crop that is planted on the rehabilitated soil. If the crop grows adequately, then the soil is effectively rehabilitated. If it does not, then the soil is not effectively rehabilitated. The best way to test this is to sow a crop across the boundary between the rehabilitated land and the undisturbed soil. The reaction of the crop will very obviously demonstrate a problem and a difference, if there is one.		
Excavations; Loading, hauling and transport creating excessive dust	Operational phase and rehabilitation/closure phase	7.9ha (Total quarries size to be rehabilitated)	Excessive Dust • Reduce drop height of material to a minimum. • Area will be mined in phases to reduce the barren areas. • Temporarily halt material handling in extreme windy conditions. • Use water (preferably non-potable if available) to dampen bare soil areas if required to mitigate windblown dust. • A speed limit of 30km/hour will be displayed and enforced through a fining system. • All vehicle drivers entering the site will be informed of the speed limit. • The requirement of additional	The dust generated and fallout will be monitored against the requirements described below and the activity will cease and mitigation measures implemented to ensure that the dust generated as a result of the activity meets the regulatory requirements. The National Dust Control Regulations regulates the following: No person may conduct any activity in such a way as to give rise to dust in such quantities and concentrations that the dust or dust fallout has a detrimental effect on the environment, including health, social, economic, ecological or	Operational phase and rehabilitation/closure phase

			dust suppression measures to be implemented must be determined through a dust monitoring programme or fugitive dust control plan to limit the emission of particulate matter	cultural heritage conditions or has contributed to the degradation of the ambient air quality beyond the premises where it originates from; or that the dust remains visible in the ambient air beyond the premises where it originates from; or if the dust fall at the boundary or beyond the boundary of the premises where it originates exceeds: – 1200 mg/m²/day averaged over 30 days, measured in accordance with reference method ASTM D1739 (Standard Test Method for Collection and Measurement of Dustfall (Settleable Particulate Matter). It is important to note that people experience dust deposition as a nuisance effect, and that there are no direct human health implications because the dust does not reach the lungs. Indirect effects on human and animal health may result from the deposition of dust containing toxicants onto edible plants. Heavy dust deposition can have detrimental effects on plants if the leaves are smothered to the extent where transpiration and photosynthesis are affected. Particulate Matter). Two dust fallout incidents that exceeds the limit may occur	
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				within a year (not sequential months).	
All activities associated with proposed mining potentially causing erosion	Operations phase and rehabilitation/ closure phase	7.9ha (Total quarries size to be rehabilitated)	Potential Erosion • Visually inspect mining area boundaries, exposed surfaces, overburden and top soil stockpiles for signs of erosion. • If erosion channels are discovered the mine must determine the cause of erosion and implement erosion rectification and prevention measures to rehabilitate eroded areas and prevent future erosion. • Rehabilitate and reinstate engineered constructed contours as soon as a phase is complete. • Undertake mining activities only in identified and specifically demarcated areas as proposed and in phases. Rehabilitating/filling excavations as soon as possible to prevent accumulation of stormwater. • Implement erosion and storm water runoff management measures as according to EMP requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and	Conservation of Agricultural Resources Act, 43 of 1983 and regulations	Operations phase and rehabilitation/ closure phase

			topsoil and overburden storage areas.		
All activities associated with proposed mining creating noise	Operations phase and rehabilitation/closure phase	7.9ha (Total quarries size to be rehabilitated)	Noise • No activities that may generate noise levels above the legal limit in terms of the Environmental Conservation Act, Western Cape Noise regulations will be conducted. • Machinery and vehicles should be regularly maintained to prevent excessive noise. • All machinery and work activities must adhere to the requirements of the noise regulations.	The standard below will be used to measure noise levels and impacts. Table 2 of SANS 10103:2004 <i>The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication</i> where the daytime, equivalent continuous rating level is given as 45 dBA for Rural Districts.	Operations phase and rehabilitation/closure phase
Mine vehicles/machinery	Operations phase and rehabilitation/closure phase	7.9ha (Total quarries size to be rehabilitated)	Emissions • Vehicles and machinery on the site will be monitored for excessive emissions. • Vehicles and machinery will be maintained to minimize emissions. A log book will be filled in to keep a record of all maintenance problems encountered and mitigation measures implemented to resolve the problem. • Vehicles and machinery emitting excessive emissions will be stopped immediately and not allowed to operate until the necessary repairs have been done.	Carbon monoxide (CO) is an odourless, colourless, and poisonous gas. Most CO is formed as a result of incomplete combustion of organic materials used as fuel. CO emissions are highest during incomplete combustion e.g. during idling and low speed mobile source operations, such as vehicle idle. CO enters the bloodstream and reduces oxygen delivery to the body's organs and tissues. Its most serious effects occur at high concentrations, and therefore it tends to be a localized problem. CO may produce adverse health effects such as headaches, work capacity impairment, learning ability	Operations phase and rehabilitation/closure phase

				impairment, dizziness, weakness, nausea, vomiting, loss of muscular control, increasing and decreasing respiratory rates, collapse, unconsciousness, or death. The health threat from CO is most serious for those who suffer from cardiovascular disease. Healthy individuals also can be affected, but only at higher concentrations. It is not anticipated that the CO emissions levels that is generated will cause the above effects. The occupational exposure limit of CO is 50 parts per million for a 40 hour work week. It is highly unlikely whether this level will be reached in the general environment.	
All activities associated with proposed mining which can cause fire	Operations phase and rehabilitation/ closure phase	7.9ha (Total quarries size to be rehabilitated)	Fire Management • All employees will be trained on fire safety and on how to reduce the probability of a fire spreading out of control. • Anyone who observes a fire must report it immediately to the fire protection agency/ fire brigade and their supervisor/ mine manager. • Vehicles must be parked in an area with no vegetation if a fire occurs.	Conservation of Agricultural Resources Act, 43 of 1983 and National Veld and Forest Fire Act, 101 of 1998; and regulations	Operations phase and rehabilitation/ closure phase
Chemical toilets and litter during proposed mining activities	Operations phase and rehabilitation/ closure phase	7.9ha (Total quarries size to be rehabilitated)	Waste Management • The toilets are serviced when needed and emptied when almost full.	National Environmental Management: Waste Act (Act No 59 of 2008) and regulations	Operations phase and rehabilitation/ closure phase

			• If a leak occurs the correct emergency procedure is to be followed (refer to EMP). • Litter will be collected and removed from site by the operator on a daily basis. • Chemical toilets must not be placed within no-go or associated buffer areas		
Mine vehicles/machinery	Operations phase and rehabilitation/ closure phase	7.9ha (Total quarries size to be rehabilitated)	Vehicle/Machine Maintenance • Any mine vehicle which is leaking hydrocarbons (e.g. petrol, diesel or oil) will be serviced in a concreted workshop to repair the leak. If it is not possible to repair the leak immediately, a drip tray will be placed under the leak to trap any spillages. The content of the drip trays will be decanted into an old oil drum for removal from the site to a hazardous waste handling facility. • Hydrocarbon spillages are to be cleaned up immediately. • The mine will also maintain a store of suitable absorbent material, suitable bioremediation substance and a spill kit. All incidences/ spillages are to be recorded in an incident log book. Contaminated soil must go to Visser's Hazardous Landfill site.	Hazardous Substances Act, 15 of 1973 and National Environmental Management: Waste Act (Act No 59 of 2008); and regulations	Operations phase and rehabilitation/ closure phase.
Mining activities which may lead to the spread	Operations phase and rehabilitation/	7.9ha (Total quarries size	Alien Vegetation Control • Alien invasive and weed	National Environmental Management: Biodiversity Act	Operations phase and rehabilitation/ closure

of alien vegetation i.e. soil disturbance	closure phase	to be rehabilitated)	vegetation monitoring and removal must be undertaken annually during mining and for at least a year after mining activities have ceased on disturbed areas or until the landowner starts with the annual cultivation activities on the affected land. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology depending on the contract agreement that the applicant has with the landowner. All invasive alien species as listed by the Conservation of Agricultural Resources Act (CARA) must be removed from the areas disturbed by mining activities during these surveys. Declared weeds and aliens must be removed before annual seeding. • Only use topsoil as derived and conserved from the proposed mining area to be rehabilitated after mining activities have ceased on the property. • Every landowner has a legal obligation in terms of the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) and the National Environmental	10 of 2004 [NEMBA] and relevant regulations Conservation of Agricultural Resources Act, 43 of 1983	phase.
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			Management: Biodiversity Act, 2004 (Act No. 10 of 2004) to control and eradicate alien invasive vegetation on his/her property.		
Rehabilitation of mined areas which may leave depressions in the landscape	Rehabilitation Phase	7.9ha (Total quarries size to be rehabilitated)	• Mine area must be rehabilitated immediately after mine is completed and the rehabilitated site must be shaped in line with surrounding topography to ensure that no depressions are left in the landscape. • Engineered contour structures reinstated (if previously present) and maintained. • Monitor rehabilitation of area on a 6 monthly basis until effective/successful rehabilitation has been obtained. • If depressions is detected rectification and preventions measures must be implemented i.e. suitable additional topsoil placed within depressions or reshape of surface to remove depressions. This will depend on depth and extent of depression occurring and must be guided by the ECO.	Conservation of Agricultural Resources Act, 43 of 1983	Rehabilitation/closure phase
Rehabilitation of mined agricultural land which may leave topsoil unfertile or insufficient for agricultural	Rehabilitation Phase	7.9ha (Total quarries size to be rehabilitated)	Mine management must be held accountable for well managed and effective implementation of all the recommended rehabilitation	Conservation of Agricultural Resources Act, 43 of 1983	Rehabilitation/closure phase

cultivation			steps above. The specific, measurable rehabilitation outcomes against which the effectiveness of completed rehabilitation must be measured are: 1. That the topography and surface have been smoothed sufficiently to allow cultivation; 2. That topsoil has been spread on the surface across all areas from which topsoil was stripped, to a minimum depth of 40 cm on Erf 3264 and 20 cm on Erf RE1412. 3. That no saline material from depth within the mining excavation occurs at less than 50 cm depth in the rehabilitated soil profile. Correctly and well implemented double stripping, as recommended in the Agricultural Statement, will ensure this. 4. That the entire disturbed area is free draining and that no ponding of water at the surface occurs. 5. That the pre-mining contour banks have been re-established to suitable specifications (height, slope, distance apart) at least as intensive as prior to disturbance, and that the integrity of the contour bank system as a whole is in		
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			place. 6. That there is no visible erosion across the area, or down-slope of it as a result of mining, and that no part of the area has been left unacceptably vulnerable to erosion. 7. That the soil chemistry, including pH, salinity, and phosphorus levels have been optimised for small grain production. 8. That a cover crop has been established, provided with a high level of nitrogen fertilisation, and grows successfully across the entire area disturbed by mining activities and that it shows no significant difference in performance when sown across the boundary between disturbed and undisturbed land.		
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e) Impact Management Outcomes

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

ACTIVITY (whether listed or not listed).	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE In which impact is anticipated	MITIGATION TYPE	STANDARD TO BE ACHIEVED
(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,	(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination,		(e.g. Mining, commissioning, operational Decommissioning, closure, post-closure)	(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.)	(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.

pipelines, power lines, conveyors, etc....etc....etc.).	air pollution etc....etc....)			E.g. • Modify through alternative method. • Control through noise control • Control through management and monitoring • Remedy through rehabilitation..	
Excavations, loading, hauling, transport and roads	Increased dust levels	Natural Environment, road users and nearby residents	Operational, Decommissioning/Closure/ Rehabilitation	• Reduce drop height of material to a minimum. • Area will be mined in phases to reduce the barren areas. • Temporarily halt material handling in extreme windy conditions. • Use non-potable water (if available) to dampen bare soil areas if required to mitigate windblown dust. • A speed limit of 30km/hour will be displayed and enforced through a fining system. • All vehicle drivers entering the site will be informed of the speed limit. • The requirement of additional dust suppression measures to be implemented must be determined through a dust monitoring programme or fugitive dust control plan to limit the emission of particulate matter.	The National Dust Control Regulations regulates. Dust fallout may not exceeds 1200 mg/m ² /day averaged over 30 days, measured in accordance with reference method ASTM D1739 (Standard Test Method for Collection and Measurement of Dustfall (Settleable Particulate Matter). Two dust fallout incidents that exceeds the limit may occur within a year (not sequential months).
All activities associated with proposed mining	Mining activities (i.e. The site preparation and removal of topsoil) will cause a disturbance	Natural and agricultural resources	Operational, Decommissioning/Closure/ Rehabilitation	• Visually inspect mining area boundaries, exposed surfaces, overburden and top soil stockpiles for signs of erosion. • If erosion channels are discovered the mine must determine the cause of erosion and implement erosion	Impact avoidance, if detected rectification and prevention.

	and this disturbance, unless carefully managed, could spread as a result thereof. Soil erosion can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should rains fall during mining. Loss of stockpiled topsoil and overburden material.			rectification and prevention measures to rehabilitate eroded areas and prevent future erosion. • Rehabilitate and reinstate engineered constructed contours as soon as a phase is complete. • Undertake mining activities only in identified and specifically demarcated areas as proposed • Implement erosion and storm water runoff management measures as according to EMP requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage areas.	
Mine vehicles/machinery	Vehicles and machinery on the site will produce tailpipe emissions leading to air pollution	Natural resources	Operational, Decommissioning/Closure/ Rehabilitation	• Vehicles and machinery will be maintained to minimize emissions. A log book will be filled in to keep a record of all maintenance problems encountered and mitigation measures implemented to resolve the problem. • Vehicles and machinery emitting excessive emissions will be stopped immediately and not allowed to operate until the necessary repairs have been done.	The occupational exposure limit of CO is 50 parts per million for a 40 hour work week. It is highly unlikely whether this level will be reached in the general environment.

All activities associated with proposed mining	Mining activities can result in increased sediment loads in water resources	Natural and agricultural resources	Operational, Decommissioning/Closure/ Rehabilitation	• Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the indigenous vegetation surrounding the non-perennial drainage lines on site must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). • Minimize sediment load in the water by stripping a maximum of 10 meters ahead of the mining face and only moving the material once it needs to be processed or onto the intended topsoil stockpiles on the edge of all current and future mining areas. Monitor for erosion. Should erosion be present, undertake mitigation measures to rectify and prevent further erosion. • All roads need to be maintained and monitored. Visible signs of possible erosion must be immediately rehabilitated. • All storm water falling outside the mine property must be diverted around the mine. This forms part of the Storm Water Management Measures and part of the EMPr.	Impact avoidance, if detected rectification and prevention.
All activities associated	Mining	Natural and	Operational,	• Where no existing gravel roads	Impact avoidance, if

with proposed mining	activities can impact on water resources i.e. groundwater, secondary drainage lines and dams with associated wetland characteristics and aquatic vegetation as associated with mapped NFEPAs and aquatic CBAs and ESAs	agricultural resources	Decommissioning/Closure/ Rehabilitation	exists as buffer areas an 8m buffer area as measured from the edge of the undisturbed indigenous vegetation areas and non-perennial drainage lines must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and for stormwater management i.e. stormwater berms and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). Refer to the proposed no-go area map below. • Visually inspect mining area boundaries, exposed surfaces, overburden and top soil stockpiles for signs of erosion. • If erosion channels are discovered the mine must determine the cause of erosion and implement erosion rectification and prevention measures to rehabilitate eroded areas and prevent future erosion. • Rehabilitate and reinstate engineered constructed contours as soon as a phase is complete. • Undertake mining activities only in identified and specifically demarcated areas as proposed and in phases. Rehabilitating/filling excavations as soon as possible to prevent	detected rectification and prevention.
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				accumulation of stormwater. • Implement erosion and storm water runoff management measures as according to EMP requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage areas. • Minimize sediment load in the water by stripping a maximum of 10 meters ahead of the mining face and only moving the material once it needs to be processed or onto the intended topsoil stockpiles on the edge of all current and future mining areas. Monitor for erosion. Should erosion be present, undertake mitigation measures to rectify and prevent further erosion. • Use existing access roads and all roads need to be maintained as is and monitored. Visible signs of possible erosion must be immediately rehabilitated. • All storm water falling outside the mine property must be diverted around the mine. • No drainage line or wetland areas edges may be disturbed or impacted upon by the proposed activities. • If any groundwater is reached during the proposed mining	
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				activities on site, mining of that area must immediately be ceased, the Environmental Control Officer must be informed and the area must be rehabilitated to prevent any potential detrimental impact on the groundwater resource. • All measures should be put in place to ensure proper post-mining rehabilitation of affected areas, to as close to the original condition as possible. • No pollution of surface water or ground water resources may occur due to activities on the property. Oil spillages from vehicles on site must be controlled to prevent pollution of water resources.	
Excavations	The trapping of storm water within excavations on the mine area	Natural and agricultural resources	Operational, Decommissioning/Closure/Rehabilitation	• All storm water falling outside the mine property must be diverted around the mine. • The mine will maintain the storm water diversion channels created along the perimeter of the mine property. The intention of the channels is to ensure water from outside the property is diverted around the quarry.	Impact avoidance, if detected rectification and prevention.
Chemical toilets and litter	Pollution and nuisance due to leakage etc.	Natural and agricultural resources	Operational, Decommissioning/Closure/Rehabilitation	• The toilets are serviced when needed and emptied when almost full. • If a leak occurs the correct emergency procedure is to be followed (see EMP). • Litter will be collected and removed from site by the operator	Impact avoidance, if detected rectification and prevention.

				on a daily basis. • Chemical toilets must not be placed within no-go or associated buffer areas.	
Mine vehicles/machinery	Ground and/or water pollution and loss of natural and agricultural resources due to a hydrocarbon spillage	Natural and agricultural resources	Operational, Decommissioning/Closure/ Rehabilitation	• Any mine vehicle which is leaking hydrocarbons (e.g. petrol, diesel or oil) will be serviced in a concreted workshop to repair the leak. If it is not possible to repair the leak immediately, a drip tray will be placed under the leak to trap any spillages. The content of the drip trays will be decanted into an old oil drum for removal from the site to a hazardous waste handling facility. • Hydrocarbon spillages are to be cleaned up immediately. • The mine will also maintain a store of suitable absorbent material, suitable bioremediation substance and a spill kit. All incidences/ spillages are to be recorded in an incident log book. Contaminated soil must go to Vissershok Hazardous Landfill site.	Impact avoidance, if detected rectification and prevention.
All activities associated with proposed mining	Fire can cause habitat or crop destruction	Natural and agricultural resources	Operational, Decommissioning/Closure/ Rehabilitation	• All employees will be trained on fire safety and on how to reduce the probability of a fire spreading out of control. • Anyone who observes a fire must report it immediately to the fire protection agency/ fire brigade and their supervisor/ mine manager. • Vehicles must be parked in an area with no vegetation if a fire	Impact avoidance, if detected rectification and prevention.

				occurs	
All activities associated with proposed mining	Declared weeds may be transported onto the site and spread to surrounding areas. This may lead to habitat destruction and increased management costs.	Natural and agricultural resources	Operational, Decommissioning/Closure/ Rehabilitation	• Alien invasive and weed vegetation monitoring and removal must be undertaken annually during mining and for at least a year after mining activities have ceased on disturbed areas or until the landowner starts with the annual cultivation activities on the affected land. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology depending on the contract agreement that the applicant has with the landowner. All invasive alien species as listed by the Conservation of Agricultural Resources Act (CARA) must be removed from the areas disturbed by mining activities during these surveys. Declared weeds and aliens must be removed before annual seeding. • Only use topsoil as derived and conserved from the proposed mining area to be rehabilitated after mining activities have ceased on the property • Every landowner has a legal obligation in terms of the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) and the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) to control and eradicate	Impact avoidance, if detected rectification and prevention.

				alien invasive vegetation on his/her property.	
All activities associated with proposed mining	Natural fauna and avifauna habitat destruction and disturbance	Natural resources	Operational, Decommissioning/Closure/ Rehabilitation	• At least three bird species of conservation concern are known to occur in the general area and habitat present on site (cultivated grainlands with renosterveld patches), namely Blue Crane (<i>Anthopoides paradiseus</i>), Denham's Bustard (<i>Neotis denhami</i>) and Black Harrier (<i>Circus maurus</i>). Mining activity should not proceed if there are Blue Cranes or Denham's Bustard breeding within the footprint or immediate surroundings. If a breeding pair is encountered, the mining should only proceed after the chick fledging. • Mining activities must be limited to identified and demarcated annually cultivated agricultural land and only existing roads may be used. • Remove and conserve topsoil layer and overburden material for rehabilitation after mining activities have ceased • Invasive vegetation to be removed during mining activities to be disposed of at landfill site in such a manner that seeds must not be able to spread from the disposal site or during transportation. • No trapping or hunting of any fauna or avifauna species may take place on the property.	Impact avoidance, if detected rectification and prevention.

				• Any tortoises or fauna or avifauna species present on the site when excavations are taking place must be safely moved to adjacent areas not to be impacted by the mining activities. • No disturbance should be allowed within the remaining indigenous vegetation areas outside of the proposed mining activity areas and existing access roads. This includes no excavations; no storage of topsoil, overburden or bentonite stockpiles, no new or widened roads, and all forms of temporary disturbance. If indigenous vegetation areas are disturbed they must be immediately rehabilitated with indigenous vegetation areas under guidance of suitably qualified rehabilitation specialist. • No natural vegetation areas edges may be cleared or impacted upon by the proposed mining activities. • Implement erosion and storm water runoff management measures to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds. • Backfill mined areas as soon as possible after mining completion with onsite excavated material. • Only use topsoil and excavated material as derived and	
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				conserved from the proposed mining site to backfill and rehabilitate impacted areas. • Monitor rehabilitated areas for signs of erosion for at least a year after rehabilitation and implement erosion rectification and prevention measures as and if required. • Alien invasive and weed vegetation monitoring and removal must be undertaken for at least a year after mining activities have ceased and the site has been rehabilitated. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology.	
All activities associated with proposed mining	Mining activities can impact on indigenous vegetation remnants associated with mapped terrestrial CBAs	Natural resources	Operational, Decommissioning/Closure/Rehabilitation	• At least three bird species of conservation concern are known to occur in the general area and habitat present on site (cultivated grainlands with renosterveld patches), namely Blue Crane (<i>Anthropoides paradiseus</i>), Denham's Bustard (<i>Neotis denhami</i>) and Black Harrier (<i>Circus maurus</i>). Mining activity should not proceed if there are Blue Cranes or Denham's Bustard breeding within the footprint or immediate surroundings. If a breeding pair is encountered, the mining should only proceed after the chick fledging. • Where no existing gravel roads	Management of potential scale/size of impact.

				exists as buffer areas an 8m buffer area as measured from the edge of the indigenous vegetation surrounding the non-perennial drainage lines on site must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). No disturbance should be allowed within the drainage lines and remaining indigenous vegetation areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance. No excavation or stockpiling is allowed within the buffer areas. Should any evidence be observed that the mining activities are impacting negatively on any indigenous vegetation areas (and drainage lines) the ECO must recommend mitigation measures to be implemented to prevent further degradation and rectify impacts. • Mining activities must be limited to identified and demarcated annually cultivated agricultural land and only existing roads may be used.	
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				• The individual milkwood trees that were recorded adjacent to proposed mining activity areas within the cultivated areas must be demarcated within a 5m buffer radius before any mining activities occurs within a 50m range of the trees and must remain demarcated throughout the applicable mining area's operational and rehabilitation phases. Demarcation can be removed when implementation of the applicable mining area's rehabilitation measures has been completed. • Remove and conserve topsoil layer and overburden material for rehabilitation after mining activities have ceased. Topsoil and overburden materials must be stored separately adjacent to the mining areas on cultivated land with effective storm water runoff and erosion prevention measures to be implemented in order to protect the materials for rehabilitation. • Alien invasive and weed vegetation monitoring and removal must be undertaken annually during mining and for at least a year after mining activities have ceased on disturbed areas or until the landowner starts with the annual cultivation activities on	
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				the affected land. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology depending on the contract agreement that the applicant has with the landowner. All invasive alien species as listed by the Conservation of Agricultural Resources Act (CARA) must be removed during these surveys. Declared weeds and aliens must be removed before annual seeding. • Invasive vegetation to be removed during mining activities to be disposed of at landfill site in such a manner that seeds must not be able to spread from the disposal site or during transportation. • No trapping or hunting of any fauna or avifauna species may take place on the property. • Any tortoises or fauna or avifauna species present on the site when excavations are taking place must be safely moved to adjacent areas not to be impacted by the mining activities. • No disturbance should be allowed within the remaining indigenous vegetation areas outside of the proposed mining activity areas and existing	
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				access roads. This includes no excavations; no storage of topsoil, overburden or bentonite stockpiles, no new or widened roads, and all forms of temporary disturbance. If indigenous vegetation areas are disturbed they must be immediately rehabilitated with indigenous vegetation areas under guidance of suitably qualified rehabilitation specialist. • No natural vegetation areas edges may be cleared or impacted upon by the proposed mining activities. • Implement erosion and storm water runoff management measures as according to EMP and stormwater management plan requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage areas. • As the excavation of the quarry advances the stored overburden material must be replaced to backfill the excavations. The backfilled area must then be contoured according to existing surrounding contours of the cultivated land to prevent	
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				erosion. After contouring has been completed the stored topsoil material must be spread over the backfilled area. Only use topsoil as derived and conserved from the proposed mining area to be rehabilitated after mining activities have ceased on the property. The topsoil must not be compacted after spreading to allow the disturbed area to be restored. The site must be monitored regularly (at least 6 monthly and after heavy rains) and all signs of erosion immediately rectified and alien vegetation removed to prevent potential siltation, erosion and alien encroachment of natural areas and drainage lines. The project implementation process should be subject to standard Environmental Management Programme (EMP) prescripts and conditions and only proceed under supervision of a competent and diligent Environmental Control Officer, both during the operational/excavation and rehabilitation phases.	
Loading, hauling and transport	Increased traffic due to the mining activities requiring various vehicles to come onto and	Socio Economic Impacts	Operational, Decommissioning/Closure/ Rehabilitation	• A speed limit of 30km/hour will be displayed and enforced through a fining system. All vehicle drivers entering the site will be informed of the speed limit. Speed limit will be applicable when delivery trucks drive through areas where farm yard and housing is next to	Management of potential scale of impact.

	leave the site.			the road. • The applicant will be responsible for upkeep and repair of farm roads used during mining activities to the satisfaction of the landowner.	
All activities associated with proposed mining	Mining on agricultural land	Socio Economic Impacts and agricultural resources impacts	Operational Phase	The following is the sequence of recommended rehabilitation steps: 1. Prevent dust by means of damping down surfaces when required. 2. Prevent erosion by means of temporary banks and ditches that will direct run-off water. Any occurrences of erosion must be attended to immediately and the erosion control at that point must be amended to prevent further erosion from occurring there. 3. Because of the challenge of the very thin topsoil that naturally occurs in the area, double stripping is essential. The thin topsoil gets easily diluted and contaminated by the underlying subsoil, during the mining and stockpiling process. Any lack of topsoil at the surface after rehabilitation is a serious problem that will have a significant, on-going, detrimental effect on crop performance. Topsoil must be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes.	Management of potential scale/size of impact.

				4. Double stripping is a rehabilitation technique that is recommended by the Chamber of Mines. It involves stripping a layer of topsoil, and then a second additional layer below the topsoil. These two layers are stockpiled separately and during rehabilitation are spread separately on the surface in their original sequence. In other words, the subsoil layer is spread immediately on top of the profiled overburden, and the topsoil layer is then spread on top of that. The recommended stripping depths on Erf 3264 are 40cm for the topsoil and then a further 35cm for the subsoil. The recommended stripping depths on Erf RE1412 are 20cm for the topsoil and then a further 35 cm for the subsoil. All overburden is stripped and stockpiled separately from both the topsoil and subsoil stockpiles. 5. Topsoil stockpiles should be protected against losses by water and wind erosion. Stockpiles should be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants on the stockpiles will help to prevent erosion. Stockpiles should be no more than 2 metres high. 6. Overburden must be backfilled into the mined-out pit.	
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				7. After mining and backfilling of overburden, any steep slopes must be reduced to a minimum and profiled to blend with the surrounding topography. A slope, even if minimal, must be ensured across all rehabilitated quarry areas so that they are naturally free draining. 8. The stockpiled subsoil must then be evenly spread and smoothed across the backfilled overburden. The depth should be monitored during spreading to ensure that coverage is even. 9. Thereafter, the stockpiled topsoil must be evenly spread and smoothed across the subsoil. The depth should be monitored during spreading to ensure that coverage is even. 10. Any parts of the existing contour bank system that has been disturbed must be re-established to the same specifications (height, slope, distance apart) as prior to disturbance, and the integrity of the entire system must be returned to full functionality. 11. Soil sampling and chemical correction should be done following the re-spreading of the topsoil. Combined, representative samples should be taken from across the site to a depth of 15cm. Soil chemical deficiencies must be corrected, based on these samples. A	
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				chemical analysis from an agricultural laboratory will include a recommendation of the appropriate quantities of chemical ameliorants (for example lime, phosphate etc) that should be applied to optimize the soil chemistry for the relevant crop. Pre-mining soil chemistry is not important. What is important is to ensure that the rehabilitated soil is optimized to within the norms for the relevant crop. 12. Sow a crop in the first season of the rehabilitated soil that is a hardy, annual crop that is sown primarily for soil stabilisation and biomass and not necessarily for economic production (eg korog). It should be dosed with a high level of nitrogen (N), phosphorus (P) and potassium (K) fertiliser in order to maximise vegetative growth and therefore biomass production (both above and below ground). High nitrogen will encourage high biomass production. The amount of required fertiliser will therefore be a higher level of fertilisation than would be determined for economic viability in terms of input costs versus production. The increased fertilisation costs should therefore be borne by the mine's rehabilitation budget, and not by the farmer.	
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				• 13. Monitoring: it is impossible, by way of a soil analysis, to evaluate, with any degree of certainty, whether a significantly disturbed soil will support crop growth or not. The final proof of effective rehabilitation must always be in the reaction of the crop that is planted on the rehabilitated soil. If the crop grows adequately, then the soil is effectively rehabilitated. If it does not, then the soil is not effectively rehabilitated. The best way to test this is to sow a crop across the boundary between the rehabilitated land and the undisturbed soil. The reaction of the crop will very obviously demonstrate a problem and a difference, if there is one.	
Excavations	Heritage Resources Impacts	The potential impact of the proposed development on archaeological, paleontological and heritage remains	Operational Phase	• Should any burials, fossils or other historical material be encountered during mining, work must cease immediately and HWC must be contacted. • In the case of any significant fossil finds exposed by mining operations in this region (e.g. vertebrate teeth, bones, crustaceans, insects, burrows, petrified wood), these should be safeguarded - preferably in situ - and reported by the ECO as soon as possible to Heritage Western Cape (3rd Floor Protea Assurance Building, 142 Longmarket Street, Green	Impact avoidance, if detected rectification and prevention.

				Market Square, Cape Town 8000. Private Bag X9067, Cape Town 8001. Tel: 021 483 5959 Email: ceoheritage@westerncape.gov.za), so that appropriate mitigation (i.e. recording, sampling or collection) by a palaeontological specialist can be considered and implemented before rehabilitation of the quarry takes place. These recommendations are summarized in the appended Chance Finds Protocol and has been incorporated into the Environmental Management Programme (EMPr) for the proposed mining project	
All activities associated with proposed mining	Noise impacts	Noise due to mining machinery, trucks and people on site	Operational, Decommissioning/Closure/ Rehabilitation	• No activities that may generate noise levels above the legal limit in terms of the Environmental Conservation Act, Western Cape Noise regulations will be conducted. • Machinery and vehicles should be regularly maintained to prevent excessive noise. • All machinery and work activities must adhere to the requirements of the noise regulations..	Noise monitoring if needed to ensure noise levels are below 45 dBA. Table 2 of SANS 10103:2004 <i>The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication</i> where the daytime, equivalent continuous rating level is given as 45 dBA for Rural Districts.
All activities associated with proposed mining	Visual impact	A negative visual impact due to the creation of excavation pits.	Operational Phase	• Proposed mining activities must be limited to development footprint site. • Rehabilitation of site when mining process complete.	Management of potential scale/size of impact.

Decommissioning of mine	Rehabilitation of agricultural land	Agricultural resources	Decommissioning/ Rehabilitation Phase	Mine management must be held accountable for well managed and effective implementation of all the recommended rehabilitation steps above. The specific, measurable rehabilitation outcomes against which the effectiveness of completed rehabilitation must be measured are: 1. That the topography and surface have been smoothed sufficiently to allow cultivation; 2. That topsoil has been spread on the surface across all areas from which topsoil was stripped, to a minimum depth of 40 cm on Erf 3264 and 20 cm on Erf RE1412 3. That no saline material from depth within the mining excavation occurs at less than 50 cm depth in the rehabilitated soil profile. Correctly and well implemented double stripping, as recommended in the Agricultural Statement, will ensure this. 4. That the entire disturbed area is free draining and that no ponding of water at the surface occurs. 5. That the pre-mining contour banks have been re-established to suitable specifications (height, slope, distance apart) at least as intensive as prior to disturbance, and that the integrity of the contour bank system as a whole is in place. 6. That there is no visible erosion	Impact avoidance and prevention.
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				across the area, or down-slope of it as a result of mining, and that no part of the area has been left unacceptably vulnerable to erosion. 7. That the soil chemistry, including pH, salinity, and phosphorus levels have been optimised for small grain production. • 8. That a cover crop has been established, provided with a high level of nitrogen fertilisation, and grows successfully across the entire area disturbed by mining activities and that it shows no significant difference in performance when sown across the boundary between disturbed and undisturbed land.	
Decommissioning of mine	Socio Economic impacts	Loss of socio-economic benefits to the local communities of Heidelberg and Riversdale	Decommissioning Phase	• Additional viable bentonite deposits must be sourced and authorised to ensure sustainability of the Cape Bentonite Mine operations. • Alternatively the mine company must assist the employees as far as possible to find alternative employment opportunities before mining operations are complete.	Impact avoidance and prevention.

f) Impact Management Actions

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

ACTIVITY whether listed or not listed.	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
(E.g. Excavations, blasting, stockpiles, discard dumps or	(e.g. dust, noise, drainage surface disturbance, fly	(modify, remedy, control, or stop)	Describe the time period when the measures in the environmental	(A description of how each of the recommendations in 2.11.6 read with

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.).	rock, surface water contamination, groundwater contamination, air pollution etc....etc....)	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..	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.	2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
Excavations, loading, hauling, transport and roads	Increased dust levels	• Reduce drop height of material to a minimum. • Area will be mined in phases to reduce the barren areas. • Temporarily halt material handling in extreme windy conditions. • Use non-potable water (if available) to dampen bare soil areas if required to mitigate windblown dust. • A speed limit of 30km/hour will be displayed and enforced through a fining system. • All vehicle drivers entering the site will be informed of the speed limit. • The requirement of additional dust suppression measures to be implemented must be determined through a dust monitoring programme or fugitive dust control plan to limit the emission of particulate matter.	Throughout operational and rehabilitation phases as and if required.	The National Dust Control Regulations regulates. Dust fallout may not exceeds 1200 mg/m ² /day averaged over 30 days, measured in accordance with reference method ASTM D1739 (Standard Test Method for Collection and Measurement of Dustfall (Settleable Particulate Matter).
All activities associated with proposed mining	Mining activities (i.e. The site preparation and removal of topsoil)	• Visually inspect mining area boundaries, exposed surfaces, overburden and top soil	Throughout operational and rehabilitation phases as and if required.	Impact avoidance, if detected rectification and prevention.

	will cause a disturbance and this disturbance, unless carefully managed, could spread as a result thereof. Soil erosion can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should rains fall during mining. Loss of stockpiled topsoil and overburden material.	stockpiles for signs of erosion. • If erosion channels are discovered the mine must determine the cause of erosion and implement erosion rectification and prevention measures to rehabilitate eroded areas and prevent future erosion. • Rehabilitate and reinstate engineered constructed contours as soon as a phase is complete. • Undertake mining activities only in identified and specifically demarcated areas as proposed • Implement erosion and storm water runoff management measures as according to EMP requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage areas.		
Mine vehicles/machinery	Vehicles and machinery on the site will produce tailpipe emissions leading to air pollution	• Vehicles and machinery will be maintained to minimize emissions. A log book will be filled in to keep a record of all maintenance problems encountered and mitigation measures implemented to resolve the problem. • Vehicles and machinery emitting excessive emissions will be stopped immediately and not allowed to operate until the necessary repairs have been	Throughout operational and rehabilitation phases as and if required.	The occupational exposure limit of CO is 50 parts per million for a 40 hour work week. It is highly unlikely whether this level will be reached in the general environment.

		done.		
All activities associated with proposed mining	Mining activities can result in increased sediment loads in water resources	• Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the indigenous vegetation surrounding the non-perennial drainage lines on site must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). • Minimize sediment load in the water by stripping a maximum of 10 meters ahead of the mining face and only moving the material once it needs to be processed or onto the intended topsoil stockpiles on the edge of all current and future mining areas. Monitor for erosion. Should erosion be present, undertake mitigation measures to rectify and prevent further erosion. • All roads need to be maintained and monitored. Visible signs of possible erosion must be immediately rehabilitated. • All storm water falling outside the mine property must be diverted around the mine. This forms part of the Storm Water Management	Throughout operational and rehabilitation phases.	Impact avoidance, if detected rectification and prevention.

		Measures and part of the EMPr.		
All activities associated with proposed mining	Mining activities can impact on water resources i.e. groundwater, secondary drainage lines and dams with associated wetland characteristics and aquatic vegetation as associated with mapped NFEPAs and aquatic CBAs and ESAs	- Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the undisturbed indigenous vegetation areas and non-perennial drainage lines must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and for stormwater management i.e. stormwater berms and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). Refer to the proposed no-go area map below. - Visually inspect mining area boundaries, exposed surfaces, overburden and top soil stockpiles for signs of erosion. - If erosion channels are discovered the mine must determine the cause of erosion and implement erosion rectification and prevention measures to rehabilitate eroded areas and prevent future erosion. - Rehabilitate and reinstate engineered constructed contours as soon as a phase is complete. - Undertake mining activities only in identified and specifically demarcated areas as proposed and in phases.	Throughout operational and rehabilitation phases.	Impact avoidance, if detected rectification and prevention.

		Rehabilitating/filling excavations as soon as possible to prevent accumulation of stormwater. • Implement erosion and storm water runoff management measures as according to EMP requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage areas. • Minimize sediment load in the water by stripping a maximum of 10 meters ahead of the mining face and only moving the material once it needs to be processed or onto the intended topsoil stockpiles on the edge of all current and future mining areas. Monitor for erosion. Should erosion be present, undertake mitigation measures to rectify and prevent further erosion. • Use existing access roads and all roads need to be maintained as is and monitored. Visible signs of possible erosion must be immediately rehabilitated. • All storm water falling outside the mine property must be diverted around the mine. • No drainage line or wetland areas edges may be disturbed or impacted upon by the proposed activities.		
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		• If any groundwater is reached during the proposed mining activities on site, mining of that area must immediately be ceased, the Environmental Control Officer must be informed and the area must be rehabilitated to prevent any potential detrimental impact on the groundwater resource. • All measures should be put in place to ensure proper post-mining rehabilitation of affected areas, to as close to the original condition as possible. • No pollution of surface water or ground water resources may occur due to activities on the property. Oil spillages from vehicles on site must be controlled to prevent pollution of water resources.		
Excavations	The trapping of storm water within excavations on the mine area	• All storm water falling outside the mine property must be diverted around the mine. • The mine will maintain the storm water diversion channels created along the perimeter of the mine property. The intention of the channels is to ensure water from outside the property is diverted around the quarry.	During operational phase	Impact avoidance, if detected rectification and prevention.
Chemical toilets and litter	Pollution and nuisance due to leakage etc.	• The toilets are serviced when needed and emptied when almost full. • If a leak occurs the correct emergency procedure is to be followed (see EMP).	During operational phase	Impact avoidance, if detected rectification and prevention.

		• Litter will be collected and removed from site by the operator on a daily basis. • Chemical toilets must not be placed within no-go or associated buffer areas.		
Mine vehicles/machinery	Ground and/or water pollution and loss of natural and agricultural resources due to a hydrocarbon spillage	• Any mine vehicle which is leaking hydrocarbons (e.g. petrol, diesel or oil) will be serviced in a concreted workshop to repair the leak. If it is not possible to repair the leak immediately, a drip tray will be placed under the leak to trap any spillages. The content of the drip trays will be decanted into an old oil drum for removal from the site to a hazardous waste handling facility. • Hydrocarbon spillages are to be cleaned up immediately. • The mine will also maintain a store of suitable absorbent material, suitable bioremediation substance and a spill kit. All incidences/ spillages are to be recorded in an incident log book. Contaminated soil must go to Vissershok Hazardous Landfill site.	Throughout operational and rehabilitation phases.	Impact avoidance, if detected rectification and prevention.
All activities associated with proposed mining	Fire can cause habitat or crop destruction	• All employees will be trained on fire safety and on how to reduce the probability of a fire spreading out of control. • Anyone who observes a fire must report it immediately to the fire protection agency/ fire brigade and their supervisor/ mine manager.	Throughout operational and rehabilitation phases.	Impact avoidance, if detected rectification and prevention.

		• Vehicles must be parked in an area with no vegetation if a fire occurs.		
All activities associated with proposed mining	Declared weeds may be transported onto the site and spread to surrounding areas. This may lead to habitat destruction and increased management costs.	• Alien invasive and weed vegetation monitoring and removal must be undertaken annually during mining and for at least a year after mining activities have ceased on disturbed areas or until the landowner starts with the annual cultivation activities on the affected land. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology depending on the contract agreement that the applicant has with the landowner. All invasive alien species as listed by the Conservation of Agricultural Resources Act (CARA) must be removed from the areas disturbed by mining activities during these surveys. Declared weeds and aliens must be removed before annual seeding. • Only use topsoil as derived and conserved from the proposed mining area to be rehabilitated after mining activities have ceased on the property • Every landowner has a legal obligation in terms of the Conservation of Agricultural Resources Act, 1983 (Act No.	Throughout operational and rehabilitation phases.	Impact avoidance, if detected rectification and prevention.

		43 of 1983) and the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) to control and eradicate alien invasive vegetation on his/her property.		
All activities associated with proposed mining	Natural fauna and avifauna habitat destruction and disturbance	• At least three bird species of conservation concern are known to occur in the general area and habitat present on site (cultivated grainlands with renosterveld patches), namely Blue Crane (<i>Anthropoides paradiseus</i>), Denham's Bustard (<i>Neotis denhami</i>) and Black Harrier (<i>Circus maurus</i>). Mining activity should not proceed if there are Blue Cranes or Denham's Bustard breeding within the footprint or immediate surroundings. If a breeding pair is encountered, the mining should only proceed after the chick fledging. • Mining activities must be limited to identified and demarcated annually cultivated agricultural land and only existing roads may be used. • Remove and conserve topsoil layer and overburden material for rehabilitation after mining activities have ceased • Invasive vegetation to be removed during mining activities to be disposed of at landfill site in such a manner that seeds must not be able to spread from the disposal site or during	Throughout operational and rehabilitation phases.	Impact avoidance, if detected rectification and prevention.

		transportation. • No trapping or hunting of any fauna or avifauna species may take place on the property. • Any tortoises or fauna or avifauna species present on the site when excavations are taking place must be safely moved to adjacent areas not to be impacted by the mining activities. • No disturbance should be allowed within the remaining indigenous vegetation areas outside of the proposed mining activity areas and existing access roads. This includes no excavations; no storage of topsoil, overburden or bentonite stockpiles, no new or widened roads, and all forms of temporary disturbance. If indigenous vegetation areas are disturbed they must be immediately rehabilitated with indigenous vegetation areas under guidance of suitably qualified rehabilitation specialist. • No natural vegetation areas edges may be cleared or impacted upon by the proposed mining activities. • Implement erosion and storm water runoff management measures to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds. • Backfill mined areas as soon as		
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		possible after mining completion with onsite excavated material. • Only use topsoil and excavated material as derived and conserved from the proposed mining site to backfill and rehabilitate impacted areas. • Monitor rehabilitated areas for signs of erosion for at least a year after rehabilitation and implement erosion rectification and prevention measures as and if required. • Alien invasive and weed vegetation monitoring and removal must be undertaken for at least a year after mining activities have ceased and the site has been rehabilitated This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology.		
All activities associated with proposed mining	Mining activities can impact on indigenous vegetation remnants associated with mapped terrestrial CBAs	• At least three bird species of conservation concern are known to occur in the general area and habitat present on site (cultivated grainlands with renosterveld patches), namely Blue Crane (<i>Anthropoides paradiseus</i>), Denham's Bustard (<i>Neotis denhami</i>) and Black Harrier (<i>Circus maurus</i>). Mining activity should not proceed if there are Blue Cranes or Denham's Bustard breeding within the footprint or immediate surroundings. If a breeding pair is encountered,	Throughout operational and rehabilitation phases.	Management of potential scale/size of impact.

		the mining should only proceed after the chick fledging. - Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the indigenous vegetation surrounding the non-perennial drainage lines on site must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). No disturbance should be allowed within the drainage lines and remaining indigenous vegetation areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance. No excavation or stockpiling is allowed within the buffer areas. Should any evidence be observed that the mining activities are impacting negatively on any indigenous vegetation areas (and drainage lines) the ECO must recommend mitigation measures to be implemented to prevent further degradation and rectify impacts. - Mining activities must be limited to identified and		
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		demarcated annually cultivated agricultural land and only existing roads may be used. • The individual milkwood trees that were recorded adjacent to proposed mining activity areas within the cultivated areas must be demarcated within a 5m buffer radius before any mining activities occurs within a 50m range of the trees and must remain demarcated throughout the applicable mining area's operational and rehabilitation phases. Demarcation can be removed when implementation of the applicable mining area's rehabilitation measures has been completed. • Remove and conserve topsoil layer and overburden material for rehabilitation after mining activities have ceased. Topsoil and overburden materials must be stored separately adjacent to the mining areas on cultivated land with effective storm water runoff and erosion prevention measures to be implemented in order to protect the materials for rehabilitation. • Alien invasive and weed vegetation monitoring and removal must be undertaken annually during mining and for at least a year after mining activities have ceased on		
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		disturbed areas or until the landowner starts with the annual cultivation activities on the affected land. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology depending on the contract agreement that the applicant has with the landowner. All invasive alien species as listed by the Conservation of Agricultural Resources Act (CARA) must be removed during these surveys. Declared weeds and aliens must be removed before annual seeding. • Invasive vegetation to be removed during mining activities to be disposed of at landfill site in such a manner that seeds must not be able to spread from the disposal site or during transportation. • No trapping or hunting of any fauna or avifauna species may take place on the property. • Any tortoises or fauna or avifauna species present on the site when excavations are taking place must be safely moved to adjacent areas not to be impacted by the mining activities. • No disturbance should be allowed within the remaining		
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		indigenous vegetation areas outside of the proposed mining activity areas and existing access roads. This includes no excavations; no storage of topsoil, overburden or bentonite stockpiles, no new or widened roads, and all forms of temporary disturbance. If indigenous vegetation areas are disturbed they must be immediately rehabilitated with indigenous vegetation areas under guidance of suitably qualified rehabilitation specialist. • No natural vegetation areas edges may be cleared or impacted upon by the proposed mining activities. • Implement erosion and storm water runoff management measures as according to EMP and stormwater management plan requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the mining activity areas and surrounds; and any storm water runoff from the mining areas and topsoil and overburden storage areas. • As the excavation of the quarry advances the stored overburden material must be replaced to backfill the excavations. The backfilled area must then be contoured		
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		according to existing surrounding contours of the cultivated land to prevent erosion. After contouring has been completed the stored topsoil material must be spread over the backfilled area. Only use topsoil as derived and conserved from the proposed mining area to be rehabilitated after mining activities have ceased on the property. The topsoil must not be compacted after spreading to allow the disturbed area to be restored. The site must be monitored regularly (at least 6 monthly and after heavy rains) and all signs of erosion immediately rectified and alien vegetation removed to prevent potential siltation, erosion and alien encroachment of natural areas and drainage lines. • The project implementation process should be subject to standard Environmental Management Programme (EMP) prescripts and conditions and only proceed under supervision of a competent and diligent Environmental Control Officer, both during the operational/excavation and rehabilitation phases.		
Loading, hauling and transport	Increased traffic due to the mining activities requiring various	• A speed limit of 30km/hour will be displayed and enforced	Throughout operational and rehabilitation phases.	Management of potential scale of impact.

	vehicles to come onto and leave the site.	through a fining system. All vehicle drivers entering the site will be informed of the speed limit. Speed limit will also be applicable when delivery trucks drive through areas where farm yard and housing is next to the road. • The applicant will be responsible for upkeep and repair of farm roads used during mining activities to the satisfaction of the landowner.		
All activities associated with proposed mining	Mining on agricultural land	The following is the sequence of recommended rehabilitation steps: 1. Prevent dust by means of damping down surfaces when required. 2. Prevent erosion by means of temporary banks and ditches that will direct run-off water. Any occurrences of erosion must be attended to immediately and the erosion control at that point must be amended to prevent further erosion from occurring there. 3. Because of the challenge of the very thin topsoil that naturally occurs in the area, double stripping is essential. The thin topsoil gets easily diluted and contaminated by the underlying subsoil, during the mining and stockpiling process. Any lack of topsoil at the surface after rehabilitation is a serious problem that will have a significant, on-going,	During operational phase	Management of potential scale of impact.

		detrimental effect on crop performance. Topsoil must be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes. 4. Double stripping is a rehabilitation technique that is recommended by the Chamber of Mines. It involves stripping a layer of topsoil, and then a second additional layer below the topsoil. These two layers are stockpiled separately and during rehabilitation are spread separately on the surface in their original sequence. In other words, the subsoil layer is spread immediately on top of the profiled overburden, and the topsoil layer is then spread on top of that. The recommended stripping depths on Erf 3264 are 40cm for the topsoil and then a further 35cm for the subsoil. The recommended stripping depths on Erf RE1412 are 20cm for the topsoil and then a further 35 cm for the subsoil. All overburden is stripped and stockpiled separately from both the topsoil and subsoil stockpiles. 5. Topsoil stockpiles should be protected against losses by water and wind erosion. Stockpiles should be positioned so as not to be vulnerable to erosion by wind and water. The		
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		establishment of plants on the stockpiles will help to prevent erosion. Stockpiles should be no more than 2 metres high. 6. Overburden must be backfilled into the mined-out pit. 7. After mining and backfilling of overburden, any steep slopes must be reduced to a minimum and profiled to blend with the surrounding topography. A slope, even if minimal, must be ensured across all rehabilitated quarry areas so that they are naturally free draining. 8. The stockpiled subsoil must then be evenly spread and smoothed across the backfilled overburden. The depth should be monitored during spreading to ensure that coverage is even. 9. Thereafter, the stockpiled topsoil must be evenly spread and smoothed across the subsoil. The depth should be monitored during spreading to ensure that coverage is even. 10. Any parts of the existing contour bank system that has been disturbed must be re-established to the same specifications (height, slope, distance apart) as prior to disturbance, and the integrity of the entire system must be returned to full functionality. 11. Soil sampling and chemical correction should be done following the re-spreading of the		
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		topsoil. Combined, representative samples should be taken from across the site to a depth of 15cm. Soil chemical deficiencies must be corrected, based on these samples. A chemical analysis from an agricultural laboratory will include a recommendation of the appropriate quantities of chemical ameliorants (for example lime, phosphate etc) that should be applied to optimize the soil chemistry for the relevant crop. Pre-mining soil chemistry is not important. What is important is to ensure that the rehabilitated soil is optimized to within the norms for the relevant crop. 12. Sow a crop in the first season of the rehabilitated soil that is a hardy, annual crop that is sown primarily for soil stabilisation and biomass and not necessarily for economic production (eg korog). It should be dosed with a high level of nitrogen (N), phosphorus (P) and potassium (K) fertiliser in order to maximise vegetative growth and therefore biomass production (both above and below ground). High nitrogen will encourage high biomass production. The amount of required fertiliser will therefore be a higher level of fertilisation than would be determined for		
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		economic viability in terms of input costs versus production. The increased fertilisation costs should therefore be borne by the mine's rehabilitation budget, and not by the farmer. • 13. Monitoring: it is impossible, by way of a soil analysis, to evaluate, with any degree of certainty, whether a significantly disturbed soil will support crop growth or not. The final proof of effective rehabilitation must always be in the reaction of the crop that is planted on the rehabilitated soil. If the crop grows adequately, then the soil is effectively rehabilitated. If it does not, then the soil is not effectively rehabilitated. The best way to test this is to sow a crop across the boundary between the rehabilitated land and the undisturbed soil. The reaction of the crop will very obviously demonstrate a problem and a difference, if there is one.		
Excavations	Heritage Resources Impacts	• Should any burials, fossils or other historical material be encountered during mining, work must cease immediately and HWC must be contacted. • In the case of any significant fossil finds exposed by mining operations in this region (e.g. vertebrate teeth, bones, crustaceans, insects, burrows,	During operational phase	Impact avoidance, if detected rectification and prevention.

		petrified wood), these should be safeguarded - preferably in situ - and reported by the ECO as soon as possible to Heritage Western Cape (3rd Floor Protea Assurance Building, 142 Longmarket Street, Green Market Square, Cape Town 8000. Private Bag X9067, Cape Town 8001. Tel: 021 483 5959 Email: ceoheritage@westerncape.gov.za), so that appropriate mitigation (i.e. recording, sampling or collection) by a palaeontological specialist can be considered and implemented before rehabilitation of the quarry takes place. These recommendations are summarized in the appended Chance Finds Protocol and has been incorporated into the Environmental Management Programme (EMPr) for the proposed mining project		
All activities associated with proposed mining	Noise impacts	• No activities that may generate noise levels above the legal limit in terms of the Environmental Conservation Act, Western Cape Noise regulations will be conducted. • Machinery and vehicles should be regularly maintained to prevent excessive noise. • All machinery and work activities must adhere to the requirements of the noise regulations.	Throughout operational and rehabilitation phases.	Noise monitoring if needed to ensure noise levels are below 45 dBA. Table 2 of SANS 10103:2004 <i>The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication</i> where the daytime, equivalent continuous rating level is given as 45 dBA for Rural Districts.
All activities associated	Visual impact	• Proposed mining activities must	Throughout operational and	Management of potential

with proposed mining		be limited to development footprint site. • Rehabilitation of site when mining process complete.	rehabilitation phases.	scale/size of impact.
Decommissioning of mine	Rehabilitation of Agricultural Land	Mine management must be held accountable for well managed and effective implementation of all the recommended rehabilitation steps above. The specific, measurable rehabilitation outcomes against which the effectiveness of completed rehabilitation must be measured are: 1. That the topography and surface have been smoothed sufficiently to allow cultivation; 2. That topsoil has been spread on the surface across all areas from which topsoil was stripped, to a minimum depth of 40 cm on Erf 3264 and 20 cm on Erf RE1412. 3. That no saline material from depth within the mining excavation occurs at less than 50 cm depth in the rehabilitated soil profile. Correctly and well implemented double stripping, as recommended in the Agricultural Statement, will ensure this. 4. That the entire disturbed area is free draining and that no ponding of water at the surface occurs. 5. That the pre-mining contour banks have been re-established to suitable specifications (height, slope, distance apart) at least as intensive as prior to disturbance,	Decommissioning phase	Impact avoidance, if detected rectification and prevention.

		and that the integrity of the contour bank system as a whole is in place. 6. That there is no visible erosion across the area, or down-slope of it as a result of mining, and that no part of the area has been left unacceptably vulnerable to erosion. 7. That the soil chemistry, including pH, salinity, and phosphorus levels have been optimised for small grain production. • 8. That a cover crop has been established, provided with a high level of nitrogen fertilisation, and grows successfully across the entire area disturbed by mining activities and that it shows no significant difference in performance when sown across the boundary between disturbed and undisturbed land.		
Decommissioning of mine	Loss of socio-economic benefits/jobs to the local communities of Heidelberg and Riversdale	• Additional viable bentonite deposits must be sourced and authorised to ensure sustainability of the Cape Bentonite Mine operations. • Alternatively the mine company must assist the employees as far as possible to find alternative employment opportunities before mining operations are complete.	Before there are no more bentonite deposits that has been authorised to be mined.	Impact avoidance and prevention.

g) 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.

Main closure/rehabilitation objectives are to rehabilitate all mining activities area on transformed cultivated agricultural land to previous agricultural potential/state. This includes proposed additional mining areas as well as current active mining areas on cultivated agricultural land.

If during the mining activities any indigenous vegetation areas or associated watercourse areas within the No-Go Areas are impacted upon by the mining activities these areas must be rehabilitated immediately and prevention measures must be put in place to prevent re-occurrence. Depending on the extent and type of impacts that occurred a qualified Environmental Control Officer must recommend and supervise rehabilitation measures that must be implemented. A suitable specialist must also be appointed to assess the impact/s on the affected environment within the No-Go area and provide suitable rehabilitation measures to be implemented. The ECO must consult with the specialist when determining rehabilitation and prevention measures that must be implemented. Only vegetation indigenous to the applicable area and suitable for the specific impacted site must be used for rehabilitation of any impacted indigenous vegetation areas. After rehabilitation measures have been implemented the specialist must inspect the rehabilitated areas and if successful provide written confirmation to the ECO that all impacted indigenous vegetation areas and/or associated watercourse areas within the No-Go Areas have been successfully rehabilitated, or if not successful must provide further rehabilitation recommendations which must be implemented. The mining company will be responsible for the rehabilitation on these areas until written confirmation has been obtained from the specialist that the impacted sites have been successfully rehabilitated. Specialist rehabilitation progress reports and/or written confirmation of successful rehabilitation must be appended to the ECO inspection reports to be submitted to the competent authority with the annual environmental compliance audit reports.

Double stripping. Double stripping is a rehabilitation technique that is recommended by the Chamber of Mines (2007). It involves stripping a layer of topsoil, and then a second additional layer below the topsoil. Both of these layers are stockpiled separately and during rehabilitation are spread on the surface in their original sequence. In other words, the subsoil layer is spread immediately on top of the profiled overburden, and the topsoil layer is then spread on top of that. The recommended stripping depths on Erf 3264 are 40cm for the topsoil and then a further 35cm for the subsoil. The recommended stripping depths on Erf RE1412 are 20cm for the topsoil and then a further 35 cm for the subsoil. All overburden is stripped and stockpiled separately from both the topsoil and subsoil stockpiles.

Topsoil and overburden materials must be stored separately adjacent to the mining areas with effective storm water runoff and erosion prevention measures to be implemented in order to protect the materials. Topsoil stockpiles should be protected against losses by water and wind erosion. The establishment of plants on the stockpiles will help to prevent erosion. Stockpiles should be no more than 2 metres high. The mining plan should be such that topsoil is stockpiled for the minimum possible time by rehabilitating different mining blocks progressively as the mining process continues.

As the excavation of the quarry advances the stored overburden material must be replaced to backfill the excavations. The backfilled area must then be contoured according to existing

surrounding contours of the cultivated land to prevent erosion. A slope, even if minimal, must be ensured across all rehabilitated quarry areas so that they are naturally free draining.

The stockpiled subsoil must then be evenly spread and smoothed across the backfilled overburden. The depth should be monitored during spreading to ensure that coverage is even.

Thereafter, the stockpiled topsoil must be evenly spread and smoothed across the subsoil. The depth should be monitored during spreading to ensure that coverage is even. The topsoil must not be compacted after spreading to allow the disturbed area to be restored for agricultural use. As far as possible topsoil spreading should be done just before the winter season should the landowner want to plant a cover crop so that it can be seeded and established during the winter rains and to control erosion on the newly spread topsoil. Any parts of the existing contour bank system that has been disturbed must be re-established to the same specifications (height, slope, distance apart) as prior to disturbance, and the integrity of the entire system must be returned to full functionality.

To ensure minimum impact on drainage, it is important that no surface depressions are left after mining. In other words the surface slope must be maintained throughout, including through the edge of the mined area. Surface depressions will result in ponding of water on the surface and accumulation of excess moisture in depression areas. There is sufficient slope and elevation in the proposed mining area to avoid the creation of depressions, provided that mining depths are controlled to ensure the maintenance of a slope. No compaction in the soil should remain after rehabilitation. Compaction will impede water movement through the soil profile. Where previously present erosion contours must be reinstated during rehabilitation.

If ripping is required to loosen compaction, this should be done to a depth of at least 30cm, and in such a way that no mixing of the subsoil into the topsoil layer occurs. Any chemical ameliorants should be spread on the soil before loosening or ploughing or should be done as part of the farmer's planting program.

Alien invasive and weed vegetation monitoring and removal must be undertaken annually during mining on the disturbed sites and for at least a year after mining activities have ceased on disturbed areas or until the landowner starts with the annual cultivation activities on the affected land. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology depending on the contract agreement that the applicant has with the landowner. All invasive alien species as listed by the Conservation of Agricultural Resources Act (CARA) must be removed during these surveys. Declared weeds and aliens must be removed before annual seeding.

Soil sampling and chemical correction should be done following the re-spreading of the topsoil. Combined, representative samples should be taken from across the site to a depth of 15cm. Soil chemical deficiencies must be corrected, based on these samples. A chemical analysis from an agricultural laboratory will include a recommendation of the appropriate quantities of chemical ameliorants (for example lime, phosphate etc) that should be applied to optimize the soil chemistry for the relevant crop. Pre-mining soil chemistry is not important. What is important is to ensure that the rehabilitated soil is optimized to within the norms for the relevant crop.

Sow a crop in the first season of the rehabilitated soil that is a hardy, annual crop that is sown primarily for soil stabilisation and biomass and not necessarily for economic production (eg korog). It should be dosed with a high level of nitrogen (N), phosphorus (P) and potassium (K) fertiliser in order to maximise vegetative growth and therefore biomass production (both above and below ground). High nitrogen will encourage high biomass

production. The amount of required fertiliser will therefore be a higher level of fertilisation than would be determined for economic viability in terms of input costs versus production. The increased fertilisation costs should therefore be borne by the mine's rehabilitation budget, and not by the farmer.

The site must be monitored regularly (at least 6 monthly and after heavy rains) and all signs of erosion immediately rectified to prevent potential siltation and erosion of natural areas and drainage lines.

It is impossible, by way of a soil analysis, to evaluate, with any degree of certainty, whether a significantly disturbed soil will support crop growth or not. The final proof of effective rehabilitation must always be in the reaction of the crop that is planted on the rehabilitated soil. If the crop grows adequately, then the soil is effectively rehabilitated. If it does not, then the soil is not effectively rehabilitated. The best way to test this is to sow a crop across the boundary between the rehabilitated land and the undisturbed soil. The reaction of the crop will very obviously demonstrate a problem and a difference, if there is one. When no evidence of erosion and alien vegetation encroachment are visible and similar successful crop production is reached as before mining activities commenced or similar to adjacent areas not previously mined the mined areas can be considered as successfully rehabilitated.

The mine permit/right holder commits to post-closure maintenance during rehabilitation of the site until the time of receipt of a closure certificate for all the impacted mining areas.

Also refer to Mine Closure/Rehabilitation Plan under **Appendix F**.

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

The environmental objectives in relation to the closure of the mining activities are included in the documents that have been submitted to all registered interested and affective parties and is in accordance with the contract requirements as drawn-up between the mining company and the landowner.

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

Refer to Appendix B for maps of proposed mining areas to be rehabilitated after mining has been completed. Cape Bentonite Mine will be responsible for rehabilitating the mining activities areas as according to the recommendations of the EMP. Refer to 1(a) above for rehabilitation measures to be implemented during and after the proposed mining activities.

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

The proposed rehabilitation measures/plan has been informed by the environmental impact assessment conducted; Potential impacts with associated mitigation measures were identified for each phase of the proposed mining activities i.e. operational and closure/decommissioning/rehabilitation phases.

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

At a rate of R 213 184/ha, the estimate global cost for the rehabilitation of the quarries still to be rehabilitated of 7.9ha will be **R1 684 153.60**.

Take note: The above mentioned proposed rehabilitation cost is only an estimate, in terms of section 1 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of

2002) a holder “*in relation to a prospecting right, **mining right**, mining permit, retention permit, exploration right, production right, reconnaissance permit or technical co-operation permit, means the person to whom such right or permit has been granted or such person’s successor in title.*” Therefore the holder of the mining right will remain financially responsible for implementing rehabilitation measures until the set rehabilitation objectives have been met no matter the final costs.

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

By signing this document the EAP hereby confirms that the applicant stated that the financial provision will be provided as determined.

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

- Monitoring of Impact Management Actions
- Monitoring and reporting frequency
- Responsible persons
- Time period for implementing impact management actions
- Mechanism for monitoring compliance

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Mining: Operation phase	Impacts on soil, air, water resources, adjacent drainage lines, indigenous vegetation and agricultural land	Conduct regular internal audits and inspections of the mining operation and assess against mine right, Environmental Authorization and EMPr conditions. Yearly audits and mine performance assessment reports.	Applicant and Environmental Control Officer	Monitoring should be undertaken for duration of operations and after completion of each phase. Internal audits and inspections should be undertaken at least monthly. External audits by a qualified ECO should be undertaken on a 3 monthly basis during operation and 6 monthly during rehabilitation phase until successful rehabilitation and closure certificate has been obtained. Reports should be made available to the Competent Authority if required in the form of an annual performance report.
Mining: Closure and rehabilitation phase	Successful rehabilitation of impacted area	Conduct regular internal audits and inspections of the mining operation and assess against mine right, Environmental Authorization and EMPr conditions. Yearly audits and mine	Applicant and Environmental Control Officer	Monitoring should be undertaken for duration of operations and after completion of each phase. Internal audits and inspections should be undertaken at least monthly. External audits by a qualified ECO should be

		performance assessment reports.		undertaken on a 3 monthly basis during operation and 6 monthly during rehabilitation phase until successful rehabilitation and closure certificate has been obtained. Reports should be made available to the Competent Authority if required in the form of an annual performance report.
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i) Indicate the frequency of the submission of the performance assessment/ environmental audit report.

Monitoring should be undertaken for duration of the active mining and rehabilitation phases. Internal audits and inspections should be undertaken at least monthly. External audits by a qualified ECO should be undertaken on a 3 monthly basis during active mining phase and 6 monthly during rehabilitation phase until successful rehabilitation and closure certificate has been obtained. Reports should be made available to the Competent Authority if required in the form of an annual performance report done by an external EAP.

j) 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.

Mine staff member will be informed of the potential environmental risks associated with their work by implementing environmental awareness training through the following methods:

- Monthly meetings
- Environmental Management Program Training (bi-annually)
- Induction courses
- Training from the Environmental Control Officer (once a year)

The Environmental Awareness Plan should be reviewed regularly to ensure that relevant environmental concerns are discussed and that the potential impacts of such concerns are minimized. The syllabus to be taught to staff members has been determined through identification of the major environmental concerns raised in the Environmental Impact Assessment.

Monthly meetings:

Monthly meetings are ideal to facilitate awareness of job-specific environmental dangers and to educate employees on how they can live a more sustainable lifestyle outside work. The method and medium of communication during the monthly meetings will be determined by the team leader facilitating the meetings. The topics discussed in monthly meetings will be recorded in a logbook, with all employees present signing an attendance register.

The team leader who is to undertake the monthly meetings will be provided with the necessary training so that he can effectively inform the other employees about the topics listed below.

The topics for discussion have been identified as both topics specific to the mine but also topics that the employees can take home and use in their personnel lives:

Any notes or minutes of the meeting or other records of the meeting should be made available to all staff members at all time for perusal and for future reference purposes.

In addition to the monthly meeting, environmental topics will be discussed at a special meeting to be held if an environmental incident occurred during the previous day. Such incidents may include a fuel spill or a complaint from a surrounding landowner/ resident.

During these meetings, the following topics will be discussed:

- How the incident occurred;
- Why the incident occurred;
- How the incident was dealt with (if applicable);
- Evaluation of the response undertaken by the employees;
- Can the response be improved;
- What preventative measures should be implemented; and

- What can be done to reduce the probability of the incident recurring

The incident and the outcomes of the discussion will be noted in an incident logbook and mitigatory measures will be implemented by the employees and mine manager as required.

Environmental Management Program Training

Twice a year, aspects of the EMP will be selected to form part of a half days training workshop. Mine employees will attend the training workshop based on the topics selected and environmental incidents that may have occurred during the previous few months. Examples of topics that may be included in the EMP training include:

- Clean up of oil spills;
- Water conservation;
- The importance of alien vegetation removal;
- Concurrent rehabilitation;
- Training on fire hazards;
- Crime and Trespassing;
- Identifying and preventing soil erosion, etc.

After attending the EMP training program the employees will be required to sign a register as proof of training.

Induction Training

All new employees will undergo an induction course when they are appointed by the mine. Environmental awareness forms part of this induction course. The following syllabus of environmental training is to be included within the induction course.

Syllabus of environmental Training:

Sustainability

Discuss the concepts of sustainability, which must include:

- Definition of sustainable development.
- An explanation of the “Triple Bottom Line” of a sustainable development.
- An example of sustainable developments. These should be selected based on the audience, selecting a development that they can relate to.

Environmental Goals and Objectives

Discuss the latest specific environmental goals and objectives, as well as the benefits of achieving such goals. As these goals change, the induction course must be updated accordingly. Where possible, the goals and objectives covered should be selected on the basis of topics that personnel can relate to. These could include, but are not limited to the following:

Concurrent rehabilitation

Goal: Rehabilitate mined out areas concurrently.

Objective: To ensure that all mine out areas are concurrently rehabilitated.

Benefits: Reduce the cost of final rehabilitation.

Reduce the time to implement final rehabilitation. Reduce the time to obtain a closure certificate. Improve the ecological status of the site. The more surfaces rehabilitated the less chance of erosion and dust from exposed surfaces. To increase the aesthetical appeal of the mining site.

Waste minimization

Goal: Reduce waste generation and recycle where possible.

Objective: Initiate recycling projects where possible.
Benefits: Reduction of waste and promotion of recycling reduces the economic and environmental costs of dealing with waste. Recycling reduces the need to use non-renewable resources, ensuring that these will be available to future generations.

Reducing amounts of hydrocarbon spillages

Goal: Reduce the amount of hydrocarbon spillages and the impact from spillages that do occur.
Objective: To reduce probability of hydrocarbon spillages.
Benefits: Saving of oil reduces the need to use non-renewable resources.
Reduce the potential for soil contamination. Reduce the potential to pollute the ground water.

Also allow time for questions

After attending the induction training, the employees will be required to sign a register as proof of training.

Environmental Training from the Environmental Control Officer

Every year, a qualified environmental consultant will be employed to undertake an environmental performance assessment of the mine. As part of the terms of reference to the consultant, it will be made a requirement that after the consultant has finished the activities required for the audit the consultant will inform all the employees of his/ her findings and provide practical tips of reducing some of the environmental impacts noted. The employees will be required to sign a register as proof of training.

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

The mine will implement an incident reporting procedure in order to identify risks timeously and implement actions to avoid or minimise environmental impacts.

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

No specific information requirements have been detailed by the Competent Authority to date. It is confirmed that the financial provisions will be reviewed annually.

l) Site Specific Storm water Management Measures to be implemented during Proposed Mining Activities

Refer to Storm water Management Plan attached as Appendix G2 and where applicable the Best Practice Guideline: Storm Water Management, 2006 for water resource protection in the South African Mining Industry published by the Department of Water Affairs attached as Appendix G3 to be adhered to.

m) General Environmental Management Guidelines to be implemented during the Proposed Mining Activities

Environmental Control Officer:

The mine must appoint or designate a suitable, experienced and qualified ECO before commencement of any land clearing or excavation activities to ensure compliance with the provisions of this EMP.

The ECO appointment contract must:

- Describe the level and type of competency required of the ECO ;
- Define and allocate the roles and responsibilities of the ECO.

- Indicate frequency of ECO site visits;

Site Meeting and Pre-conditions before Mining Activities Commence

The following pre-conditions must be fully met before any mining activities may commence:

- Compile a dust monitoring programme before the commencement of mining activities on site. The dust monitoring programme must be compiled in accordance with the National Environmental Management : Air Quality Act, 2004 (Act No 39 of 2004) National Dust Regulations - subregulation (5) for implementation during mining activities
- A land use planning application for the property that the expansion is earmarked for must be applied for at the local municipality and temporary rezoning from agriculture to mining must be obtained before mining commences.
- A site meeting between the mine manager and the ECO must take place at least 5 days prior to commencement of mining activities to:
 - Demarcate mining areas, services routes, stockpile areas, access, working boundaries and no-go areas;
 - Discuss methods and places for/of stockpiling;
 - Check required toilets and fire-fighting facilities to be in place;
 - Discuss and agree communication channels including provision of contact details;
 - Discuss and agree areas of responsibility;
 - Discuss and agree the demarcation and control of mining areas.
 - Discuss and implement adherence to site specific specialist recommendations.

Minutes of this formal site meeting must be kept, and are to be distributed to all parties.

The following equipment must be on site before any mining work is due to start:

- Sufficient and suitable chemical toilet facilities.
- Sufficient refuse bins, which are weather and wind proof, with proper lids.
- Adequate quantity of type ABC (all purpose) 12.5 kg fire extinguishers

No-Go Areas:

Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the indigenous vegetation surrounding the non-perennial drainage lines on site must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). No disturbance should be allowed within the drainage lines and remaining indigenous vegetation areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance. Impacts on any no-go areas due to mining activities taking place on site is to be monitored by the ECO, and if it is determined that the mining activities impacted on any no-go areas the applicant will be responsible for rehabilitation of the impacts areas to its original state before mining activities commenced.

Security and Safety:

Access to the mining site must be controlled. Telephone numbers of emergency services, including the local firefighting services, must be posted conspicuously at the mining site or at the entrance to the property. No firearms are permitted on the site, other than those authorised by the developer for the property security service provider. Notices should be displayed at all public entrances to the property, warning visitors that they are entering a mining site. Signboards to inform road users of the existing mining site must also be

displayed on the property to warn any pedestrians or road users of the mining activities taking place on site.

Public Complaints:

A complaints register must be kept on site specifying the date, time, nature of complaint, details of the complainant and the responses undertaken to address and resolve problems raised.

Speed Limit:

For security and safety reasons the speed limit on the property for all mining vehicles is 30km per hour. The mining company is responsible for ensuring that all his employees, operators and delivery vehicles adhere to this rule.

Livestock Grazing:

During mining operations on a particular site no livestock grazing is allowed within the agricultural land that is being mined until mining activities have ceased and the site has been rehabilitated to its former agricultural status quo.

Demarcation and Fencing:

No-go areas along the edge of the proposed mining area must be clearly demarcated to restrict access/egress across such demarcated lines and minimise environmental impact. The ECO must indicate each boundary and/or access route to be demarcated and demarcation methods to be used before excavation commences and mining personnel will not be allowed beyond the perimeter of the site. All activities including stockpiling must occur within this demarcated area. The mine operator responsible must fund reinstatement or rehabilitation of damaged areas and features.

Where deemed necessary by the ECO physical demarcation of mining boundaries along no-go area should at the very least be via colour coded posts at least 1,5m high. Relatively small areas can be fenced with wooden or metal post at 3m centres with 1 plain wire strand tensioned horizontally at 900mm from ground level. Commercially available danger tape may also be wrapped around the wire strand. For large areas, like fairways, these posts are to be at 15m centres with 5 equidistant easily visible lime spot markings in between.

The onus here will fall on the mining staff to ensure all respect these no-go lines. Failure to ensure discipline will lead to the immediate erection of more physically challenging structures.

The mine operator must take measures to control the corrosive effects of storm-water runoff particularly in the hoarded-off areas. No run-off oil, fuel, sewage, or any other hazardous material is to be permitted, or allowed to enter the storm-water system or natural areas.

In the event that sensitive features are threatened by mining activities, the temporary fencing off of these areas or the mining areas might be required and this must be determined and recommended by the ECO.

No additional access routes may be created during the proposed mining activities and existing access routes may also not be widened.

Indigenous Fauna and Flora:

Indigenous plants or wild animals including reptiles, amphibians, birds, etc. may not be damaged or harmed or interfered with. Trapping, poisoning and/or killing of animals is specifically and strictly forbidden.

Alien Vegetation Management:

Alien invasive and weed vegetation monitoring and removal must be undertaken annually during mining and for at least a year after mining activities have ceased on disturbed areas or until the landowner starts with the annual cultivation activities on the affected land. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology depending on the contract agreement that the applicant has with the landowner. All invasive alien species as listed by the Conservation of Agricultural Resources Act (CARA) must be removed during these surveys. Declared weeds and aliens must be removed before annual seeding.

No on-site burying, dumping, stockpiling or burning of any weeds and aliens or invasive species must occur. Invasive alien plant species which are removed from the site should not be chipped for mulch if they are in a seed-bearing state. Such material must be disposed of at a suitably licensed waste disposal facility. Wherever possible, suitable larger stumps should be made available to the local community for use as firewood.

The applicant must make sure of and implement all legal requirements regarding herbicide application procedures if herbicide is to be used to control weeds/invasive plants. The instructions on the herbicide labels must be strictly followed throughout application.

The contractor shall take all necessary precautions to prevent overspray of herbicides outside of the demarcated mining areas and onto natural veld.

All personnel working with any herbicide, pesticide or fertilizer must be registered and comply with the requirements set in these registrations.

CapeNature approved methodology must be used during alien vegetation/weed control.

All equipment associated to herbicides and pesticides must be maintained in accordance to the set standards.

The disposal of all redundant and empty containers of herbicides and pesticides must be controlled and disposed of at a waste management facility licensed to do so under the National Environmental Management: Waste Act.

The removal of the alien and weed species encountered within the zone of influence of the proposed mining activities, must take place to comply with existing legislation (amendments to the regulations under the Conservation of Agricultural Resources Act, 1983 and Section 28 of the National Environmental Management Act, 1998)

Alien vegetation that is removed must not be allowed to lay on unprotected ground as seeds might disperse upon it. Additionally, all care should be taken in the removal of alien vegetation to prevent seeds from falling on it, including (if necessary and practical) the use of temporary sheeting around the base of the plant.

No alien plants may be introduced to the mining area and surrounding areas during the rehabilitation phase and particular attention must be paid to ensure that any imported material used for rehabilitation purposes (if required), is certified weed-free.

Water and Soil Management:

No activities, including swimming, washing, recreation, ablution, vehicle-washing, etc. will be permitted in any of the watercourses and/or the wetlands. Water is to be protected and conserved at all times. No watercourse may be polluted or affected by the mining activities. No surface or groundwater may be polluted due to any activity on the property/site.

Archaeology and Palaeontology Management:

In the case of any significant fossil finds exposed by mining operations in this region (e.g. vertebrate teeth, bones, crustaceans, insects, burrows, petrified wood), these should be safeguarded - preferably in situ - and reported by the ECO as soon as possible to Heritage Western Cape (Contact details: Heritage Western Cape. Protea Assurance Building, Green Market Square, Cape Town 8000. Private Bag X9067, Cape Town 8001. Tel: 086-142 142. Fax: 021-483 9842. Email: hwc@pgwc.gov.za), so that appropriate mitigation (i.e. recording, sampling or collection) by a palaeontological specialist can be considered and implemented before rehabilitation of the quarry takes place. These recommendations are summarized in the appended Chance Finds Protocol below.

CHANCE FOSSIL FINDS PROCEDURE: Quarry developments on Farm Uitspankraal 1/585 near Heidelberg, Western Cape	
Province & region:	Western Cape, Hessequa Municipality / Heidelberg Magisterial District
Responsible Heritage Resources Authority	HERITAGE WESTERN CAPE. Protea Assurance Building, Green Market Square, Cape Town 8000. Private Bag X9067, Cape Town 8001. Tel: 086-142 142. Fax: 021-483 9842. Email: hwc@pgwc.gov.za
Rock unit(s)	Kirkwood Formations (Uitenhage Group), Grahamstown Formation silcretes, Late Caenozoic alluvium, colluvium and soils
Potential fossils	Petrified wood (<i>e.g.</i> logs), plant compressions, bones and teeth of dinosaurs, mammals and other vertebrates, non-marine shell beds in Kirkwood Formation bedrocks. Reworked petrified wood and dinosaur bones in superficial deposits.
ECO protocol	1. Once alerted to fossil occurrence(s): alert site foreman, stop work in area immediately (<i>N.B.</i> safety first!), safeguard site with security tape / fence / sand bags if necessary.
	2. Record key data while fossil remains are still <i>in situ</i> : • Accurate geographic location – describe and mark on site map / 1: 50 000 map / satellite image / aerial photo • Context – describe position of fossils within stratigraphy (rock layering), depth below surface • Photograph fossil(s) <i>in situ</i> with scale, from different angles, including images showing context (<i>e.g.</i> rock layering)
	3. If feasible to leave fossils <i>in situ</i>: • Alert Heritage Resources Authority and project palaeontologist (if any) who will advise on any necessary mitigation • Ensure fossil site remains safeguarded until clearance is given by the Heritage Resources Authority for work to resume 3. If <i>not</i> feasible to leave fossils <i>in situ</i> (emergency procedure only): • <i>Carefully</i> remove fossils, as far as possible still enclosed within the original sedimentary matrix (<i>e.g.</i> entire block of fossiliferous rock) • Photograph fossils against a plain, level background, with scale • Carefully wrap fossils in several layers of newspaper / tissue paper / plastic bags • Safeguard fossils together with locality and collection data (including collector and date) in a box in a safe place for examination by a palaeontologist • Alert Heritage Resources Authority and project palaeontologist (if any) who will advise on any necessary mitigation
	4. If required by Heritage Resources Authority, ensure that a suitably-qualified specialist palaeontologist is appointed as soon as possible by the developer.
	5. Implement any further mitigation measures proposed by the palaeontologist and Heritage Resources Authority
Specialist palaeontologist	Record, describe and judiciously sample fossil remains together with relevant contextual data (stratigraphy / sedimentology / taphonomy). Ensure that fossils are curated in an approved repository (<i>e.g.</i> museum / university / Council for Geoscience collection) together with full collection data. Submit Palaeontological Mitigation report to Heritage Resources Authority. Adhere to best international practice for palaeontological fieldwork and Heritage Resources Authority minimum standards.

Fuel, Lubricant and Hazardous Material Handling Programme:

Servicing and refuelling of vehicles and machinery to take place at the mining plant and not on site. All vehicles must be in a good condition with no leakages leading to possible contamination of soil or water supplies.

If present on site all potentially hazardous chemicals and fuel should be stored in bunded areas which are clearly marked. The bunded areas must have a volume of 110% above that of the stored volume.

Emergency on-site refuelling should happen over a drip tray and on-site repairs in emergency situations should also take special precautions to minimise the risk of spillage of any mechanical fluids into the environment.

Mitigation measures must be put in place to avoid any hazardous material spillages, any spillage must be contained and immediately reported to the Departments Directorate: Pollution Management.

Hazardous spill reaction procedure:

Confine the Spill -

- Remove leaking container/vehicle from the site to a bunded area and repair leak immediately.
- Reduce flow from punctured area and seal the leak, by using the plug putty (Provided that the hole/tear is not larger than 5cm in width).

Clean Up of a spill -

- Confine spillage to smallest possible area
- Collect spill control kits and absorb the spillage by spreading the absorbent granules over the affected area.
- Shut off critical equipment and utilities.
- Attempt to de-contaminate or clean up the spill
- Place the soaked granules or contaminated soil into plastic bags and dispose with hazardous waste.
- Assess need for outside spill contractor to assist.
- Notify site manager of the need for or outside spill contractor and of the nature and location of the spill.

Within 24hours of spill detection the ECO must be informed of the incident, where after ECO will conduct a site visit and recommend further remediation and/or rehabilitation methods to be implemented. Depending on type and extent of emergency that occurred specialists may be contacted to provide specific recommendations and an incident report might need to be completed and sent to municipal and governmental authorities

On completion of the clean-up operations, ECO to inspect site and announce "All Clear".

On-Site emergency repairs:

Only small mobile plant and emergency repairs are to take place on site. These will require the provision of drip trays and funnels to ensure that no oil or fuel leakages occur onto the ground. Should such spill take place, then the oil saturated soil is to be placed in suitable containers and disposed of at a hazardous waste disposal site. Any contamination of soil is to be treated with Spillsolve or similar product. Contaminated water as a result of an oil or fuel spillage on the area should similarly be treated in appropriate way, and the polluted water should not be specifically removed and not allowed to merge with run-off water collected in the trap collecting all run offs from the slab.

Collection of contaminated spares and waste oils and greases:

Contaminated spares, oil filters, gaskets, water, waste oils and fuel etc. must be stored in separate impermeable waste containers to be transported to or collected by a registered and reputed waste handling operator for disposal at a licensed hazardous waste disposal facility.

Staff will require instruction in:

- Deleterious effects of oil / fuel on the environment
- Identification of oil leaks
- Handling of oil / fuel leaks into soil
- Location and method in storage of contaminated spares
- Fire prevention and emergency drills in case of an accident

Roads:

Existing access roads must be used during mining work. The mine operator must ensure that access to mining sites and associated infrastructure and equipment is clearly defined and designated to be off-limits to the public at all times during mining.

Watercourse crossings should be avoided as far as possible and no infilling and excavations of water crossings are allowed during the use of any water crossings during mining activities.

Traffic safety measures must be considered and implemented in determining entry or exit points to public roads. Mud and sand deposited onto public roads by mining activities must be cleared regularly. Appropriate traffic warning signs must be maintained.

The applicant will be responsible for upkeep and repair of farm roads used during mining activities to the satisfaction of the landowner.

In collaboration and consultation with the local municipality the applicant will also be responsible for upkeep and repair of access roads used during mining activities as and if deemed necessary.

Dust and Noise Control:

Dust control- The mine operator is to take appropriate measures to minimise the generation of dust as a result of mining works, to the satisfaction of the landowner. Vegetation must be stripped from demarcated mining sites only shortly before commencing with the mining process. On sandy or very dusty sites, mulched vegetation, which is to be obtained from area cleared for mining and is suitable, can be used as a method of stabilisation and dust control. Anchovy net can further be used as a method of stabilising dust control on mining sites or stockpiled sites, especially on sites where no current mining equipment is working. Seed bearing material with invasive vegetation must not be used for stabilization purposes.

During high velocity wind conditions, the mine operator or his representative is to evaluate the situation and make recommendations as to whether dust suppression measures are adequate, or whether to suspend work until wind speeds drop to an acceptable level.

The use of potable water for dust suppression is discouraged and alternative sources of water should be considered and discussed with the landowner i.e. from farm dams if required.

Where possible, all haulage vehicles exiting the site must be suitably covered when transporting materials to minimise the impact of windblown dust.

Compile a dust monitoring programme before the commencement of mining activities on site. The dust monitoring programme must be compiled in accordance with the National

Environmental Management: Air Quality Act, 2004 (Act No 39 of 2004) National Dust Control Regulations, 2013 - subregulation (5) for implementation during mining activities. If the dust monitoring results indicates that dustfall standards as set out in regulation 3 is exceeded a dust management plan must be compiled and submitted to the relevant air quality officer for approval. As according to the regulations this dust management plan must then be implemented within a month of the date of approval received from the air quality officer. An implementation progress report must be submitted to the air quality officer at agreed time intervals. See below a copy of the National Dust Control Regulations, 2013.

4 No. 36974

GOVERNMENT GAZETTE, 1 NOVEMBER 2013

GOVERNMENT NOTICES
GOEWERMENTSKENNISGEWINGS

DEPARTMENT OF ENVIRONMENTAL AFFAIRS
DEPARTEMENT VAN OMGEWINGSAKE

No. R. 827

1 November 2013

NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT, 2004
(ACT NO. 39 OF 2004)

NATIONAL DUST CONTROL REGULATIONS

I, Bomo Edith Edna Molewa, Minister of Water and Environmental Affairs, hereby make the National Dust Control Regulations, in terms of section 53(o), read with section 32 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), set out in the Schedule hereto.



BOMO EDITH EDNA MOLEWA

MINISTER OF WATER AND ENVIRONMENTAL AFFAIRS

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SCHEDULE

1. Definitions

In these regulations any word or expression to which a meaning has been assigned in the Act has that meaning, and unless the context indicates otherwise:

“ASTM D1739” means the American Standard for Testing and Materials method D1739, which is the standard test method for the collection and measurement of dust fall;

“dust (or settleable particulate matter)” means any material composed of particles small enough to pass through a 1 mm screen and large enough to settle by virtue of their weight into the sampling container from the ambient air.

“dustfall” means the deposition of dust;

“dustfall monitoring programme” means monitoring of the dustfall on a continuous basis;

“Non- residential area” means any area not classified for residential use as per local town planning scheme;

“premises” means any land and structures thereon including stockpiles of materials, roadways and other means of conveyance, from which dust may be generated through anthropogenic or natural activities or processes;

“residential area” means any area classified for residential use in terms of the local town planning scheme; and

“the Act” means National Environmental Management: Air Quality Act, 2004 (Act No.39 of 2004).

2. Purpose of the regulations

The purpose of the regulations is to prescribe general measures for the control of dust in all areas.

3. Dustfall standard

- (1) A standard for the acceptable dustfall rate is set out in Table 1 for residential and non-residential areas.

Table 1: Acceptable dust fall rates

Restriction Areas	Dustfall rate (D) (mg/m ² /day, 30-days average)	Permitted frequency of exceeding dust fall rate
Residential area	D < 600	Two within a year, not sequential months.
Non-residential area	600 < D < 1200	Two within a year, not sequential months.

- (2) The method to be used for measuring dustfall rate and the guideline for locating sampling points shall be ASTM D1739: 1970, or equivalent method approved by any internationally recognized body.

4. Dustfall monitoring programme

- (1) The air quality officer may require any person, through a written notice, to undertake a dustfall monitoring programme as contemplated in subregulation (5) if:
- (a) the air quality officer reasonably suspects that the person is contravening regulation 3; or
 - (b) the activity being conducted by the person requires a fugitive dust emission management plan as per the notice published in terms of section 21 of the Act.
- (2) Any person who conducts any activity in such a way as to give rise to dust in quantities and concentrations that may exceed the dustfall standard set out in regulation 3 must, upon receipt of a notice from the air quality officer, implement dustfall monitoring programme.
- (3) A person required to implement the dustfall monitoring programme must, within a specified period, submit a dustfall monitoring report to the air quality officer.
- (4) If a person who is required to implement the dustfall monitoring programme has an existing one, the reports of that programme shall be accepted by the air quality officer if it meets the requirements of regulation 5.

- (5) A dustfall monitoring programme must include:
- (a) the establishment of a network of dust monitoring points using method ASTM D1739: 1970 (or equivalent), sufficient in number to establish the contribution of the person to dustfall in residential and non-residential areas in the vicinity of the premises, to monitor identified or likely sensitive receptor locations, and to establish the baseline dustfall for the district; and
 - (b) a schedule for submitting to the air quality officer, dustfall monitoring reports annually or at more frequent intervals if so requested by the air quality officer.

5. Dustfall monitoring report

A dustfall monitoring report must provide:

- (a) information on the location of sampling sites, including latitudinal and longitudinal coordinates, and a position indicator on a topographic map;
- (b) classification of the area where samplers are located, in terms of residential and non-residential, and identification of sensitive receptors;
- (c) reference to the standard methods used for site selection, sampling and analysis, and any methods/laboratory accreditation, if applicable;
- (d) the dustfall monitoring results including a comparison of current year and historical results (if any) for each site, and including a tabular summary of compliance with the dustfall standard set out in regulation 3;
- (e) meteorological data (wind speed and direction, rainfall) for the sampling area; and
- (f) any other relevant data that might influence the results.

6. Measures for the control of dust

- (1) Any person who has exceeded the dustfall standard set out in regulation 3 must, within three months after submission of the dustfall monitoring report, develop and submit a dust management plan to the air quality officer for approval.
- (2) A dust management plan, contemplated in subregulation (1), must:
 - (a) identify all possible sources of dust within the affected site;
 - (b) detail the best practicable measures to be undertaken to mitigate dust emissions;
 - (c) detail an implementation schedule;
 - (d) identify the line management responsible for implementation;

- (e) incorporate the dust fallout monitoring plan; and
 - (f) establish a register for recording all complaints received by the person regarding dustfall, and for recording follow up actions and responses to the complainants.
- (3) A dust management plan contemplated in subregulation (1) must be implemented within a month of the date of approval.
- (4) An implementation progress report must be submitted to the air quality officer at agreed time intervals.

7. Ambient air quality monitoring for PM₁₀

An air quality officer may require any person to undertake continuous ambient air quality monitoring for PM₁₀ in accordance with a notice published in terms of section 9 of the Act, if the dustfall monitoring report contemplated in regulation 5 indicates non-compliance with regulation 3.

8. Offences

A person is guilty of an offence if that person contravenes or fails to comply with a provision of regulation 4 (2) and (3), 6(1); (3) and (4) or 7.

9. Penalties

A person convicted of an offence referred to in regulation 8 is liable to in the case of a first conviction to a fine not exceeding R5 million or to imprisonment for a period not exceeding five years; and in the case of a second or subsequent conviction to a fine not exceeding R10 million or imprisonment for a period not exceeding 10 years and in respect of both instances to both such fine and such imprisonment.

10. Short title and commencement

These regulations are called the National Dust Control Regulations, 2013.

Noise control - Mining noise levels must not pose a nuisance to the surrounding communities and all mining working hours must be limited to normal working hours weekday 8h00 – 17h00 unless otherwise arranged with municipality and adjacent landowners. All machinery and mining vehicles must be serviced regularly and be in a good working condition to prevent excessive noise generation. Noise levels is not to exceed the daytime, equivalent continued rating of 45dBA as recommend by SANS 10103:2004. If deemed necessary, the applicant is to appoint a specialist to conduct noise monitoring at the proposed mining site to establish if the noise produced is within regulated requirements. Noise generated on site from all the proposed activities must comply with the Western Cape Noise Control Regulations in Provincial Notice 200/2013.

Anti-erosion Measures:

The mine operator must take all appropriate and active measures to prevent erosion, especially wind and water erosion, resulting from operations and activities, specifically inclusive of storm water control measures, to the satisfaction of the ECO.

During mining the mine operator must protect areas susceptible to wind and water erosion, by installing all the necessary temporary and permanent works. Measures can include brush packing, anchovy net stabilisation, etc. Runoff from the site will be reduced to not exceed pre-development runoff by using detention facilities in critical places. Where required erosion protection measures must be installed.

Top Soil and Material Removal & Stockpiling:

Topsoil and subsoil must be removed, stored and conserved for rehabilitation in accordance with the agricultural specialist recommendations.

Appropriate use of Machinery:

The mine operator must at all times carefully consider what machinery is appropriate to the task to minimise the extent of environmental damage. No machinery is to operate outside of any demarcated working area. Overloading of vehicles carrying minerals must not be allowed. Operators of machinery must be suitably qualified.

Eating, Washing and Resting Areas:

The mine operator must designate restricted places for personnel to eat, wash and rest, within the specified working areas. The mine operator must provide adequate weather proof refuse bins. The feeding of, or leaving food for, animals is strictly prohibited. No persons will be permitted to live on site. Only employed security personnel will be allowed to overnight on site.

The mine operator is responsible for the provision of sufficient and suitably placed chemical toilets. Toilets must be of a neat mining and must be provided with doors and locks and must be secure to prevent wind damage. The mine operator must ensure that toilets are serviced and emptied when required. Waste must be disposed of at a registered waste disposal site. Sanitation provision and servicing must be to the satisfaction of the landowner.

Cleaning of vehicles / equipment:

Washing of mining vehicles and equipment will only be allowed at the mining plant in bunded areas and not on proposed mining property.

Waste Disposal in terms of Integrated Waste Management:

The mine operator will be expected to keep his mining site neat and tidy and free of litter at all times. No on-site burying or dumping of any waste materials, vegetation, litter or refuse must be allowed. The mine operator must ensure that waste and surplus food, food

packaging and organic waste are not disposed of by any workers anywhere on the site except in the provided removable refuse bins.

Refuse bins must be weather and animal proof. Bins must not be allowed to become overfull and must be emptied on a frequent basis by the mine operator. The mine operator must transport refuse collected from the working areas on site to a suitable waste site when required.

Refuse is deemed to include all discarded mining materials such as wire, nails, tins, and cans, drums, piping, plastic straps, bricks, waste cement or concrete, cement bags, etc. The mine operator must make adequate provision for the removal of mining rubble and other excess material. No material or mining rubble may be spoiled on the property.

Hazardous and general waste should be stored in separate containers. Schedule 3 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) defines and identifies categories and waste types and should be consulted to determine which wastes types are classified as hazardous waste.

All hazardous waste must be stored in a secured and demarcated area and disposed of using a registered waste disposal operator. All hazardous waste, such as used mechanical lubricants, plant filters, etc. must be stored on a surfaced area under a roof and taken to appropriate hazardous management facilities to be reused, recycled, treated or disposed of.

Waste minimisation should be implemented such as the avoidance, reduction and re-use of waste during mining, before considering the disposal of such waste. Any solid waste that is not being recycled must be disposed of at a licenced landfill. Recyclable general waste, building rubble and plant materials must be stored separately at mining site office and diverted from landfill facilities as far as possible. Plant materials can be sent for chipping or for composting.

The applicant must obtain and file disposal certificates from service providers who will dispose of the general and hazardous waste as evidence that the waste has been disposed of at an appropriate and licenced facility.

General mitigation measures as proposed by the Department: Pollution and Chemical Management:

- The responsible management of hazardous chemicals should be always practised and storage or handling of chemicals must not take place within proximity of watercourses.
- The refuelling and/or repair of heavy earthmoving vehicles should not take place within the active mining area and should be conducted within a dedicated impervious area on-site.
- All heavy earthmoving and transport vehicles must be in good working condition with no leaking hydrocarbon fuel, fluids or lubricant emanating from these vehicles. 3.4.4. The movement and storage of earth moving vehicles must strictly be prohibited within the "no go" areas.
- Should any spillage occur during the refuelling and/or repair of vehicles, the Directorate: Pollution and Chemicals Management is to be notified immediately in conformance to prescribed legislation.
- The storage of hazardous substances (i.e., petrol, diesel, and lubricants, etc.) should be located on impervious bases with bunds (to accommodate 110% of the volume) around them to contain any fugitive spillages and/or leakages.
- An emergency response plan is to be implemented in the event of a spill or leakage, with trained and competent on-site staff to deal with the clean-up of any hazardous

substances. The provision of on-site spill kits must be available in the event of a pollution incident.

- Machinery and equipment should be regularly inspected for any damage which could lead to contamination/leaks onto the receiving environment.

Chemical toilets:

The mining company is responsible for the provision of sufficient and suitably placed chemical toilets. Toilets must be of a neat construction and must be provided with doors and locks and must be secure to prevent being windblown. Chemical toilets must be placed more than 32m away from any water courses. The mining company must ensure that toilets are serviced and emptied by the service provider on a weekly basis at least or when full/required. All chemical toilets waste water must be disposed of at a licensed waste water treatment works.

Fires:

The collecting and use of vegetation for firewood on the property is prohibited. No open fires will be allowed on site and adequate firefighting equipment should be available on site in good working order at all times as prescribed by the fire management protocols.

Site Clean Up:

The mine operators must ensure that all temporary structures, equipment, materials and facilities used or created on site for, or during mining activities, are removed once the project has been completed. The mining sites must be cleared, and cleaned to the satisfaction of the ECO.

Mining Personnel Safety:

All personnel must wear Personal Protective Equipment during the mining as required.

Emergency Response/Remedial Action Plans:

If an environmental emergency such as fire, oil/fuel spills, sewage pipe burst, floods etc. occurs on site during the mining phase immediate actions must be taken to manage and contain the situation by the mining operator/s and municipality.

Within 24hours of emergency detection the ECO must be informed of the incident, where after ECO will conduct a site visit and recommend further remediation and/or rehabilitation methods to be implemented. Depending on type and extent of emergency that occurred specialists may be contacted to provide specific recommendations.

An incident report must be completed and sent to municipal and governmental authorities.

Incident Reporting:

In order to ensure that the necessary environmental issues are adequately addressed and recorded, the following environmental reporting shall be undertaken:

- Incident reporting; and
- Compliance reporting

I.e. should there be any deviations from the EMP or any incident or potential incident that might impact on any water resources or sensitive environmental features, the relevant organs of state (to be determined by the ECO) must be notified immediately.

See below for a template of an Incident Report to serve as a guideline for the recording and addressing of emergency incidents as and when they occur.

If there is any accidental release of a hazardous substance it must be reported to the relevant authorities, including the Directorate: Pollution and Chemicals Management, in terms of section 30 of the NEMA, 1998.

In terms of NEMA Section 30 the following shall apply during the occurrence of an "incident" due to the proposed mining activities:

NEMA Section 30. Control of incidents

(1) In this section

- (a) "incident" means an unexpected, sudden and uncontrolled release of a hazardous substance, including from a major emission, fire or explosion, that causes, has caused or may cause significant harm to the environment, human life or property;
- (b) "responsible person" includes any person who
 - (i) is responsible for the incident;
 - (ii) owns any hazardous substance involved in the incident; or
 - (iii) was in control of any hazardous substance involved in the incident at the time of the incident;
- (c) "relevant authority" means
 - (i) a municipality with jurisdiction over the area in which an incident occurs;
 - (ii) a provincial head of department or any other provincial official designated for that purpose by the MEC in a province in which an incident occurs;
 - (iii) the Director-General;
 - (iv) any other Director-General of a national department

(2) Where this section authorises a relevant authority to take any steps, such steps may only be taken by

- (a) the person referred to in subsection (1)(c)(iv) if no steps have been taken by any of the other persons listed in subsection (1)(c);
- (b) the person referred to in subsection (1)(c)(iii) if no steps have been taken by any of the persons listed in subsection (1)(c)(i) and (c)(ii);
- (c) the person referred to in subsection (1)(c)(ii) if no steps have been taken by the person listed in subsection (1)(c)(i):

Provided that any relevant authority may nevertheless take such steps if it is necessary to do so in the circumstances and no other person referred to in subsection (1)(c) has yet taken such steps.

(3) The responsible person or, where the incident occurred in the course of that person's employment, his or her employer must forthwith after knowledge of the incident, report through the most effective means reasonably available

- (a) the nature of the incident;
- (b) any risks posed by the incident to public health, safety and property;
- (c) the toxicity of substances or by-products released by the incident; and

(d) any steps that should be taken in order to avoid or minimise the effects of the incident on public health and the environment to

- (i) the Director-General;
- (ii) the South African Police Services and the relevant fire prevention service;
- (iii) the relevant provincial head of department or municipality; and
- (iv) all persons whose health may be affected by the incident.

(4) The responsible person or, where the incident occurred in the course of that person's employment, his or her employer, must, as soon as reasonably practicable after knowledge of the incident

(a) take all reasonable measures to contain and minimise the effects of the incident, including its effects on the environment and any risks posed by the incident to the health, safety and property of persons;

(b) undertake clean-up procedures;

(c) remedy the effects of the incident;

(d) assess the immediate and long-term effects of the incident on the environment and public health;

(5) The responsible person or, where the incident occurred in the course of that person's employment, his or her employer, must, within 14 days of the incident, report to the Director-General, provincial head of department and municipality such information as is available to enable an initial evaluation of the incident, including

(a) the nature of the incident;

(b) the substances involved and an estimation of the quantity released and their possible acute effect on persons and the environment and data needed to assess these effects;

(c) initial measures taken to minimise impacts;

(d) causes of the incident, whether direct or indirect, including equipment, technology, system, or management failure; and

(e) measures taken and to be taken to avoid a recurrence of such incident.

(6) A relevant authority may direct the responsible person to undertake specific measures within a specific time to fulfil his or her obligations under subsections (4) and (5): Provided that the relevant authority must, when considering any such measure or time period, have regard to the following:

(a) the principles set out in section 2;

(b) the severity of any impact on the environment as a result of the incident and the costs of the measures being considered;

(c) any measures already taken or proposed by the person on whom measures are to be imposed, if applicable;

(d) the desirability of the state fulfilling its role as custodian holding the environment in public trust for the people;

(e) any other relevant factors.

(7) A verbal directive must be confirmed in writing at the earliest opportunity, which must be within seven days.

(8) Should

(a) the responsible person fail to comply, or inadequately comply with a directive under subsection (6);

(b) there be uncertainty as to who the responsible person is; or

(c) there be an immediate risk of serious danger to the public or potentially serious detriment to the environment,

a relevant authority may take the measures it considers necessary to

(i) contain and minimise the effects of the incident;

(ii) undertake clean-up procedures; and

(iii) remedy the effects of the incident.

(9) A relevant authority may claim reimbursement of all reasonable costs incurred by it in terms of subsection (8) from every responsible person jointly and severally.

(10) A relevant authority which has taken steps under subsections (6) or (8) must, as soon as reasonably practicable, prepare comprehensive reports on the incident, which reports must be made available through the most effective means reasonably available to

(a) the public;

(b) the Director-General;

(c) the South African Police Services and the relevant fire prevention service;

(d) the relevant provincial head of department or municipality; and

(e) all persons who may be affected by the incident

See below for a template of an Incident Report to serve as a guideline for the recording and addressing of emergency incidents as and when they occur.

Document Type:	Emergency Incident Report	
	Title:	(PROPERTY WHERE INCIDENT OCCURRED, DATE AND TYPE OF INCIDENT)
	Document Status:	Pilot reporting format

Reference:	[A reference that may be used in future correspondence]	Initial Submission Date:	[Date of initial submission of the report to the Department: Environmental Affairs and Tourism]
Revision No.:	example	Compiled by:	[Full name and contact details of the person submitting the report]

This form provides a template for the emergency incident report required in terms of section 30(5) of the National Environmental Management Act (Act No. 107 of 1998) (hereinafter “NEMA”) in which the responsible person or, where the incident occurred in the course of that person’s employment, his or her employer, must, within 14 days of the incident, report to the Director General, provincial head of department and municipality such information as is available to enable an initial evaluation of the incident, including: (a) the nature of the incident; (b) the substances involved and an estimation of the quantity released and their possible acute effect on persons and the environment and data needed to assess these effects; (c) initial measures taken to minimise impacts; (d) causes of the incident, whether direct or indirect, including equipment, technology, system, or management failure; and (e) measures taken and to be taken to avoid a recurrence of such incident.

In terms of section 30(1)(a) of NEMA, an “incident” means an unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed.

In line with section 24 of the Constitution of the Republic of South Africa (Act No. 108 of 1996), “serious” is taken to be a measure of the impact of an incident where such an incident has had, could have had, is having, or will have a negative impact on human health or well-being.

RESPONSIBLE PERSON			
In terms of section 30(1)(b) of NEMA, the “responsible person” includes any person who: (i) is responsible for the incident; (ii) owns any hazardous substance involved in the incident; or (iii) was in control of any hazardous substance involved in the incident at the time of the incident			
Name:	[Full name of person, company, etc.]	Designation:	[designation of responsible person (n/a for companies, etc.)]
Postal Address:	[Full postal address including postal code]	Physical Address:	[Full physical address]
Telephone (B/H)	[Business hours contact telephone number and area code]	Telephone (A/H)	[After hours contact telephone number and area code]
Nature of Business:	[Brief summary of the nature of the business]		

EMERGENCY INCIDENT SUMMARY INFORMATION							
Mark the appropriate boxes							
Fire:		Spill:		Explosion:		Gaseous Emission:	
Injuries		Reportable injuries:		Hospitalisation:		Fatalities:	
Open water impacts:		Ground water impacts:		Atmospheric impacts:		Soil impacts:	
Own emergency response involved		Fire prevention services involved		Government hazardous materials emergency response involved		More than 1 governmental emergency response service involved	
Emission of non-toxic substances at low concentrations		Emission of non-toxic substances at high concentrations		Emission of toxic substances at low concentrations		Emission of toxic substances at high concentrations	
No evacuation required		Immediate area evacuated		Immediate surrounds evacuated		Evacuation of the general public	

INITIAL EMERGENCY INCIDENT REPORT				
In terms of section 30(3) of NEMA, the responsible person or, where the incident occurred in the course of that person's employment, his or her employer must forthwith after knowledge of the incident, report through the most effective means reasonably available: (a) the nature of the incident; (b) any risks posed by the incident to public health, safety and property; (c) the toxicity of substances or byproducts released by the incident; and (d) any steps that should be taken in order to avoid or minimise the effects of the incident on public health and the environment to: (i) the Director General; (ii) the South African Police Services and the relevant fire prevention service; (iii) the relevant provincial head of department or municipality; and (iv) all persons whose health may be affected by the incident.				
Description	Date:	Time:	Medium:	Contact Details:
Director General:	[submission date]	[submission time]	[Fax, phone, SMS, letter, etc.)	[who was the report made to?]
SAPS:				
Relevant fire prevention service:				
Relevant province or municipality				
Affected persons:			Provide details of who was contacted and how they were contacted as Annexure A to this report	

INCIDENT DETAILS			
In terms of NEMA section 30(5)(a) and (d), the responsible person must report on the nature of the incident as well as the causes of the incident, whether direct or indirect, including equipment, technology, system, or management failure			
Incident start time:	[The exact time that the unexpected event started]	Incident duration:	[the duration of the unexpected event]
Duration of danger:	[The time taken from the start of the event to the time when the impacts of the event no longer posed a threat to anyone's health or well-being]	Duration of exposure:	[The duration of conditions that had a direct impact anyone's health or well-being]
Incident description	[Brief description of the incident detailing, but not limited to, a description of: (i) what happened; (ii) how it happened; (iii) where it happened; (iv) the timing and sequence of events; and (v) why it happened. A detailed discussion may be included as an annex.] Plans, diagrams, maps or any other graphical material relating to the incident description must be attached as annexures B1, B2, etc.		
Wind speed and direction	[The wind speed and direction at the point of the incident at the time of the incident]	Ambient air temperature	[ambient air temperature at the time of the incident]
Weather conditions	[Sunny, light rain, mist, heavy rain, etc.]	Other relevant meteorological conditions	[Temperature inversion, floods, etc]

POLLUTANTS RELEASED DURING INCIDENT					
In terms of NEMA section 30(5)(b), the responsible person must report on the substances involved and an estimation of the quantity.					
List all the pollutants directly released during the incident (i.e. exclude those pollutants that resulted from mitigation measures, e.g. flaring, treatment, dilution etc.)					
Substance or mixture of substances	Reference Number	Phase	Total Quantity emitted	Unit	Nature of emission
[The name recognised by any national or internationally recognised chemical referencing system]	[Reference to any national or internationally recognised chemical referencing system]	[solid, semi-solid, liquid or gas]	[the total measured or estimated quantity released into the environment]	[the unit of measure in respect to the quantity]	[emitted from truck, underground pipe, stack, etc.]

SECONDARY POLLUTANTS RESULTING FROM INCIDENT					
In terms of NEMA section 30(5)(b), the responsible person must report on the substances involved and an estimation of the quantity released.					
List all the pollutants that resulted from mitigation measures, e.g. flaring, treatment, dilution etc.					
Substance or mixture of substances	Reference Number	Phase	Total Quantity emitted	Unit	Nature of emission
[The name recognised by any national or internationally recognised chemical referencing system]	[Reference to any national or internationally recognised chemical referencing system]	[solid, semi-solid, liquid or gas]	[the total measured or estimated quantity released into the environment]	[the unit of measure in respect to the quantity]	[emitted from truck, underground pipe, stack, etc.]

1. POLLUTANT CONCENTRATIONS					
In terms of NEMA section 30(5)(b), the responsible person must report on the substances involved and an estimation of the quantity released.					
List all the pollutants detailed in sections Error! Reference source not found. and Error! Reference source not found. Error! Reference source not found.					
1.1 Substance or mixture of substances	1.2 Reference Number	1.3 Estimated pollutant concentration			
		1.4 10m	1.5 100m	1.6 500m	1.7 Concentration unit (e.g. ppm)
[The name recognised by any national or internationally recognised chemical referencing system]	[Reference to any national or internationally recognised chemical referencing system]	[estimate the concentration of the pollutant in water, soil and/or air within a 10m radius of the epicentre of the incident]	[estimate the concentration of the pollutant in water, soil and/or air within a 100m radius of the epicentre of the incident]	[estimate the concentration of the pollutant in water, soil and/or air within a 500m radius of the epicentre of the incident]	[[Provide the unit of concentration used in columns 1.4, 1.5 and 1.6.]

INCIDENT IMPACT	
In terms of NEMA section 30(5)(b), the responsible person must report on possible acute effect on persons and the environment and data needed to assess these effects;	
Minor injuries	[Describe the number and types of any minor injuries that resulted from the incident or efforts to manage the incident or the impacts thereof]
Reportable injuries	[Describe the number and types of any injuries requiring statutory reporting that resulted from the incident or efforts to manage the incident or the impacts thereof]
Hospitalisation	[Describe the number and types of any injuries that required professional medical care that resulted from the incident or efforts to manage the incident or the impacts thereof]
Fatalities	[Describe the number and cause of any fatalities that resulted from the incident or efforts to manage the incident or the impacts thereof]
Biological impacts	[Describe any impacts on biological life, other than human life, e.g. fish kills, plant mortality, etc.]
Impact area	[Describe the area possibly affected by the incident or the impacts thereof including: (i) size of the area; (ii) socio-economic context; (iii) population density; (iv) sensitive environments (if any), etc.]
Data	Attach relevant impact reports, medical reports, death certificates, post mortem reports, environmental monitoring data, etc. as Annexes C1, C2,... to this report

EXISTING PREVENTION PROCEDURES AND/OR SYSTEMS	
Foresight	[Briefly describe whether the incident could have, or had, been foreseen, e.g. was it included in any environmental impact assessment, risk assessment, health and safety plan, etc.]
Procedures and/or systems	Attach any relevant safety, health and environmental plans (including any statutory planning requirements) that detail what actions should be taken in the event of the incident that is the subject of this report
Procedure and/or systems failures	[Describe any failures or shortfalls in procedures and/or systems that may have contributed to the incident]
Technical measures	[Describe any technical measures, equipment, 'fail-safe' devices, etc. that are in place to prevent the occurrence of the incident]
Technical failure	[Describe any failures of technical measures, equipment, 'fail-safe' devices, etc. that are in place to prevent the occurrence of the incident]

2. INITIAL INCIDENT MANAGEMENT	
In terms of NEMA section 30(5)(c), the responsible person must report on initial measures taken to minimise impacts.	
2.1 Evacuation	[Describe any evacuation activities including information on the number of people evacuated and whether these people were staff or otherwise]
2.2 Technical measures	[Describe all technical measures taken to address the incident]
2.3 Mitigation measures	[Describe all measures taken to minimise the impact]
2.4 Emergency Services	[Describe any governmental emergency services involvement]

3. CLEANUP AND/OR DECONTAMINATION			
In terms of NEMA section 30(5)(c), the responsible person must report on initial measures taken to minimise impacts.			
3.1 Cleanup and/or decontamination		[Provide a detailed description of all cleanup and/or decontamination activities and the environmental quality and impacts resulting from these activities as well as contact details for any contracted service providers in an annex.]	
Permissions and Instructions			
Provide details of any permissions and/or instructions received from any organ of state during initial incident management, cleanup and/or decontamination			
3.2 Type	3.3 Statuate	3.4 Issued By	3.5 Details
[Describe the nature or type of permission or instruction]	[Provide a reference to the legal mandate for the permission or instruction]	[Provide contact details for the permitting or instructing authority]	[provide a summary of the activities carried out in terms of the permission or instruction]

MITIGATION MEASURES			
In terms of NEMA section 30(5)(e), the responsible person must report on measures taken and to be taken to avoid a recurrence of such incident.			
Measure	Objective	Cost	Timing
[Briefly describe each of the measures taken, and to be taken, to avoid a recurrence of such incident]	[Briefly describe the objective of the measure, i.e. the desired outcome of the measure]	[Estimate the cost of the measure in terms of capital costs and/or recurrent costs]	[Provide information on the timing for the full implementation of the measure]

4. AUTHORISATIONS			
Provide detail on all authorisations (including permits, licenses, certificates, etc.) in respect of the activity to which the incident relates.			
4.1 Type	4.2 Statute	4.3 Issued By	4.4 Issue & Expiry Date
[Describe the nature or type of authorisation, e.g. Registration Certificate]	[Provide the reference for the authorisation, e.g. section X of the National Environmental Management Act (Act No. 107 of 1989)]	[Provide contact details for the issuing authority]	[provide the date of issue and expiry]

HISTORY			
Provide details on any and every similar incident involving the responsible person in the last 24 months. Similar incidents include those that: (i) involved similar circumstances; (ii) involved similar emissions; (iii) involved similar personal; and/or (iv) involved similar impacts.			
Incident title	Report reference	Date of incident	Summary of event
[Provide the title used in the relevant emergency incident report]	[Provide the reference in respect of the relevant emergency incident report]	[Date of incident]	[Provide a summary of the event]

Signed by, or as a mandated signatory for, the responsible person:		Date:	
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APPENDICES		Tick the box if Appendix is attached
Appendix A:	EAP CV and Qualifications	X
Appendix B:	Maps & Site Photos	X
Appendix C:	Proof of Public Participation Process	X
Appendix D:	Mining Work Programme	X
Appendix E:	Specialist/s Report/s	X
	Appendix E1: Heritage Western Cape NID	x
	Appendix E2: Heritage Western Cape NID Appendices Part 1	x
	Appendix E3: Heritage Western Cape NID Appendices Part 2	x
	Appendix E4: Heritage Western Cape NID Record of Decision	x
	Appendix E5: Agricultural Impact Assessment	x
	Appendix E6: Aquatic Compliance Statement	x
	Appendix E7: Animal Compliance Statement	x
	Appendix E8: Plant Compliance Statement	x
	Appendix E9: Terrestrial Biodiversity Compliance Statement	x
Appendix F:	Mine Closure/Rehabilitation Plan	X
Appendix G:	Any Other (if applicable):	X
	Appendix G1: Geological and Socio-Economic Motivation Report	x

	Appendix G2: Stormwater Management Plan	x
	Appendix G3: Best Practice Guideline Stormwater Management 2006	x
	Appendix G4: Social Labour Plan	x
	Appendix G5: DEA Screening Tool Report and Site Sensitivity Verification Report	x
	Appendix G6: Converted Mining Right	x
	Appendix G7: Proof of Mining Right Renewal Granted	X

EAP UNDERTAKING/DECLARATION

The EAP herewith confirms

- the correctness of the information provided in the reports ✓
- the inclusion of comments and inputs from stakeholders and I&APs ; ✓
- the inclusion of inputs and recommendations from the specialist reports where relevant; ✓ and
- 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:

Enviro-EAP

Name of company:

27 July 2026

Date:

-END-