mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

DRAFT SCOPING REPORT

FOR LISTED ACTIVITIES ASSOCIATED WITH A BENTONITE AND ZEOLITE MINING RIGHT APPLICATION ON ERVEN 1401, 1199 AND 2924 HEIDELBERG, WESTERN CAPE

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

NAME OF APPLICANT: Imerys Refractory Minerals South Africa: t/a Cape Bentonite Mine

TEL NO: 028 722 2011
FAX NO: 028 722 2927
POSTAL ADDRESS: Cape Bentonite Mine, Princess Farm, PO Box 242, Heidelberg, Western Province 6665
PHYSICAL ADDRESS: Cape Bentonite Mine, Princess Farm, PO Box 242, Heidelberg, Western Province 6665

FILE REFERENCE NUMBER SAMRAD: 197025

DMR REFERENCE NUMBER: WC30/5/1/2/2/10115MR

DATE: 14 August 2019

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.

OBJECTIVE OF THE SCOPING PROCESS

1) The objective of the scoping process is to, through a consultative process—

(a) identify the relevant policies and legislation relevant to the activity;
(b) motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
(c) identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
(d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
(e) identify the key issues to be addressed in the assessment phase;
(f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and
(g) identify suitable measures to avoid, manage, or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

2) Contact Person and correspondence address

(a) Details of

i) The EAP who prepared the report

Name of The Practitioner: Johmandie Pienaar (Giliomee)
Tel No.: 021 6711 660
Fax No. : 088 021 6711660
e-mail address: johmandie@ecoimpact.co.za

ii) Expertise of the EAP.

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

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).

(2) 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) Description of the property.

Farm Name:	Erven 1401, 1199 and 2924
Application area (Ha)	**Erf 1401:** • Property size – 75.5ha • Proposed mining activities areas size (as located on completely transformed cultivated lands – 57ha • Phase 1 Quarry – 4.6ha • Phase 2 Quarry – 4.33ha • Phase 3 Quarry – 1.05ha • Phase 6 Quarry – 1.24ha **Erf 1199 :** • Property size – 11.5ha • Proposed mining activities areas size (as located on completely transformed cultivated lands – 6ha **Erf 2924:** • Property size – 47.2ha • Proposed mining activities areas size (as located on completely transformed cultivated lands – 17ha • Phase 4 Quarry – 3.68ha • Phase 5 Quarry – 1.94ha **TOTALS:** • Total properties size – 135ha • Total mining activities area on completely transformed agricultural lands – 80ha • Total quarries size – 16.84ha
Magisterial district:	Heidelberg
Distance and direction from nearest town	The erven are located approximately 3km northwest from the town of Heidelberg and can be accessed via a gravel road off the R322 towards Barrydale
21 digit Surveyor General Code for each farm portion	Erf 1401 – C07300030000140100000 Erf 1199 – C07300030000119900000 Erf 2924 – C07300030000292400000

(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

NAME OF ACTIVITY	Aerial extent of the Activity Ha or m²	LISTED ACTIVITY Mark with an X where applicable or affected.	APPLICABLE LISTING NOTICE (*GNR 983, GNR 984 or GNR 985)*
Proposed mining of bentonite and zeolite on transformed agricultural land. Proposed mining as referred to include all activities associated with the proposed bentonite mining such as any explorations required, site establishment, demarcations, any excavations, any vehicular movements, any access and internal road mining, topsoil and overburden storage, implementation of rehabilitation measures etc	Total mining activities area = 80ha Quarry extent =16.84ha	X	GNR 983, Activity no: 12, 22, 28 GNR 984, Activity no: 17

(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)

This application is for the mining of bentonite and zeolite.

Imerys Refractory Minerals (trading as Cape Bentonite Mine) is applying for a mining right on Erven 1401, 1199 and 2924 to mine bentonite and zeolite on transformed agricultural land.

The total area required for the mining activities will be 80ha and the total excavated quarries extent within this area will be 16.84ha.

- **Site infrastructure**

Access

No new roads would have to be constructed to provide access to the proposed site. The mine area is accessed directly off existing informal gravel roads. See below a map of the intended access road as indicated from the mine processing plant to the proposed mining properties.

Fig 1: Proposed access road to and from the proposed mining areas and processing plant.

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 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.

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

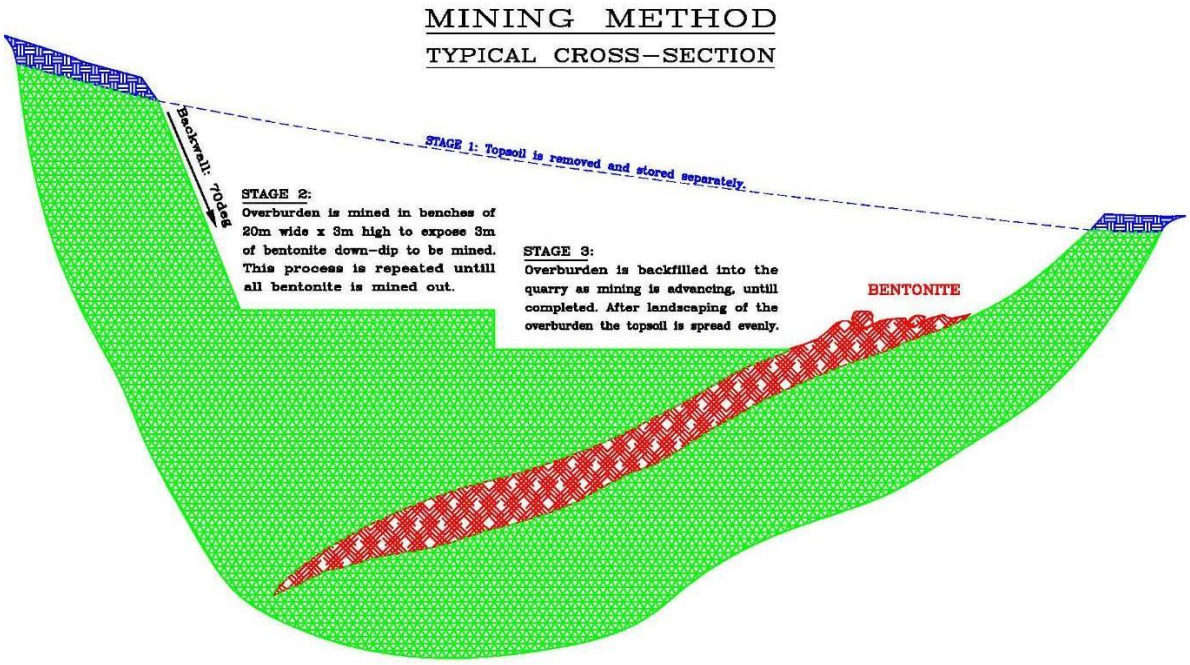
Mining Phases:

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

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLIY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)
Minerals and Petroleum Resources 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 and reports to be submitted to DMR for Environmental Authorization
Land Use Planning Ordinance (15 of 1985)	-	-
National Heritage Resources Act 25 of 1999 [NHRA]	-	Notice of Intent to Develop submitted to Heritage Western Cape – no further action required under Section 38 of the National Heritage Resources
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [NEMWA] and relevant regulations	-	-
National Environmental Management: Biodiversity Act 10 of 2004 [NEMBA] and relevant regulations	-	No mining activities to take place on any remaining indigenous vegetation areas nor within watercourses. All potential indirect impacts to be mitigated.
National Environmental Management: Air Quality Act, 39 of 2004 [NEMAQA] and Relevant Regulations	-	-
National Water Act, 1998 (Act No. 36 of 1998) [NWA] and relevant regulations	S21	Draft scoping report submitted to BGCMA to determine applicability of Section 21 of the NWA
Conservation of Agricultural Resources Act, 43 of 1983 [CARA]	-	Proposed mining areas to be rehabilitated to previous agricultural state after mining operations have been completed
National Health Act, 61 of 2003; Constitution of the Republic of South Africa, 1996	-	-
Fencing Act, 31 of 1963	-	-
National Veld and Forest Fire Act 101 of 1998 [NVFFA]	-	-
Environment Conservation Act, 73 of 1989, Western Cape Noise Control	-	-

Regulations		
National Forests Act, 84 of 1998	-	-
Hazardous Substances Act, 15 of 1973	-	-
National Environmental Management: Protected Areas Act 57 of 2003	-	-
Mine Health and Safety Act, 1996 (Act No. 29 of 1996)	-	-
Compensation for Occupational Injuries and Diseases Act 130 of 1993	-	-
Basic Conditions of Employment Act 75 of 1997	-	-
Labour Relations Act 66 of 1995	-	-

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).

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 Eden District Municipality in the Western Cape Province.

Ecca Holdings (Pty) Ltd (name changed to Imerys Refractory Minerals South Africa) has mining rights for several properties within close proximity to the proposed erven 1401, 1199 & 2924 due to the viable sources of bentonite and zeolite found in this area. During the prospecting of this property viable sources of bentonite and zeolite were discovered on already cultivated agricultural land.

The proposed mining activities area of 80ha is proposed on completely transformed and cultivated agricultural land, previously and continually impacted upon by ongoing cultivation and heavy livestock grazing and will not impact on any significant environmental features found on site.

The mine provides direct employment for at least 43 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.

The proposed site is considered suitable for bentonite 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 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.

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

(g) Period for which the Environmental Authorisation is required.

It is expected that mining operations will begin within one year of obtaining environmental authorisation. Mining operations on the 16.84ha applicable quarry areas is expected to take approximately ten years. The Environmental authorization should therefore be valid for 10 years.

(h) 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.

Location alternatives – Erven 1401, 1199 and 2924 as a whole are the only location alternative considered. This is the only feasible and reasonable locality alternative because these properties are owned by one landowner and adjacent to each other with high quality bentonite deposits as determined during previous prospecting activities. Also refer to **Appendix G1** Geological and Socio-economic Motivation Report.

Activity alternatives- No activity alternatives other than the no go option was considered or assessed. The applicant identified this area for bentonite mining purposes. The method of bentonite mining is singular.

Layout alternatives – Layout alternatives were considered and assessed by the ecologist. The proposed layout is informed by the ecologist recommendations and avoids all remaining terrestrial and aquatic Critical Biodiversity and Ecological Support Areas. Also refer to Appendix E: Specialists Reports

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.

Operational alternatives – No operational alternatives exist. The method of bentonite mining is singular and is described in mining work programme. Refer to Appendix D: Mining Work Programme.

The No-Go Option- The No-Go option will result in the site remaining as it is presently, cultivated 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.

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.**

This section of the report is included in compliance with the Regulations. Public participation is an integral part of the mining right application and EIA process and affords potentially interested and potentially affected parties (I&APs) an opportunity to participate in the 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 HAS AND WILL BE CONDUCTED:

An advert/notice was placed in the local newspaper

Notice boards was placed on the site boundaries

The Pre-Application Draft Scoping Report was sent to the following Departments for Comment:

- Hessequa Municipality
- CapeNature Scientific Services
- DEA&DP Land Management
- DEA&DP Planning
- DEA&DP Pollution Management
- DEA&DP Waste Management
- DEA&DP Air Quality Management
- Department of Agriculture
- Garden Route District Municipality
- Breede-Gouritz Catchment Management Agency (also commenting on behalf of Department of Water and Sanitation)
- Heritage Western Cape
- Transnet
- Greater Cluster Biosphere Reserve

- Decision making/Competent Authority – Department of Mineral Resources

Notices to were sent via registered mail to the owners and occupiers of land on and adjacent to the site where the activity is to be undertaken. The notice request them to register as Interested and Affective Parties (I&APs) and invited them to provide written comments together with the project reference, their name, contact details and an indication of any direct business, financial, personal or other interest which they have in the application to the contact person within 30 days from the date of the notice.

STEPS TAKEN AND STILL TO BE TAKEN TO NOTIFY POTENTIALLY INTERESTED AND AFFECTED PARTIES

This section of the report is included in compliance with the Regulations. Potential I&APs will be notified about the project by:

- Fixing a notice board at the boundary of the site in compliance with the Regulations. All relevant and required information to be displayed on the notice board. The notice board will contain the following minimum information (Size of Board 70 x 50 cm):

    - how to register as an interested and affected party;
    - the manner in which representations on the application may be made;
    - where further information on the application or activity can be obtained; and
    - the contact details of the person(s) to whom representations may be made.
    - The fact that the public participation process had commenced, that a basic assessment process will be followed, the dates within which they can register or send comments and what the proposed activity constituted, was displayed.

- Photos of the notice boards placed at the entry to the proposed property to be mined on 9 January 2019 are included in Appendix C of the Scoping Report.

- Placing an advertisement in a local newspaper in compliance with the Regulations. An advert was placed in the local newspaper notifying the public of the proposed development and inviting them to register as Interested and Affected Parties within 30 days. Proof of advertisement placed is included in Appendix C of the Scoping Report.

- Lists of Identified and Registered Interested and Affected Parties:
  This list includes the potential as well as the registered Interested and Affected Parties. The list of parties who are identified as potential I&APs as per the requirements of the Regulations and the list of parties who request registration as an I&AP, and who are registered on the I&AP database for the project as required in terms of the Regulations are included. A Comments and Responses Report from registered I&AP's is included in the Scoping Report.

- Workshop with Key Role players will be held upon request. None has been requested thus far (12 August 2019)

Registered Interested and Affected Parties and key departments are afforded a 30 day comment period on the Draft Scoping Report. The comments are recorded and the EAP (specialists) respond to the comments and compile the comments and response report as part of the Final Scoping Report where after it is submitted to DMR for acceptance or rejection.

Once the scoping report has been accepted by the DMR the public participation during the EIA phase involves submitting the draft EIR to the registered I&AP's and Key Departments for a 30 day period to comment on the findings of the report. Once all comments have been received, the EIR will be finalised taking into account the comments received and thereafter submitted to DMR for a decision.

iii) Summary of issues raised by I&APs
(Complete the table summarising comments and issues raised, and reaction to those responses)

Proof of all Public Participation Process correspondence sent/received is available under Appendix C.

Interested and Affected Parties **List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
AFFECTED PARTIES		All comments received during the review periods of the pre-application and draft scoping reports as well as responses provided will be captured and recorded within this Comments and Response Report table.			
Landowner	**X**				
JAA Lazenby Plaas Wilgenhof Posbus 66 Heidelberg 6665	**-**	Signed landowner's consent to be obtained and included in the EIR phase. Notice sent on 02/01/2019, no comments received to date 12/08/2019			
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**				
Hooikraal Diepkloof Familie Trust Posbus 49 Heidelberg 6665	-	Notice sent on 02/01/2019, no comments received to date 12/08/2019			
AJ Keyser Posbus 223 Heidelberg 6665	•	Notice sent on 02/01/2019, no comments received to date 12/08/2019			
Stephen Keyser Familie Trust Posbus 100 Heidelberg 6665	•	Notice sent on 02/01/2019, no comments received to date 12/08/2019			
Helena J Duminy Posbus 211 Heidelberg 6665	•	Notice sent on 02/01/2019, no comments received to date 12/08/2019			
MEP De Jager Posbus 179 Heidelberg 6665	•	Notice sent on 02/01/2019, no comments received to date 12/08/2019			
J Seggie Eksteenstraat 48 Heidelberg 6665	•	Notice sent on 02/01/2019. Comments received 11/01/2019	Dear Mr Pienaar Please send me a site map of proposed erven Jennifer Seggie 0836753572 Owner of Erf 1413	Site map was emailed to I&AP on 11/01/2019. A link to the Pre-application Scoping Report for download was sent on 25/01/2019.	Refer to Appendix B for relevant site maps.
GRP Development Services cc	•	Notice sent on 02/01/2019.	Dear Johmandie,	Responses are as per email reply sent on 05/02/2019.	

Mr Gert Rynier Potgieter Posbus 363 Heidelberg 6665		Comments received 04/02/2019	I am acting on behalf of **GRP Development Services cc** (hereinafter referred to as GRP), which company owns Erf 1080, Heidelberg, Western Cape that borders onto Erf 1401, mentioned above. I hereby wish to: • Register interest within the process. • Enquire about the following: ○ your notice refers to a gravel road off the R322 towards Barrydale that gives access to the site - please indicate the locality of this road on a plan. ○ will this road be used as an access route for all the mining activities or do you have another route in mind? See reply above ○ furthermore, your notice also refers to a secondary non-perennial watercourse - please indicate this watercourse on a plan (same plan as above). Proposed zeolite & bentonite mining on Erven 1401, 1199 & 2924, Heidelberg,	I&AP registration confirmed. The access road as described on the notice is the main access road/farm entrance to the applicable properties given to better describe the location of the properties however this is not the road that is intended to be used as access for mining operation, refer to Pre-application Draft Scoping Report page 7 figure 1 for a map indicating the proposed access route to be used during mining operations. See reply above. Refer to Appendix B_ Site_Plans & Photographs Maps 3 and 4 which indicates the locations of the water courses on the properties and surrounds. Note that none of these watercourses are located on proposed mining areas and may not be impacted upon, neither may any indigenous vegetation areas be impacted upon all proposed mining activities to remain on and within cultivated agricultural land.	
		Additional			

		comments received 22/02/2019	Western Cape Dear Me Pienaar, Your e-mail, dated 5th February 2019 refers, wherein GRP Development Services cc has been registered as an interested and affected party concerning the "Proposed zeolite & bentonite mining on Erven 1401, 1199 & 2924, Heidelberg, Western Cape". We have the following comments: 1. On the Map on Page 7, Figure 1 of the "Pre-application Draft Scoping Report" the proposed access route to be used during mining operations is depicted. This route traverses over our private property, Erf 1080, for approximately 100 meters on the road next to the railway line, subsequently we reject this for: 1.1 We have not given approval for this and are not planning to do so as the rights to this road have been well established since 1930 and possibly even before that, being an access route for the direct neighbours and normal farming operations. Movement of heavy trucks have never formed part of these rights. 1.2 Such operations will cause major dust contamination rendering our own farming operations nul and void.	1.1 As confirmed by Mr Paul Louw from the Hessequa Municipality (Manager: Town Planning) the road as referred to and which runs along the railway line and is proposed to be used as access road is a 20 foot Servitude road to which access cannot be denied. Refer to Appendix G5: HB Diagram of Erf 1080, as received from the municipality, indicating the 20F Servitude road along the railway line. Currently the road is also used by dairy trucks which is the same size than the proposed mining trucks. 1.2 As per the EMP requirements a dust monitoring programme is to be compiled and implemented during the mining operational phase. This dust	Appendix G5: Erf 1080 HB Diagram. Appendix H: EMP p) General Environmental

				monitoring programme will be implemented on the proposed mining site, surrounds and along the proposed access route gravel road section. If the dust monitoring programme results shows that excessive dust is being produced with significant negative impacts on surrounding residents and farming operations dust mitigation measures will be recommended and implemented to eliminate excessive dust production. These dust mitigation measures (if required) is to be recommended by the relevant specialist conducting the dust monitoring.	Management Guidelines to be implemented during the Proposed Mining Activities
			1.3 The noise associated with such trucks passing so closely to our houses will be unbearable.	1.3 As per EMP requirements mining operations are proposed to take place only during normal working hours weekday from 8:00 – 17:00 unless otherwise arranged with municipality and adjacent landowners. 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 and along the proposed access route to establish if the noise produced is within regulated requirements.	Appendix H: EMP p) General Environmental Management Guidelines to be implemented during the Proposed Mining Activities
			1.4 The road cannot carry such heavy traffic and it is too narrow for even smaller vehicles to pass each other, let alone heavy trucks.	1.4 As per EMP requirements the condition of the roads used are to be monitored by the applicant during operations and the necessary road maintenance measures must be implemented as/if required in consultation with the landowner and local municipality. All drivers are to adhere to speed limit and road safety regulations and will let other road	Appendix H: EMP p) General Environmental Management Guidelines to be implemented during the Proposed

				users pass safely as current heavy trucks (dairy trucks) do as and when necessary. 2. Any activities currently occurring on the proposed development properties is the responsibility of the landowner. The applicant (mining company) is not aware of nor part of any earthmoving activities taking place on these properties. As per the EMP requirements a buffer is to be maintained in-between the no-go areas and mining areas as proposed. The Environmental Control Officer must monitor that all mining activities remains outside of the no-go areas and if it is determined that mining activities impacted on any no-go areas the applicant will be responsible for rehabilitating the no-go areas to its previous state as before mining activities commenced.	Mining Activities Appendix H: EMP p) General Environmental Management Guidelines to be implemented during the Proposed Mining Activities
			2. On Map 6, Sheet No 2, the area directly to the west of Line M-N is depicted as a No-Go area. How is it then possible that there has been recent earthmoving activity in that area? What measures are therefore in place to ensure that there is no mining encroachment in No-Go areas? A response to these concerns will be appreciated.		
Local and District Municipalities	**X**				
Hessequa Municipality municipal manager on behalf of municipal council	**-**	Pre-application Scoping Report sent 25 January 2019. Comments on Pre-application Scoping Report received 01/07/2019	The following comments: 1. Page 10 refer to Eden District Municipality which should be Garden Route District Municipality. 2. Page 60 refers to Dust Monitoring or Fugitive dust control plan, kindly make recommendations within the said plan of how dust from materials that will be transported of site to the processing plant will be managed, especially if open carriages will be used. Also kindly make reference of the dominant wind direction/speed, distance to closest town and whether	1. Name change has been corrected. 2. Should environmental authorisation and mining right be obtained a dust monitoring programme must be compiled and implemented as per EMPr requirements. The dust monitoring programme to be compiled and implemented during the operational phase will include monitoring of all potential dust production sources including	Appendix H: EMP p) General Environmental Management Guidelines to be implemented during the Proposed

			this will have an impact (dust and general air quality) on the community.	transportation of mined materials to and from the mining properties and will make reference and take into account the dominant wind directions/speed etc. the results from the monitoring programme will determine whether additional dust management measures (other than what is currently recommended in the EMPr) is required to suppress excessive dust and then a dust management plan must be compiled and submitted to the Department of Environmental Affairs and development Planning air quality officer for approval before implementation to mitigate dust as and if required.	Mining Activities
			3. Page 61, who will do the vehicle inspections and frequency (ECO?), should be a suitably qualified person.	3. As per standard vehicle operating procedures of the mining company (Cape Bentonite Mine) each driver is responsible for inspecting his/her vehicle on a daily basis before operation. However should the ECO notice a fault in a vehicle during site visit/inspections the ECO must report this to the mine manager and note it in the ECO report for rectification. This is as per current EMPr requirements	Appendix H: EMP
			4. Page 65, kindly take cognisance that depending on the severity of the spill, the relevant authority should also be informed, per prescribed reporting formats and in accordance with section 30 of NEMA.	4. This is as per current EMPr requirements.	Appendix H: EMP – Incident Reporting
Garden Route District Municipality	-	Pre-application Scoping Report sent 25 January 2019. Comments	Goeiemore Johmandie Vind aangeheg n google earth kaart wat ons provinsiale paaie wys. Die rooi pad is Hoofpad 286. Dit is die enigste provinsiale pad wat deur U voorstel geraak word, en n amptelike aansoek sal aan provinsie	Draft Scoping Report to be provided to provincial department of roads and transport for comments. As according to information received	Appendix G5:

		on Pre-application Scoping Report received 01/07/2019	gerig moet word vir die voorgestelde bentonite myn. Die twee paaie wat na links en regs afdraai vanaf Hoofpad 286 is nie onder die beheer van hierdie Munisipaliteit of Provinsie nie, en is of privaat paaie of behoort aan Hessequa Munisipaliteit. Groete	from the Hessequa Municipality the relevant proposed access road along the railway tracks is a Servitude road.	Erf 1080 HB Diagram.
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA etc)	**X**				
Breede-Gouritz Catchment Management Agency (also commenting on behalf of the Department of Water and Sanitation)	**-**	Pre-application scoping report sent 25/01/2019 Comments on Pre-application Scoping Report received 18/02/2019	COMMENTS ON THE PROPOSED BENTONITE AND ZEOLITE MINING RIGHT APPLICATION ON ERVEN 1401, 1199 & 2924, HEIDELBERG, WESTERN CAPE The above mentioned report, dated 25 January 2019 has reference. The BGCMA has the following comments: 1. No operation is allowed within 100m of a water resource or 1:100 year flood line, whichever is the greatest. If the proposed activity falls within this area, authorisation needs to be put in place in terms of the National Water Act (NWA), 1998 (Act No 36 of 1998). This is to ensure that the riparian ecological status of the water resource will not be negatively impacted. 2. Please note that any development within 500m form the boundary of	1-2 All proposed mining activities are to take place on existing annually cultivated agricultural lands with no remaining watercourse characteristics on site i.e. drainage lines, seasonally wet soils, riparian vegetation etc. As described and assessed in the Ecological Baseline Assessment (Appendix E1) non-perennial secondary drainage lines with associated riparian/wetland characteristics and indigenous vegetation are present throughout the property adjacent to the proposed	Appendix E1: Ecological Baseline Assessment

			any wetland requires authorisation in terms of the National Water Act (NWA), 1998 (Act No. 36 of 1998).	mining areas due to the undulating topography of the property. Where no existing gravel roads exists as buffer areas an 8m buffer area in- between any excavations and the edge of indigenous vegetation/drainage line 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). Similar mining activities with associated mitigation measures were proposed and approved on other properties within the area on which BGCMA and DWS concluded that these applications did not constitute a water use authorisation. (Proof of these previous comments provided by Mr. John Roberts and Mr Makhosi Mthimkulu concerning similar applications in the area which have also been approved by DMR is available upon request).	
			3. No water maybe abstracted from any surface water body and groundwater unless authorised by this Agency.	3. No water abstraction is proposed.	
			4. Where solid waste disposal is to take place on site, ensure that only non-toxic materials which have no risk of polluting the groundwater, are buried in designated approved areas at	4. No solid waste disposal is to take place on site.	

			acceptable depth below ground level. 5. No surface, ground or storm water may be polluted as a result of any activities on the site. 6. The rehabilitation of the site must ensure that the final conditions of the site environmentally acceptable and that there will be no adverse long term effects on the surrounding environment especially the water resources. 7. Please note that all the requirements as stipulated in the National Water Act (NWA), 1998 (Act No 36 of 1998) must be adhered to. 8. Please note that this Agency reserves the right to amend and/or add to the comments made above in the light of subsequent information received.	5. Stormwater management measures to prevent surface, ground or stormwater pollution and erosion have been incorporated into the EMP and stormwater management plan. (Refer to Appendices H: EMP and G2: Stormwater Management Plan) 6. The site specific Closure/Rehabilitation Plan (Appendix F) aims to restore the proposed mining activities areas to its original agricultural potential and all affected areas must be effectively rehabilitated as and if required, and may not lead to adverse long term effects of the site and surrounds. 7. Compliance to all requirements as stipulated in the NWA 1998 (Act No 26 of 1998) is part of the EMP requirements. 8.Noted.	Appendix H: EMP and Appendix G2: Stormwater Management Plan Appendix F: Mine Closure/ Rehabilitation plan Appendix H: EMP
CapeNature	-	Pre-application scoping report sent 25/01/2019. No comments received to date 12/08/2019			
Heritage Western Cape	-	Notice of	NOTIFICATION OF INTENT TO		

		Intent to Develop submitted 30/11/2018– record of decision received 19/12/2018	DEVELOP: PROPOSED BENTONITE AND ZEOLITE MINE ON ERVEN 1401, 1199 & 2924, HEIDELBERG, HESSEQUA, SUBMITTED IN TERMS OF SECTION 38(8) OF THE NATIONAL HERITAGE RESOURECES ACT (ACT 25 OF 1999) CASE NUMBER: 18113001AS1130E The matter above has reference. Heritage Western Cape is in receipt of your application for the above matter received on 30 November 2018. This matter was discussed at the Heritage Officers meeting held on 13 December 2018. You are hereby notified that, since there is no reason to believe that the proposed mine will impact on heritage resources, no further action under Section 38 of the National Heritage Resources Act (Act 25 of 1999) is required. However, should any heritage resources, including evidence of grave 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. This letter does not exonerate the application from obtaining any necessary approval form any other applicable statutory authority. HWC reserves the right to request additional information as required.	Recommendation is as per current EMPr requirements.	Appendix H: EMP
Department of Agriculture	-	Pre-			

		application scoping report sent 25/01/2019. No comments received to date 12/08/2019			
Transnet	-	Pre-application scoping report sent 25/01/2019. No comments received to date 12/08/2019			
Communities	**X**				
Municipal Council to be consulted on behalf of Heidelberg Community	-	See above comments received from municipalities			
Dept. Land Affairs	**NA**				
Traditional Leaders	**NA**				
Western Cape Dept. Environmental Affairs and Development Planning	**X**				
Directorate: Waste Management	-	Pre-application scoping report sent 25/01/2019. Comments received 07/03/2019	**COMMENT ON THE PRE-APPLICATION SCOPING REPORT AND PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT FOR LISTED ACTIVITIES ASSOCIATED WITH THE BENTONITE AND ZEOLITE MINING RIGHT APPLICATION ON ERVEN NO. 1401, 1199 AND 2924, HEIDELBERG** 4. Directorate: Waste Management – Mr Raheem Dalwai		

			(Raheem.Dalwai@westerncape.gov.za; Tel: (021) 483 8011):		
			4.1 The DSR and/or EIA Report must include a map showing the location of the proposed mining right area in relation to the processing plant located on Erf No. 1412, Heidelberg.	4.1 A map of the proposed mining properties in relation to the processing plant on Erf No 1412 near Heidelberg and proposed access route has been included as Map 2.2 under Appendix B	Appendix B: Map 2.2
			4.2 The anticipated number of trucks per day, to and from the proposed mining right area to the processing plant, must be indicated. Please consult the district roads engineer (contact Mr Juan Prodehl, e-mail: Juan.Prodehl@westerncape.gov.za or tel.: (044) 272 6071) for comments on the application and an indication whether any traffic impact study is required.	4.2 Due to the current low volumes of traffic experienced along the proposed access route to and from the processing plant it is not expected that the proposed mining activities will have a significant impact on traffic conditions within the area. During the proposed mining operations a maximum amount of trips from the mining property to the processing plant will be 10 trips per truck per day with 5 trucks which equates to max 50 trips/day. But a **maximum of 150 loads will be hauled per month** and most of the time only one truck will be taking loads to the processing plant and the other trucks will remain on site for work. The mining company is mining 4-7 quarries within the Heidelberg and Riversdale areas at a time on different properties so they will not always be hauling from the same property every day. The Draft Scoping Report is to be provided to Mr Evan Burger (Department: Transport and Public Works) for comments on whether or not a traffic impact study is required.	-
			4.3 The PSR states that only Erven 1401, 1199 and 2924 are considered as feasible and reasonable locality alternatives as high quality bentonite deposits were discovered during previous prospecting	4.3 Refer to the Geological and Socio-Economic Motivation Report as available under Appendix G1. Mining of bentonite and zeolite materials is currently taking place on directly	Appendix G1: Geological and Socio-Economic Motivation

			activities. The DSR must include a copy of the prospecting right approval that was issued to the proponent for the undertaking of prospecting activities on the mentioned erven.	adjacent properties and from the mining done on adjacent properties and non-invasive prospecting investigations done on the applicable properties Erven 1401, 1199 and 2924 the proposed mining areas were determined. Non-invasive prospecting investigations done, for which prospecting right approval was not required, were foot surveys and a desktop study undertaken by the mine geologist on the proposed properties with permission from the landowner.	Report
			4.4 The DSR and/or EIA Report must indicate how the 30m quarries will be rehabilitated as mining is expected to lead to depressions in the landscape, and the quarries are expected to alter the geohydrological dynamics and groundwater quality of the receiving environment. This may require input from a geohydrologist.	4.4 Refer to Appendix F: Mine Closure/Rehabilitation Plan which indicates how proposed mining areas must and will be rehabilitated. No depressions may be left in the landscape after rehabilitation. Overburden material that are removed from the mining site during mining activities will be used to refill the mined areas and removed topsoil will be replaced and shaped according to surrounding contours to ensure that no depressions are left. Similar mining activities is taking place on the adjacent 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 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	Appendix F: Mine Closure/ Rehabilitaiton Plan Appendix H: EMP

				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 as per EMPr requirements 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.	
			4.5 The DWAF Best Practice Guideline for Stormwater Management, 2006 attached as Appendix G3 to the PSR, should not be construed as the storm water management plan for the proposed mining development but could be used as a guide in drafting the storm water management plan.	4.5 Appendix G3: DWAF Best Practice Guideline for Stormwater Management 2006 is intended as a good practise guideline for stormwater management to be implemented on site, a site specific stornwater management plan is provided under Appendix G2: Stormwater Management Plan	Appendix G2: Stormwater Management Plan
			4.6 Reference to “prospecting activities” throughout the PSR must be replaced with “mining activities”.	4.6 This has been corrected throughout the report.	
			6. Please direct all enquiries to the officials indicated in this correspondence should you require any clarity on any of the comments provided.	6. Noted	
			7. The Department reserves the right to revise or withdraw initial comments and request further information based on any information received.	7. Noted.	
Development/Land Management	-	Pre-application	**COMMENT ON THE PRE-APPLICATION SCOPING REPORT AND PLAN OF**		

		scoping report sent 25/01/2019. Comments received 07/03/2019	**STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT FOR LISTED ACTIVITIES ASSOCIATED WITH THE BENTONITE AND ZEOLITE MINING RIGHT APPLICATION ON ERVEN NO. 1401, 1199 AND 2924, HEIDELBERG** 1. The Pre-Application Scoping Report ("PSR") and Plan of Study for Environmental Impact Assessment ("EIA") dated January 2019 as received by the Department on 25 January 2019 (Cape Town office) and 30 January 2019 (George office) refers. Thank you for graciously allowing a time extension to submit comment on the PSR. 2. It is understood that the proponent intends to apply for a mining right to mine bentonite and zeolite on the above-mentioned properties, which consist mainly of transformed agricultural land. The total mining right area will be approximately 80ha whilst the extent of the quarry areas will be 16.84ha. Mining will be undertaken in three phases, starting with the removal and stockpiling of topsoil, followed by actual mining of the minerals and subsequent rehabilitation of the mined areas. Rehabilitation will be undertaken on an on-going basis. No new access roads are proposed, and no buildings will be constructed. Please find the Department's collated comments on the PSR and Draft Plan of Study for EIA. Please note that the Department will only provide comments on the Environmental Management Programme ("EMPr"), Closure/Rehabilitation Plan and Mine Social & Labour Plan during the EIA phase of the application.		

			3. Directorate: Development Management (Region 3) – Ms Shireen Pullen (Shireen.Pullen@westerncape.gov.za; Tel: (044) 805 8600):		
			3.1 It is noted from the layout plan submitted with the PSR that the Duiwenhoks River and floodplain areas are marked as “no-go” areas. Clear demarcation of these areas and environmental awareness training for mine workers are important to ensure that these areas remain undisturbed.	3.1 Noted, this is as per current EMPr requirements.	Appendix H: EMP
			3.2 The areas referred to in paragraph 3.1 above are also classified as Critical Biodiversity Areas and Ecological Support Areas, which means that they are sensitive to biophysical disturbance. It is therefore crucial that appropriate rehabilitation be undertaken during and after completion of mining activities.	3.2 Noted, refer to Appendix F: Mine Closure/Rehabilitation Plan which indicates proposed rehabilitation measures.	Appendix F: Mine Closure/ Rehabilitation Plan
			3.3 It is noted that the Baseline Ecological Assessment was undertaken by the environmental assessment practitioner (“EAP”) responsible for undertaking the EIA process. Please note that this specialist report and any updates thereto must contain a declaration of independence to ensure that the specialist inputs are objective in terms of the ecological attributes of the site.	3.3 Mrs Johmandie Pienaar from Eco Impact is responsible for undertaking the EIA process, Mr N Hanekom from Eco Impact was responsible for compiling the Baseline Ecological Assessment. Signed declaration of independence from Mr N Hanekom is included on page 27 of the Ecological Baseline Assessment under Appendix E1.	Appendix E1: Ecological Baseline Assessment
			3.4 Please further note that all specialist reports must comply with Appendix 6 of the EIA Regulations, 2014 (as amended). Regulation 1(1)(a)(ii) of Appendix 6 states that all specialist reports must contain details of the expertise of that specialist to compile a specialist report, including a curriculum vitae. Please ensure that all	3.4 A copy of Mr Nicolaas Hanekom’s CV has been included under Appendix E1: Ecological Baseline Assessment. All specialist assessment to be conducted during EIA phase to adhere to Appendix g of the EIA Regulation, 2014 (as amended).	Appendix E1: Ecological Baseline Assessment

			the specialist reports submitted with the EIA Report comply with this requirement. 3.5 Per the Plan of Study for EIA, only the impacts on the ecological features will be assessed during the EIA phase. It is not clear what assessments will be undertaken to assess the anticipated visual, traffic, groundwater pollution and dust impacts. Only mitigation measures have been proposed to avoid, reverse or mitigate these potential impacts, based on the assumption that these impacts are not deemed significant.	3.5 Plan of Study for the EIA has been updated, currently only proposed specialist assessment is socio-economic impact inputs to be obtained. Requirement for visual impact assessment has been deemed not necessary due to the proposed site not being visible along any significant tourists routes and the proposed mining being in line with the current visual landscape of the surrounding area due to existing and adjacent similar mining areas being present. Requirement for traffic impact assessment to be confirmed by Mr Evan Burger (Department: Transport and Public Works) whom will receive a copy of the Draft Scoping Report for comments. Potential impacts on groundwater pollution and dust impacts have been assessed by the EAP; in terms of potential impacts on groundwater it has been determined that similar mining activities is taking place on the adjacent 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 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 as per EMPr requirements 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. In terms of potential dust impacts this can only be successfully assessed during the actual operational phase therefore the following is recommended and as per current EMPr requirmentents. Should environmental authorisation and mining right be obtained a dust monitoring programme must be compiled and implemented as per EMPr requirements. The dust monitoring programme to be compiled and implemented during the operational phase will include monitoring of all potential dust production sources including transportation of mined materials to and from the mining properties and will make reference and take into account the dominant wind directions/speed etc. the results from the monitoring programme will determine whether additional dust management measures (other than what is currently recommended in the EMPr) is required to suppress excessive dust and then a dust management plan must be	

				compiled and submitted to the Department of Environmental Affairs and development Planning air quality officer for approval before implementation to mitigate dust as and if required.	
			3.6 Considering that the quarries will have a maximum depth of 30m, it is unclear how the determination was made that no visual impact assessment is required. This Department's Guideline for Involving Visual and Aesthetic Specialists in the EIA Process dated June 2005 recommends the various levels of visual assessment required for specific types of developments. Said guideline identifies quarries and mining activities with related processing plants as a Category 5 development. Category 5 developments in environments categorised as "areas or routes of low scenic, cultural, historical significance/ disturbed" are expected to result in a high visual impact whereas Category 5 developments in environments categorised as "disturbed or degraded sites/ run-down urban areas/ wasteland" are expected to result in a moderate visual impact. 3.6.1 The category of issues associated with high visual impacts are indicated as having a potential intrusion on protected landscapes or scenic resources; a noticeable change in the visual character of the area; and establishing a new precedent for development in the area. 3.6.2 The category of issues associated with moderate visual impacts are indicated as having potentially some effect on protected landscapes or scenic resources; having some change in the	3.6.1 – 3.6.3 Various similar mining sites occur within the area at Heidelberg for which no visual impact assessment was previously deemed necessary as these sites (and the proposed) is not visible from a significant tourist route and will be in line with similar landscape features currently visible within the area i.e. the closest operational bentonite and zeolite mining site is located directly adjacent to the southern bourndary of the proposed mining right property Erf 1401. And is visible from most of the same vantage points as the proposed mining areas will be. Proposed mining activities is also temporary and will be done in phases, once mining activities have ceased the impacted areas will be rehabilitated and returned to current land use which is cultivated agricultural land. A new precedent for development/mining will also not be established as several similar mines already occurs within close proximity to the proposed sites. No protected landscape will be impacted upon nor a scenic resources as it is proposed on existing annually cultivated agricultural land. Similar bentonite and zeolite mining activities have been present within the applicable areas for the last 35 years and the surrounding communities is therefore accustomed to this temporary visual mining landscapes.	

			visual character of the area; and introducing new development or adding to existing development in the area. 3.6.3 The Guideline for Involving Visual and Aesthetic Specialists in the EIA Process recommends a Level 3 Assessment for developments where a moderate visual impact is expected and a Level 4 Assessment for developments where a high visual impact is expected. The EAP is advised to consult the Guideline for Involving Visual and Aesthetic Specialists in the EIA Process to determine which level of assessment is required, and to amend the Plan of Study for EIA to include the appointment of a suitably qualified and experienced visual specialist to undertake the necessary level of visual impact assessment. 3.7 The PSR indicates that the proposed development is proposed on "completely transformed and cultivated agricultural land, previously and continually impacted upon by ongoing cultivation and heavy livestock grazing". The Provincial Department of Agriculture must be consulted whether an Agricultural Impact Assessment is required and if so, the Plan of Study for EIA must be amended to include the required Agricultural Impact Assessment. 3.8 Further, the draft Terms of Reference ("ToR") for the ecological baseline assessment was mainly informed by CapeNature's ToR for biodiversity specialists and exclude aspects/issues raised by interested and affected parties ("I&APs") during the public participation process ("PPP") for the proposed development. Any comments raised by	3.7 Pre-application Draft Scoping report has been submitted to the Provincial Department of Agriculture for comments, thus far not comments has been received, but the Draft Scoping is again to be provided to them for consideration and indication of whether they require a Agricultural Impact Assessment to be conducted. 3.8 Any issues raised by I&APs during the PPP will be considered and if required addressed by relevant specialists during the EIA process.	

			I&APs during the PPP must be considered and where relevant, the Plan of Study for EIA must be amended to include any specialist studies where significant impacts are identified by I&APs.		
			3.9 Due to the scale of the proposed development and the anticipated life of mine (10 years), the need and desirability of the proposed development must be informed by input from a socio-economic specialist.	3.9 Plan of Study in the draft Scoping Report has been amended to include obtaining input from a socio-economic specialist during the EIA phase on the proposed need & desirability of the proposed mining activities.	
			3.10 Although it is motivated that areas sensitive to physical disturbance will be avoided, this Directorate remains concerned about the cumulative extent of the anticipated negative ecological impacts on the surrounding watercourses. It is therefore important that the anticipated cumulative impacts be identified and described in the Draft Scoping Report ("DSR") and assessed during the EIA phase; or that at least a description of the anticipated cumulative impacts be provided if they are deemed to be insignificant.	3.10 As per current similar mining activities taking place within the region the mitigation measures as proposed to protect sensitive environmental features such as surrounding non-perennial watercourses have been proven effective in protecting these watercourses and their associated hydrological functioning against potential direct and cumulative impacts which may arise from the proposed mining activities. As per current EMPr requirements should any proposed mitigation measures be proven not be affective during the mining operational phase the ECO is to record these findings and provide additional mitigation/preventative measures to be implemented to ensure that all negative environmental impacts are managed effectively and impacted site rehabilitated to its previous state.	Appendix H: EMP Appendix F: Closure/ Rehabilitation Plan
			3.11 The EMPr to be submitted with the EIA Report must comply with all the relevant information requirements stipulated in Appendix 4 of the EIA Regulations, 2014 (as amended). The EMPr must also include an alien invasive	3.11 The EMPr to be submitted with the EIA Report is to comply with all the relevant requirements stipulated in Appendix 4 of the EIA Regulations, 2014 (as amended). Alien vegetation management is to be implemented	Appendix H: EMP

			management plan to address the removal of alien vegetation along the floodplain areas.	within relevant impacted mining activities areas as indicated in the EMPr requirements, but it will remain the responsibility of the landowner to conduct alien vegetation clearing outside of the proposed mining activities areas as per legislative requirements.	
			3.12 The Closure/Rehabilitation Plan must be amended to clearly articulate the financial provision that will be made for each stage/phase of rehabilitation. Please further take note of the following aspects that should also be included in the environmental cost estimates for rehabilitation: 3.12.1 Where applicable, seeds should be harvested prior to the commencement of mining activities, and indigenous vegetation (or suitable agricultural crops) should be reintroduced during the rehabilitation process; 3.12.2 Where re-vegetation work will be done on the disturbed areas, and if no agricultural activities are anticipated, only locally indigenous vegetation that occur naturally in the immediate area must be used, and no alien plant species must be introduced into the area; 3.12.3 Remediation and management of latent or residual environmental impacts, which may become known in the future must be addressed; and 3.12.4 Roles and responsibilities for rehabilitation should be included in the rehabilitation plan.	3.12.1-3.12.4 Because rehabilitation takes place in accordance with mining phases as described in the Mine Closure/Rehabilitation Plan is ongoing until the rehabilitated site has been cultivated/replanted by the landowner or a closure certificate has been obtained from the DMR (whichever comes first) the proposed financial provision for rehabilitation cannot be divided into rehabilitation phases. The mine closure/rehabilitation plan clearly states 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 or parts of the impacted mining areas, except for the areas which the landowner plants crops after rehabilitation. In other words once the landowner plants the first crops on the rehabilitated areas the landowner takes further responsibility for impact maintenance of the cultivated areas. It also states that the expected rehabilitation costs of R 3 590 018.50 is only an estimate, and that 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 actual final costs.	Appendix F: Mine Closure/ Rehabilitation Plan

			3.13 Due to the proximity to watercourses and the floodplain areas, erosion-preventative measures must be implemented to mitigate potential erosion of loose soil, both from vehicle paths and the mined areas. 6. Please direct all enquiries to the officials indicated in this correspondence should you require any clarity on any of the comments provided. 7. The Department reserves the right to revise or withdraw initial comments and request further information based on any information received.	3.13 Erosion preventative measures is proposed within the EMPr and Stormwater Management Plan and is to be implemented on all proposed mining activities areas during mining operations and rehabilitation. 6. Noted 7. Noted	Appendix H: EMP Appendix G2: Stormwater Management Plan Appendix G3: Stormwater Management Guidelines.
Pollution and Chemical Management	-	Pre-application scoping report sent 25/01/2019. No comments received to date 12/08/2019			
Directorate: Air Quality Management	-	Pre-application scoping report sent 25/01/2019. Comments received 07/03/2019	**COMMENT ON THE PRE-APPLICATION SCOPING REPORT AND PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT FOR LISTED ACTIVITIES ASSOCIATED WITH THE BENTONITE AND ZEOLITE MINING RIGHT APPLICATION ON ERVEN NO. 1401, 1199 AND 2924, HEIDELBERG** 5. Directorate: Air Quality Management – Mr Peter Harmse (Peter.Harmse@westerncape.gov.za; Tel:	- -	

			(021) 483 4383): 5.1 Dust generated during the construction and operational phases must comply with the National Dust Control Regulations (Government Notice No. R. 827 of 1 November 2013) promulgated in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004). The cumulative impacts of the proposed mine, the proposed bentonite and zeolite mine on Erf No. 2224, Heidelberg and the existing, surrounding bentonite and zeolite mines, may require the undertaking of a dust impact assessment. 5.2 It is not clear whether any blasting will be required to access the bentonite and zeolite. The DSR must indicate all potential mining methods and anticipated impacts. Noise generated during the construction and operation phases must comply with the Western Cape Noise Control Regulations (Provincial Notice 200/2013) of 20 June 2013. 6. Please direct all enquiries to the officials indicated in this correspondence should you require any clarity on any of	5.1 Should environmental authorisation and mining right be obtained a dust monitoring programme must be compiled and implemented as per EMPr requirements. The dust monitoring programme to be compiled and implemented during the operational phase will include monitoring of all potential dust production sources including transportation of mined materials to and from the mining properties and will make reference and take into account the dominant wind directions/speed etc. the results from the monitoring programme will determine whether additional dust management measures (other than what is currently recommended in the EMPr) is required to suppress excessive dust and then a dust management plan must be compiled and submitted to the Department of Environmental Affairs and development Planning air quality officer for approval before implementation to mitigate dust as and if required. 5.2 All proposed mining methods is described under (d) (ii) *Description of activities to be undertaken*, of the Draft Scoping report. No blasting will be required nor is proposed. Recommendations relating to noise generated is as per current EMPr requirements. 6. Noted.	Appendix H: EMP p) General Environmental Management Guidelines to be implemented during the Proposed Mining Activities Appendix H: EMP

			the comments provided. 7. The Department reserves the right to revise or withdraw initial comments and request further information based on any information received.	 7. Noted	
Directorate: Planning					
Other Competent Authorities affected	**NA**				
OTHER AFFECTED PARTIES					
NA					
INTERESTED PARTIES					
Mr Filip Verheyden Thorn Tree River Farm		Comments received 08/01/2019 Comments received 27/01/2019	Dear Miss Pienaar, Thank you for your email with the initial info and maps concerning the mining right application on properties 1401, 1199 and 2924 in Heidelberg, WC. We have received this information in good order. We hereby wish to register as affected party in this matter. The mining application concerns us directly because it applies to the properties of our neighbour across the road. We already want to mention that we as one party but also together with our neighbours will put together a list of reasons why we are opposing the mining. Dear Miss Pienaar, Thank you for your email and for sending us the Pre-Application Draft Scoping Report regarding the mining right application for erven 1401, 1199 and 2924. We have taken notice of the date of 25 February 2019 being the deadline for commenting.	Confirmation of registration as interested and affected party sent 08/01/2019 Objection to the proposed mining activities noted.	

		We can already let you know that we strongly oppose to this mining activity, since it directly affects the quality of life of at least ten families all situated within roughly 1 kilometer of the mining sites, including our private and professional residence. We will send you our response in due course.	Objection to proposed mining activities noted. No further comments received to date 14/08/2019	
Mrs Elizabeth Peter-Borman	Comments received on 08/01/2019	Good day Johmandie With regards to the information below on proposed mining right application on properties 1401, 1199 and 2924, we would like to register as an interested and affected party. Please could you keep us up to date on developments in this process? We would also like to let you know that the farmer, Kobus Lazenby, is no longer displaying the notice of this process on his fence, it has been lying in the road and on his field for 3 days. We assume that it needs to be displayed for a certain number of days and as such he is not adhering to due process.	Email reply as sent form EAP on 10/01/2019 Good day Liz We hereby confirm that you have been registered as an interested and affected party and will receive all information on the proposed project as it becomes available for commenting. We as the environmental consultants are responsible for displaying the notice at the relevant property (not the landowner) and after being informed of the situation I was on site yesterday to repost the site notice at the farm entrance and look for the broken-off notice to retrieve it but could unfortunately not find it. Unfortunately the notices usually gets ripped-off by people walking by before the 30 day display date is over, but we have to display the notice at the proposed site entrance as such. According to the legal requirements in terms of notices we have to put up the notice at the site boundary and take a picture as proof thereof, we have to send notices to directly bordering property owners via registered mail and place a notice in the local newspaper which is all being	

			done. Anybody who wishes to register as interested and affected parties are welcome to do so, and we will keep them informed of the environmental impact assessment progress.	

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 more flat lying areas.

Several non-perennial drainage lines with associated man-made and natural dams occurs throughout the property due to the undulating topography which drains mainly towards the R322 and which eventually feeds the Duiwenhoks tributary within Heidelberg. 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

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. Bentonite occurs as three main horizons in the area, each horizon comprising several layers in the Kirkwood Formation, overlain by conglomerate and sandstone of the Buffelskloof Formation. The Grahamstone Formation silcrete occurs at the top of the sequence in some places, whereas the Enon conglomerate forms the floor.

As according to Mucina and Rutherford (2006) the remnants of natural vegetation occurring on this property are classified as Eastern Ruens Shale Renosterveld (*Critically Endangered*) and Cape Lowland Alluvial Vegetation (*Critically Endangered*) as part of the Fynbos biome.

Most of the indigenous vegetation remnants associated with the non-perennial drainage lines along the steep slopes and gorges surrounding the proposed mining area as surveyed have been identified as terrestrial and aquatic Critical Biodiversity Areas. The proposed mining activities will not have an impact on any of these CBAs and no indigenous vegetation remains on the proposed mining activities areas.

Some of the proposed mining activities areas as assessed partially fall within mapped drainage line/aquatic Ecological Support Areas (Res) *Category 1: ESA 2 Restore from other land use*. The mapped ESA 2 areas are not essential for meeting biodiversity targets, but play an important role in supporting the functioning of the CBAs and are important in maintaining ecosystem services i.e. drainage systems. The objectives for these areas are to restore and/or manage to minimise impacts on ecological processes. The mining activities are however only proposed on completely transformed and annually cultivated agricultural land and the restorations of ESA 2 areas which have been mapped on these areas will therefore not be feasible or reasonable as cultivation of these areas will in any case proceed as is after the proposed mining activities have been completed. With the implementation of proper buffer and stormwater management measures as proposed the mining activities will not have a significant

detrimental impact on the current ecological processes as associated with the mapped ESAs, CBAs and NFEPAS.

Also refer to the Ecological Baseline Assessment as done by Eco Impact dated June 2018 under Appendix E1.

Socio-Economic Characteristics

The communities of Heidelberg and Riversdale whom directly benefits from the Cape Bentonite Mine operations is located within the Hessequa Municipality jurisdiction as part of the Eden District Municipality.

In 2011 Hessequa has one of the smaller populations in the Eden District consisting of 52 642 of Eden District's 574 265 people. Hessequa's population however grew at a slow annual average rate of 1.8 per cent between 2001 and 2011, below the District (2.4 per cent) and provincial rates. Hessequa's population growth rate over the 2001 to 2011 period was also one of the slowest in the District, only to Kannaland (0.3 per cent) and Oudtshoorn (1.3 per cent) with lower growth within the Eden District.

According to forecasts by the Department of Social Development, Hessequa Municipality's population will continue to grow with the additional of approximately 1 650 people from 53 511 to 55 164 people, between 2013 and 2017.

Hessequa's population age distribution in 2013 was as follows: Children (aged 0 - 14 years) 23.9 per cent, Working age population (aged 15 - 64 years) 64.4 per cent and the Aged (aged 65 years and above) 11.6 per cent.

Learner enrolment in Hessequa has increased from 8 475 in 2013 to 8 572 in 2014. For the same period, the average learner-teacher ratio has increased just slightly from 24.3 for 2013 to 26.6 in 2014. Hessequa Municipality's dropout rates are very high, with a dropout rate of 33.9 in 2012 and a rate for dropouts in the FET phase in 2013 of 38.2.

In the 2013 matric examinations, 96.5 per cent of Hessequa Municipality's matriculants passed; which is the highest matric pass rate in the District.

In 2014, there are 82 healthcare facilities operational in the Eden District, of which 42 are fixed primary healthcare structures, with 6 district and 1 regional hospital. Of the total number of facilities, 10 are situated in Hessequa, including 4 fixed clinics, 2 satellite and 3 mobile clinics. Hessequa also has one district hospital.

In terms of reported HIV patients in Hessequa the uptake of Antiretroviral treatment (ART) has gradually increased over the past years. Keeping with this trend, 2014 figures have increased with an additional 2 386 in the District, of which 118 was in Hessequa.

Tuberculosis (TB) patient numbers in Hessequa has, over the past year, fallen just slightly, from 343 in 2012/13 to 333 in 2013/14, administered from 10 Hessequa facilities.

In 2014, the full immunisation rate for the Eden District was 86.3, with Hessequa virtually the same at 86.4.

The number of malnourished children under five years in the Western Cape in 2014 was 1 087. For the Eden District it was 168 of which 7 were in Hessequa. Hessequa had one of the lower

malnutrition rates in the District, their rate of 175 per 100 000 was lower than the District rate of 319, as well as lower than the Province's 180.

Of the 730 deliveries to women under 18 years in the District, 61 deliveries were in Hessequa. Although the Hessequa numbers seem relatively low compared with other municipalities, the delivery rate was one of the higher ones in the District, with a rate of 10.3 compared to the District average of 7.9.

In 2010, the proportion of people in Hessequa living in poverty in 2010 was third lowest (16.0 per cent) in the District, after Mossel Bay (12.4 per cent) and Knysna (15.0 per cent). Of the Eden local municipalities, Oudtshoorn (34.1 per cent) had the highest percentage of people in poverty.

The per capita GDPR in the Western Cape Province was estimated at R43 557 per annum in 2011 (2005 prices). Per capita GDPR for the Eden District of R32 956 was thus well below the provincial average with Hessequa's per capita GDPR (R19 702) the lowest of all the local municipalities in the District. Mossel Bay (R55 019) had the highest per capita GDPR in the region, followed by Knysna (R34 791) and Bitou (R31 501).

In 2011 the largest proportion of households in Hessequa earned between R9 601 and R307 600 per annum. A similar pattern can be seen for the other local municipalities in the District. Although lower than some of the other local municipalities, it is concerning that a significant proportion of households in Hessequa have no income.

Household income for Hessequa in 2011:
7.9% (None income); 1.7% (R1 - R4 800); 3.0% (R4 801 - R9 600); 14.1% (R9 601 - R19 600); 22.5% (R19 601 - R38 200); 22.5% (R38 201 - R76 400); 14.3% (R76 401 - R153 800); 9.0% (R153 801 - R307 600); 3.6% (R307 601 - R614 400); 0.9% (R614 001 - R1 228 800); 0.3% (R1 228 801 - R2 457 600); 0.3% (R2 457 601+)

With the exception of drug-related crime, crime levels in Hessequa have remained relatively stable over the past number of years. This spike in drug-related crime is concerning and appears to be at odds with Hessequa's generally low crime levels. In more recent years the area has seen an increase in burglaries at residential premises. It should however be noted that drug-related crime and driving under the influence of alcohol or drugs are heavily dependent on police for detection and increases in these recorded crimes are likely to be from a combination of an increase in the level of crime and an increase in level of policing in the area.

Access to potable water in Hessequa is good (97.5 per cent), above the District average of 95.2 per cent in 2013. In 2013, an estimated 90.4 per cent of households in Hessequa had access to basic sanitation services. This was above the District average of 85.1 per cent; which placed Hessequa second after Mossel Bay (90.5 per cent) in terms of household access to basic sanitation services. Household electricity access levels are generally good across the District, with Hessequa Municipality's 2013 household access level at 94.8 per cent, highest in the District. At 78.9 per cent in 2013, Hessequa Municipality's household access level to refuse removal services was significantly below the District average of 86.5 per cent. It has the third lowest access level in the region, after Kannaland's 66.0 per cent and Oudtshoorn's 78.0 per cent; it falls well short of Knysna's 93.0 per cent and Mossel Bay's 92.7 per cent.

It is estimated that in 2013, 94.4 per cent of households in Hessequa had access to formal housing. This is second highest in the District, after Kannaland's 96.8 per cent. Bitou (72.9 per cent) has the lowest proportion of households with access to formal housing.

The Eden District regional economy generated 8.1 per cent of the Western Cape GDPR during 2013, i.e. R35 billion of the total R431 billion. Hessequa is the 22nd ranking non-metro municipality according to growth and size (between 2000 and 2013), its percentage contribution to real GDPR growth and size being 0.4 per cent. According to the Growth Potential of Towns Study, the towns in Hessequa are classified mostly as having medium growth potential, only Stilbaai have high potential while socio economic need is seen as being very low to medium. Overall, growth in Hessequa for the 2000 to 2013 period was slower than that of the Eden District region. With the exception of Knysna, Bitou and Mossel Bay, Agriculture growth for the 2000 to 2013 period was relatively slow across the Eden District; in Hessequa, Agriculture's performance was particularly poor, with the sector contracting by 1.8 per cent per annum. While Manufacturing growth did better than that of Agriculture across the region, Hessequa's 2.7 per cent growth over the 2000 to 2013 period in Manufacturing was well below the District's 4.4 per cent. Hessequa's Services growth of 2.1 per cent was also below that of the District's 5.4 per cent.

In 2011, The Western Cape unemployment rate was 21.6 per cent, significantly higher than Hessequa's 14.1 per cent, which was the lowest unemployment rate in the District. As with all the other local municipalities in the District, at 27.6 per cent, Hessequa's youth unemployment rate (18.9 per cent) is a few percentage points higher than the overall unemployment rate. Overall, over the 2000 to 2013 period, the District has experienced an expansion in its employment, due to the net employment creation in the region's services industries (38 600) even though the Agriculture (-11 650) and Manufacturing (-4 400) sectors shed large numbers of jobs. The largest number of job created was recorded in Mossel Bay and Bitou Municipalities. With the services sector generally requiring a high skill level, there appears to be a trend towards employing higher skilled persons.

In the Hessequa area, the overall job losses over the 2000 - 2013 period can also be seen in all sectors, i.e. in Agriculture (-3 320), Manufacturing (-380) as well as in Services (-630). Because job losses were experience across all, Hessequa experienced overall job losses for the 2000 to 2013 period.

Overall Hessequa Municipality has shown limited improvement over the years with regard to its socio-economic environment as discussed above. The socio-economic profile illustrates how the socio-economic environment impacts on the standard of living for people within the Municipality. Low population growth has partially concealed the relatively poor overall economic performance of the area since 2000. According to Census information, in 2011, 7.9 per cent of households had no income. Although poverty levels are still relatively high, they have decreased over time. A decrease in poverty levels will in turn translates into decreased dependence on indigent support that the Municipality provides. Other areas where the Municipality still experiences challenges include education, where literacy rates are relatively low and dropout rates are high. Unemployment remains a challenge and has even increased slightly between 2001 and 2011 with the unemployment rate amongst the youth even higher than the generally rate. Most towns in Hessequa was ranked as having only medium growth potential while socio-economic needs were generally low. Only Stilbaai in the Hessequa municipal region had high growth potential. The Municipality should attempt to take advantage of at least this one area while also seeking further potential in some of the other areas, potentially looking at opportunities in the agricultural/agro-processing sector.

Information obtained from the Socio-economic Profile of Hessequa Municipality for 2014 (Western Cape Government Provincial Treasury)

Cultural Characteristics
See Notice of Intent to Develop as submitted to Heritage Western Cape under Appendix E2. Heritage Western Cape concluded that there is no reason to believe that the proposed mine will impact on heritage resources, no further action sunder Section 38 of the National Heritage Resources Act (Act 25 of 1999) is required.

However, 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.

(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 is located on completely transformed 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 X**	~~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 X**~~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 quarry areas, drainage lines due to the undulating nature of the property, man-made farm dams and natural dams. As well as a railway line which transects the property and a “koppie” to the southeast.

(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 – 1:4~~	~~Steeper than 1:4~~

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~~

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.

The secondary non-perennial drainage lines with seasonal wetland characteristics adjacent to the proposed mining area are storm water run-off drainage lines as formed within undulating topography i.e. “klowe” and only “flows” temporarily during heavy rains and flow stops immediately after rain once storm water has flowed to lower lying areas.

Small mainly man-made dams are also located on the property along the drainage line areas.

Also refer to Ecological Baseline Assessment as done by Eco Impact under Appendix E1.

None of the drainage lines nor their amount of runoff produced during heavy rains will be

physically impacted upon by any mining activities and sufficient buffer areas have been recommended alongside the drainage lines as according to the edge of the cultivated areas which also borders on the drainage lines.

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)**	Sensitive environmental features that were identified on the properties include natural and near natural indigenous vegetation remnants which exists throughout the properties and consists of Critically Endangered - Eastern Ruens Shale Renosterveld and Cape Lowland Alluvial Vegetation also identified as Terrestrial Critical Biodiversity Areas ("CBA") as according to the Western Cape Biodiversity Plan ("WCDP") 2017. These remnants of indigenous vegetation areas are also associated with secondary and primary non-perennial drainage lines and man-made dams with associated wetland characteristics, also classified as Aquatic Critical Biodiversity and Ecological Support Areas ("ESA and National Freshwater Ecosystems Priority Areas ("NFEPA"). Refer to Maps 4-5. Some of the proposed mining activities areas as assessed partially fall within mapped drainage line/aquatic Ecological Support Areas (Res) *Category 1: ESA 2 Restore from other land use*. The mapped ESA 2 areas are not essential for meeting biodiversity targets, but play an important role in supporting the

				functioning of the CBAs and are important in maintaining ecosystem services i.e. drainage systems. The objectives for these areas are to restore and/or manage to minimise impacts on ecological processes. The mining activities are however only proposed on completely transformed and annually cultivated agricultural land and the restorations of ESA 2 areas which have been mapped on these areas will therefore not be feasible or reasonable as cultivation of these areas will in any case proceed as is after the proposed mining activities have been completed. With the implementation of proper buffer and stormwater management measures as proposed the mining activities will not have a significant detrimental impact on the current ecological processes as associated with the mapped ESAs, CBAs and NFEPAS.

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 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.

<table>
<tr><th colspan="2">Terrestrial Ecosystems</th><th colspan="6">Aquatic Ecosystems</th></tr>
<tr><td rowspan="5">Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)</td><td>~~Critical~~</td><td rowspan="2" colspan="3">Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)</td><td rowspan="2" colspan="2">Estuary</td><td rowspan="2" colspan="2">Coastline</td></tr>
<tr><td>~~Endangered~~</td></tr>
<tr><td>~~Vulnerable~~</td><td colspan="3" rowspan="2"></td><td colspan="2" rowspan="2"></td><td colspan="2" rowspan="2"></td></tr>
<tr><td rowspan="2">~~Least/Not Threatened~~</td></tr>
<tr><td>~~YES~~</td><td>**NO**</td><td>~~UNSURE~~</td><td>~~YES~~</td><td>**NO**</td><td>~~YES~~</td><td>**NO**</td></tr>
</table>

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)

Sensitive environmental features that were identified on the properties include natural and near natural indigenous vegetation remnants which exists throughout the properties and consists of Critically Endangered - Eastern Ruens Shale Renosterveld and Cape Lowland Alluvial Vegetation also identified as Terrestrial Critical Biodiversity Areas ("CBA") as according to the Western Cape Biodiversity Plan ("WCDP") 2017. These remnants of indigenous vegetation areas are also associated with secondary and primary non-perennial drainage lines and man-made dams with associated wetland characteristics, also classified as Aquatic Critical Biodiversity and Ecological Support Areas ("ESA and National Freshwater Ecosystems Priority Areas ("NFEPA").

Some of the proposed mining activities areas as assessed partially fall within mapped drainage line/aquatic Ecological Support Areas (Res) *Category 1: ESA 2 Restore from other land use*. The mapped ESA 2 areas are not essential for meeting biodiversity targets, but play an important role in supporting the functioning of the CBAs and are important in maintaining ecosystem services i.e. drainage systems. The objectives for these areas are to restore and/or manage to minimise impacts on ecological processes. The mining activities are however only proposed on completely transformed and annually cultivated agricultural land and the restorations of ESA 2 areas which have been mapped on these areas will therefore not be feasible or reasonable as cultivation of these areas will in any case proceed as is after the proposed mining activities have been completed. With the implementation of proper buffer and stormwater management measures as proposed the mining activities will not have a significant detrimental impact on the current ecological processes as associated with the mapped ESAs, CBAs and NFEPAS.

Although CBA's and ESA's have been identified throughout the property the mining activities sites are only proposed on cultivated agricultural lands on which no natural areas remain.

From the survey conducted it was concluded that the proposed mining activities areas are located on completely transformed and cultivated agricultural land, previously and continually impacted upon by cultivation and heavy livestock grazing. The proposed mining sites are therefore considered suitable for bentonite and zeolite mining in terms of avoiding potential detrimental environmental impacts and the potential impacts identified would be adequately

managed and effectively mitigated through the implementation the mine Environmental Management Programme (EMP). It was also concluded that the proposed mining activities will not have a significant negative environmental impact mainly because the proposed mining activities areas are all located on completely transformed cultivated agricultural land and the socio-economic benefits of the proposed bentonite and zeolite mining outweigh the potential negative impact on the environment if specialist and EMP recommendations are effectively implemented.

Also refer to Ecological Baseline Assessments as done by Eco Impact dated June 2018 under Appendix E1.

(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 were and can be mitigated

(Provide a list of the potential impacts identified of the activities described in the initial site layout that were and 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 had or may cause irreplaceable loss of resources, and can be reversed, 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	20
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 Environment	Risk of negative visual aesthetics experienced by public due to scarring, scale, location in sensitive environment, dumping and/ or abandonment of plant	1	1	
8		Risk of instability, slippage and failure of re-vegetation due to steep slopes and/ or erosion	1	2	
9		Risk of sedimentation to watercourse or water bodies due to steep slope and/ or erosion	1	2	
10		Risk of environmental degradation due to illegal dumping, unplanned or uncontrolled spoiling and/ or *ad hoc* mining	1	3	
11		Risk of spread of alien/ invasive vegetation due to disturbance caused by mining	1	3	
12		Risk of spreading fire due to inadequate fire planning and implementation	1	4	
13		Risk of nuisance to flora and fauna due to noise and dust generation	1	2	
14	Built Environment	Risk of nuisance to neighbours and lands due to dust and noise generation	1	2	
15		Risk of direct and indirect damage to heritage resources/ significance due to poor planning and implementation of mining plan	1	2	
16		Risk of loss of access to property due to operation of heavy plant	0	0	
17		Risk of permanent loss of land use potential due to poor operation and abandonment of mining area	1	2	

18		Risk of damage to service infrastructure due to proximity of services	0	0																						
19	Economic	Risk of increased operation/ rehabilitation costs and lost opportunity due to poor operation	1	2																						
20	Legal and Authorisation	Risk of legal action due to the failure to comply with the requirements of the Mine Health	1	2																						
21		Risk of prosecution or stop works order from authority due to lack of authorisation	1	2																						
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	1	2																						
23		Risk of legal action or compensation claim by third party due to irresponsible operation/abandonment of the mining area	1	2																						
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	1	2																						
25		Risk of unregulated removal of materials by unauthorised third party due to uncontrolled access	1	2																						

26		Risk of uncontrolled development of mining area, with attendant risks, due to formally shared liability Act	1	2	[redacted]																			

Impacts that may result from mining activities proposed on 16.84Ha area <u>operational phase</u> (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 remaining proposed mining operational phase.

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 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.

	Preferred Mine Area		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.

	Preferred Mine Area		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.

	Preferred Mine Area		No Go option
	Without	With Mitigation	

	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 EMPr.

	Preferred Mine Area		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 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 potential impact:
Impact of proposed mining activities on groundwater resources, secondary drainage lines and dams with associated wetland characteristics and aquatic vegetation as associated with mapped NFEPAs and aquatic CBAs and ESAs

Discussion:
Sensitive environmental and landscape features identified on the property include secondary non-perennial drainage lines and dams with associated wetland characteristics mostly connected to remaining indigenous remnants, also classified as Aquatic Critical Biodiversity and Ecological Support Areas ("ESA"), associated buffer areas and 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 as identified and delineated in this report.

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.

Similar mining activities is taking place on the adjacent 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 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:

- Undertake mining activities only in identified and specifically demarcated areas as proposed.
- Storm water and erosion control as per an Environmental Management Programme (EMP) must be conducted and monitored to prevent siltation of drainage line
- No disturbance should be allowed within the drainage line or wetland areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance.
- No drainage line or wetland areas edges may be disturbed or impacted upon by the proposed activities.
- 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 and for stormwater management 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).

- 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.
- No mining activities may occur within 100m from any drainage line or wetland without determining requirement for water use authorisation from Department of Water and Sanitation or the Breede Gouritz Catchment Management Agency

	Preferred Mine Area		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.

	Preferred Mine Area		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.

	Preferred Mine Area		**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 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:
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.

	Preferred Mine Area		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.

	Preferred Mine Area		No Go option
	Without Mitigation	With Mitigation	
Extent	3	1	Not Applicable (No mining activities to take place during the No-Go Alternative)
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%		
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

	Preferred Mine Area		**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:

- Rehabilitate the area after mining process is complete and vegetation will return.
- Use of stockpiled topsoil to rehabilitate the site.
- Restrict mining activities only to demarcated approved mining areas.

	Preferred Mine Area		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 areas as associated with mapped terrestrial CBAs, ESAs and buffer areas.

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:

- 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.

- 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 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.

	Preferred Mine Area		**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	1-Will not be lost		

resources		
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 43 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 43 local residents in the area will be ensured
Mitigation: Implement proposed mining activities

	Preferred Mine Area		No Go option	
	Without Mitigation	**With Mitigation**	**Without Mitigation**	**With Mitigation**
Extent	High Positive – Sustained jobs for local **c**ommunities		High Negative – Not authorising proposed mining expansion will lead to shortening of the mine lifespan which in turn will lead to loss of existing jobs.	
Duration				
Magnitude				
Probability				
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: During the proposed mining operations a maximum amount of trips from the mining property to the processing plant will be 10 trips per truck per day with 5 trucks which equates to max 50 trips/day. But a **maximum of 150 loads will be hauled per month** and most of the time only one truck will be taking loads to the processing plant and the other trucks will remain on site for work. The mining company is mining 4-7 quarries within the Heidelberg and Riversdale areas at a time on different properties so they will not always be hauling from the same property every day. Making use of existing roads will cause deterioration. Also potential dust generation and noise generation and safety concerns for surrounding residents.
Cumulative impacts: The increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are very low, this cumulative impact is not expected to be significant.

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.
- 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.

	Preferred Mine Area		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:
During the mining activities operational phase proposed on agricultural land currently being used for crop cultivation and livestock grazing, the affected 15.2ha cannot be used for agricultural activities

Cumulative impacts:
Temporary loss of agricultural land for agricultural use.

Mitigation:
Compensate the landowner for the temporary loss of agricultural land during mining activities.

Before any mining activities commence, soil fertility samples (in terms of agricultural potential) must be taken at each of the proposed mining areas, by a qualified person and samples must be tested at a certified laboratory. Samples should be taken from the surface to a depth of 25cm so as to include equal amounts of soil over the full depth range between 0 and 25cm.

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 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. After contouring has been completed the stored topsoil material must be spread over the backfilled area. The topsoil must not be compacted after spreading to allow the disturbed area to be restored for agricultural use. 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. Only use topsoil as derived and conserved from the proposed mining area to be rehabilitated after mining activities have ceased on the property.

During rehabilitation, the stockpiled topsoil must be evenly spread over the mining surface. Topsoil spreading should be done just before the winter season so that a cover crop can be seeded and established during the winter rains and to control erosion on the newly spread topsoil. If topsoil is spread long before the winter, it will be subject to wind erosion before vegetation can be established on it.

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. The engineered constructed contours must be reinstated as soon as a phase is completed.

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. A cover crop must be established immediately after spreading of topsoil and ripping, to stabilize the soil and protect it from erosion. 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 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.

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 topsoil layer should be stripped to approximately 30cm depth. Care must be taken by the stripping operator to strip as great a depth of topsoil as possible (up to a maximum of 30cm) without including any of the underlying clay layer as part of the topsoil. So where the clay layer occurs at a shallower depth than 30cm, the stripping must only occur to that shallower depth. The second subsoil stripping should be done to an additional depth of 30cm below the depth to which the subsoil was stripped. The double stripping ensures that the rehabilitated profile contains the original soil material to a depth of 60cm, and that none of the deeper underlying material, that is likely to be too saline to be part of the root zone, occurs within it.

The crop that is sown on the first season of the rehabilitated soil should be a hardy, annual crop that is sown primarily for soil stabilisation and biomass and not necessarily for production. It should be dosed with a high level of nitrogen fertilser in order to maximise vegetative growth and therefore biomass production (both above and below ground). This is likely to 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.

Soil fertility samples (in terms of agricultural potential) must be taken at the restored areas similar to soil fertility samples that were taken before mining activities commenced. The fertility of the soil must at least be restored to the soil quality levels that were recorded before mining activities commenced. Samples should be taken in the same way as pre-mining samples to a depth of 25cm. 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. 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.

When no evidence of erosion and alien vegetation encroachment are visible and similar soil quality levels are reached as before mining activities commenced the mined areas can be considered as successfully rehabilitated.

	Preferred Mine Area		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	4		
Probability	5	5		
Significance	85 - High	35 - Medium		
Status	High Negative significance if not mitigated	Medium-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 heritage characteristic on site. If burials, fossils or other historical material are on site then potentially these could be lost

Cumulative impacts:
Loss of burials, fossils or other historical material.

Mitigation:

- Should any burials, fossils or other historical material be encountered during excavations, work must cease immediately and HWC must be contacted.

Preferred Mine Area		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	1	
Magnitude	2	2	
Probability	2	2	
Significance	16-Low	8 - Low	
Status	Low 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 IMPACTS OF NOISE

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.

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.

	Preferred Mine Area		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.

	Preferred Mine Area		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 <u>decommissioning/closure/rehabilitation</u> 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:
Soil erosion.

Discussion:
Decommissioning (i.e. the spreading of topsoil back over the site) could lead to soil erosion can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should rains fall.

Cumulative impacts:
Exposing soil may lead to erosion if not mitigated.

Mitigation:

- Mine area must be rehabilitated and pastures planted immediately after mine is completed.
- Monitor rehabilitation of area on a 6 monthly basis until effective/successful rehabilitation has been obtained.
- Engineered contour structures reinstated and maintained.
- If erosion is detected implement erosion rectification and preventions measures as guided by the EMPr and recommend by a ECO

	Preferred Mine Area		No Go option
	Without Mitigation	With Mitigation	
Extent	3	1	Not Applicable (No mining activities to take place during the No-Go Alternative)
Duration	5	1	
Magnitude	6	2	
Probability	4	2	
Significance	56 - Medium	8 - Low	
Status	Medium negative significance if not mitigated	Low negative significance if mitigated	
Reversibility	100% Partly 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:
Introduction of alien plant species during rehabilitation.

Discussion:
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 processes due to the effects of the alien species. The extent of the indirect impact in this case is local

Cumulative impacts:
Is this case the introduction of alien vegetation during rehabilitation may lead to infestation of surrounding remaining natural areas and drainage lines resulting in disruption and destruction of ecological processes.

Mitigation:
The mitigation measures mentioned below will help reduce the risk of introductions and will ensure that should introductions occur they are controlled timeously:

- 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 proposed mining area to be rehabilitated after mining activities have ceased on the property.

Preferred Mine Area		No Go option
Without Mitigation	With Mitigation	

Extent	3	1	Not Applicable (No mining activities to take place during the No-Go Alternative)
Duration	5	1	
Magnitude	6	2	
Probability	4	2	
Significance	56- 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: 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 43 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.

	Preferred Mine Area		**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		

vi) Methodology used in determining the significance of environmental impacts

(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 *ad hoc* 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.

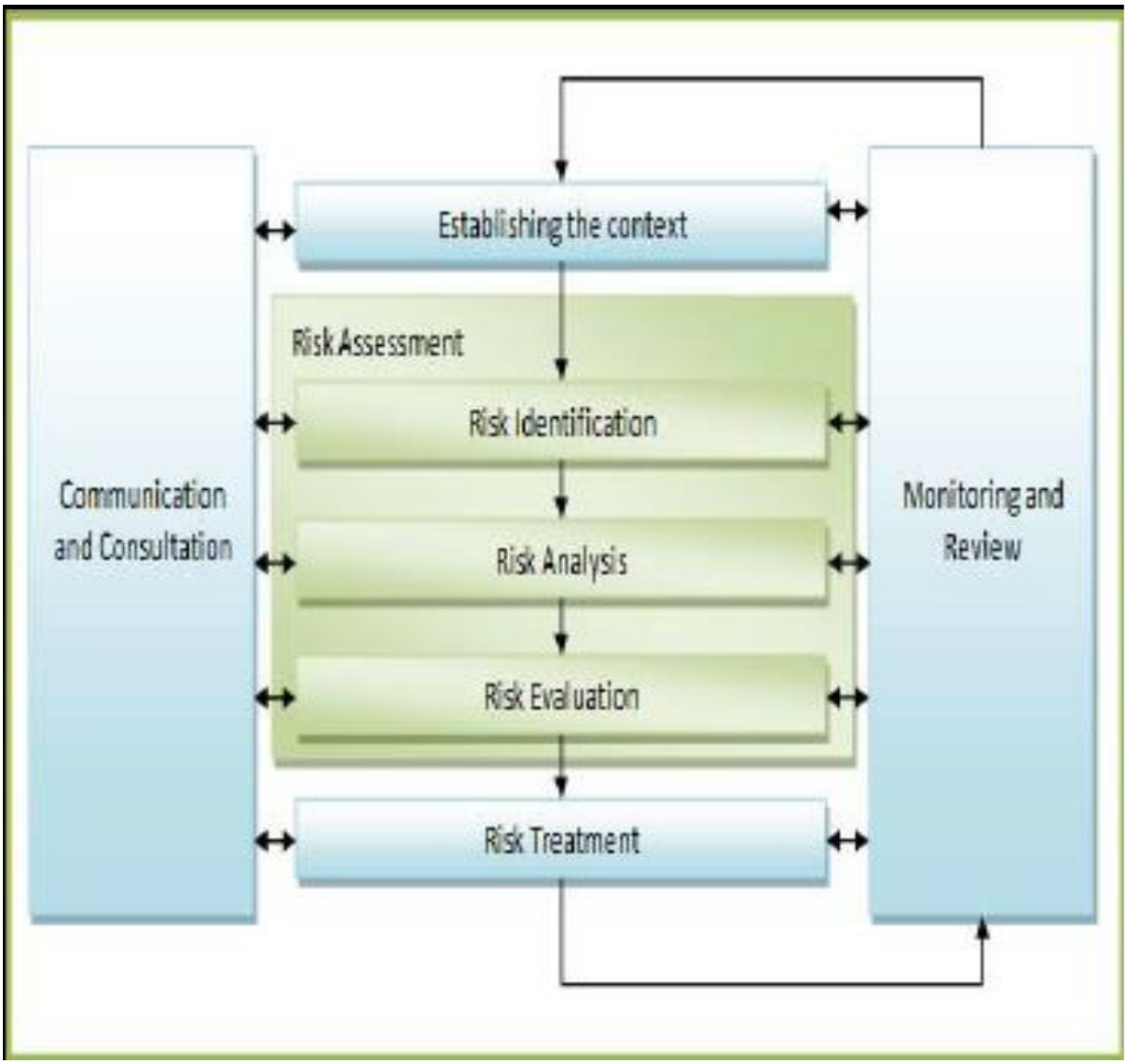


Figure 1.1.

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 *severely* altered
	Medium	Natural and/ or social functions and/ or processes are *notably* altered
	Low	Natural and/ or social functions and/ or processes are *slightly* altered
	Very Low	Natural and/ or social functions and/ or processes are *negligibly* altered
	Zero	Natural and/ or social functions and/ or processes remain *unaltered*
Duration of impact	**Mining period Medium Term**	Up to 60 months 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 mitigatible (CM)	1	The impact can be completely mitigated providing that all management and mitigation measures as stipulated in the EMP are implemented
	Partly mitigatible (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 mitigatibility
	Un-mitigatible (UM)	3	The impact cannot be mitigated no matter which management or mitigation measures are implemented.

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 – Erven 1401, 1199 and 2924 as a whole are the only location alternative considered. This is the only feasible and reasonable locality alternative because these properties are owned by one landowner and adjacent to each other with high quality bentonite deposits as determined during previous prospecting activities.. (Refer to Appendix B for proposed mining areas layout plans and Appendix E for specialist report).

Significant positive impact/s:

- No impact on any terrestrial or aquatic indigenous vegetation areas nor on CBAs, ESAs or NFEPAs
- Potentially increasing operational lifespan of Cape Bentonite Mine ensuring income for at least 45 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 on the property and a mining right for the areas can be successfully obtained.

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 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 located not mined which in turn leads to loss of local community income and decrease of operational lifespan of Cape Bentonite Mine.

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 h) v) above for risk and impact assessments and associated mitigation measures proposed.

ix) The outcome of the site selection Matrix. Final Site Layout Plan
(Provide a final site layout plan as informed by the process of consultation with interested and affected parties)

Refer to Appendix B for proposed mining areas layout plans

x) Motivation where no alternative sites were considered.

Erven 1401, 1199 and 2924 as a whole are the only location alternative considered. This is the only feasible and reasonable locality alternative because these properties are owned by one landowner and adjacent to each other with high quality bentonite deposits as determined during previous prospecting activities. Layout alternatives were considered and assessed by the ecologist. The proposed mining areas on completely transformed cultivated agricultural land are informed by the ecologist recommendations.

xi) Statement motivating the preferred site. (Provide a statement motivating the final site layout that is proposed)

Layout alternatives were considered and assessed by the ecological specialist. The proposed layout is informed by the specialist's recommendations and all proposed mining activities areas are located outside of any indigenous terrestrial or aquatic vegetation areas and drainage lines, will not impact on any water courses/wetlands and will be restricted to transformed cultivated agricultural land.

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).

(i) Plan of study for the Environmental Impact Assessment Process

i. Description of alternatives to be considered including the option of not going ahead with the activity.

Location alternatives – Erven 1401, 1199 and 2924 as a whole are the only location alternative considered. This is the only feasible and reasonable locality alternative because these properties are owned by one landowner and adjacent to each other with high quality bentonite deposits as determined during previous prospecting activities. Also refer to **Appendix G1** Geological and Socio-economic Motivation Report.

Activity alternatives- No activity alternatives other than the no go option was considered or assessed. The applicant identified this area for bentonite mining purposes. The method of bentonite mining is singular.

Layout alternatives – Layout alternatives were considered and assessed by the ecologist. The proposed layout is informed by the ecologist recommendations and avoids all remaining terrestrial and aquatic Critical Biodiversity and Ecological Support Areas. Also refer to Appendix E: Specialists Reports

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.

Operational alternatives – No operational alternatives exist. The method of bentonite mining is singular and is described in mining work programme. Refer to Appendix D: Mining Work Programme.

The No-Go Option- The No-Go option will result in the site remaining as it is presently, cultivated 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.

ii. Description of the aspects to be assessed as part of the environmental impact assessment process. The EAP must undertake to assess the aspects affected by blasting, Loading, hauling and transport, and mining activities such as Excavations, stockpiles, discard dumps or dams, water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)

Refer to Part (h) v) above for list of aspects assessed thus far and associated mitigation measures proposed, which includes potential impacts assessed as relating to:

- Increase in dust levels
- Soil erosion
- Emissions
- Increased sediment load in water resources
- Impacts 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
- The trapping of stormwater
- Pollution and nuisance due to leakage of toilets
- Ground and/or water pollution
- Fire
- Declared weeds may be transported onto the site
- Natural fauna and avifauna habitat destruction
- Impact on indigenous vegetation remnants associated with mapped terrestrial CBAs, ESAs and buffer areas
- Increased traffic
- Mining of agricultural land
- Heritage resources impact
- Noise impacts
- Visual impacts
- Introduction of alien plant species during rehabilitation

These aspects will be included in the EIA phase and additional aspects to be assessed or further investigated during the EIA phase include:

- Further assessment of potential cumulative negative impacts on surrounding landowners i.e. particularly relating to socio-economic impacts

iii. Description of aspects to be assessed by specialists.

Thus far the following specialist impact assessment/s has been done:

- Ecological Baseline Assessment

Additional specialist assessments/inputs to be obtained during the EIA phase, as identified thus far:

- Need and desirability of the proposed development to be informed by input from a socio-economic specialist.

iv. Proposed method of assessing the environmental aspects including the proposed method of assessing alternatives.

Refer to assessment methodology under part (h) vi) above.

v. The proposed method of assessing duration significance

Refer to assessment methodology under part (h) vi) above.

vi. The stages at which the competent authority will be consulted

Once the Draft Scoping Report has gone through the 30 day public participation commenting period and all comments have been addressed in the final scoping report it will be submitted to the DMR for review and acceptance/rejection. Once/if the Final Scoping Report is accepted by the DMR the Draft EIR will be compiled and submitted to all registered I&APs and key departments for a 30 day commenting period, once all comments have been addressed in the Final EIR the report will be submitted to DMR for a decision.

vii. Particulars of the public participation process with regard to the Impact Assessment process that will be conducted

1. Steps to be taken to notify interested and affected parties.
(These steps must include the steps that will be taken to ensure consultation with the affected parties identified in (h) (ii) herein).

Also Refer to **Appendix C** for more details on public participation process conducted/still to be conducted and proof thereof**.**

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 the notice is in compliance with the Regulations.

All potential I&APs are 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.

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

Once the pre-application draft scoping report has been circulated for a 30 day commenting period the comments received will be addressed in the draft scoping

report to be circulated for another 30 day commenting period and then the scoping report will be finalised and submitted to DMR for acceptance/rejection.

Once the final scoping report has been accepted by the DMR the public participation during the EIA phase involves submitting the draft EIR to the registered I&AP's and Key Departments for a 30 day period to discuss the findings of the report. Once all comments have been received, the EIR will be finalised taking into account the comments received and thereafter submitted to DMR for a decision.

2. Details of the engagement process to be followed.

(Describe the process to be 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 and records of such consultation will be required in the EIA at a later stage).

Refer to point 1. above for details of public participation process to be followed. Also refer to Appendix C.

3. Description of the information to be provided to Interested and Affected Parties.

Information to be provided must include the initial site plan and sufficient detail of the intended operation and the typical impacts of each activity, to enable them to assess what impact the activities will have on them or on the use of their land).

All registered interested and affected parties and key departments will receive a copy of the Pre-application Scoping Report, Draft Scoping Report and Draft EIR for comments which will include all site plans and details of intended operations and potential impact assessment of each activity proposed.

viii. Description of the tasks that will be undertaken during the environmental impact assessment process.

The objective of the environmental impact process is to, through a consultative process─

(a) determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
(b) describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
(c) identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
(d) determine the—-
    (i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
    (ii) degree to which these impacts—
        (aa) can be reversed;
        (bb) may cause irreplaceable loss of resources, and
        (cc) can be avoided, managed or mitigated;
(e) identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;

(f) identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;
(g) identify suitable measures to manage, avoid or mitigate identified impacts; and
(h) identify residual risks that need to be managed and monitored.

ix. Measures to avoid, reverse, mitigate, or manage identified impacts to determine the extent of the residual risks that need to be managed and monitored.

ACTIVITY (whether listed or not) **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** (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc.	**MITIGATION TYPE** (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. Modify through alternative method. Control through noise control Control through management and monitoring through rehabilitation..	**POTENTIAL FOR RESIDUAL RISK (after mitigation)**
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 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. Compile and Implement a dust monitoring programme before the commencement of mining activities on site	Low
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.	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 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.	Low

	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.		
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 done.	Low
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 Measures and part of the EMPr.	Low
All activities associated	Mining activities	Undertake mining activities only in identified and specifically demarcated areas as proposed.	Low

with proposed mining	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	Storm water and erosion control as per an Environmental Management Programme (EMP) must be conducted and monitored to prevent siltation of drainage line No disturbance should be allowed within the drainage line or wetland areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance. No drainage line or wetland areas edges may be disturbed or impacted upon by the proposed activities. 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 and for stormwater management 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). 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. No mining activities may occur within 100m from any drainage line or wetland without determining requirement for water use authorisation from Department of Water and Sanitation or the Breede Gouritz Catchment Management Agency	
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.	Low
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). Litter will be collected and removed from site by the operator on a daily basis.	No significance
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.	Low
All activities associated with proposed mining	**Fire** can cause **habitat or crop**	All employees will be trained on fire safety and on how to reduce the probability of a fire spreading out of control.	Low

	destruction	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.	
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 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	Low
All activities associated with proposed mining	**Natural fauna and avifauna habitat destruction**	Rehabilitate the area after mining process is complete and vegetation will return. Use of stockpiled topsoil to rehabilitate the site. Restrict mining activities only to demarcated approved mining areas.	Low
All activities associated with proposed mining	Mining activities can **impact on indigenous vegetation remnants** associated with mapped terrestrial CBAs, ESAs and buffer 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. 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. 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.	Low

		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. 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 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.	
All activities associated with proposed mining	The **continued employment of at least 45 local residents** in the area will be ensured	Positive – No mitigation required	-
Loading, hauling and transport	**Increased traffic** due to the mining activities requiring various vehicles to come onto and leave the site.	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 the road. The applicant will be responsible for upkeep and repair of farm roads used during mining activities to the satisfaction of the landowner.	Low
All activities associated with proposed mining	**Mining on agricultural land**	Compensate the landowner for the temporary loss of agricultural land during mining activities. Before any mining activities commence, soil fertility samples (in terms of agricultural potential) must be taken at each of the proposed mining areas, by a qualified person and samples must	Medium

		be tested at a certified laboratory. Samples should be taken from the surface to a depth of 25cm so as to include equal amounts of soil over the full depth range between 0 and 25cm. 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 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. After contouring has been completed the stored topsoil material must be spread over the backfilled area. The topsoil must not be compacted after spreading to allow the disturbed area to be restored for agricultural use. 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. Only use topsoil as derived and conserved from the proposed mining area to be rehabilitated after mining activities have ceased on the property. During rehabilitation, the stockpiled topsoil must be evenly spread over the mining surface. Topsoil spreading should be done just before the winter season so that a cover crop can be seeded and established during the winter rains and to control erosion on the newly spread topsoil. If topsoil is spread long before the winter, it will be subject to wind erosion before vegetation can be established on it. 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. The engineered constructed contours must be reinstated as soon as a phase is completed. 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. A cover crop must be established immediately after spreading of topsoil and ripping, to stabilize the soil and protect it from erosion. 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 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. 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 topsoil layer should be stripped to approximately 30cm depth. Care must be taken by the stripping operator to strip as great a depth of topsoil as possible (up to a maximum of 30cm) without including any of the underlying clay layer as part of the topsoil. So where the clay layer occurs at a shallower depth than 30cm, the stripping must only occur to that shallower depth. The second subsoil stripping should be done to an additional depth of 30cm below the depth to which the subsoil was stripped. The double stripping ensures that the rehabilitated profile contains the original soil material to a depth of 60cm, and that none of the deeper underlying material, that is likely to be too saline to be part of the root zone, occurs within it. The crop that is sown on the first season of the rehabilitated soil should be a hardy, annual crop that is sown primarily for soil stabilisation and biomass and not necessarily for production. It should be dosed with a high level of nitrogen fertilser in order to maximise vegetative growth and therefore biomass production (both above and below ground). This is likely to 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. Soil fertility samples (in terms of agricultural potential) must be taken at the restored areas similar to soil fertility samples that were taken before mining activities commenced. The fertility of the soil must at least be restored to the soil quality levels that were recorded before mining activities commenced. Samples should be taken in the same way as pre-mining samples to a depth of 25cm. 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. 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. When no evidence of erosion and alien vegetation encroachment are visible and similar soil quality levels are reached as before mining activities commenced the mined areas can be considered as successfully rehabilitated.	
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.	Low
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.	Low
All activities associated with proposed mining	**Visual impact**	Proposed mining activities must be limited to development footprint site. Rehabilitation of site when mining process complete.	Low
Decommissioning of mine	**Soil erosion**	Mine area must be rehabilitated and pastures planted immediately after mine is completed. Engineered contour structures reinstated and maintained. Monitor rehabilitation of area on a 6 monthly basis until effective/successful rehabilitation has been obtained. If erosion is detected implement erosion rectification and preventions measures as guided by the EMPr and recommend by a ECO	Low
Decommissioning of mine	**Introduction of alien plant species** during 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 Only use topsoil as derived and conserved proposed mining area to be rehabilitated after mining activities have ceased on the property.	Low
Decommissioning of mine	**Loss of socio-economic benefits/jobs** to the local communities of	Additional viable bentonite deposits must be sourced and authorised to ensure sustainability of the Cape Bentonite Mine operations.	Low

	Heidelberg and Riversdale		

(j) Other 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** and confirm that the applicable mitigation will be reflected in the EMPr.

Please refer to the impact tables above for more detail. If Cape Bentonite Mine operations cease at least 45 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. Cape Bentonite Mining operations contribute significantly to the local and regional economy of Heidelberg and Riversdale.

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 will be reflected in the EMPr).

A Notice of Intent to Develop has been submitted to Heritage Western Cape for determining need for an HIA. It is not expected that any significant heritage resources will be impacted upon by the proposed mining activities. See Notice of Intent to Develop as submitted to Heritage Western Cape and Record of Decision received under **Appendix E2**. HWC has concluded that no further HIA studies will be required for the proposed development.

(k) 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 mine the identification of feasible alternatives is severely constrained by a number of factors, including:

- The location of the viable bentonite deposits on the property as determined by the prospecting investigation.
- The specific mining footprints as proposed take account of environmental constraints identified by the ecological specialist.
- The mine area will be mined using existing, accepted bentonite mining methods and therefore no technology or process alternatives are considered; and

- Given the nature of open cast / strip mining, alternative physical mining technologies are not expected to have any meaningful implications for environmental impacts.

A number of alternatives have however, been considered during preliminary mine planning. These alternatives, as well as reasons for their exclusion from further consideration, are summarised here. Mine layouts taking environmental sensitivities into account were considered within the proposed mining footprint. The mine footprint was 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 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 – Erven 1401, 1199 and 2924 as a whole are the only location alternative considered. This is the only feasible and reasonable locality alternative because these properties are owned by one landowner and adjacent to each other with high quality bentonite deposits as determined during previous prospecting activities. Also refer to **Appendix G1** Geological and Socio-economic Motivation Report.
.
Activity alternatives- No activity alternatives other than the no go option was considered or assessed. The applicant identified this area for bentonite mining purposes. The method of bentonite mining is singular.

Layout alternatives – Layout alternatives were considered and assessed by the ecologist. The proposed layout is informed by the ecologist recommendations and avoids all remaining Critical Biodiversity and Ecological Support Areas.

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.

Operational alternatives – No operational alternatives exist. The method of bentonite mining is singular and is described in the EMP and mining work programme.

The No-Go Option- The No-Go option will result in the site remaining as it is presently, cultivated 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.

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

(l) UNDERTAKING REGARDING CORRECTNESS OF INFORMATION

I Johmandie Pienaar (Giliomee) **herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and Interested and Affected parties has been correctly recorded in the report.**

_____

Signature of the EAP

DATE: 14 August 2019

(m) UNDERTAKING REGARDING LEVEL OF AGREEMENT

I Johmandie Pienaar (Giliomee) **herewith undertake that the information provided in the foregoing report is correct, and that the level of agreement with interested and Affected Parties and stakeholders has been correctly recorded and reported herein.**

_____

Signature of the EAP

DATE: 14 August 2019

-END-

APPENDICES		Tick the box if Appendix is attached
Appendix A:	**EAP CV and Qualifications**	X
Appendix B:	**Site plan(s) and photographs**	X
Appendix C:	**Proof of Public Participation Process**	X
Appendix D:	**Mining Work Programme**	X
Appendix E:	**Specialist/s Report/s**	X
Appendix F:	**Mine Closure/Rehabilitation Plan**	X
Appendix G:	**Any Other (if applicable):** Appendix G1: Geological and Socio-Economic Motivation Report Appendix G2: Storm Water Management Plan Appendix G3: Best Practice Guideline - Stormwater Management 2006 Appendix G4: Imerys Social and Labour Plan 2018 – 2022 Appendix G5: Erf 1080 HB Diagram	X
Appendix H:	**2nd Draft Environmental Management Programme**	X