mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

2nd DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT
AND
DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

FOR LISTED ACTIVITIES ASSOCIATED WITH A MINING RIGHT ON REMAINING EXTENT OF FARM UITSPANSKRAAL NR 585 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: 183789
(PREVIOUS/LAPSED SAMRAD REFERENCE NUMBER: 170222)

DMR REFERENCE NUMBER: WC30/5/1/2/2/10098MR
(PREVIOUS/LAPSED DMR REFERENCE NUMBER: WC30/5/1/2/2/10097MR)

DATE: September 2018

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 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

1) The objective of the environmental impact assessment 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 any impact and risk assessment process inclusive of cumulative impacts and a ranking process or 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 locaton 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.

PART A

SCOPE OF ASSESSMENT AND ENVIRONMENTAL IMPACT ASSESSMENT REPORT

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, 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 mining 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:	Remaining Extent of Farm Uitspanskraal Nr585
Application area (Ha)	151ha Mining activities area applied for (Property extent 858.2962ha)
	Uitspanskraal South Phase 1 Quarry – 0.9ha Phase 2 Quarry – 1.3ha **Uitspanskraal North** Phase 1 Quarry – 2.81ha Phase 2 Quarry – 1.82ha Phase 3 Quarry – 0.11ha Phase 4 Quarry – 2.51ha Phase 5 Quarry – 1.24ha Phase 6 Quarry – 3.46ha Phase 7 Quarry – 1.18ha Phase 8 Quarry - 1.24ha Phase 9 Quarry - 2.51ha Phase 10 Quarry – 4.31ha Phase 11 Quarry – 1.13ha Phase 12 Quarry – 0.97ha Phase 13 Quarry – 2.20ha Phase 14 Quarry – 2.41ha Phase 15 Quarry – 2.54ha Phase 16 Quarry -1.20ha Phase 17 Quarry – 2.54ha Phase 18 Quarry – 1.20ha Phase 19 Quarry – 0.74ha **Total quarries size** as proposed for the property – 38.32ha
Magisterial district:	Heidelberg
Distance and direction from nearest town	The farm is situated ±4km northwest of the town Heidelberg in the Western Cape and can be accessed via R322 towards Barrydale/Suurbraak.
21 digit Surveyor General Code for each farm portion	C07300000000058500000

(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 **(E.g. For prospecting -** drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **E.g. for mining**,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	**Aerial extent of the Activity** **Ha or m²**	**LISTED ACTIVITY** **Mark with an X where applicable or affected.**	**APPLICABLE LISTING NOTICE** ***(GNR 983, 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.	151ha (Quarry extent – 38.32ha)(within which mining activities are proposed to only take place on transformed cultivated agricultural land)	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.

- **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.

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.

- **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 timing of the several phases is indicated on the Mine Layout Plan as attached under **Appendix B**.

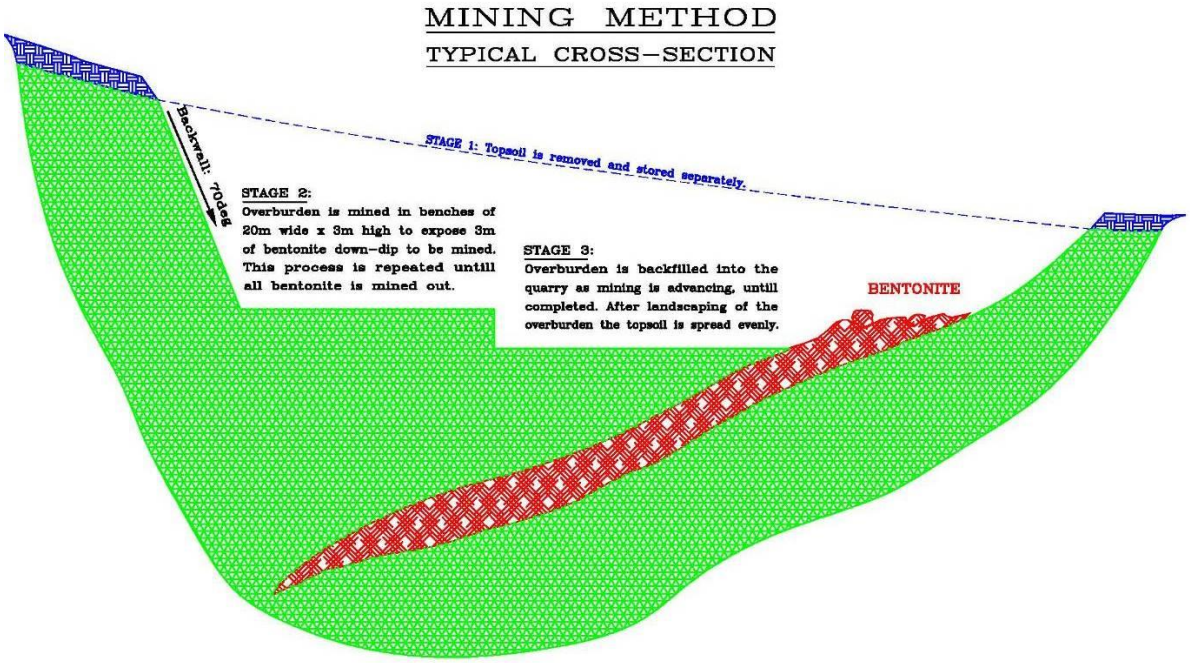
Mining Phases:

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 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 – HWC confirmed no HIA required
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	As per comments received from the BGCMA during the scoping process – proposed mitigation measures as per current EMP supported (*no water use application required*)
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 R/E of farm Uitspankraal nr 585 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 151ha is therefore located 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 38.32ha applicable quarry areas is expected to take approximately nine years. The Environmental authorization should therefore be valid for 10 years.

(h) Motivation for the Preferred Development Footprint within the Approved Site including a Full Description of the process Followed to Reach the Proposed Development Footprint within the Approved Site.

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

i) Details of the development footprint alternatives considered.

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

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

(a) Location alternatives – Remaining Extent of farm Uitspanskraal Nr 585 was the only location alternative considered. This is the only feasible and reasonable locality alternative because this is where the high quality bentonite deposits are located on the property as determined during the prospecting activities. Also refer to **Appendix G1** Geological and Socio-economic Motivation Report.

(b) 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.

(c) 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. Also refer to Appendix E: Specialists Reports

(d) Technology alternatives – No technology alternatives exist. The method of bentonite mining is singular. Plant equipment (excavator and dump trucks) is used to remove and transport the bentonite materials from the mine area.

(e) 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.

(f) The No-Go/No-Development Option- The No-Go/No-Developemnt 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 WAS CONDUCTED THUS FAR UNDER THE PREVIOUS SAMRAD REFERENCE NR (WHICH HAS SINCE LAPSED AND NOW A NEW EA APPLICATION HAVE BEEN SUBMITTED, BUT NO CHANGE IN SCOPE HAS OCCURRED):

An advert was placed in the local newspaper

The notice boards was placed on site

The Draft and Final Scoping Report was sent to the following Departments for Comment:

- Hessequa Municipality
- CapeNature Scientific Services
- Department of Mineral Resources
- DEA&DP Land Management
- DEA&DP Pollution Management
- DEA&DP Waste Management
- Department of Agriculture
- Eden District Municipality
- Breede-Gouritz Catchment Management Agency (also commenting on behalf of Department of Water and Sanitation)
- Heritage Western Cape
- Decision making/Competent Authority – Department of Mineral Resources

Notices 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 requested them to register as Interested and Affective Parties (I&APs) and invited them to provide written comments together with the reference number, 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 are included in Appendix C.

- Placing an advertisement in a local newspaper in compliance with the Regulations. An advert will be place 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.

- 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 EIA Report.

- Workshop with Key Role players will be held upon request – no requests received to date 6 June 2018

Registered Interested and Affected Parties and key departments were 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.

The final scoping report was accepted by the DMR on 01/06/2018.

Refer to Appendix C for proof of public participation process conducted thus far.

The previous application [under Ref Nrs: SAMRAD 170222 - (WC) 30/5/1/2/2/10097MR] lapsed due to failure to submit the final Scoping Report within the stipulated timeframe, therefore a new EA Application was submitted and all registered key departments/organ of state and I&APs were afforded another 30 day commenting period on the draft scoping report under the new application reference number. All comments received were recorded and the EAP (specialists) responded to the comments and compiled the comments and response report as part of the Final Scoping Report where after it was submitted to DMR for acceptance or rejection. The scope of the proposed project has however not changed and therefore all previous public participation conducted under the old reference number are still relevant and therefore included as such for consideration in this report. Proof of the reports sent out for commenting is provided under Appendix C.

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 draft and final scoping reports as well as responses provided have been captured and recorded within this Comments and Response Report table.			
Landowner	**X**				
Stephen Keyser Familie Trust Adriaan Johannes Keyser PO Box 225 Klein Braak Rivier 6503	-	Signed landowner's consent to be provided with the final EIA Report			
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**				
Weideland Boerdery Pty Ltd PO Box 150	-	Notice was sent on 30 Jan 2017. No			

Heidelberg 6665		comments received to date.			
Stephen Keyser Familie Trust PO Box 100 Heidelberg 6665	•	Notice was sent on 30 Jan 2017. No comments received to date.			
MJ & M Badenhorst Familie Trust PO Box 44 Heidelberg 6665	•	Notice was sent on 30 Jan 2017. No comments received to date.			
WJ Wessels PO Box 44 Heidelberg 6665	•	Notice was sent on 30 Jan 2017. No comments received to date.			
George Rall Family Trust PO Box 217 Heidelberg 6665	•	Notice was sent on 30 Jan 2017. No comments received to date.			
Steyn Familie Trust-Doornkraal PO Box 60 Heidelberg 6665	•	Notice was sent on 30 Jan 2017. No comments received to date.			
Kleynhans Familie Trust PO Box 32 Heidelberg 6665	•	Notice was sent on 30 Jan 2017. No comments received to date.			
GJ Willemse PO Box 127 Heidelberg	•	Notice was sent on 30 Jan 2017. No			

6665		comments received to date.			
Klipdrift Boere Trust PO Box 123 Suurbrak 6743	•	Notice was sent on 30 Jan 2017. No comments received to date.			
Local and District Municipalities	**X**				
Hessequa Municipality municipal manager on behalf of municipal council	-	1st Draft Scoping Report was sent on 29 Sep 2017. Final Scoping Report was sent on 6 Dec 2017. 2nd Draft Scoping Report was sent on 23 March 2018. 1st Draft EIA Report sent on 27 July 2018 – no comments received to date.			
Eden District Municipality	-	1st Draft Scoping Report was sent on 29 Sep 2017. Final Scoping	**Letter received as dated 24 April 2018** **PROPOSED MINING RIGHT ON REMAINING EXTENT OF FARM UITSPANSKRAAL NR 585, HEIDELBERG, WESTERN CAPE (DMR REF NO WC30/5/1/2/210098MR)**		

		Report was sent on 6 Dec 2017. 2nd Draft Scoping Report was sent on 23 March 2018 1st Draft EIA Report sent on 27 July 2018	The Eden District Municipality would like to thank you for providing this Department with the mining right application for Farm Uitspankraal Nr 585, Heidelberg, and would like to provide the following comments: The Municipality has no objection to the proposed development provided that: o The mitigation measures as indicated in the Report be adhered to; o No mining activities may occur prior to the completion of the relevant Hessequa Municipality town planning application processes for the mine on the property; o It be explained in more detail the dust pollution mitigation methodologies to be implemented; o It be explain what sources of non-potable water will	- Town planning application requirements is not part of the EIA process and it is the applicant's responsibility to ensure that they adhere to any other legal/application requirements before mining commences. Refer to Draft EMP under Appendix H p) General Environmental Management Guidelines to be implemented during the Proposed Mining Activities – Dust and Noise Control for proposed dust suppression measures to be implemented to avoid dust pollution. If during mining activities it is found that the proposed mitigation measures is not adequate/effective the Environmental Control Officer must and will investigate and recommend suitable alternative measures to be implemented. As per the EMP dust suppression recommendations,	Appendix H p) General Environmental Management Guidelines to be implemented during the Proposed Mining Activities – Dust and Noise Control Appendix H p) General Environmental Management Guidelines to be implemented during the Proposed Mining Activities – Dust and Noise Control

			be used to dampen bare soil to mitigate windblown dust, as mentioned in your Report. The Eden District Municipality reserves the right to provide comment or to amend initial comments.	"*The use of potable water for dust suppression is discouraged and alternative sources of water should be considered and discussed with the landowner if required.*" Therefore if it is deemed necessary to dampen exposed mining activity areas with water to prevent dust pollution it is recommended that the mining company discuss and agree upon viable non-potable water options with the landowner such as the usage of water from farm dams.	
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)	**-**	Draft Scoping Report was sent on 29 Sep 2017. Final Scoping Report was sent 6 Dec 2017 2nd Draft Scoping Report was sent on 23 March 2018 1st Draft EIA Report sent on 27 July 2018	**Letter received as dated 10/01/2018** **BGCMA Ref:** 4/10/2/H80C/UITSPANSKRAAL **COMMENTS ON THE ENVIRONMENTAL MANAGEMENT PLAN FOR PROPOSED MINING RIGHT ON REMAINING EXTENT OF FARM UITSPANSKRAAL NR 585 HEIDELBERG, WESTERN CAPE** The above mentioned report, SAMRAD reference number: 170222 for the above mentioned activity has reference. The Breede-Gouritz Catchment Management Agency (GBGCMA) has the following comments: 1. No operation is allowed within 100m of a water resource or 1:100 year floodline whichever is the	1-2 All proposed mining activities are to take place on	

			greatest. If the proposed activity falls within these criteria, you need to apply for water use license to ensure that the riparian ecological status of the water resource will not be negatively impacted. It is advisable to consider an alternative site. 2. Please note that any development within 500m from the boundary of any wetland requires a water use license according to National Waer Act (NWA) 1998 (Act No 36 of 1998).	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 of the Draft Scoping Report previously received) non-perennial secondary drainage lines with associated riparian/wetland characteristics and indigenous vegetation are present throughout the property adjacent to the proposed 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	Appendix E1: Ecological Baseline Assessment

				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.	Appendix G2 and G3: Stormwater Management Plan and Guidelines
			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 acceptable depths below ground level.	4. No solid waste disposal is to take place on site.	Appendix F: Mine Closure/ Rehabilitation Plan
			5. No surface, ground or storm water may be polluted as a result of any activities on the site.	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 Appendix G)	
			6. The rehabilitation of the site must ensure that the final conditions of the site is environmentally acceptable and that there will be no adverse long term effects on the surrounding environment especially the water resources.	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	Appendix H: EMP

				surrounds.	
			7. Please note that all requirements as stipulated in the National Water Act (NWA) 1998 (Act No 36 of 1998) must be adhered to.	7. Compliance to all requirements as stipulated in the NWA 1998 (Act No 26 of 1998) is part of the EMP requirements.	
			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.	8.Noted.	
			E-mail received as dated 9 April 2018: **From:** Makhosi Mthimkhulu [mailto:MMthimkhulu@bgcma.co.za] **Sent:** Monday, April 9, 2018 3:50 PM **To:** Johmandie **Cc:** Andiswa Sam **Subject:** RE: Comments on BAR Uitspanskraal Good day We have received your report for the above mentioned activity.		
			As per our telephonic conversation we are satisfied with your response (page 19 of 102 in your report), and keeping to the specialist recommendation of the buffer zone. We have no further comments. Kind Regards M.U Mthimkhulu **:**:mmthimkhulu@bgcma.co.za P.O Box 1205 / 101 York Street George, 6530	No further comments and acceptance of previous EAP replies noted.	
			E-mail received as dated 13 August 2018: From: Makhosi Mthimkhulu [mailto:MMthimkhulu@bgcma.co.za]		

			Sent: 13 August 2018 09:10 AM To: admin@ecoimpact.co.za Cc: Johmandie; Andiswa Sam Subject: FW: Comments on BAR Uitspanskraal Good day I have received your report reference number: WC30/5/1/2/2/10098MR. I have commented on this report please note the email dated 9/04/2018. Kind regards	No further comments noted.	
CapeNature	-	Draft Scoping Report was sent on 29 Sep 2017. Final Scoping Report was sent 6 Dec 2017 2nd Draft Scoping Report was sent on 23 March 2018 – no further comments received to date 25 April 2018	**Letter received as dated 9 November 2017:** **CapeNature** **Ref:** 14/2/6/1/6/5_HESS/585/REM_2017/CF128 **CONSULTATION IN TERMS OF SECTION 40 OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (ACT No. 28 OF 2002) AND THE NEMA FOR EVALUATION OF AN DRAFT SCOPING REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT FOR THE PROPOSED ESTABLISHMENT OF A BENTONITE MINE ON FARM UITSPANSKRAAL No. 585 REMAINDER, HEIDELBERG, HESSEQUA MUNICIPAL AREA** **DMR reference #: 170222** CapeNature, as custodian of biodiversity in the Western Cape1, would like to thank you for the opportunity to comment on the application for a mining right on Farm Uitspanskraal No. 585 Remainder Heidelberg (received on the 9th October 2017) and would like to make the following comments. Please note that our comments only pertain to the biodiversity related impacts and not to the overall desirability of the application. The applicant would like to establish several open cast mining pits on the Farm Uitspanskraal No. 585 Remainder. The location of the pits will be on existing		

			agricultural lands with no mining proposed within 8m of any indigenous vegetation (only access roads are proposed to pass through such areas). Rehabilitation is proposed to be undertaken via an ongoing process. According to Mucina and Rutherford2 and the Western Cape Biodiversity Spatial Plan (WCBSP 2017)3, the vegetation units affected on the property are the ***Critically Endangered*** Eastern Rûens Shale Renosterveld (Hardly Protected), the ***Critically Endangered*** Cape Lowlands Alluvial (Hardly Protected) and the ***Endangered*** (listed as Vulnerable in terms of NBA 2011) Swellendam Silcrete Fynbos (Poorly Protected), (Figure 1). All vegetation units are listed as threatened ecosystems in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEM: BA). The Eastern Rûens Shale Renosterveld contains 49 threatened plant species and fifteen endemic plant species with <1% formally conserved and with 14% of the original extent remaining in a natural condition. The conservation target for the Eastern Rûens Shale Renosterveld vegetation unit is listed as 27% of its original extent. The Cape Lowland Alluvial Vegetation contains 10 red listed plant species with <1% formally conserved and with 33% of the original extent remaining in a natural condition. The conservation target for the Cape Lowland Alluvial vegetation unit is listed as 31% of its original extent. Lastly the Swellendam Silcrete Fynbos vegetation unit has 23 red data plant species and fourteen endemic plant species with 4% formally conserved and 49% of the original extent remaining in a natural condition. The conservation target for the Swellendam Silcrete Fynbos vegetation unit is listed as 30% of its original extent. In addition to the vegetation found on site there are several cultivated fields as per the Department of Agriculture Fisheries and Forestry (DAFF) 2013 data. It is primarily these areas that have been targeted for mining operations. In addition to which, there are several non-perennial drainage lines and National		

			Freshwater Ecosystem Priority Area (NFEPA) 4 wetlands adjacent to the proposed mine areas (Figure 1). According to the WCBSP and the DAFF (2013) data, the majority of the proposed mine area is located on No Natural remaining areas with the exception of some Ecological Support Area 2 regions (Figure 2). ESA 2 areas are defined as: *"Areas that are not essential for meeting biodiversity targets, but that play an important role in supporting the functioning of PAs or CBAs, and are often vital for delivering ecosystem services."* ESA 2 objectives are:*" Restore and/or manage to minimize impact on ecological processes and ecological infrastructure functioning, especially soil and water-related services, and to allow for faunal movement.* Following a review of the Draft Scoping Report, Environmental Management Programme Report (EMPr) and appendices, and given the above mentioned sensitivity of the site, CapeNature would like to make the following comments/recommendations: 1. Prior to the commencement of mining activities on the property, the number livestock grazing the farm must be reduced accordingly and records of such activities submitted to relevant authorities. This is to prevent overgrazing of stock within the sensitive CBA and Critically Endangered vegetation units due to mining activities removing vegetation and therefore changing livestock carrying capacity of the farm.	1. No livestock grazing will occur during mining operations within the affected agricultural lands, however the applicant is not the landowner and cannot force the landowner to reduce livestock numbers during mining on the rest of the property. During mining operations on a particular site no livestock grazing is allowed within the agricultural land that is being mined until mining activities have ceased and the site has been rehabilitated to its former agricultural status	

				quo.	
			2. WCBSP (2017) ESA 2 regions are areas delineated that require restoration from other land-uses to support sensitive areas that are designed to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure. As stipulated in the Land Use Advice (LUA) Handbook (Pool-Stanvliet *et al.* 2017)5 although the mine area selected may have undergone a level of disturbance via agricultural practices, this cannot be used as motivation for establishing of mining activities within ESA 2. It is therefore recommended that these regions be excluded from the mining operations as mining of these regions could compromise the ecosystem functionality of the CBA regions present on the property.	2. As per the findings of the Ecological Baseline specialist Assessment all of the ESA2 areas within which mining activities are proposed consists of annually cultivated agricultural land and with the implementation of the proposed 8m buffer areas along any remaining indigenous vegetation and watercourse areas the proposed mining activities will not have any detrimental impacts on these areas and existing hydrological and terrestrial ecosystems functioning will continue as is. Restoration of the cultivated ESA2 areas on the property is also not reasonable of feasible because the landowner will continue to cultivate all of the existing cultivated land as according to the current status quo.	Appendix H: EMP Appendix E1: Ecological Baseline Assessment
			3. According to the *Fynbos Forum Ecosystem Guidelines for Environmental Assessment in the Western Cape* (de Villiers *et al.* 2016)*6*: *"All core renosterveld conservation areas should be buffered by an area of natural habitat of at least 30 m breadth. It is especially important to establish buffers when renosterveld patches are adjacent to agricultural lands."* It is therefore recommended that the EAP and Ecologist buffer all of the identified sensitive regions accordingly informing the mine layout accordingly.	3. As per the findings of the Ecological Baseline Assessment Report the mining activities as proposed on existing cultivated areas will not lead to any additional potentially detrimental impacts on the surrounding indigenous vegetation areas if recommended management measures are implemented. Current agricultural cultivation activities adjacent to and livestock grazing within indigenous vegetation areas	Appendix H: EMP

				will continue as is until mining activities commence and will resume after mining activities have ceased and the agricultural land has been rehabilitated to its previous agricultural potential. The temporary buffering of indigenous vegetation areas with a 30m buffer area during mining activities will therefore not serve any reasonable or feasible purpose and along most of the remaining indigenous vegetation areas a 30m natural habitat buffer area is not possible to implement.	Appendix E1: Ecological Baseline Assessment Appendix H: EMP
			4. The No-Go area map should be compiled by the ecologist and appended to the Operational EMPr. This would act as a reminder to the applicant of the location of sensitive regions on the property. It is also recommended that the extent of the mining footprint be fenced off prior to mining activities taking place.	4. No-go area maps as compiled by the ecologist Mr Nicolaas Hanekom have been appended to the EMP as recommended. Fencing of the currently unfenced indigenous vegetation areas scattered throughout the applicable cultivated lands on which mining activities are proposed will potentially impede movement of indigenous fauna species and is therefore not recommended if it can be avoided. The following is recommended by the ecologist in terms of demarcation requirements- *Clearly demarcate the 8m wide buffer areas proposed as measured from the edge of all remaining indigenous vegetation areas and undertake mining activities only in identified and specifically demarcated areas*	Appendix H: EMP

				as proposed on completely transformed and cultivated areas. Demarcation method to be approved by an Environmental Control Officer (ECO). The proposed buffer areas to be located within existing cultivated land 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. Further demarcation requirements recommendations as according to the EMP - *No-go areas along the edge of the proposed mining area must be clearly demarcated to restrict access/egress across such demarcated lines and minimise environmental impact. The ECO must indicate each boundary and/or access route to be demarcated and demarcation methods to be used before excavation commences and mining personnel will not be allowed beyond the perimeter of the site. All activities including stockpiling must occur within this demarcated area. The mine operator responsible must fund reinstatement or rehabilitation of damaged areas and features.* *Physical demarcation of mining boundaries along no-go area should at the very least be via*	

				colour coded posts at least 1,5m high. Relatively small areas can be fenced with wooden or metal post at 3m centres with 1 plain wire strand tensioned horizontally at 900mm from ground level. Commercially available danger tape may also be wrapped around the wire strand. For large areas, like fairways, these posts are to be at 15m centres with 5 equidistant easily visible lime spot markings in between. *The onus here will fall on the mining staff to ensure all respect these no-go lines. Failure to ensure discipline will lead to the immediate erection of more physically challenging structures.* *The mine operator must take measures to control the corrosive effects of storm-water runoff particularly in the hoarded-off areas. No run-off oil, fuel, sewage, or any other hazardous material is to be permitted, or allowed to enter the storm-water system or natural areas.* *In the event that sensitive features are threatened by mining activities, the temporary fencing off of these areas or the mining area, when working in a mainly natural environment, is recommended and will be determined by the ECO.*	Appendix H: EMP

			5. The location of all proposed haulage and mine access roads should be illustrated on an appropriately scaled map. It is especially important to illustrate how and where existing farm tracks would need to be upgraded and the sizes of these roads given. The impact of these would have on the neighbouring sensitive habitat should also be suitably assessed.	5. Maps showing existing access roads to agricultural lands to be used during mining activities have been attached to the EMP. Existing farm tracks will not have to be upgraded as it will be used as is, no additional access routes will be created and farm tracks will not have to be upgraded. The existing one vehicle track farm roads are sufficient for the proposed haulage as have been proven on adjacent properties on which mining activities have been taking place for several years now. As per the EMP requirements if during mining operations any evidence is found of erosion taking place on any areas of the mining activities areas (including access routes) the erosion must immediately be rectified and prevention measures put in place to ensure that it does not erode again, these erosion management and prevention measures must be conducted under the guidance of the ECO.	Appendix F: Closure/ Rehabilitation Plan Appendix H: EMP
			6. The rehabilitation and closure plan does not list the plant species proposed to be used in the rehabilitation process. Greater botanical detail regarding the proposed implementation of the rehabilitation plan is also required.	6. No mining activities are proposed or may take place within any indigenous vegetation areas therefore no list of indigenous vegetation species to be used for rehabilitation has been provided. The areas to be impacted upon during mining	

				activities are agricultural crop cultivated lands and as per the rehabilitation plan requirements once mining operations have ceased and the impacted areas have been rehabilitated to its previous agricultural potential the rehabilitated areas will be planted with agricultural crops as per existing practice. If however any indigenous vegetation areas are unintentionally impacted upon during any mining related activities the EMP requirements states that rehabilitation of the impacted indigenous vegetation areas must take place under the supervision of a qualified ECO whom may request specialist inputs for the required rehabilitation of indigenous vegetation areas depending on the extent of rehabilitation required. Either the ECO or the specialist will then determine the indigenous vegetation species that must be used for rehabilitation depending on the specific area to be rehabilitated. More details on rehabilitation requirements for potentially impacted indigenous vegetation areas as described above have been provided in the EMP and Mine Closure/Rehabilitation Plan	Appendix F: Closure/ Rehabilitation Plan Appendix H: EMP
			7. A suitably qualified Environmental Control Officer (ECO) must be appointed during the operational phase of the mine to ensure that rehabilitation measures are	7. Appointment of ECO during operational and rehabilitation phases is as per current EMP	

			being implemented as per the mining plan. Given the nature of the proposed mine plan, the applicant should be restricted from continuing to mine neighbouring sections, without the competent authority approving the extent of rehabilitation measures undertaken on mined areas.	requirements. As per legislative requirements the competent authority only issues one Mine Closure Certificate for all the proposed mining right areas as a whole once the mining operations have finished and rehabilitation have been adequately implemented, therefore if rehabilitation on any impacted area is not deemed adequate by the competent authority the Mine Closure Certificate will not be issued until all areas have been rehabilitated as per the requirements of the Mine Closure/Rehabilitation Plan and the mining company will remain responsible for rehabilitation of all of the affected areas until the Mine Closure Certificate have been issued.	
			8. It should be noted that no mining activities may occur, prior to the completion of the relevant Hessequa Municipality town planning application processes for the mine on the property.	8. Noted. It is the applicant's responsibility to ensure that all of the necessary town planning authorisations are obtained from the local authorities as/if required before mining commences on the property. Town planning application is not part of the scope of this Scoping EIA process. Town planning authorisation will however only be issued after and if a positive Environmental Authorisation and Mining Right have been obtained.	
			CapeNature may provide additional comment on any required further applications and reserves the right to revise initial comment and request further information based on any additional information that may be received.		

			Letter received as dated 31 August 2018: CapeNature, as custodian of biodiversity in the Western Cape1, would like to thank you for the opportunity to comment on the application for a mining right on Farm Uitspanskraal No. 585 Remainder Heidelberg (received on the 31st of July 2018) and would like to make the following comments. Please note that our comments only pertain to the biodiversity related impacts and not to the overall desirability of the application. CapeNature previously commented on the Draft Scoping Report, (which was withdrawn and resubmitted) on the 9th of November 2017 (Ref#: 14/2/6/1/6/5_HESS/585/REM_2017/CF128). Since that comment the proposed scope of works and literature sensitivity of the site has not changed so CapeNature sees no need to repeat that information within this comment. Following a review of the Draft Environmental Impact Report (DEIR), Environmental Management Programme Report (EMPr) and appendices, and given the above mentioned sensitivity of the site, CapeNature would like to make the following comments/recommendations: 1. The following comments relate directly to the Ecological Baseline Assessment Report: 1.1. The consultant may have misunderstood CapeNature's comment regarding fencing. CapeNature recommends that the mine area be fenced off, not the indigenous vegetation being fenced off. Although fencing off of the mining areas will result in a form of habitat fragmentation, the risk the mining operation has to fauna and livestock should be minimised where possible. This fence will also form a physical barrier which will reduce the risk of encroachment into the No-Go areas.	1.1 Recommended fencing off of significant slopes (i.e. steeper than 50 degrees) along mining quarry areas as proposed within cultivated agricultural lands have been included as mitigation measure within the EMPr to minimise potential risks on faunal movements. No-go area demarcation/fencing	

				requirements are already included in EMPr mitigation measures as previously listed in EAP replies.	
			1.2. Although the specialist did compile a No-Go Map, a vegetation habitat community map is also of importance in determining where specific communities are located relative to the mine footprint. This map provides additional information in relation to how some habitat (even if degraded), could be of importance relative to the proposed new surrounding land use. It is also recommended that for rehabilitation purposes, that the specialist recommend what vegetation community should have been growing in all areas, even those that are transformed or severely degraded. This map is also important from a faunal perspective as it will allow for decision makers to note where freshwater habitat is located. Such habitat is especially relevant for both terrestrial and aquatic fauna, as even if significantly degraded, these habitat can form important refugia for all fauna, especially when mining operations commence. The impact of mining near these habitat should be assessed and mitigated for accordingly. 1.3. The aforementioned habitat vegetation habitat community map will also assist the ECO in terms of rehabilitation guidelines. Should the applicant illegally transgress this map serves as a reference point for all competent authorities. It informs authorities of by how much the applicant transgressed, and where and what was exactly removed and how best to rehabilitate the region. This map should be cross referenced with an applicable species list by the specialist. The specialist should provide a list of plants to be used for rehabilitation purposes for by the ECO, depending on the habitat impacted.	1.2 -1.3 All forms of indigenous vegetation areas/habitats (aquatic and terrestrial) have been included in the mapped no-go areas whether degraded or not. All remaining indigenous vegetation areas and aquatic habitats were recorded on site and included and demarcated as part of the no-go areas. The proposed mining activities areas as indicated on the maps within the EBA and the No Go boundary maps within the EMPr does not have ANY signs of remaining indigenous or aquatic habitats/communities on site. Refer to Map 5 of the EBA which indicates the vegetation habitat communities associated with the areas assessed which is a combination of Eastern Ruens Shale Renosterveld (*Critically Endangered*), Cape Lowland Alluvial Vegetation (*Critically Endangered*) and Swellendam Silcrete Fynbos (*Endangered*) as part of the Fynbos biome. The potential impacts of the mining near these indigenous aquatic and terrestrial habitats have been assessed and accordingly mitigated, refer to point 7 in the EBA. As per current EMPr and	

				rehabilitation requirements if a no-go area is impacted upon during the mining activities a specialist must be appointed to assess the impacts and provide recommendations for rehabilitation. Historical and latest google earth images and no-go maps will be used to determine the extent of transgressions. The specialist assessing the specific impacted no-go area and surrounds will determine required rehabilitation measures and provide a list of associated indigenous plant species to be planted within any no-go indigenous vegetation areas which might have been impacted upon.	
			2. Within the rehabilitation plan, mention is made as to how silt can be removed from farm dams to be used in the rehabilitation process. This impact was not considered in any specialist studies and CapeNature did not note if applicable listing notice activities for such activity were applied for. In addition to which, should this be considered, it is recommended that specific dams be identified to be used for such purposes. The relevant impacts both on the dam itself and downstream impacts of increasing the capacity of such dams should also be assessed and the BGCMA should also comment regarding these proposed activities, as it is likely these will require approval in terms of the NWA.	2. Refer to amended rehabilitation plan and EMPr, stating that if this option is to be considered by the mine/applicant to source the required additional topsoil for rehabilitation that environmental authorisation and water use authorisation will first need to be obtained for the associated listed activities and impacts accordingly assessed before silt/materials can be removed from any farm dams.	
			3. The statement that the number of livestock cannot be reduced in line with the potential loss of grazing is concerning and should have been assessed in the Ecological Baseline Report as an indirect operational phase impact. If mining occurs no grazing will be allowed in the mine area, therefore it stands to reason	3. The statement says that the applicant cannot force the landowner to reduce the livestock numbers not that it cannot or will not be reduced by the landowner; it is however	

			that the surrounding vegetation in the No-Go areas will be impacted to a greater degree. If the farmer refuses to do reduce the number of livestock, then the impact should be assessed as such, or mitigation measures implemented accordingly (such as for example the mine providing additional feed for the livestock). Depending on the current stocking rates (and a variety of other factors), this impact could be minimal or extensive. This has potential direct ecological impacts on the remaining habitat. Ideally the stocking density of the farms should have been quantified and comment obtained from DAFF or applicable research presented regarding if the stocking density is in line with relevant guidelines and standards for the area. The specialist should also be able to determine how much of an impact this would have on the No-Go vegetation, without simply dismissing the comment. To conclude there is **insufficient information** to allow for CapeNature to make an informed decision regarding the proposed project. CapeNature may provide additional comment on any required further applications and reserves the right to revise initial comment and request further information based on any additional information that may be received.	up to the landowner whether or not he wants to do so. The landowner is compensated for the loss of agricultural land ("*agricultural land*" – includes land used for cultivation and grazing) therefore the "mine" pays/compensates the landowner not only for use of cultivation land but also for the use of grazing land while mining is in progress on a specific site. The landowner is therefore able to buy and provide additional feed to the livestock with these funds. Mining is also conducted in phases which means that not all of the proposed mining areas will be mined at once and therefore the current grazing regimes will be able to continue as is as current agricultural practices are to rotate grazing between lands, therefore not causing any additional strain/impacts on surrounding indigenous vegetation areas in terms of grazing impacts due to proposed mining activities.	
Heritage Western Cape	-	Notice of Intent to Develop	**Letter received as dated 13 October 2017:** **Notification of Intent to Develop: Proposed Zeolite**		

		submitted 22 Sept 2017 Draft Scoping Report was sent on 29 Sep 2017. Final Scoping Report was sent 6 Dec 2017 2nd Draft Scoping Report was sent on 23 March 2018 – no further comments received to date 25 April 2018	**and Bentonite Mine on the Remainder Extent of Farm Uitspanskraal 585, Heidelberg, Submitted in Terms of Section 38(8) of the National Heritage Resources Act (Act 25 of 1999)** **HWC Case Nr:** 17091923ASS0922E Heritage Western Cape is in receipt of your application for the above matter received on 22 September 2017. You are hereby notified that, since there is no reason to believe that the proposed zeolite and bentonite 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 palaeontological material be discovered during the execution of the activities above, all works must be stopped immediately and HWC must be notified without delay. This letter does not exonerate the applicant from obtaining any necessary approval from any other applicable statutory authority. HWC reserve the right to request additional information as required.	Noted – No Heritage Impact Assessment required. Recommendation included in EMP requirements to be adhered to during mining operational phase.	Appendix H:EMP
Department of Agriculture	-	Draft Scoping Report was sent on 29 Sep 2017. Final Scoping Report was sent 6 Dec 2017 2nd Draft Scoping	**Letter received on 26 January 2018 (dated 08/01/2018):** **MINING RIGHT APPLICATION: DIVISION HEIDELBERG FARM UITSPANSKRAAL NO 585** Your application of 29 September has reference. It is noted that no Agricultural Impact Assessment Report (AIAR) is furnished. Please furnish this office with an AIAR form an expert	Refer to Appendix E: Specialist	

		Report was sent on 23 March 2018 1st Draft EIA Report sent on 27 July 2018 – no further comments received to date. 1st Draft EIA Report sent on 27 July 2018 – no further comments received to date.	Soil Scientist (preferred SACNASP registered) to advice on the impact the mine has on the potential of the agricultural land, the best way of rehabilitation from an agricultural perspective (soil fertility, drainage of the area, prevention of saturation etc.) as well as the impact this has on the farm and loss of production. Please note this application also triggers a Section 53 (LUPA) application. Please also note: • That this is comment to the relevant deciding authorities in terms of the Subdivision of Agricultural Land Act 70 of 1970. • Kindly quote the above-mentioned reference number in any future correspondence in respect of the application. • The Department reserves the right to revise initial comments and request further information based on the information received. **Late comments/letter received on the Final Scoping Report on 18 June 2018:**	Reports for a copy of the Agricultural Impact Assessment conducted. All specialist recommendations have been incorporated into the EMPr and Rehabilitation Plan. As per the conclusion of the AIA, "*From an environmental impact assessment point of view the potential negative impact of long term reduction in soil potential can be completely mitigated through effective rehabilitation. Without mitigation the significance of the impact will be high, but with mitigation it will be low.* *If the additional recommended rehabilitation steps are included into the soil rehabilitation program, and effectively implemented, the mining process is assessed as not having any long term detrimental impact on soil potential. All the proposed quarries will be able to be returned to agricultural use, at the same level of productivity as pre-mining."* The applicant will be responsible for applying for the LUPA application once/if a positive EA and Mining Right are obtained during the EIA application process.	Appendix E: Specialist Report; EMP and Appendix F:Mine Closure/ Rehabilitation Plan

			FINAL SCOPING REPORT **MINING RIGHT APPLICATION: DIVISION HEIDELBERG** **FARM UITSPANSKRAAL NO 585** Your application of 5 December 2017 has reference. Please note that this application also triggers Section 53 of the Land Use Planning Act No3 of 2014. The Western Cape Department of Agriculture cannot assess the application without an agricultural impact assessment report as requested 2018/01/08. Please note: • Kind quote the above-mentioned reference number in any future correspondence in respect of the application. The Department reserves the right to revise initial comments and request further information based on the information received.	The applicant will be responsible for applying for the LUPA application once/if a positive EA and Mining Right are obtained during the EIA application process. An agricultural impact assessment has been conducted and is available under appendix E of the EIA report for review. No further comments from this department on the AIA report has been received to date 07/09/2018	
Communities	**X**				
Municipal Council to be consulted on behalf of Heidelberg Community	**-**	Draft Scoping Report was sent on 29 Sep 2017. Final Scoping Report was sent on 6 Dec 2017 2nd Draft Scoping Report was sent on 23 March 2018 1st Draft EIA Report			

		sent on 27 July 2018 – no comments received to date.			
Dept. Land Affairs	**NA**				
Traditional Leaders	**NA**				
Western Cape Dept. Environmental Affairs and Development Planning	**X**				
Directorate: Waste Management	-	1st Draft Scoping Report was sent on 29 Sep 2017. Final Scoping Report was sent 6 Dec 2017 2nd Draft Scoping Report was sent on 23 March 2018 1st Draft EIA Report sent on 27 July 2018	**Consolidated comments received on the 1st Draft Scoping Report via email on 11/01/2018 (letter dated 30/10/2017):** 4. Directorate: Waste Management – Mr Gary Arendse (Gary.Arendse@westerncape.gov.za; Tel: (021) 483 3713): 4.1 Waste which is temporarily stored at the mining site may not be stored for a period longer than 90 days. Please be advised that storage of hazardous and/or general waste of more than 80m3 and 100m³ respectively, excluding the storage of waste in lagoons or the temporary storage of such waste, would require the applicant to comply with GN No. 926 of 29 November 2013: National Norms and Standards for the Storage of Waste. 4.2 Page 63 of the 1st Draft EMPr indicates that various waste types will be disposed of by the mine operator. Please note that where hazardous waste is mixed with general waste, the entire volume of waste	4.1 Waste will neither be temporarily nor permanently stored/disposed of at the mining site. The only waste expected to be produced at the proposed mining site is general food and drink waste from the mining staff, who will be responsible for taking the waste with them on a daily basis to be disposed of at the mine processing plant which is not located on the proposed mining property. 4.2 It is not expected that the mine operator will produce any hazardous waste at the proposed mining site. However	- Appendix H: EMP

			will be regarded as hazardous. Hazardous and general waste should therefore be stored in separate containers. Schedule 3 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) defines and identifies categories and waste types and should be consulted to determine which wastes types are classified as hazardous waste. **Consolidated comments received on the 2nd Draft Scoping Report on 24 April 2018:** 4. Directorate: Waste Management – Ms Hadjira Peck (Hadjira.Peck@westerncape.gov.za; Tel: (021) 483 3003): 4.1 As per paragraph 3.1.1 above, incident management includes the reporting, containment and clean-up procedure of such incident and the remediation of the affected area. Containment, clean-up and remediation of incidents identified in section 30 of the NEMA, 1998 must commence immediately, and all the necessary documentation must be completed and submitted within the prescribed timeframes. **Consolidated comments received on the 1st Draft EIA Report via email on 28/08/2018:** 4. Directorate: Waste Management – Ms Hadjira Peck (Hadjira.Peck@westerncape.gov.za; Tel:(021) 483 3003: 4.1 The Directorate has no further comment on the application as this Directorate's previous comments on the new DSR have been addressed and incorporated in the EMPr.	as a general good practice rule waste management measures to be implemented by the mine operator if/when applicable have been included in the EMP requirements. 4.1 Recommendation included in the Draft EMP under Appendix H p) General Environmental Management Guidelines to be implemented during the Proposed Mining Activities – Fuel, Lubricant and Hazardous Material Handling Programme	Appendix H Draft EMP p) General Environmental Management Guidelines to be implemented during the Proposed Mining Activities – Fuel, Lubricant and Hazardous Material Handling Programme
Development/Land Management	-	1st Draft Scoping Report was sent on 29 Sep 2017.	**Consolidated comments received on the Draft Scoping Report via email on 11/01/2018 (letter dated 30/10/2017):** **COMMENT ON THE DRAFT SCOPING REPORT**		

			FOR THE PROPOSED MINING OF BENTONITE AND ZEOLITE BY CAPE BENTONITE MINE ON THE REMAINING EXTENT OF THE FARM UITSPANSKRAAL NO. 585, HEIDELBERG (SAMRAD FILE REFERENCE: 170222) 1. The Draft Scoping Report ("DSR") dated September 2017 as received by the Department on 2 October 2017 refers. Please find the Department's collated comments on the DSR. 2. Directorate: Development Management (Region 3) – Ms Shireen Pullen (Shireen.Pullen@westerncape.gov.za; Tel: (044) 805 8600): 2.1 It is understood that the proposal entails the mining of bentonite and zeolite on 151 hectares ("ha") of transformed agricultural land. The mining activities will take place in phases and the total size of the mining areas will encompass a total quarry size of 38.32ha. Page 10 of the DSR however states that 15.2ha is proposed for the mining activities area, which contradicts page 5 and 6, which refer to a mining application area of 151ha. Furthermore, page 10 of the DSR states that "*Mining operations on the 2.2ha applicable areas is expected to take approximately nine years*." Please provide clarity on the discrepancies indicated. 2.2 This Directorate is satisfied that the proposed layout is designed to avoid Critical Biodiversity Areas and Ecological Support Areas, which also considers the recommendations made in the Ecological Baseline Assessment dated September 2017 compiled by Eco Impact Legal Consulting. Although it is motivated that areas sensitive to physical disturbance will be avoided, this Directorate however remains concerned about the cumulative impact of the anticipated negative ecological impacts on the surrounding remnants of	2.1 Typing errors in the Scoping Report have been corrected. 2.2 Further assessment and mitigation of potential cumulative negative impacts on surrounding remnants of indigenous vegetation areas has been included in the impact assessment as part of the EIA report, and all associated mitigation measures have been included in the	- **v**) Impacts and risks identified including the

			indigenous vegetation. It is therefore important that the anticipated cumulative impacts be identified and described in the Final Scoping Report ("FSR") and be assessed during the environmental impact assessment ("EIA") phase, or at least describe how these impacts will be addressed. 2.3 Further, all mining activities should be restricted to the areas already disturbed by agricultural activities and be kept away from watercourses or drainage lines. 2.4 Consideration should also be given to the need and desirability of the proposal and to what extent the proposed mining activities will impact on the current land use (e.g. the agricultural potential of the portion of land earmarked for the proposed mining activities), as well as the socio-economic viability of the land. It is not clear which specialist study or report supports the concluding statement in the DSR 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.*" The FSR and Draft EIA Report should clearly specify which aspects of the environment will be outweighed, as it is not clear which findings inform this concluding statement. Considering the latter, inputs from the Department of Agriculture will critically inform the need for a Soil Potential Study to weigh the potential benefits of the proposed mining activities against the agricultural potential and benefits of the land from an agricultural perspective. If a Soil Potential Study is required by the Department of Agriculture, then the Plan of Study for EIA must be amended to include the specialist study.	EMP. 2.3 Noted. This is as per current proposed project description. All proposed mining activities are proposed to take place on already disturbed and cultivated lands and only existing access roads are to be used. 2.4 Refer to Appendix E: Specialist Reports for a copy of the Agricultural Impact Assessment conducted. All specialist recommendations have been incorporated into the EMPr and Rehabilitation Plan. As per the conclusion of the AIA, "*From an environmental impact assessment point of view the potential negative impact of long term reduction in soil potential can be completely mitigated through effective rehabilitation. Without mitigation the significance of the impact will be high, but with mitigation it will be low.* *If the additional recommended rehabilitation steps are included into the soil rehabilitation program, and effectively implemented, the mining process is assessed as not having any long term*	nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts were and can be mitigated – EIA Report Appendix E: Specialist Report; EMP and Appendix F:Mine Closure/ Rehabilitation Plan

				detrimental impact on soil potential. All the proposed quarries will be able to be returned to agricultural use, at the same level of productivity as pre-mining."	
			2.5 In terms of section 1 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) a holder *"in relation to a prospecting right, mining right, mining permit, retention permit, exploration right, production right, reconnaissance permit or technical co-operation permit, means the person to whom such right or permit has been granted or such person's successor in title."* Therefore, the holder of the mining right will ultimately be responsible for the rehabilitation of the mining right area. The Mine Closure/ Rehabilitation Plan dated September 2017 compiled by Eco Impact Legal Consulting must clearly articulate the financial provision that has been made for each stage/ phase of rehabilitation.	2.5 As per the proposed project and rehabilitation description rehabilitation will take place throughout the proposed mining operations. The expected rehabilitation costs associated with the proposed mining activities is calculated by the mining company using expected rehabilitation cost per hectare which the mining company obtains from the DMR. However should the total expected rehabilitation costs as calculated by the mining company at the time of the application proof to be insufficient to achieve the required rehabilitation objectives as set in the Mine Rehabilitation/Closure Plan the mining company/mining right holder will still be responsible to provide the necessary funds until final rehabilitation objectives have been achieved. This is as per current legislation and proposed EMP and Closure/Rehabilitation Plan requirements.	Appendix F:Mine Closure/ Rehabilitation Plan
			2.6 Rehabilitation of the mining right area must be focussed on restoring the topography (land form) and no significant depression should be left in the landscape. Local, indigenous vegetation should be reintroduced during the rehabilitation process. Where	2.6 These recommendations are as per current rehabilitation recommendations already included in the Closure/Rehabilitation Plan.	

			re-vegetation work will be done on the disturbed areas, only suitable vegetation must be used that naturally occurs in the immediate area and no alien plant species should be introduced into the area.		Appendix F:Mine Closure/ Rehabilitation Plan
			2.7 All road tracks that will be created because of vehicle movement over undisturbed veld must be rehabilitated as close as possible to the former state, and erosion-preventative measures must be implemented to mitigate potential erosion of loose soil, both from vehicle paths and the mined areas.	2.7 As per current EMP requirements no new road tracks may be created over undisturbed veld and only current access roads/tracks may be used during proposed mining activities. The requirement of implementing erosion-preventative/stormwater management measures have already been addressed in the EMP and Stormwater Management Plan as provided.	Appendix H: EMP
			2.8 Please be advised that the Planning Component of the Directorate: Development Management (Region 3) of this Department (Stiaan Carstens, e-mail: Stiaan.Carstens@westerncape.gov.za) should also be included in the list of potential interested and affected parties/ state Departments to be consulted on the development proposal.	2.8 Included in list of key departments to be consulted during the EIA phase.	
			2.9 Please be advised that the EIA Regulations, 2014 and its listing notices were amended on 7 April 2017 and came into effect on the same day. It is noted that Activity 21 of Government Notice ("GN") No. R. 984 of 4 December 2014 (as amended) has been applied for. Please note that said activity has been repealed and authorisation for the activity is therefore no longer required.	2.9 Activity 21 of GN 984 Listing Notice 2, as amended 7 April 2017 has been removed from applicable activities applied for.	Appendix C: Proof of Public Participation Process
			2.10 All specialist reports must comply with all the relevant information requirements stipulated in Appendix 6 of the EIA Regulations, 2014 (as amended). Similarly, the Environmental Management Programme ("EMPr") should comply with all the	2.10 Noted.	-

			relevant information requirements stipulated in Appendix 4 of the EIA Regulations, 2014 (as amended). 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. **Comments received on Final Scoping Report dated 31/01/2018**: **COMMENT ON THE FINAL SCOPING REPORT FOR LISTED ACTIVITIES ASSOCIATED WITH A MINING RIGHT ON REMAINING EXTENT OF FARM UITSPANSKRAAL NO 585, HEIDELBERG, WESTERN CAPE**	6. Noted - -	- -
		Final Scoping report received by the Department 11 Dec 2017	1. The final Scoping Report (dated 4 December 2017) but only received by this Department on 11 December 2017 refers. 2. It is uncommon for the Final Scoping Report to be subject to a 30 day commenting period, it is unclear which enabling provision has been implemented to do so. Nonetheless, it is not clear whether this Department's written comment on the draft Scoping Report was taken into account as the inputs do not reflect in the comments and responses report contained in the final Scoping Report. Thank you for the opportunity to provide comment on the proposed development. In light of the report only being received on 11 December 2017, the 30 day comment period is calculated to end on 31 January 2018. 3. Please consider the following comments: 3.1 It is understood that the proposed entails the	- 2. Consolidated comments on the Draft Scoping Report was only received on 11/01/2018, but has now been included and addressed in the Final Scoping Report. 3.1 Correct.	Appendix

			mining of bentonite and zeolite on 151 hectares (quarry extent 38.32hectares) of transformed agricultural land. The mining activities will take place in phases and the total size of the mining areas will encompass a quarry size of 3(8),32 hectares. 3.2 This Department is satisfied that the proposed development is designed to avoid Critical Biodiversity Areas (CBA's) and Ecological Support Areas (ESA's) and takes into account all recommendations made by specialists. 3.3 The cumulative impacts identified in the Final Scoping Report must be assessed during the environmental impact phase or at least be described how these will be addressed. 3.4 Further, all mining activities should be restricted to the areas already disturbed by Agricultural activities and kept away from water courses or drainage lines. 3.5 Rehabilitation of the prospecting area must be focussed on restoring the topography (land form), and no significant depression should be left in the landscape. Indigenous vegetation should be reintroduced during the rehabilitation process. 3.6 Where re-vegetation work will be done on the disturbed areas, only suitable and locally indigenous vegetation must be used that occurs naturally in the immediate area. 3.7 All road paths that will be created as a result of	- 3.3 Further assessment of potential cumulative negative impacts on surrounding remnants of indigenous vegetation areas has been included in the Plan of Study to be further assessed during the EIA phase. 3.4 This is as per current proposed project description. All proposed mining activities are proposed to take place on already disturbed and cultivated lands and only existing access roads are to be used. 3.5 These recommendations are as per current rehabilitation recommendations already included in the Closure/Rehabilitation Plan. 3.6 These recommendations are as per current rehabilitation recommendations already included in the Closure/Rehabilitation Plan. 3.7 As per current EMP	C:Proof of Public Participation Process and Scoping report (h) iii) Summary of Issues Raised by I&APs Scoping Report (i) Plan of Study for the Environmental Impact Assessment

			vehicle movement over undisturbed veld must be rehabilitated as close as possible to the former state and erosion-preventative measure must be implemented to mitigate potential erosion of loose soil, both form vehicle paths and the drilled sites.	requirements no new road tracks may be created over undisturbed veld and only current access roads/tracks may be used during proposed mining activities. The requirement of implementing erosion-preventative/stormwater management measures have already been addressed in the EMP and Stormwater Management Plan as provided.	Phase - Appendix F: Mine Closure/ Rehabilitation Plan
			3.8 Consideration should also be given to the need and desirability of the proposal and to what extent the proposed mining activities will impact on the current land use (e.g. the agricultural potential of the portion of land earmarked for the proposed mining activities), as well as the socio-economic viability of the land. It is not clear which specialist study or report supports the concluding statement in the DSR 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.*" The FSR and Draft EIA Report should clearly specify which aspects of the environment will be outweighed, as it is not clear which findings inform this concluding statement. Considering the latter, inputs from the Department of Agriculture will critically inform the need for a Soil Potential Study to weigh the potential benefits of the proposed mining activities against the agricultural potential and benefits of the land from an agricultural perspective. 3.9 Further to the above, it is noted from the mining methods that overburden will be mined in benches up to the point where the bentonite is intersected. After the bentonite is mined, the overburden will be backfilled into the quarry as mining is advancing, until completed. After landscaping of the overburden, the topsoil will be returned and spread evenly.	3.8 The Department of Agriculture has requested an Agricultural IA Report therefore a Soil Scientist is to be appointed during the EIA phase to conduct and provide the requested Agricultural Impact Assessment Report. This is part of the Plan of Study as provided in the Scoping Report and will also address the Need & Desirability issues as listed by the Department.	Appendix F: Mine Closure/ Rehabilitation Plan Appendix H: EMP Appendix G2 and G3: Stormwater Management Plan and Guidelines Scoping Report (i) Plan of Study for the Environmental Impact Assessment Phase

			The information in the Scoping Report is unclear on the- 3.9.1 Landform/Topography of the site post decommissioning. The difference in the current ground level and the expected level after the backfill and landscaping (decommissioning) is completed is unclear. As it is not stated that material will be imported to reinstate the decommissioned mine to the current ground level, the mined area is expected to lead to depressions in the landscape. The depth of the depressions is unknown at this point, however, it is expected that this will influence the future land use. All decommissioned sites must be free flowing and the end-use of the mine may not constitute a storage dam or water detention facility. It is noted that during the mining operation stormwater will be diverted around the excavations. It is unclear whether the stormwater flow will be restored to a natural system. This aspect should be clarified and dealt with in the EIR.	3.9.1 As per current closure/rehabilitation objectives the end-use of the proposed mining activities area on transformed cultivated agricultural land will be to rehabilitate the area to its previous agricultural potential/state therefore no storage dams or water detention facilities area is proposed. Concerning rehabilitation of excavated areas and avoiding depressions the closure/rehabilitation plan also states the following - *The backfilled area must be contoured according to existing surrounding contours of the cultivated land to prevent erosion. 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*	Appendix F: Mine Closure/ Rehabilitation Plan

				maintenance of a slope. No depressions or compaction in the soil should remain after rehabilitation. Depression and compaction will impede water movement through the soil profile. The engineered constructed contours must be reinstated as soon as a phase is completed to ensure that stormwater are free flowing, but does not cause erosion of rehabilitated sites. Therefore with implementation of the rehabilitation plan the MR holder will be responsible for rehabilitating the excavated areas according to its pre-mining surface slope and stormwater flow patterns.	
			3.9.2 Dimensions of the landscaped area (i.e. slope between current ground level and floor of mined area). The slope should not be more than 1:5. Rehabilitation of the mining area must be focussed on restoring the topography (land form), and no significant depression should be left in the landscape. Locally indigenous vegetation should be reintroduced during the rehabilitation process where the sites will not be prepared for agricultural land-use. The cut face slopes of the mining area must be rehabilitated to a slope of preferably 1:6 but not exceeding a gradient of 1:5 (v:h);	3.9.2 Refer to EAP reply in 3.9.1 above, all proposed excavations areas to be rehabilitated to its pre-mining surface slope and existing contours to be reinstated.	
			3.9.3 Impact Management Outcome regarding the future land use is vague and needs clarity.	3.9.3 As according to current rehabilitation/closure objectives - *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, accept*	

				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. Management and maintenance is expected to continue until after the first winter rain season and the closure certificate is issued or once the land has been cultivated by the landowner. Maintenance will be focused on erosion prevention and removal of weed and alien vegetation species on the mined area.	Appendix F: Mine Closure/ Rehabilitation Plan
			3.10 All Specialist Reports submitted with the Environmental Impact Assessment Report must comply with all the relevant information requirements stipulated in Appendix 2 of the EIA Regulations, 2014 (as amended).	3.10 Noted – as part of the Terms of Reference set for the specialists in the Plan of Study for EIA phase.	
			3.11 The Environmental Management Programme submitted with the Environmental Impact Assessment Report must comply with all the relevant information requirements stipulated in Appendix 4 of the EIA Regulations, 2014 (as amended).	3.11 Noted.	
			3.12 You are also reminded that the planning component of the Directorate: Development Management (Region 3) of this Department should also be included in the list of interested and affected parties to comment on the proposal. 4. This Department will review the Draft Environmental Impact Report once received. It is trusted that the issues and concerns raised above will be adequately addressed before a decision is made on the	3.12 Included in list of key departments to be consulted during the EIA phase.	Scoping Report (i) Plan of Study for the Environmental Impact Assessment Phase

		2nd Draft Scoping Report was sent on 23 March 2018	application. **Consolidated comments received on the 2nd Draft Scoping Report on 24 April 2018:** 2. Directorate: Development Management (Region 3) – Ms Shireen Pullen (Shireen.Pullen@westerncape.gov.za; Tel: (044) 805 8600): 2.1 This Directorate notes that its comments on the previous application (dated 30 October 2017 and 31 January 2018) were captured correctly and responded to in the new DSR. This Directorate has no new comments on the DSR, but reiterates that the Planning Component of this Directorate (attention: Mr Stiaan Carstens) should be consulted on the development proposal during the Environmental Impact Assessment ("EIA") Reporting phase of the application. Kindly notify the Directorate: Development Facilitation (Adri.LaMeyer@westerncape.gov.za) when such request is made to Mr Carstens to ensure that the comments from the Planning Component are included in this consolidated Department's comments on the Draft EIA Report. **Letter received and dated 20 April 2018:** COMMENT ON THE DRAFT SCOPING REPORT FOR LISTED ACTIVITEIS ASSOCIATED WITH A MINING RIGHT ON REMAINING EXTENT OF FARM UITSPANSKRAAL NO. 585 HEIDELBERG, WESTERN CAPE 1. The draft Scoping Report received by the Directorate: Development Management Region 3 (hereinafter referred to as "this Directorate") on 28 March 2018 refers. 2. It is noted that the previous application with the Department of Mineral Resources lapsed due to the fact that the final Scoping Report was not received	2.1 Included in list of key departments to be consulted during the EIA phase, and Directorate: Development Facilitation also notified and included.	Appendix C: Proof of Public Participation Appendix C: Proof of Public Participation

		1st Draft EIA Report sent on 27 July 2018	within the legislated timeframe. 3. It is also noted that the proposal has not changed and therefore this Directorate has no additional comment at this stage. All comments provided during the previous round of Public Participation is still valid. 4. This Directorate will review the Environmental Impact Report once received. It is trusted that the issues and concerns raised during the previous round of PPP will be adequately addressed before a decision is made on the application. **Consolidated comments received on the 1st Draft EIA Report via email on 28/08/2018:** **COMMENT ON THE DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR LISTED ACTIVITIES ASSOCIATED WITH A MINING RIGHT ON THE REMAINING EXTENT OF THE FARM UITSPANSKRAAL NO. 585, HEIDELBERG (DMR REFERENCE: WC30/5/1/2/2/10098MR)** 1. The previous Draft Scoping Report ("DSR") dated September 2017, the Department's comments thereto dated 30 October 2017, the Final Scoping Report ("FSR") dated December 2017, comments thereto dated 31 January 2018, the new DSR dated March 2018, the Department's comments thereto dated 24 April 2018 and the Draft Environmental Impact Assessment ("EIA") Report dated July 2018 that was received by this Department on 27 July 2018, refer. 2. It is understood that the proposal entails the mining of bentonite and zeolite on 151 hectares of transformed agricultural land.		

			The mining activities will take place in phases and the total size of the mining areas will encompass a quarry size of 38.32 hectares. It is also understood from the Draft EIA Report that no new roads will be constructed to provide access to the proposed site and there would be no site buildings located at the mining site. Site infrastructure would be restricted to a chemical toilet and waste bin. Please find the Department's comments on the Draft EIA Report. 3. Directorate: Development Management (Region 3) – Mr Malcolm Fredericks / Ms Shireen Pullen (Malcolm.Fredericks@westerncape.gov.za: Tel: (044) 805 8600): 3.1 <u>Impact on current land use / agricultural potential of soil</u> 3.1.1 It is evident from the findings of the Agricultural Impact Assessment dated July 2018 that the soils are particularly sensitive to disturbance and that their agricultural potential can be drastically reduces by the mining process, if not well rehabilitated. 3.1.2 The agricultural specialist and Draft EIA Report further confirms that without proper rehabilitation mitigation, the significance of the impact will be high. 3.1.3 According to the Draft EIA report, the potential negative impact of reduction in soil potential can be completely	3.1 and 3.2 Agricultural rehabilitation methods to be implemented as proposed by agricultural specialist and included in rehabilitation plan and EMPr.	

			mitigated through effective rehabilitation. 3.1.4 As such, this Department strongly emphasizes and advise the competent authority to ensure that adequate financial provision is provided by the applicant for effective rehabilitation of the areas that will be disturbed or affected by the proposed mining activities. 3.1.5 Effective rehabilitation should therefore include extra double stripping and addition of extra topsoil to the rehabilitated land, as it would alleviate the problem of deeper, saline material being in contact with crop roots; and additional topsoil will alleviate the lack of topsoil according to the agricultural specialist. 3.2 <u>Need & desirability</u> 3.2.1 This Department is further convinced that the findings of the Agricultural Impact Assessment serves as sufficient supporting evidence that the proposed mining activities will not negatively impact on the socio-economic viability of the land for future agricultural use, subject to strict implementation of the rehabilitation mitigation measures proposed by the agricultural specialist. 3.2.2 The finding of the Ecological Baseline Assessment dated September 2017 also support the concluding statement		

			in the Draft EIA Report that the potential benefits of the proposed mining activities will outweigh the potential negative impact on the environment. 3.2.3 The potential employment opportunities (e.g. direct employment for at least 43 local persons), cornpensation for the landowner and the possibility that the current agricultural land use practice can still be pursued in future, adequately address some of the concerns relating to the need and desirability of the proposal. 3.3 <u>Impact on the receiving biophysical environment</u> 3.3.1 According to the Ecological Baseline Assessment, sensitive environmental features were identified on the site and surrounds, which include non-perennial secondary drainage lines with associated indigenous vegetation areas adjacent to the proposed mining areas. 3.3.2 These have been identified as Aquatic Critical Biodiversity Areas ("CBAs") and associated buffer and Ecologically Support Areas ("ESAs"). 3.3.3 The fact that some mining areas partially fall within the mapped ESAs, the important role of ESAs in supporting the functioning of CBAa	3.3 Biodiversity specialist recommendations to be implemented as recommended and included in EMPr requirements.	

			and maintaining ecosystems services cannot be ignored. 3.3.4 As such, the implementation of proper buffer and storm water measures to maintain the current ecological process (as recommended by ecological specialist) must be strictly imposed as a prerequisite/condition by the competent authority. 3.4 <u>Storm water management</u> 3.4.1 The Impact Management Outcome section, potential impact column of the Draft Environmental Management Programme ("EMPr") must align the proposed mitigation measures regarding storm water management, in accordance with the recommendation of the Ecological Baseline Assessment. This relates to site-specific storm water management measures that must be designed and implemented for each proposed quarry area to prevent the accumulation of storm water in the quarries. 3.4.2 The EMPr states that there is sufficient slope and elevation in the proposed mining area to avoid the creation of depressions, ponding of water and accumulation of excess moisture in depression areas; however, this deals mainly with the impact of mining on agricultural land/soils, and not the potential impact on ecological runoff	3.4.1 All specialists recommendations have been included in the EMPr mitigation measures, including proposed stormwater management measures to be implemented 3.4.2 This statement and impact as assessed also deals with potential impact on runoff to adjacent areas not only on proposed mining areas. The site specific and general stormwater mitigation measures as proposed and included in the EMPr to be implemented is designed in such a manner so as to allow continued functioning of	

			areas/non-perennial drainage lines that require this (unpolluted) run-off water to maintain ecological functioning. This impact must be addressed in the EMPr.	(unpolluted) runoff to continue current ecological functioning status que. As per EMPr requirements this will also be monitored by the ECO and if it is found that stormwater management measures implemented is not sufficient additional/alternative measures will also be proposed until the desired runoff state is reached.	
			3.4.3 This Directorate is satisfied that the identified cumulative impacts have been addressed in the Draft EIA Report in terms of extent, duration, magnitude, probability and significance and rated accordingly with, and without mitigation. However, it is not clear to from any of the specialist studies conducted whether cumulative impacts have been assessed or considered as part of the assessments, as none of these studies refer to how cumulative impacts must be addressed.	3.4.3 The same impact assessment methodology was used by the ecology specialists as was used within the EIA report and the agricultural specialists discussed cumulative impacts within his report under point 6.5 of the report therefore cumulative impacts were also assessed by specialists and associated required mitigation measures were provided by the specialists in their assessments and included in EMPr recommendations.	
			3.5 This Directorate would like to re-iterate the following comments dates 31 January 2018 provided on the previous FSR dated December 2017:		
			3.5.1 All mining activities should be restricted to the areas already distributes by agricultural activities and be kept away from watercourses or drainage lines.	3.5.1 This is as per current project proposal, and recommended to be included as EA condition.	
			3.5.2 Rehabilitation of the mining area must	3.5.2 This is as per current rehabilitation requirements	

			be focussed on restoring the topography (land form), and no significant depression should be left in the landscape.	included in EMP and rehabilitation plan.	
			3.5.3 Indigenous vegetation should be reintroduced during the rehabilitation process.	3.5.3 and 3.5.4 As per current rehabilitation requirements included in rehabilitation plan. If any no-go indigenous vegetation areas are impacted upon during mining activities a specialist botanists must/will be appointed to assess significance of impacts and provide rehabilitation recommendation measures to be implemented to restore impacted indigenous vegetation areas.	
			3.5.4 Where re-vegetation work will be done on the disturbed areas, only suitable and locally indigenous vegetation must be used that occurs naturally in the immediate area.		
			3.6 The following issue / concern relating to the topography of the site that was previously raised on the FRS remains unanswered in the Draft EIA Report. There is no clear response in the Draft EIA Report whether material will be imported to reinstate the decommissioned mine to the current ground level)pre-mining surface slope and existing contours) as the mined area is expected to lead to depressions in the landscape. The depth in the depressions is unknown at this point, however, it is expected that his will influence the future land use.	3.6 As per current EMPr and rehabilitation mitigation measures, the applicant is responsible to restore the proposed mining areas to its pre-mining state which includes restoration of surface slope and existing contours and no depressions may be left/occur at the mining areas. If it is therefore deemed necessary to import additional soil from elsewhere to restore the topography the applicant must do so.	
			3.7 Apart from paragraph 3.4.1 above, this Directorate is satisfied that the Impact	-	

			Management Outcome in terms of the future land use has been addressed, as the Agricultural Impact Assessment has been confirmed future use of mining area for agricultural purposes, subject to effective rehabilitation measures being employed. 3.8 It is however noticed from Appendix C of the Draft EIA Report that the Planning Component of the Directorate: Development Management (Region 3) of this Department has still not been included in the list of interested and affected parties to comment on the proposal, as previously advised. 3.9 This Directorate trust that the Final EIA Report will be included and address all the outstanding issues and concerns raised above to accurately inform the final decision on the application.	3.8 Please refer to Table 1 of Appendix C – 4th I&AP as listed in the table. Mr Stiaan Carstens DEA&DP:Planning was included. -	
Pollution and Chemical Management	-	1st Draft Scoping Report was sent on 29 Sep 2017. Final Scoping Report was sent 6 Dec 2017 2nd Draft Scoping Report was sent on 23 March 2018	**Consolidated comments received on the Draft Scoping Report via email on 11/01/2018 (letter dated 30/10/2017):** 3. Directorate: Pollution and Chemicals Management – Ms Nicole Garcia (Nicole.Garcia@westerncape.gov.za; Tel: (021) 483 8352): 3.1 It is noted that the proposed mining areas will be rehabilitated to its previous state once mining operations have ceased. Storing of topsoil is likely to decrease the agricultural land value and the applicant must indicate what the return value of the land would be after the rehabilitation process is completed (i.e.	3.1 The Department of Agriculture has requested an Agricultural IA Report therefore a Soil Scientist is to be appointed during the EIA phase to conduct and provide the	Scoping Report (i) Plan of Study for the Environmental

		1st Draft EIA Report sent on 27 July 2018 – no additional comments received to date	what percentage of the mining area will not be able to be reused for agricultural purposes?).	requested Agricultural Impact Assessment Report. This is part of the Plan of Study as provided in the Scoping Report and will also address the issues as listed by the Department	Impact Assessment Phase
			3.2 The Ecological Baseline Assessment states that the drainage lines of the site feed into the lower lying man-made farm dams and the Duiwenhoks River. The Storm Water Management Plan attached as Appendix G2 of the DSR must be included in the Draft EIA Report. Pollution of the farm dams must be prevented to create a situation where it becomes unsuitable for irrigation purposes. Furthermore, natural water resources (i.e. the Duiwenhoks River and groundwater resources) may not be polluted due to mining operations.	3.2 The stormwater management plan will be included as part of the EIA Report. As per current EMP requirements no pollution of surface nor groundwater resources may occur due to the proposed mining activities and if evidence of such occurrence is noted polluted resources must be rehabilitated and additional prevention measures must be implemented.	Appendix H: EMP
			3.3 It is noted that a 1st Draft EMPr was included as an appendix to the DSR. Please be advised that an EMPr should be submitted with the EIA Report, as per Regulation 23 of the EIA Regulations, 2014 (as amended). Notwithstanding this, the EMPr must be amended to address the following recommendations:	3.3 The EMP will be included as part of the EIA Report phase as well.	
			3.3.1 Where possible, all haulage vehicles exiting the site must be suitably covered when transporting materials to minimise the impact of windblown dust;	3.3.1 Recommendation has been included in EMP requirements.	Appendix H:EMP
			3.3.2 Overloading of vehicles carrying minerals must not be allowed; and	3.3.2 Recommendation has been included in EMP requirements.	
			3.3.3 A wheel washing facility should be installed and used.	3.3.3 All washing of vehicles etc. and equipment have been installed and are available at the mine processing plant which is on another property	Appendix H: EMP

				nearby and therefore a wheel washing facility will not be installed nor required at the property proposed to be mined.	
			Consolidated comments received on the 2nd Draft Scoping Report on 24 April 2018: 3. Directorate: Pollution and Chemicals Management – Ms Nicole Garcia/ Ms Shehaam Brinkhuis (Nicole.Garcia@westerncape.gov.za; Shehaam.Brinkhuis@westerncape.gov.za; Tel: (021) 483 8352/ 8309): 3.1 Regarding the 3rd Draft Environmental Management Programme ("EMPr") attached as Appendix H of the new DSR, the following preliminary comment is offered for inclusion in the EMPr to be submitted with the EIA Report: 3.1.1 The sections on hydrocarbon spillage and leakage of hazardous substances must be expanded to include the reporting mechanisms of such incidences to all the relevant authorities (including to this Directorate) in accordance with section 30 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"). 3.1.2 When used as a liquid absorber, bentonite waste could be disposed of with other non-toxic and inactive materials at a suitably licenced waste disposal facility. This recommendation is only allowed for bentonite waste disposal consistent with the prescribed regulations and only if used for non-toxic waste mitigation purposes. 3.1.3 The EMPr should include a responsible chemicals management plan for chemicals (including hazardous materials such as fuels) used during the proposed development. All chemicals must be handled,	3.1.1 Reporting mechanism included in the Draft EMP under Appendix H p) General Environmental Management Guidelines to be implemented during the Proposed Mining Activities – Fuel, Lubricant and Hazardous Material Handling Programme 3.1.2 No bentonite waste disposal is proposed as part of the mining right applied for as excavated bentonite materials are processed on a different property where the processing plant is located. 3.1.3 No chemicals or fuels is to be handled, stored, transported or disposed of at the property on which the	Appendix H Draft EMP p) General Environmental Management Guidelines to be implemented during the Proposed Mining Activities – Fuel, Lubricant and Hazardous Material Handling Programme

			stored, transported and disposed of in a responsible and environmentally safe manner.	mining right is being applied for. Mining vehicles are to be refuelled elsewhere at petrol stations and/or the processing plant where fuels and chemicals are stored etc. therefore chemicals management plan is not applicable for the mining right activities being applied for.	
Directorate: Air Quality Management		2nd Draft Scoping Report was sent on 23 March 2018 1st Draft EIA Report sent on 27 July 2018	**Consolidated comments received on the Draft Scoping Report via email on 11/01/2018 (letter dated 30/10/2017):** 5. Directorate: Air Quality Management – Mr Peter Harmse (Peter.Harmse@westerncape.gov.za; Tel: (021) 483 4383): 5.1 The DSR indicates that the proposed mining activities may result in noise and dust impacts during the operational and decommissioning phases. It is noted that the 1st Draft EMPr provide mitigation measures to address the mentioned impacts. This Directorate awaits the Draft EIA Report with associated EMPr for further comment. 5. Directorate: Air Quality Management – Mr Peter Harmse (Peter.Harmse@westerncape.gov.za; Tel: (021) 483 4383): 5.1 This Directorate notes that the 3rd Draft EMPr provides mitigation measures to address noise and dust impacts during the construction, operation and decommissioning phases of the proposed development. This Directorate awaits the Draft EIA Report with updated EMPr for further comment. **Consolidated comments received on the 1st Draft EIA Report via email on 28/08/2018:** 5. Directorate: Air Quality Management – Mr Peter Harmse (Peter.Harmse@westerncape.gov.za; Tel: (021) 483 4383): 5.1 The noise and dust control mitigation	- - 5.1 Compilation and	

			measures proposed in the EMPr are generally supported for implementation. It is further recommended that dust suppression measures should be implemented through a dust monitoring programme or fugitive dust control plan to limit the emission of particulate matter. 5.2 The applicant is reminded of the "general duty of care towards the environment" as prescribed in section 28 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) to ensure that the proposed mining activities do not cause significant pollution or degradation of the environment.	implementation of dust monitoring programme included in the EMPr requirements	
Other Competent Authorities affected	**NA**				
OTHER AFFECTED PARTIES					
NA					
INTERESTED PARTIES					
NA					

iv) The Environmental attributes associated with the development footpring alternatives.

(The environmental attributes 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.

The highest elevation of the property is located north being 310m above mean sea level and the lowest in the middle at 120m above mean sea level.

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

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*), Cape Lowland Alluvial Vegetation (*Critically Endangered*) and Swellendam Silcrete Fynbos (*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 fall within mapped Ecological Support Areas (Res) *Category 1: ESA 2 Restore from other land use*. These ESAs 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. Due to these areas already being historical and ongoing cultivated agricultural lands restoration will not be feasible or reasonable, but the areas must and can be managed to maintain current ecological processes. With the implementation of proper buffer and stormwater management measures as proposed the mining activities will not have a significant detrimental impact on these ESAs and surrounding CBAs.

Also refer to the Ecological Baseline Assessment as done by Eco Impact dated September 2017 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. No archaeologically significant resources were found during the foot survey. The mining operation will not impact on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 or impact on any building or structure older than 60 years in any way.

(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 &~~	~~Light industrial~~	~~Medium industrial~~

	~~warehousing~~		
~~Power station~~	~~Office/consulting room~~	~~Military or police base/station/compound~~	~~Casino/entertainment complex~~
~~Open cast mine~~	~~Underground mine~~	~~Spoil heap or slimes dam~~	**Quarry X**, ~~sand or borrow pit~~
~~Hospital/medical center~~	~~School~~	~~Tertiary education facility~~	~~Church~~
~~Sewage treatment plant~~	~~Train station or shunting yard~~	~~Railway line~~	~~Major road (4 lanes or more)~~
~~Harbour~~	~~Sport facilities~~	~~Golf course~~	~~Polo fields~~
~~Landfill or waste treatment site~~	~~Plantation~~	**Agriculture X**	**River, stream, wetland or drainage line X**
~~Mountain, koppie or ridge~~	~~Museum~~	~~Historical building~~	~~Graveyard~~
~~Archaeological site~~			
~~Other land uses (describe~~):			

Provide a description:

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

(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.

Artificial and natural wetlands also exist throughout the property due to man-made and natural dams.

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 site and surrounds as surveyed include non-perennial secondary drainage lines with associated indigenous

				vegetation areas that are present adjacent to the proposed mining areas due to the undulating nature of the landscape, which has also been identified as Aquatic Critical Biodiversity Areas and with associated buffer and Ecological Support Areas. The drainage lines feed into lower lying man-made farm dams and the Duiwenhoks River catchment area. The only surface water run-off that is occasionally present in the drainage lines is storm water runoff during heavy rains. The indigenous vegetation remnants, which exists throughout the property mainly associated with the non-perennial drainage line areas too steep to plough for cultivation, consists of Critically Endangered - Eastern Ruens Shale Renosterveld and Cape Lowlands Alluvial Vegetation and Endangered – Swellendam Silcrete Fynbos also identified as Terrestrial Critical Biodiversity Areas ("CBA") as according to the Western Cape Biodiversity Spatial Plan (2017) for Hessequa. Mining activities will however only occur on already ploughed and cultivated land and will not impact on any indigenous vegetation. Some of the proposed mining activities areas partially fall within mapped Ecological Support Areas (Res) *Category 1: ESA 2 Restore from other land use*. These ESAs 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. Due to these areas already being historical and ongoing cultivated agricultural lands restoration will not be feasible or reasonable, but the areas must and can be managed to maintain current ecological processes. With the implementation of proper buffer and stormwater management measures as proposed the mining activities will not have a significant detrimental impact on these ESAs and surrounding CBAs.

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.

Terrestrial Ecosystems		**Aquatic Ecosystems**		
Ecosystem threat status as per the National Environmental	~~Critical~~	Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps	Estuary	Coastline
	~~Endangered~~			
	~~Vulnerable~~			

Management: Biodiversity Act (Act No. 10 of 2004)	~~Least/Not Threatened~~	pans, and artificial wetlands)						
		~~YES~~	**NO**	~~UNSURE~~	~~YES~~	**NO**	~~YES~~	**NO**

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

Sensitive environmental features that were identified on the site and surrounds as surveyed include non-perennial secondary drainage lines with associated indigenous vegetation areas that are present adjacent to the proposed mining areas due to the undulating nature of the landscape, which has also been identified as Aquatic Critical Biodiversity Areas and with associated buffer and Ecological Support Areas. The drainage lines feed into lower lying man-made farm dams and the Duiwenhoks River catchment area. The only surface water run-off that is occasionally present in the drainage lines is storm water runoff during heavy rains. The indigenous vegetation remnants, which exists throughout the property mainly associated with the non-perennial drainage line areas too steep to plough for cultivation, consists of Critically Endangered - Eastern Ruens Shale Renosterveld and Cape Lowlands Alluvial Vegetation and Endangered – Swellendam Silcrete Fynbos also identified as Terrestrial Critical Biodiversity Areas ("CBA") as according to the Western Cape Biodiversity Spatial Plan (2017) for Hessequa.

Some of the proposed mining activities areas partially fall within mapped Ecological Support Areas (Res) *Category 1: ESA 2 Restore from other land use*. These ESAs 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. Due to these areas already being historical and ongoing cultivated agricultural lands restoration will not be feasible or reasonable, but the areas must and can be managed to maintain current ecological processes. With the implementation of proper buffer and stormwater management measures as proposed the mining activities will not have a significant detrimental impact on these ESAs and surrounding CBAs.

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 April 2016 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 the 151Ha 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 will create an increase in dust levels. When the topsoil is removed there may be windblown soil.

Cumulative impacts:
The potential for dust nuisance due to vegetation clearing and mining is not expected to be more significant than the potential dust nuisance that is created during the ploughing of adjacent 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 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.
- Site specific stormwater management measures must be implemented as per EMPr requirements and stormwater management plan provided

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 Mitigation	With Mitigation	
Extent	2	1	Not Applicable (No mining activities to take place
Duration	2	2	

Magnitude	6	2	during the No-Go Alternative)
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 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 prospecting of the site may occur within the buffer areas.

Cumulative impacts:
Disturbance and transformation of adjacent drainage lines 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).
- 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 amd 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	Low negative significance if	

	mitigated	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	1-Will not be lost		

loss of resources		
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 resources	1-Will not be lost		
Can impacts be mitigated?	1- Can be completely mitigated		

POTENTIAL IMPACTS ON SOCIO-ECONOMIC ASPECTS

Nature of impact:
Sustained jobs

Discussion:
The continued employment of at least 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	
Duration				
Magnitude				

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

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

Discussion:
The mining machinery will only have a traffic impact on delivery to and collection from the site and is therefore regarded as negligible. Making use of existing roads will cause deterioration. Also potential dust generation and noise generation and safety concerns for surrounding residents.

Cumulative impacts:
The minor 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 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 be applicable when delivery trucks drive through areas were 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.

	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?	1- Can be completely 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 quarry areas 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.

The following additional steps in the rehabilitation process are recommended as per the Agricultural Impact Assessment conducted to ensure maintenance of soil potential:

1. 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.
2. Additional topsoil. To overcome the compromise to the topsoil discussed above, additional topsoil should be added to the rehabilitated land. In order for this to be feasible, additional topsoil will need to be sourced. One possible source is from the numerous, small, man made farm dams on the farm. However, the clearing of sediments, even from a man made dam, is subject to environmental authorisation, which may not be possible to get in this case, even though it is technically a very suitable choice and constitutes a win-win in terms of improving topsoil as well as improving the water storage capacity of the dams. It is therefore worth fully investigating the feasibility of this option. If the dams are not a feasible source of topsoil, an alternative and economically feasible source will need to be found. Commercial sources may not be feasible in terms of costs and available quantities. If no feasible source exists in the area, it will not be possible to implement this rehabilitation measure, and long term soil production potential will therefore be compromised to some extent. If additional topsoil can be sourced, it should be spread over the surface, once the stripped and stockpiled topsoil has already been spread. This additional layer of topsoil should be added at a minimum rate of 200 cubic metres per hectare, which is the equivalent of a 2 cm thick layer on the surface.
3. 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	2		
Probability	5	5		
Significance	85 - High	25 - Low		
Status	High Negative significance if not mitigated	Low Negative significance if mitigated		
Reversibility	100% Reversible			
Irreplaceable loss of resources	1-Will not be lost if mitigated			
Can impacts be mitigated?	2 – Can be partly mitigated			

POTENTIAL IMPACTS ON CULTURAL-HISTORICAL ASPECTS

Nature of impact:
The potential impact of the proposed development on archaeological, paleontological and heritage remains

Discussion:
No 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. There is no residential areas close by and as such the noise impact will not be significant.

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

Mitigation:

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

	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	Low negative significance if mitigated	

	not 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 and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks

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

RISK REGISTER

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

- Health and safety risks (5);

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

Category	Number	Issue / Risk Event
Health & Safety	1	Risk of public injury/death due prospecting operations
	2	Risk of injury/ death to livestock and natural fauna due to prospecting operations
	3	Risk of public injury/ death due to drowning in poorly drained prospecting 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 prospecting 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 prospecting 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* prospecting
	11	Risk of spread of alien/ invasive vegetation due to disturbance caused by prospecting
	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 prospecting 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 prospecting 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 prospecting area
	23	Risk of legal action or compensation claim by third party due to irresponsible operation/abandonment of the prospecting area
	24	Risk of not obtaining closure certification from DMR due to absence of extent authorization for prospecting 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.

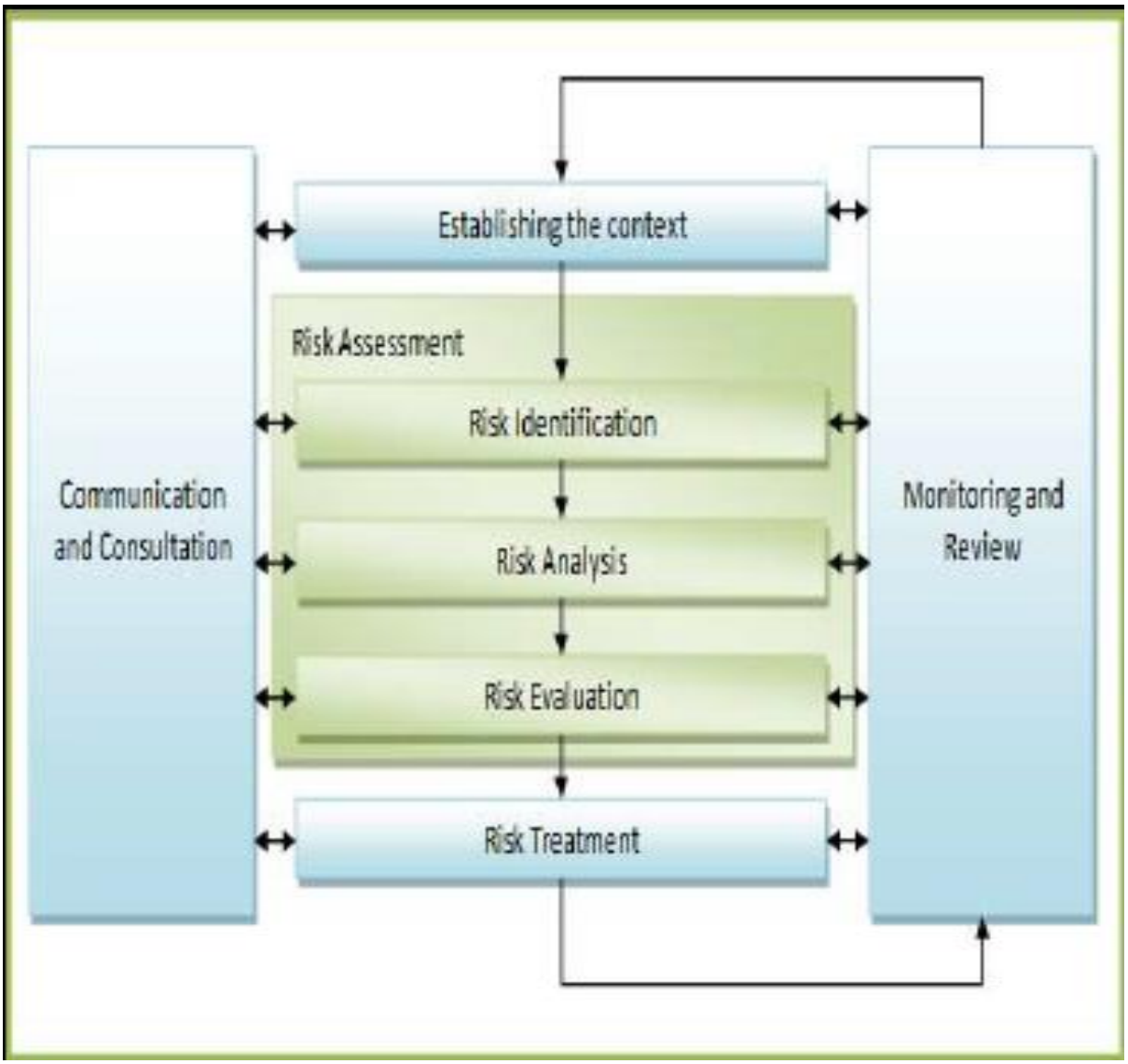


Figure 1.1.

In terms of the M&PRDA, the prospecting 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 prospecting 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 prospecting 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 – Remaining Extent of farm Uitspanskraal Nr 585 was the only location alternative considered. This is the only feasible and reasonable locality alternative because this is where the high quality bentonite deposits are located on the property as determined during the 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. (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.

Remaining Extent of farm Uitspanskraal Nr 585 was the only location alternative considered. This is the only feasible and reasonable locality alternative because this is where the high quality bentonite deposits are located on the property as determined during the 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 alternative development location within the overall 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) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity. (Including (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.)

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

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

declared weed species; Increased traffic due to the mining activities requiring various vehicles to come onto and leave the site;

Potential negative impacts rated as low before and after mitigation include – Emissions; Impact on the naturally occurring fauna and avifauna present in the area; The potential impact of the proposed development on archaeological, paleontological and heritage remains; Noise due to mining machinery, trucks and people on site; A negative visual impact due to the creation of excavation pits

Potential negative impacts rated as high which can be mitigated to low status includes – Impact of proposed mining activities on secondary drainage lines and dams with associated wetland characteristics and aquatic vegetation as associated with mapped NFEPAs and aquatic CBAs and ESAs; Impact of proposed mining activities on terrestrial indigenous vegetation areas as associated with mapped terrestrial CBAs, ESAs and buffer areas; Mining of agricultural land;

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

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

Decommissioning/Closure/Rehabilitation Phase
The potential impacts of decommissioning the mine include soil erosion and alien species spreading during the rehabilitation phase. The site will be rehabilitated after mine closure and this is detailed in the EMP and Mine Closure/Rehabilitation Plan.

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

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

(j) Assessment of each identified potentially significant impact and risk

(This section of the report must consider all the known typical impacts of each of the activities (including those that could or should have been identified by knowledgeable persons) and not only those that were raised by registered interested and affected parties).

NAME OF ACTIVITY **E.g. For mining**,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	**POTENTIAL IMPACT** (Including the potential impacts for cumulative impacts) (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc.…etc…)	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated (e.g. Mining, commissioning, operational Decommissioning, closure, post-closure)	**SIGNIFICANCE** if not mitigated	**MITIGATION TYPE** (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. Modify through alternative method. Control through noise control Control through management and monitoring through rehabilitation..	**SIGNIFICANCE** if mitigated
Excavations, loading, hauling, transport and roads	**Increased dust levels**	Natural Environment, road users and nearby residents	Operational, Decommissioning/Closure/ Rehabilitation	36-Medium	Reduce drop height of material to a minimum. Area will be mined in phases to reduce the barren areas. Temporarily halt material handling in extreme windy conditions. Use 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.	10-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. **Soil erosion** can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should rains fall during mining. Loss of stockpiled topsoil and overburden material.	Natural and agricultural resources	Operational, Decommissioning/Closure/ Rehabilitation	44-Medium	Visually inspect mining area boundaries, exposed surfaces, overburden and top soil stockpiles for signs of erosion. If erosion channels are discovered the mine must determine the cause of erosion and implement erosion rectification and prevention measures to rehabilitate eroded areas and prevent future erosion. Rehabilitate and reinstate engineered constructed contours as soon as a phase is complete. Undertake mining activities only in identified and specifically demarcated areas as proposed 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.	8-Low
Mine vehicles/machinery	Vehicles and machinery on	Natural resources	Operational, Decommissioning/Closure/	20-Low	Vehicles and machinery will be maintained to	10- Low

	the site will produce tailpipe **emissions** leading to air pollution		Rehabilitation		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.	
All activities associated with proposed mining	Mining activities can result in **increased sediment loads in water resources**	Natural and agricultural resources	Operational, Decommissioning/Closure/ Rehabilitation	40 – Medium	Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the indigenous vegetation surrounding the non-perennial drainage lines on site must be demarcated and kept throughout mining operational phase. The proposed buffer areas may only be used as roads and no other activities associated with the proposed mining of the site may occur within the buffer areas. Demarcation method to be approved by an Environmental Control Officer (ECO). Minimize sediment load in the water by stripping a	8 – Low

					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.	
All activities associated with proposed mining	Mining activities can **impact on adjacent water resources** i.e. secondary drainage lines and dams with associated wetland characteristics and aquatic vegetation as	Natural and agricultural resources	Operational, Decommissioning/Closure/ Rehabilitation	85-High	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	8-Low

	associated with mapped NFEPAs and aquatic CBAs and ESAs				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). 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	Natural and agricultural resources	Operational, Decommissioning/Closure/ Rehabilitation	40 - Medium	All storm water falling outside the mine property must be diverted around the mine. The mine will maintain the storm water diversion channels 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.	10 - Low
Chemical toilets and litter	**Pollution and nuisance due to leakage etc.**	Natural and agricultural resources	Operational, Decommissioning/Closure/ Rehabilitation	30-Medium	The toilets are serviced when needed and emptied when almost full. If a leak occurs the correct emergency procedure is to be followed (see EMP). Litter will be collected and removed from site by the operator on a daily basis.	0-No significance
Mine vehicles/machinery	**Ground and/or water pollution** and loss of natural and agricultural resources due to a **hydrocarbon spillage**	Natural and agricultural resources	Operational, Decommissioning/Closure/ Rehabilitation	30-Medium	Any mine vehicle which is leaking hydrocarbons (e.g. petrol, diesel or oil) will be serviced in a concreted workshop to repair the leak. If it is not possible to repair the leak immediately, a drip tray will be placed under the	8 – Low

					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.	
All activities associated with proposed mining	**Fire** can cause **habitat or crop destruction**	Natural and agricultural resources	Operational, Decommissioning/Closure/ Rehabilitation	36- Medium	All employees will be trained on fire safety and on how to reduce the probability of a fire spreading out of control. Anyone who observes a fire must report it immediately to the fire protection agency/ fire brigade and their supervisor/ mine manager. Vehicles must be parked in an area with no vegetation if a fire occurs	8 - Low
All activities associated with proposed mining	**Declared weeds may be**	Natural and agricultural	Operational, Decommissioning/Closure/	52- Medium	Alien invasive and weed vegetation monitoring and	8-Low

	transported onto the site and spread to surrounding areas. This may lead to **habitat destruction and increased management costs.**	resources	Rehabilitation		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	
All activities associated with proposed mining	**Natural fauna and avifauna habitat destruction**	Natural resources	Operational, Decommissioning/Closure/ Rehabilitation	20- Low	Rehabilitate the area after mining process is complete and vegetation will return.	4- Low

					Use of stockpiled topsoil to rehabilitate the site. Restrict mining activities only to demarcated approved mining areas.	
All activities associated with proposed mining	Mining activities can **impact on indigenous vegetation remnants** associated with mapped terrestrial CBAs, ESAs and buffer areas.	Natural resources	Operational, Decommissioning/Closure/ Rehabilitation	85-High	Where no existing gravel roads exists as buffer areas an 8m buffer area as measured from the edge of the 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	28-Low

					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.	
Sustained jobs	The continued employment of at least 43 local residents in the area will be ensured	Socio-economic Impacts	Operational Phase	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.	Socio Economic Impacts	Operational, Decommissioning/Closure/ Rehabilitation	36-Medium	A speed limit of 30km/hour will be displayed and enforced through a fining system. All vehicle drivers entering the site will be informed of the speed limit. Speed limit will be applicable when delivery trucks drive through areas where farm yard and housing is next to the	21- Low

					road. The applicant will be responsible for upkeep and repair of farm roads used during mining activities to the satisfaction of the landowner.	
All activities associated with proposed mining	**Mining on agricultural land**	Socio Economic Impacts and agricultural resources impacts	Operational Phase	85- High	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	25- Low

					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. The following additional steps in the rehabilitation process are recommended as per the Agricultural Impact	

					Assessment conducted to ensure maintenance of soil potential: 1. 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. 2. Additional topsoil. To overcome the compromise to the topsoil discussed above, additional topsoil should be added to the rehabilitated land. In order for this to be feasible, additional topsoil will need to be sourced. One possible source is from the numerous, small, man made farm dams on the farm. However, the clearing of sediments, even from a man made dam, is subject to environmental authorisation, which may not be possible to get in this case, even though it is technically a very	

					suitable choice and constitutes a win-win in terms of improving topsoil as well as improving the water storage capacity of the dams. It is therefore worth fully investigating the feasibility of this option. If the dams are not a feasible source of topsoil, an alternative and economically feasible source will need to be found. Commercial sources may not be feasible in terms of costs and available quantities. If no feasible source exists in the area, it will not be possible to implement this rehabilitation measure, and long term soil production potential will therefore be compromised to some extent. If additional topsoil can be sourced, it should be spread over the surface, once the stripped and stockpiled topsoil has already been spread. This additional layer of topsoil should be added at a minimum rate of 200 cubic metres per hectare, which is the equivalent of a 2 cm thick layer on the surface. 3. 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**	The potential impact of the proposed	Operational Phase	16-Low	Should any burials, fossils or other historical material be encountered during	8 - Low

		development on archaeological, paleontological and heritage remains			mining, work must cease immediately and HWC must be contacted.	
All activities associated with proposed mining	**Noise impacts**	Noise due to mining machinery, trucks and people on site	Operational, Decommissioning/Closure/ Rehabilitation	6- Low	No activities that may generate noise levels above the legal limit in terms of the Environmental Conservation Act, Western Cape Noise regulations will be conducted. Machinery and vehicles should be regularly maintained to prevent excessive noise. All machinery and work activities must adhere to the requirements of the noise regulations..	6-Low
All activities associated with proposed mining	**Visual impact**	A negative visual impact due to the creation of excavation pits.	Operational Phase	16-Low	Proposed mining activities must be limited to development footprint site. Rehabilitation of site when mining process complete.	10 - Low
Decommissioning of mine	**Soil erosion**	Natural and agricultural resources	Decommissioning Phase	56-Medium	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	8-Low

					rehabilitation has been obtained. If erosion is detected implement erosion rectification and preventions measures as guided by the EMPr and recommend by a ECO	
Decommissioning of mine	**Introduction of alien plant species** during rehabilitation.	Natural and agricultural resources	Decommissioning Phase	56-Medium	Alien invasive and weed vegetation monitoring and removal must be undertaken annually during mining and for at least a year after mining activities have ceased on disturbed areas or until the landowner starts with the annual cultivation activities on the affected land. This must be done by the applicant, landowner or their appointed contractor, using CapeNature approved methodology depending on the contract agreement that the applicant has with the landowner. All invasive alien species as listed by the Conservation of Agricultural Resources Act (CARA) must be removed during these surveys. Declared weeds and aliens must be removed before annual seeding Only use topsoil as	8-Low

					derived and conserved proposed mining area to be rehabilitated after mining activities have ceased on the property.	
Decommissioning of mine	**Socio Economic impacts**	Loss of socio-economic benefits to the local communities of Heidelberg and Riversdale	Decommissioning Phase	90-High	Additional viable bentonite deposits must be sourced and authorised to ensure sustainability of the Cape Bentonite Mine operations.	1-Low

(k) Summary of specialist reports.

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

LIST OF STUDIES UNDERTAKEN	**RECOMMENDATIONS OF SPECIALIST REPORTS**	**SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)**	**REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.**
Ecological Baseline Assessments by Eco Impact Legal Consulting September 2017	**Concluding Remarks and Summary of Impact Mitigation and Rehabilitation Measures Proposed before, during and after Mining Activities** If strict adherence is kept to the recommendations as set out in this report and incorporated into the Environmental Management Programme, the proposed development will not have a significant impact on any listed flora, fauna or avifauna species of conservation concern, their habitats or any sensitive environment and landscape features as identified on the site and surrounds.	**X** (All specialist recommendations have been included in potential impact mitigation measures and EMPr requirements)	Part A – i) and j) Appendix H – Environmental Management Programme Report

	• All proposed mining activities to be located on completely transformed and cultivated agricultural areas as identified on Maps 4.1 and 4.2 of this report. • Clearly demarcate the 8m wide buffer areas proposed as measured from the edge of all remaining indigenous vegetation areas and undertake mining activities only in identified and specifically demarcated areas as proposed on completely transformed and cultivated areas. Demarcation method to be approved by an Environmental Control Officer (ECO). The proposed buffer areas to be located within existing cultivated land 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. • Compile and implement a site specific stormwater management plan which aims to prevent (and if prevention is not possible to mitigate and rehabilitate) erosion of the site and surrounds and accumulation of stormwater in excavation areas. 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. • No disturbance should be allowed within the remaining indigenous vegetation, drainage lines and wetland areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance. • No natural vegetation, drainage lines or wetland areas edges may be cleared or impacted upon by the proposed mining activities. • Topsoil and overburden materials must be removed and stored separately adjacent to the mining areas on transformed agricultural land with effective storm water runoff and erosion prevention measures to be implemented in order to protect the		

	materials for use during rehabilitation phase. • 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 during the mining operational/excavation phase (at least 3 monthly and after heavy rains) for signs of erosion which if detected must be immediately rectified and alien vegetation removed to prevent potential siltation, erosion and alien encroachment of the site and surrounds. • 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. • Alien invasive and weed vegetation monitoring and removal must be undertaken for at least a year after mining activities have ceased and the site has been rehabilitated 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. • The project implementation process should be subject to standard Environmental Management Programme (EMP) prescripts and conditions, including the recommendations as provided in this report and only proceed under supervision of a competent and diligent Environmental Control Officer, both during the operational/excavation and rehabilitation phases.		

	Eco Impact is of the opinion, and based on the survey and desk study done, that if the proposed mining activities remains on the completely transformed cultivated agricultural areas of the site as indicated on Maps 4.1 and 4.2 of this report and the specialist recommendations as listed in this report are adhered to and incorporated into the mining EMP that the proposed mining activities will not have any significant detrimental environmental impacts on any of the sensitive environmental and landscape features as identified on the site and surrounds.		
Agricultural Impact Assessment by Johan Lanz July 2018	**IDENTIFICATION AND ASSESSMENT OF IMPACTS ON AGRICULTURE** **Discussion** The defining question of this assessment is whether the capacity of the soil to support crop production will be reduced by the mining and rehabilitation process or not. In other words, will the soil potential of the rehabilitated land be any less than it was prior to the mining disturbance. To answer this question this study investigated the pre-mining soil conditions of the proposed mine. It also investigated the mining and rehabilitation processes as well as agricultural lands where rehabilitation has been completed for different periods of time. The standard rehabilitation that is and has been applied by Cape Bentonite is to strip and stockpile a relatively thin layer of topsoil before any mining disturbance. The mining pit is excavated to varying depths to a maximum of 30 metres in order to extract		

	thin layers of bentonite. All overburden is backfilled directly into the pit, behind the bentonite extraction. Once all bentonite has been extracted and the pit has been completely backfilled and profiled, the stockpiled topsoil is re-spread across the surface. The important characteristics of the soil conditions that have relevance for answering the above question are the following: 1. The topsoil (A horizon) of most of the mining area is very thin. It varies between 20 and 40 cm in thickness. The topsoil is the most critical component of soil potential and any loss of or change to the quality of topsoil can therefore have a significant effect on soil potential. 2. Over most of the mining area the thin topsoil is directly underlain by a dense clay layer. This dense clay layer is much less suitable than the topsoil for supporting root development of crop plants. 3. Deeper overburden material that is excavated during the mining process is likely to be even less suitable for root development than the shallower subsoil. It is highly likely to have higher salinity than the shallow subsoils and to have salinity levels that impede root development of crop plants. As a result of these characteristics of the soil, the mining and rehabilitation process poses a significant risk of reducing the soil potential of the rehabilitated soil to some extent. Given that the topsoil layer is so thin, and that it varies in thickness, it is almost		

	impossible to strip it effectively without either including some underlying clay, where stripping is slightly deeper than the topsoil layer (see Figures 9 and 10), or losing some topsoil below the stripping depth, where this is slightly shallower than the topsoil layer. Both of these will compromise the topsoil to some extent and lead to some reduction in the agricultural potential of the rehabilitated soil. Inclusion of the clay layer in the topsoil causes water infiltration and moisture supply problems for the crop. A reduction in soil potential, by either of the above two mechanisms, will have long lasting impacts, and the soil will not restore itself within decades. In summary, the mining and current rehabilitation process that simply strips and then re-spreads a layer of topsoil is likely to lead to some reduction in soil potential. **Mitigation measures** It is unfair to expect the mine to have to improve on the pre-mining soil potential. But it is also unfair and environmentally unsound for the mine to rehabilitate to a lower soil potential. Because of the likelihood of the mechanisms identified above, to reduce the soil potential, it is fair to expect the mine to take extra steps to ensure that soil potential is not compromised. Where there is some uncertainty, the precautionary principle requires that it will be better to err on the side of improved soil potential than on the side of reduced soil potential.		

	The following are the sequence of soil rehabilitation steps that are currently part of the Environmental Management Program. Some comments are made on certain of these. 1. Soil sampling before mining. No sampling depth is specified. 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. 2. Protection of topsoil stockpiles. 3. Profiling of overburden surface. 4. Prevention of any surface depressions. 5. Spreading of topsoil. The current EMP states that a depth of 50cm of potential root zone should be available. However, because of the thin topsoil, this will be less than 50cm in many cases. 6. Reconstruction of any erosion control contour banks that existed before mining. The integrity of the contour system as a whole and the way that water flows from or to adjacent un-mined land must be maintained. 7. Sampling and chemical correction. Samples should be taken in the same way as pre-mining samples to a depth of 25cm. 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. 8. Loosening of the soil. 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.		

	9. Alien invasive and weed control. 10. Erosion control. The following additional steps in the rehabilitation process are recommended to ensure maintenance of soil potential: 1. 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.		

	2. Additional topsoil. To overcome the compromise to the topsoil discussed above, additional topsoil should be added to the rehabilitated land. In order for this to be feasible, additional topsoil will need to be sourced. One possible source is from the numerous, small, man made farm dams on the farm. However, the clearing of sediments, even from a man made dam, is subject to environmental authorisation, which may not be possible to get in this case, even though it is technically a very suitable choice and constitutes a win-win in terms of improving topsoil as well as improving the water storage capacity of the dams. It is therefore worth fully investigating the feasibility of this option. If the dams are not a feasible source of topsoil, an alternative and economically feasible source will need to be found. Commercial sources may not be feasible in terms of costs and available quantities. If no feasible source exists in the area, it will not be possible to implement this rehabilitation measure, and long term soil production potential will therefore be compromised to some extent. If additional topsoil can be sourced, it should be spread over the surface, once the stripped and stockpiled topsoil has already been spread. This additional layer of topsoil should be added at a minimum rate of 200 cubic metres per hectare, which is the equivalent of a 2 cm thick layer on the surface. 3. 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. 4. 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. **Impact assessment** From an environmental impact assessment point of view the		

	potential negative impact of mining is to reduce the soil potential. This is a direct impact that can last long term, but that can be completely mitigated through effective rehabilitation. Without mitigation the significance of the impact will be high, but with mitigation it will be low. If the additional recommended rehabilitation steps are included into the soil rehabilitation program, and effectively implemented, the mining process is assessed as not having any long term detrimental impact on soil potential. All the proposed quarries will be able to be returned to agricultural use, at the same level of productivity as pre-mining. **Socio-economic impacts** The mine compensates the farmer for loss of income due to the fact that the land cannot be farmed from when mining begins until mining and rehabilitation have been completed. The compensation is paid per ton of mineral extracted and is likely to more than compensate any direct loss of income from farming the land. The purpose of the compensation is not to cover any loss of soil potential and loss of future income as a result of lost soil potential. The mine must take responsibility for and incur all costs associated with fully returning the soil potential to at least pre-mining levels. **Cumulative impact**		

	The environmental impact assessment process requires the assessment of cumulative impacts. The cumulative impact of a development is the impact that development will have when its impact is considered together with the impacts of other proposed developments that will affect the same environment. The most important concept related to a cumulative impact is that of an acceptable level of change to an environment. A cumulative impact only becomes relevant when the sum of proposed developments that impact an environment will cause an acceptable level of change to be exceeded. There are numerous Cape Bentonite quarries in the vicinity of the proposed mine. These could potentially impact a large area of arable land and exceed the acceptable level of arable land loss. However, the agricultural potential of the land can be completely restored, if effectively rehabilitated. If this is done, there is zero cumulative, long term impact of mining on agricultural potential in the area. **CONCLUSIONS AND RECOMMENDATIONS** Although the soil is shallow and the topsoil is very thin, the land is suitable for production of specific crops. The important potential impact of mining is a long term loss of soil potential, which is of high significance because the land is suitable for crop production. The thin topsoil with underlying clay means that the soils are particularly sensitive to disturbance and their agricultural potential can be drastically reduced by the mining process, if they are not		

	well rehabilitated. The mining and current rehabilitation process that strips and then re-spreads a layer of topsoil is likely to lead to some reduction in long term soil potential. Extra rehabilitation steps are therefore justified. The recommended extra steps are double stripping and addition of extra topsoil to the rehabilitated land. From an environmental impact assessment point of view the potential negative impact of long term reduction in soil potential can be completely mitigated through effective rehabilitation. Without mitigation the significance of the impact will be high, but with mitigation it will be low. If the additional recommended rehabilitation steps are included into the soil rehabilitation program, and effectively implemented, the mining process is assessed as not having any long term detrimental impact on soil potential. All the proposed quarries will be able to be returned to agricultural use, at the same level of productivity as pre-mining.		

(l) Environmental impact statement

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

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

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.

Cape Bentonite Mine has mining rights for several properties within close proximity to the R/E of farm Uitspankraal nr 585 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 151ha is therefore located 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.

Non-perennial drainage lines with associated indigenous vegetation areas are present throughout the property (but not proposed to be mined upon) due to the undulating nature of the landscape. The drainage lines feed mainly into lower lying man-made farm dams and the Duiwenhoks River system. The only surface water run-off that is occasionally present in the drainage lines is storm water runoff during heavy rains.

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

Mining is conducted "in-house" by means of excavators, front-end loaders and 9-15 Ton dumper trucks. The mining and method comprise relatively shallow opencast quarrying. The topsoil (a layer of at least 300mm are removed for rehabilitation) and overburden are removed and stockpiled separately adjacent to the mining area. The bentonite as it is being mined 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.

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

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

The mine provides direct employment for at least 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.

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

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

(ii) Final Site Map

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

Refer to maps attached under **Appendix B**

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

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

Mining Operational Phase

Most of the potential negative impacts are rated as medium which can be mitigated to a low status. The potential impacts rated as medium before mitigation measures are

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

Potential negative impacts rated as low before and after mitigation include – Emissions; Impact on the naturally occurring fauna and avifauna present in the area; The potential impact of the proposed development on archaeological, paleontological and heritage remains; Noise due to mining machinery, trucks and people on site; A negative visual impact due to the creation of excavation pits

Potential negative impacts rated as high which can be mitigated to low status includes – Impact of proposed mining activities on secondary drainage lines and dams with associated wetland characteristics and aquatic vegetation as associated with mapped NFEPAs and aquatic CBAs and ESAs; Impact of proposed mining activities on terrestrial indigenous vegetation areas as associated with mapped terrestrial CBAs, ESAs and buffer areas; Mining of agricultural land;

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

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

Decommissioning/Closure/Rehabilitation Phase
The potential impacts of decommissioning the mine include soil erosion and alien species spreading during the rehabilitation phase. The site will be rehabilitated after mine closure and this is detailed in the EMP and Mine Closure/Rehabilitation Plan.

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

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

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

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

The National Environmental Management Laws Amendment Act 25 of 2014 and Section 38 of the MPRDA stipulated that the general objectives of integrated environmental management must be applied in accordance with NEMA and this will include the assessment and management of impacts identified as part of the EIA process. The following

proposed impact management objectives and the impact management outcomes for each impact identified for the mine where recorded:

- **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 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..

- **Soil erosion**

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

- **Emissions**

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

- **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.

- **Impact of proposed mining activities on adjacent drainage lines**

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). 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.

- **The trapping of all 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.

- **Waste from chemical toilets and litter**

The toilets are serviced when needed and emptied when almost full. If a leak occurs the correct emergency procedure is to be followed (see EMP). Litter will be collected amd removed from site by the operator on a daily basis.

- **Hydrocarbon spill**

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

- **Fire**

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

- **Introduction of declared weed species**

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.

- **Impact on the naturally occurring fauna and avifauna present in the area**

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.

- **Impact of proposed mining activities on terrestrial indigenous vegetation areas as 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. 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.

- **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 were farm yard and housing is next to the road. The applicant will be responsible for upkeep and repair of farm roads used during mining activities to the satisfaction of the landowner.

- **Mining of 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 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. The following additional steps in the rehabilitation process are recommended as per the Agricultural Impact Assessment conducted to ensure maintenance of soil potential:

1. 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.

2. Additional topsoil. To overcome the compromise to the topsoil discussed above, additional topsoil should be sourced from the numerous man-made farm dams on the farm and spread over the surface, once the stripped and stockpiled topsoil has already been spread. This additional layer of topsoil should be a minimum of 2 cm thick. This topsoil should be sourced and stockpiled before rehabilitation commences, during the dry season when dam levels are low and may only be sourced from man-made dams within the area and not from any "natural" dams. No terrestrial or aquatic indigenous vegetation areas may be impacted upon during the sourcing of the additional topsoil required for rehabilitation of the quarry areas.

3. 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.

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. 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.

- **The potential impact of the proposed development on archaeological, paleontological and heritage remains.**

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

- **The potential impact of noise due to machinery, trucks and people on site**

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

- **The potential negative visual impact due to the creation of excavation pits**

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

- **Soil erosion during decommissioning**

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

- **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.

- **The potential negative socio-economic impact due to the decommissioning of the mine leading to the loss of socio-economic benefits to the local communities of Heidelberg and Riversdale**

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

(n) Final Proposed Alternatives.

(Provide an explanation for the final layout of the infrastructure and activities on the overall site as shown on the final site map together with the reasons why they are the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment)

The proposed mining areas on completely transformed cultivated agricultural land are informed by the ecologist recommendations as it avoids sensitive remaining natural terrestrial and aquatic areas associated with CBAs, ESAs and NFEPAs (Refer to Appendix B for proposed mining areas layout plans and Appendix E for specialist report).

(o) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

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

The ECO must:

- Inspect the site and record compliance with the EA and EMP on a three monthly basis during operations and six monthly after closure until successful rehabilitation has been obtained;
- Inform key, on-site staff of their roles and responsibilities in terms of the EA and EMP;
- Ensure that all activities on site are undertaken in accordance with the EA and EMP;
- Immediately notify the mine operator of any non-compliance with the EA or EMP, or any other issues of environmental concern; and

All specialist recommendations must be adhered to.

All EMP requirements must be adhered to.

(p) Description of any assumptions, uncertainties and gaps in knowledge.
(Which relate to the assessment and mitigation measures proposed)

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

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

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

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

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

The proposed sites as located on cultivated agricultural lands are 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 mining of the proposed expansion areas.

ii. Conditions that must be included in the authorisation

(1) Specific conditions to be included into the compilation and approval of EMPr

All specialist recommendations and mitigation measures as per the environmental impact assessment conducted must be included as part of the EMPr requirements to be implemented and adhered to during all phases of the proposed mining activities.

(2) Rehabilitation requirements

All areas impacted by proposed mining activities must be rehabilitated to its previous status quo before mining activities commenced.

(r) 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 38.32ha applicable quarry areas is expected to take approximately nine years. The Environmental authorization should therefore be valid for 10 years.

(s) Undertaking

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

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

(t) Financial Provision

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

Total Proposed Rehabilitation Financial Provision for the Mining Right (including rehabilitation costs for existing mining right and proposed expansion quarry areas) = R 4 047 320.00)

i) Explain how the aforesaid amount was derived.

At a rate of R 105 619/ha, the estimate global cost for the rehabilitation of the proposed active quarries of 38.32ha will be R 4 047 320.00.

Total Proposed Rehabilitation Financial Provision for the Mining Right = R 4 047 320.00

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

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

(u) Deviations from the approved scoping report and plan of study

i) Deviations from the methodology used in determining the significance of potential environmental impacts and risks

(Provide a list of activities in respect of which the approved scoping report was deviated from, the reference in this report identifying where the deviation was made, and a brief description of the extent of the deviation)**.**

No deviations occurred.

ii) Motivation for the deviation

Not applicable.

(v) Specific Information required by the competent Authority

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

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

Please refer to the impact tables above for more detail. 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 is reflected in 2.5.3; 2.11.6.and 2.12.herein).

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 under **Appendix E2**. No archaeologically significant resources were found during the foot survey. The mining operation will not impact on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 or impact on any building or structure older than 60 years in any way.

(w) 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 – Remaining Extent of farm Uitspanskraal Nr 585 was the only location alternative considered. This is the only feasible and reasonable locality alternative because this is where the high quality bentonite deposits are located on the property as determined during the 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.

(x) 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: 18 July 2018

(y) 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: 18 July 2018

-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):** Geological and Socio-Economic Motivation Report Storm Water Management Plan Best Practice Guideline - Stormwater Management 2006	X
Appendix H:	**Part B: Draft Environmental Management Programme**	X