mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

# BASIC ASSESSMENT REPORT

# and

# ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

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

NAME OF APPLICANT: **Ellenzo Construction & Supplies CC**
TEL NO: **082 881 7551**
FAX NO: **-**
POSTAL ADDRESS: **P.O. Box 17961, Witsieshoek, 9670**
PHYSICAL ADDRESS: **1B Dampies du Preez Street, Panarama, Bethlehem 9701**
FILE REFERENCE NUMBER SAMRAD: **FS30/5/1/3/2/10249 MP**

## 1. IMPORTANT NOTICE

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

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

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

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

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

## 2. Objective of the basic assessment process

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

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

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

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

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

(i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and

(ii) the degree to which these impacts—

(aa) can be reversed;

(bb) may cause irreplaceable loss of resources; and

(cc) can be managed, avoided or mitigated;

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

(i) identify and motivate a preferred site, activity and technology alternative;

(ii) identify suitable measures to manage, avoid or mitigate identified impacts; and

(iii) identify residual risks that need to be managed and monitored.

## PART A

## SCOPE OF ASSSSMENT AND BASIC ASSESSMENT REPORT

### 3. CONTACT PERSON AND CORRESPONDENCE ADDRESS

#### A) DETAILS OF

#### (i) Details of the EAP

Name of the Practitioner: ***DERA Environmental Consultants (Pty) Ltd. Mr. Daan Erasmus***

Tel No.: **018 468 5355**

Fax No. : **018 468 4015**

E-mail address: **daane@dera.co.za**

#### (ii) Expertise of the EAP.

i. **The qualifications of the EAP**

(with evidence)

See next page for copy of qualification, **Figure 1.**

**Figure 1 – Copy of Qualification**

# TECHNIKON PRETORIA

PROSPERITAS PER PERITIAM

## BACCALAUREUS TECHNOLOGIAE

**LANDBOU: VOORLIGTING** **AGRICULTURE: EXTENSION**

Toegeken aan Awarded to

**DANIEL ELARDUS ERASMUS**

9100143 7 1970-09-07

met ingang van with effect from

1997-01-01

Registrateur (Akademies)
Registrar (Academic)

Rektor/Rector

No 97/206

TECHNIKON PRETORIA

TECHNIKON PRETORIA

# NASIONALE NATIONAL DIPLOMA

LANDBOU: HULPBRONBENUTTING — AGRICULTURE: RESOURCE UTILIZATION

Toegeken aan — Awarded to

DANIEL ELARDUS ERASMUS

91004437 — 7009075033088

met ingang van — with effect from

1994-01-01

Die volgende is voltooi — The following were completed

| | |
|---|---|
| Landbou-ekonomie I, II en III | Agricultural Economics I, II and III |
| Voorligtingsmetodiek I en II | Extension Method I and II |
| Akkerbou I, II en III | Field Husbandry I, II and III |
| Weidingkunde A | Pasture Science A |
| Bodembeplanning I en II | Land Use Planning I and II |
| Bodembewaring I | Soil Conservation I |
| Grondkunde I en II | Soil Science I and II |
| *Meganisasie | Mechanisation* |
| Fisiese Wetenskap | Physical Science |
| Melkproduksietegnologie | Milk Production Technology |
| Vleisbeesproduksietegnologie | Beefer Production Technology |
| Kleinveeprodukeietegnologie | Small Stock Production Technology |
| Grondklassifikasie III | Soil Classification III |

**********

Minimum Opleidingstydperk: 3 Jaar
Minimum Training Period : 3 Years

SERTEC
Uitvoerende Direkteur/
Executive Director

Nr/No ND1117/94

TECHNIKON
Rektor/Rector

ii. **Summary of the EAP's past experience.**
(Attach the EAP's curriculum vitae as Figure 2)
See **Figure 2** below Curriculum Vitae of D. E. Erasmus.

27 Lewis Street
Wilkoppies
Klerksdorp

Phone +2718-468-5355
Fax +2718-468-4015
E-mail: dera@xsinet.co.za

# DAAN ERASMUS

## Curriculum Vitae
## Daniël Elardus Erasmus

**February 2015**

**Personal Information**

| | |
|---|---|
| Name: | Daniël Elardus Erasmus |
| Date of Birth: | 7 September 1970 |
| Place of Birth: | Ottosdal, North West Province, South Africa |
| Marital Status: | Married with two children |

**Secondary & Post Secondary Education**

**1983-1988** Wolmaransstad High School, North West, SA
Higher School Certificate – with Full Exemption

Subjects:

| | |
|---|---|
| English | Afrikaans |
| Mathematics | Science |
| Geography | Accounting |

**1989-1990** Military Service, Potchefstroom, SA
Artillery Division
**Officers Course: II Lieutenant**

**1991-1994** Technikon Pretoria, Pretoria, SA
**National Diploma**
Agriculture: Resource Utilization

Subjects:
Agricultural Economics I, II and III
Extension Method I, II and III
Field Husbandry I, II and III
Pasture Science A
Land Use Planning I and II
Soil Conservation I
Soil Science I and II
Mechanization
Physical Science
Milk Production Technology
Beef Production Technology
Small Stock Production Technology
Soil Classification III
Computer Application I

**1996** Technikon Pretoria, Pretoria, SA
**Baccalaureus Technologiae**
Agriculture: Extension
Agricultural Resource Conservation Act in the North West Province of SA; management of personnel and personnel related matters; management of budget of regional office in Potchefstroom; monitoring mine rehabilitation and environmental management out of agricultural point of view; management and control of declared weeds and invader species.

**2003-Present** Began own company – DERA Environmental Consultants. Main scope of business: Compiling and submission of mining related applications; Manage and compile legal environmental documents. Further doing monitoring work to evaluated compliance to environmental legislation; evaluating outstanding rehabilitation liabilities for mining companies.

Assist legal companies in determining environmental damage. Do assessment for closure applications. Give guidance in rehabilitation practices. Compile applications and basic assessment reports for chicken broilers and feed lots based on experience form management of the natural resources and the mitigation of impacts.

# B) LOCATION OF THE OVERALL ACTIVITY

**Table 1: Property Description**

| | |
|---|---|
| **Farm Name:** | **Losklip 793**<br>✓ Over a certain area of Portion 1 |
| **Application area (Ha)** | 5 Hectares |
| **Magisterial district:** | Bethlehem |
| **Distance and direction from nearest town:** | Approximately 5.2 km north, north-west of Bethlehem |
| **21 digit Surveyor General Code for each farm portion** | F0030000000079300001 |

# C) LOCALITY MAP

(Show nearest town, scale not smaller than 1:250000 below as Figure 3).

Locality Map, see **Appendix 1(a).**

# 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 and attach as **Appendix 1**.

**Appendix 1(b)** – Land use map & **Appendix 1(c)** Photos & Site Map **Appendix 1d**

## (i) Listed and specified activities

**Table 2: Listed Activities**

| NAME OF ACTIVITY<br>(E.g. For prospecting -drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc...etc...etc<br>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<br>Ha or m² | LISTED ACTIVITY<br>Mark with an<br>'X' where applicable or affected | APPLICABLE LISTING NOTICE<br>(GNR. 544, GNR. 545 or GNR 546) | WASTE MANAGEMENT AUTHORISATION<br>(Indicate whether authorisation is required in terms of the Waste Management Act). (Mark with an X) |
|---|---|---|---|---|
| Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (Activity 21, listing 1) | 5 ha | X | GNR 327 | |
| The clearing of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation. (Activity 27, listing 1) | 5 ha | X | GNR 327 | |

## (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)

**Table 3: Description of Activities to be followed**

| ITEM | DESCRIPTION |
|---|---|
| **Environmental attributes.**<br>Describe how the Environmental attributes associated with the development footprint will be determined. | The site will be visited and a proper foot survey will be conducted. The activities that will be conducted by the applicant will be discussed on site as described in the Finance and technical document. The environmental setting on site and surrounding with the experience of the EAP will give an idea and lead to environmental attributes. |
| **Identification of impacts and risks.**<br>Describe the process that will be used to identify impacts and risks. | The activities will take place will be discussed in detail with the applicant on site.<br>With the specific environmental setting in mind and more specifically, the type of soil, soil depth, land use, vegetation type, and distances to open water and structures, the EAP will be able to identify potential impact areas where significant impacts might occur and the risks thereof.<br>The methods of rehabilitation that need to be done, in order to meet the objective of the final land use will also be taken in consideration. |
| **Consideration of alternatives.**<br>Describe how alternatives, and in particular the alternatives to the proposed site layout and possible alternative methods or technology to be applied will be determined. | This will be mining of clay with a small screening plant.<br>The site will be visited before the BAR is compiled. There are no different site alternatives as this is a Mining Permit with in the application area.<br>The entire application area will be visited and areas that might be environmentally sensitive will be identified. The proposed impacts and mitigations will also be discussed. |
| **Process to assess and rank impacts.**<br>Describe the process to be undertaken to identify, assess and rank the impacts and risks each individual activity. | The site was visited before the BAR was compiled. The entire application area will be visited and areas that might be environmentally sensitive will be identified. The proposed impacts and mitigations will also be discussed.<br>The EAP (with 21 years' experience in prospecting and mining activities) will assess the specific site for possible impacts. The assessment of impacts will be done according to a synthesis of the following assessment criteria:<br>- Nature of the impact;<br>- Extent (spatial scale);<br>- Duration;<br>- Magnitude or intensity of the impact (severity);<br>- Probability.<br>The criteria that will be used to determine significance as described below.<br>Nature of the impact: This is an appraisal of the type of effect the activity would have on the affected environment. The description includes how and what is being affected, whether it is positive or negative, as well as whether it is direct or indirect. |

| | |
|---|---|
| **Contribution of specialist reports.**<br>Describe how specialist reports, if required, will be taken into consideration and inform the impact identification, assessment and remediation process. | No specialist reports required at this stage, unless specifically requested. |
| **Determination of impact management objectives and outcomes.**<br>Describe how impact management objectives will be determined for each activity to address the potential impact at source, and how the impact management outcomes will be aligned with standards. | The Nature of the impact:<br>This is an appraisal of the type of effect the activity would have on the affected environment. The description includes how and what is being affected, whether it is positive or negative, as well as whether it is direct or indirect.<br>Each impact will be assessed and quantified, and management objectives according to the first two steps, will be set.<br>The management of the objectives will be aligned with the significance of the impact, as well as to ensure a positive outcome.<br>The outcomes will be aligned with standards on environmental management and rehabilitation of mining areas according to Department Mineral Resources. |

**1. The mineral**

Ellenzo Construction and Supplies CC, intends to mine for ***Clay (general)*** situated on a portion of the farm ***Losklip 793***, Bethlehem district, and 5 hectares in total. The clay will be used in different facets of the brickmaking industry.

**2. The extend**

The clay is situated on this demarcated area on average 2 - 3 meters deep. The identified and demarcated which are 5 hectares in total includes the entire mining area of 2.5 ha will be used for mining and 2.5 ha for the stockpiling. The clay reserve on this 5 hectares is estimated at 93 750 tons.

**3. Mining method**

The above area will be mined through opencast excavations where the clay will be removed with an excavator onto a stockpile and loaded by a frond end loader on the trucks for transporting to the clients. The clay from the stockpile is transported at an average rate of 100 tons a day to the clients or as needed. The total estimated reserve of clay is 93 750 tons taken at a production rate of 2000 tons a month it will take 46 months to work this reserve.

The clay which is 2.5 m thick and the relatively low production rate of this operation make this 2.5 hectare to be worked sustainable over a period of four years.

Equipment to be used includes:

- ✓ 1 x Frond end loader;
- ✓ 1 x Excavator;
- ✓ 1 x truck
- ✓ 3 x Permanent labourers and one manager will used in this operation.

The total cost of the operation is taken at R 34/ton and the total material moved monthly at 2500tons. The total monthly mining cost is then R 86 166 .00 and the total monthly income is on average R 133 500.00. This operation can thus be economical viable.

**4. The grade**

The total estimated reserve of clay is 108 000 tons taken at a production rate of 2500 tons a month it will take **43 months** to work this reserve.

## E) POLICY AND LEGISLATIVE CONTEXT

**Table 4: Policy & Legislative Context**

| APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT<br>(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.<br>(E.g. In terms of the National Water Act a Water Use License has has not been applied for) |
|---|---|---|
| Mineral & Petroleum Resources Development Act 28 of 2002 | | 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 has been triggered by applications in terms of the Minerals and Petroleum Resources Development Act, 2002 (As mentioned). |
| National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) | | EA Authorization and BAR |
| National Environmental Management Act, 1998 (Act 107 of 1998): Environmental Impact Assessment Regulations, 2014 (G38282 – R982-985) | | Compliance to Act and Regulations during course of activities. |
| World Heritages Convention Act, 1999 (Act 49 of 1999) | | Compliance to Act and Regulations during course of activities. |
| Conservation of Agricultural Resources Act, No. 43 of 1983 | | Compliance to Act and Regulations during course of activities. |

## 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)

The farm portions over which the application was applied for is currently used as agricultural cultivation and grazing land by the landowner. There is no infrastructure over this 5 hectares area. Access to the farm is gained by an existing farm road from the gravel road from the R76 out of Bethlehem in the direction of Lindley. See **Figure 3** for an extraction of the Google Earth Map showing the current surface layout, pre-mining. Only a small portion of the agricultural land will be impacted upon at any given time and land use on the rest of the area can proceed normally.

The area will be mined and rehabilitated. The mining focus area will be clearly demarcated. The area applied for is over the demarcated portion only. After mining the land will be used for grazing again. It is envisaged that 70% of the clay resource will be excavated and loaded on the trucks without processing, and only 30% will be screened.

**Figure 3: Google Earth Map**


## G) MOTIVATION FOR THE OVERALL PREFERRED SITE, ACTIVITIES AND TECHNOLOGY ALTERNATIVE

The applicant envisaged that good quality clay be present on this property as the adjacent property was mined successfully. Therefore the application for a mining permit. The clay reserves is envisage on only this demarcated mining area, thus the preferred site. The only alternative to mining is the continuation of agricultural activities with no mining.

## H) FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED ALTERNATIVES WITHIN THE SITE

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

### (i) Details of the development footprint alternatives considered

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

Alternative is not applicable. The current land is used as grazing/cultivated land for farming. The option to explore the possibility for mining is already in itself an alternative land use. The applicant, Ellenzo Construction and Supplies CC is not interested in any other alternative land use over this land aside of clay exploration, or any other activity, or method use other than mining for clay in the conventional way, which is the most cost effective.

**(a)** the property on which or location where it is proposed to undertake the activity

There are no alternative for the property as the application is for this ±5 hectare area only.

(b) the type of activity to be undertaken

The type of activity is in line with the submitted Mining Programme.

(c) the design or layout of the activity
The layout of the activity will and can only be on the application area as per sketch plan.

(d) the technology to be used in the activity
The technology used in the activity will as described in the Mining Programme and the best options will be determined by the applicant.

(e) the operational aspects of the activity, and
The operational aspect is only the mining of clay on this specific area.

(f) the option of not implementing the activity
This option might only be possible if the applicant decide to abandon the project.

## (ii) Details of the Public Participation Process Followed

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

The process as described by NEMA for Environmental Authorization was followed. The applicant Ellenzo Construction and Supplies CC did consult the landowner (Inry Trust), and the direct neighbours were consulted personally and through a letter that was given to them by hand. A site notice was placed at the entrance gate of the farm. With this site notice all passers-by are requested to submit any written comments to be forwarded to the consultant. A notice was published in the Vrystaat News of 27 June 2018 and a public meeting were held at the site of Ellenzo Construction and Supplies on the 3rd of July 2018. See attendance register and minutes of the meeting attached at **Appendix 2.** See proof of consultation under **Appendix 2**. The Public Participation process did run for 30 days and all correspondence is attached and in Table 7.

**Appendix 2** – Proof of consultation.

**Table 5: Description of process to be undertaken to consult interested and affected parties**

| IDENTIFICATION CRITERIA | Mark with an X where applicable | |
|---|---|---|
| | YES | NO |
| Will the landowner be specifically consulted? | X | |
| Will the lawful occupier on the property other than the Landowner be consulted? | X | |
| Will a tribal authority or host community that may be affected be consulted? | | X |
| Will recipients of land claims in respect of the area be consulted? | X | |
| Will the landowners or lawful occupiers of neighbouring properties been identified? | X | |
| Will the local municipality be consulted? | X | |
| Will the Authority responsible for power lines within 100 metres of the area be consulted? | | X |
| Will the Authorities responsible for public roads or railway lines within 100 metres of the area applied for be consulted? | | X |
| Will the Authorities responsible for any other infrastructure within 100 metres the area applied for be consulted? (Specify) | | X |
| Will the Provincial Department responsible for the environment be consulted? | X | |
| Will all of the parties identified above be provided with a description of the proposed mining/prospecting operation as referred above? | X | |
| Will all the parties identified above be requested in writing to provide information as to how their interests (whether it be socio-economic, cultural, heritage or environmental) will be affected by the proposed mining project? | X | |
| Other, Specify | | |

**Table 6: Furthermore the details of the engagement process to be followed are as reflected below.**

| | |
|---|---|
| **Steps to be taken to notify interested and affected parties**<br>(Describe the process to be undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings. Photographs of notice and copies of advertisements and notices notifying potentially interested and affected parties of the proposed application are attached as **Appendix 1b**). | **PROVIDE DESCRIPTION HERE**<br>The applicant is also the landowner and the neighbours was informed personally consulted by the applicant and confirmed in the writing. A consultation letter was send to the Local Municipality.<br>An advertisement was placed in the local newspaper for comments. |
| **Information to be provided to Interested and Affected Parties.** | **Compulsory**<br>The site plan.<br>List of activities to be authorized<br>Scale and extent of activities to be authorized<br>Typical impacts of activities to be authorized (e.g. surface disturbance, dust, noise, drainage, fly rock etc.)<br>The duration of the activity.<br>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) |
| | **Other, specify:** mining plan |

| | |
|---|---|
| **Information to be required from Interested and Affected Parties.** | **Compulsory**<br>To provide information on how they consider that the proposed activities will impact on them or their socio-economic conditions<br>To provide written responses stating their suggestions to mitigate the anticipated impacts of each activity<br>To provide information on current land uses and their location within the area under consideration<br>To provide information on the location of environmental features on site to make proposals as to how and to what standard the impacts on site can be remedied. requested to make written proposals<br>To mitigate the potential impacts on their socio economic conditions to make proposals as to how the potential impacts on their infrastructure can be managed, avoided or remedied). |
| | **Other, Specify** |

## (iii)Summary of issues raised by I&AP's

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

See **Appendix 2** for full detail on public participation.

**Table 7: Summary of Identified I&AP's**

| Interested and Affected Parties<br>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 sent and/or Comments Received | Issues raised | EAP's response to the applicant |
|---|---|---|---|---|
| **AFFECTED PARTIES** | | | | |
| **Landowner/s** | X | | | |
| Inry Trust - Landowner on Portion 1 of the farm Losklip 793 | | 20 June 2018 | | |
| Lawful occupier/s of the land | | | | |
| None | | | | |
| **Landowners or lawful occupiers on adjacent properties** | X | | | |
| | | 20 June 2018 | | |
| **Municipal councilor** | **X** | | | |
| **Municipality** | X | | | |
| Dihlabeng Local Municipality LED Manager (Nkosi Mondli)<br>Fax: 058 303 4703; Tel: 058 303 5732;<br>E-mail: nkosim@dihlabeng.co.za | | 20 June 2018 | E-mail sent – no response received | |
| **Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA.** | | | | |
| **Eskom** | | | | |
| | | | | |
| **Communities** | | | | |
| N/A | | | | |
| **Dept. Land Affairs** | X | | | |
| Mr. Cindy Benyane<br>Office of the Regional Land Claims Commissioner FS Province<br>E-mail: cindy.benyane@drdlr.gov.za | | 20 June 2018 | E-mail was sent to verify any land claims | No response received |
| **Traditional Leaders** | | | | |
| N/A | | | | |
| **Dept. Rural, Environment and Agricultural Development** | X | | | |
| Mr. Coenie Erasmus<br>Private Bag X20801, Bloemfontein, 9300<br>Tel: 086 110 2185; E-mail: erasmusc@detea.fs.gov.za | | 8 Aug 2018 | BAR was sent with Fastway couriers for comments. | |
| **Dept. Agriculture, Forestry and Fisheries** | | | | |
| Kefilwe Disipi<br>1st Floor Omni Building, Aliwal north Street, Bloemfontein, 9300<br>Tel: 051 409 2625; E-mail: kefilwed@nda.agric.za | | 8 Aug 2018 | BAR was sent with Fastway couriers for comments | |
| **Dept. Water Affairs** | X | | | |

| | | | | |
|---|---|---|---|---|
| Dr. T. Ntili<br>2nd Floor Bloem Plaza Building, Cnr East Burger & Charlotte Maxeke,<br>Bloemfontein, 9300,<br>Tel: 051 405 9109 | | 8 Aug 2018 | BAR was sent with Fastway couriers for comments | |
| **Dept. Rural Development and Landform** | X | | | |
| Lezzane Rungasamy<br>E-mail: Lezzane.Rungasamy@drdlr.gov.za<br>Rachel Taole<br>E-mail: Rachel.taole@drdlr.gov.za | | 20 Aug 2018 | BAR was sent via e-mail for comments | |
| **Other Competent Authorities** | | | | |
| All other Authorities will be consulted with through DMR | | | | |
| **OTHER AFFECTED PARTIES** | | | | |
| | | | | |
| **INTERESTED PARTIES** | | | | |

Notice published in Vrystaat Nuus 27 June 2018

## (iv)The Environmental attributes associated with the alternatives.

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

### 1. Baseline Environment

***Introduction:***

The purpose of this section is to provide information on the environment in which the proposed mining activities will take place, with a view to identify sensitive issues/areas, which need to be considered when conducting the impact assessment.

The application is over a certain area of the farm ***Losklip 793 (Port. 1)***. This area consists of natural veld and cultivated field, currently used by agriculture.

***Magisterial District:***

Bethlehem.

***Direction from neighbouring town:***

The site is situated approximately 8 min (5.2 km) via R76, form the SAPS Bethlehem, 15 Malan Street, Bethlehem, Free State, 9701. Head west on Malan Street toward Roux Street for 260 m. Turn right onto Commissioner Street (R76) continue to follow R76 for 1.5 km. Turn right onto Atbara Street (R76) continue to follow R76 for 2.1 km. Turn left drive for 1.4 km. Turn left the proposed site will be on the right after 31 m.

***Longitude (approximate center of mining site):***

28.2808 E

***Latitude (approximate center of mining site):***

-28.1960 S

***Existing Surface Infrastructure:***

There is no infrastructure over this 5 hectares area. Access to the farm is gained by an existing farm road from the gravel road from the R76 out of Bethlehem in the direction of Lindley. See **Figure 3** for an extraction of the Google Earth Map showing the current surface layout, pre-mining.

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

[Its current geographical, physical, biological, socio- economic and cultural character].

According to VEGMAP (2006) classified this area form part of the (Gm 3) Eastern Free State Clay Grassland. VT 48 Cymbopogon—Themecia Veld (clayy) (83%) (Acocks 1953). LR 39 Moist Cool Highveld Grassland (73%) (Low & Rebelo 1996).

***Distribution:***

Free State Province and marginally in Lesotho: Low-lying areas of the eastern regions of the province, covering the vicinities of Wepener (south), Petrus Steyn (north), Excelsior and east of Winburg (west) and Warden (east) and a thin extension between Maseru and Fouriesburg. Altitude 1 380-1 740 m.

***Climate:***

Summer-rainfall region, with MAP around 630 mm. Much of the precipitation falls in form of thunderstorms between November and March. One of the coldest regions of the Highveld. Frost is very frequent in winter.

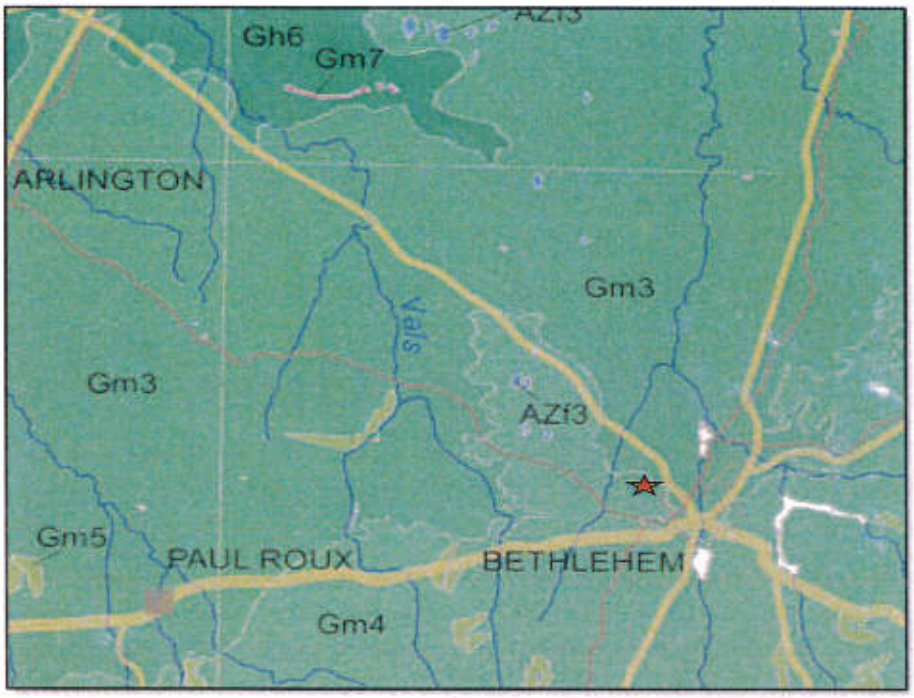
***Geology & Soil:***

Mudstones and claystones of the Adelaide Formation (Beaufort Group) underlie this flat to slightly undulating terrain in the north, while the Tarkastad Formation (Beaufort Group) dominates the geology in the south. Dolerite dykes and sills as well as claystone outcrops, resistant to weathering, form isolated hills and ridges (Gm 5 Basotho Montane Shrubland) that create a broken landscape, especially in the

southern parts of the unit. Sepane, Arcadia, Estcourt and Rensburg forms dominate the moist bottomlands while the Glenrosa, Bonheim, Avalon, Clovelly and Mayo forms dominate the outcrops and slightly elevated areas. Major land types Ca and Bd.

***Vegetation [Flora] and Landscape Features:***
Flat to gently rolling land surfaces covered with grassland dominated by *Eragrostis curvula, Themeda triandra, Cymbopogon pospischilii, Eragrostis plana, Setaria sphacelata, Elionurus muticus* and *Aristida congesta*. Overgrazing in certain areas and selective grazing of the grassland create a patchy appearance, with dominant and diagnostic species associated with small to large patches of a few hectares in diameter. A wide range of grazing regimes on the macro-scale and within grazing units in the area on the micro-scale, create this fragmentation (Fuls 1993). [See **Figure 5** below].

**Figure 5: The VEGMAP classification: [*Gm 3 Eastern Free State Clay Grassland*]**




***Important Taxa*** Graminoids: *Andropogon appendiculatus* (d), *Aristida congesta* (d), *Brachiaria serrata* (d), *Cymbopogon pospischilii* (d), *Cynodon dactylon* (d), *Elionurus muticus* (d), *Eragrostis chloromelas* (d), *E. plana* (d), *Harpochloa falx(* (d), *Heteropogon contortus* (d), *Microchloa caffra* (d), *Miscanthus capensis* (d), *Panicum gilvum* (d), *Pennisetum sphacelatum* (d), *Setaria sphacelata* (d), *Themeda triandra* (d), *Tristachya leucothrix (d), Aristida junciformis* subsp. *galpinii, Eragrostis capensis, E. gummiflua, E. racemosa, Panicum stapfianum, Setaria nigrirostris, Trichoneura grandiglumis.* Herbs: *Vernonia oligocephala* (d), *Ajuga ophrydis, Berkheya onopordifolia* var. *onopordifolia, Chamaesyce inaequilatera, Cineraria lyratiformis, Crabbea acaulis, Geigeria aspera* var. *aspera, Haplocarpha scaposa, Helichrysum rugulosum, Hermannia depressa, Hibiscus microcarpus, Monsonia burkeana, Nolletia ciliaris, Selago densiflora, Sonchus dregeanus, S. nanus, Tolpis capensis.* Geophytic Herbs: *Boophone disticha, Crinum bulbispermum, Kniphofia ritualis, Ledebouria macowanii.* Herbaceous Climber: *Rhynchosia totta.* Low Shrubs: *Helichrysum dregeanum* (d), *Anthospermum rigidum* subsp. *pumilum, Felicia muricata, Pentzia globosa, Stoebe plumosa.* Succulent Shrub: *Euphorbia clavarioides* var. *clavarioides.*

***Conservation Endangered:*** Target 24%. Only a small portion statutorily conserved (Willem Pretorius Nature Reserve). More than half already transformed by cultivation or building of dams (Allemanskraal, Armenia, Egmont, Loch Lomond, Lovedale, Mushroom Valley and Newberry Dams). Erosion very low (34%), low (30%) and moderate (26%). Remarks: Several clusters of AZf 3 Eastern Temperate Freshwater Wetlands (playas) occur in an area between Lindley, Bethlehem, Warden and Petrus Steyn. These playas are probably the remains of palaeodrainage lines (Seaman 1987). References Scheepers (1975), Seaman (1987), Du Preez (1991), Fuls (1993).

***Animal Life [Fauna]:***
Small animals common in this area are: Steenbuck, Duiker, Jackal and Meerkats.

***Topography:***
The mine site is situated on a terrain that is characterized by flat to gently rolling land surfaces covered with grassland. The slope varies around <0.1% to not more than 3%.

***Surface Water:***
This site falls in Upper Vaal (No. 8) water management area as classified by the Department of Water Affairs, under tertiary drainage region C83 and quaternary catchment C83C. There is no open water or streams within 5km distance of the application area. River diversion is not applicable.

***Ground Water:***
Presence of water boreholes and springs: There are no boreholes on the application area.

***Air Quality:***
The impact on air quality will only start with the mining where dust from excavating and from the roads will occur. This impact will be low and will be monitored and mitigated trough wetting of the roads.

***Noise:***
The impact of noise will only start with the mining of the clay where noise from the mining equipment will be generated. This operation will only be in day time working hours and will have a low impact on current surroundings.

***Sites of Archaeological and Cultural Interest:***
No graves on the application area or within a 500m radius. However, should any archaeological sites be discovered, all work will be ceased and the relevant specialists will be contacted in conjunction with SAHRA, and the appropriate steps will be taken to protect the identified resource.

According to Section 36(3) of the National Heritage Resources Act 25 of 1999 no person may, without a permit issued by SAHRA or a provincial heritage resources authority—

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

(b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or

(b) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

***Sensitive Landscapes:***
There were no sensitive landscapes identified on the site visit on the application area.

***Visual Aspects:***
These mining activities will be visible from the landowner's house. The site will also be visible to passersby on the local gravel road.

***Social:***
The proposed activity will employ 6 people, of which few are resident around the operation. Various social amenities are available close to the operation. These include schools, hospitals, churches, recreation facilities as well as a police station in Bethlehem which is located approximately 5.2 km south, south-east of the operation.

### (b) Description of the current land uses.

Currently the land is in use for agriculture as grazing and cultivated land.

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

Please refer to Section 2(d)(ii)Table 2 for a description of the activities and infrastructure which are foreseen to form part of the proposed activity.

The existing infrastructure consists out of an entrance road and farm structures adjacent to the application area 1km away. No structures on the application area.

### (d) Environmental and current land use map.

(Show all environmental and current land use features)

Current land-use of the application area consists out of 100% agricultural land. See **Appendix 1(b)** [Infrastructure Map] for more detail.

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

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

The proposed project is anticipated to impact on a range of biophysical and socio-economic aspects of the environment. The main purpose of the Basic Assessment Report is to identify and evaluate the significance of these potential impacts and determine how they can be minimized or mitigated.

It should be noted that a comprehensive Environmental Management Program (EMPr) will be developed and implemented to regulate and minimize the direct, indirect and cumulative impacts during the construction and operational phases. The potential environmental impacts identified, which will be investigated further in the Impact Assessment Phase of the project, are summarized in **Table 8** on next page.

## Table 8: Impact significance identification matrix for Losklip 793

| | | | A | B | C | D | E | F | E | F | G | H | I | J | K | L | M | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Components | ABIOTIC | | | | | | | | | BIOTIC | | | VISUAL | SOCIO-ECONOMIC | | |
| | PHASE | Impacts | Geology | Topography | Soil | Land capability | Land use potential | Surface water | Ground water | Air quality | Noise | Vegetation | Wildlife | Sensitive landscapes | Visual impact | Archaeological & cultural sites | Socio-economic impacts | Affected parties |
| | | Activity, Product or Service | | | | | | | | | | | | | | | | |
| 1 | Construction | Demarcation of mine focuses area. | | | L | L | L | | | | | | L | | L | | | |
| 2 | | Establishment (site preparation, vegetation clearance, topsoil removal and stockpiling) of proper access roads (upgrade existing road), Initial vegetation clearance, topsoil removal & stockpiling next to first opencast/pit/trench within the mine focus area. | | L | L | L | | | M | H | H | L | L | L | M | | L | L |
| 4 | | Provision of storage tanks for potable (drinking water) and process water (dust suppression). | | L | L | L | L | L | M | M | L | L | L | L | L | L | | |
| 5 | | Provision of waste handling/disposal facilities (domestic & industrial waste bins. | | | L | | | L | L | | | | | L | | | | |
| 6 | | Fencing –off active mining site in as required in terms of the MHSA. Ensure access control (gate), ect. | | | | M | | | | | | | M | | M | | | H+ |
| 7 | Operational | Vegetation clearance, topsoil removal & stockpiling net to opencast/pit/trench within the mine focus area (0.5 ha of surface area disturbed at any given time). | | M | H | H | M | L | | L | | H | L | | L | | M | H |
| 8 | | Mechanically excavating overburden with an excavator and stockpile separately from topsoil dump. Remove clay with excavator and stockpile on side of /pit to load into the screening plant. | H | M+ | H | H | H | L | M | L | L | H | L | | L+ | | M | H |
| 9 | | Transport of clay away from the site. | | | H | | | L | H | L | L | H | | | M | | M | H |
| 10 | | Final sloping of all voids/trenches. | H+ | H+ | H+ | H+ | H+ | H+ | H+ | L | L | | | | L | | H+ | H± |
| 11 | Decommissioning and closure | Replace and spread all topsoil evenly over sloped sites. | | | H+ | H+ | H+ | H+ | H+ | H+ | L | H+ | H+ | | H+ | | H+ | H+ |
| 12 | | Establishment of vegetation cover. | | | H+ | H+ | H+ | H+ | H+ | H+ | | H+ | H+ | | H+ | | H+ | H+ |

| | | | A | B | C | D | E | F | E | F | G | H | I | J | K | L | M | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Components | ABIOTIC | | | | | | | | | BIOTIC | | | VISUAL | SOCIO-ECONOMIC | | |
| | PHASE | Impacts | Geology | Topography | Soil | Land capability | Land use potential | Surface water | Ground water | Air quality | Noise | Vegetation | Wildlife | Sensitive landscapes | Visual impact | Archaeological & cultural sites | Socio-economic impacts | Affected parties |
| | | Activity, Product or Service | | | | | | | | | | | | | | | | |
| 13 | | Removal of all temporary & demolition of all permanent structures (Section 44 of the MPRDA). | | | H+ | H+ | H+ | H+ | H+ | H+ | L | H+ | H+ | | H+ | | H+ | H+ |
| 14 | | Rehabilitation of all access roads, compacted areas, etc. | | | H+ | H+ | H+ | H+ | H+ | H+ | L | H+ | H+ | | H+ | | H+ | H+ |

## (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 were determined in order to decide the extent to which the initial site layout needs revision)

**Introduction:**

**Table 9** describes and evaluates the effects of the different mining projects and the associated activities on the natural and social environments.

The different environmental components, on which the project (can/may) have an impact, are:

1. Geology
2. Topography
3. Soil
4. Land Capability
5. Land Use
6. Vegetation
7. Wildlife
8. Surface Water
9. Ground Water
10. Air Quality
11. Noise
12. Archaeological and Cultural sites
13. Sensitive Landscapes
14. Visual Aspects
15. Socio-economic Structure
16. Interested and Affected Parties

**IMPACT ASSESSMENT**

Before the impact assessment could be done the different project activities were identified:

**ACTIVITIES:**

Access Roads (Existing farm roads to be upgraded)
Temporary office, workshops, ablution facility, water tanks, diesel tanks tanks and other temporary buildings
Mining equipment (conveyor, drum screen, washing pans, generator)
Stockpiles
Overburden dumps
Opencast trenches (as part of bulk sampling)
Tailings dam (porrel dam)

### I. Environmental Impact Assessment Summary:

- **Environment likely to be affected by the prospecting operation. (See Appendix 1(a) for location)**

| Environmental aspect | Affected | | Not affected |
|---|---|---|---|
| | Negligible | Substantial | |
| 1. GEOLOGY | | X | |
| 2. TOPOGRAPHY | X | | |
| 3. SOIL | | X | |
| 4. LAND CAPABILITY | | X | |
| 5. LAND USE | X | | |
| 6. VEGETATION | | X | |
| 7. WILDLIFE | X | | |
| 8. SURFACE WATER | | | X |
| 9. GROUND WATER | X | | |
| 10. AIR QUALITY | X | | |
| 11. NOISE | X | | |
| 12. SENSITIVE LANDSCAPES | | | X |
| 13. VISUAL ASPECTS | X | | |
| 14. SOCIO ECONOMICS | X | | |
| 15. INTERESTED & AFFECTED PARTIES | X | | |
| 16. ARCHAEOLOGICAL | | | X |

- **Environment likely to be affected by the alternative land use**

  Mining will be a new land use over this area. The site that is earmarked for mining represents ± 1 % of the total farm area. And it is further not foreseen that mining activities would disturbed an area of more than 0.5 ha at any given time. The rest of the terrain would continue to be used for agriculture purposes by the landowner.

- **Assessment of the impacts created by the prospecting activity**

Before any assessment can be made the following evaluation criteria need to be described:

*Explanation of **probability** of impact occurrence*

| Probability of impact occurrence | Explanation of probability |
|---|---|
| Very low | <20% sure of particular fact or likelihood of impact occurring. |
| Low | 20 to 39% sure of particular fact or likelihood of impact occurring. |
| Moderate | 40 to 59% sure of particular fact or likelihood of impact occurring. |
| High | 60 to 79% sure of particular fact or likelihood of impact occurring. |
| Very high | 80 to 99% sure of particular fact or likelihood of impact occurring. |
| Definite | 100% sure of particular fact or likelihood of impact occurring. |

*Explanation of **extent** of impact*

| Extend of impact | Explanation of extend |
|---|---|
| Site specific | Direct and indirect impacts limited to site of impact only. |
| Local | Direct and indirect impacts affecting environmental elements within the Bethlehem area. |
| Regional | Direct and indirect impacts affecting environmental elements within Free State Province. |
| National | Direct and indirect impacts affecting environmental elements on a national level. |
| Global | Direct and indirect impacts affecting environmental elements on a global level. |

*Explanation of **duration** of impact*

| Duration of impact | Explanation of duration |
|---|---|
| Very short | Less than 1 year |
| Short | 1 to 5 years |
| Medium | 6 to 12 years |
| Long | 13 to 50 years |
| Very long | Longer than 50 years |
| Permanent | Permanent |

*Explanation of impact **significance***

| Impact significance | Explanation of significance |
|---|---|
| No impact | There would be no impact at all - not even a very low impact on the system or any of its parts. |
| Very low | Impact would be negligible. In the case of negative impacts, almost no mitigation and/or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap and simple. In the case of positive impacts, alternative means would almost all likely to be better, in one or a number of ways, than this means of achieving the benefit. |
| Low | Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and/or remedial activity would be either easily achieved or little would be required, or both. In case of positive impacts, alternative means for achieving this benefit would likely be easier, cheaper, more effective, less time-consuming, or some combination of these. |
| Moderate significance | Impact would be real but not substantial within the bounds of those which could occur. In the case of negative impacts, mitigation and/or remedial activity would be both feasible and fairly easily possible. In the case of positive impacts, other means of achieving these benefits would be about equal in time, cost and effort. |
| High significance | Impacts of a substantial order. In the case of negative impacts, mitigation and/or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. In the case of positive impacts, other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these. |
| Very high significance | Of the highest order possible within the bounds of impacts which could occur. In the case of negative impacts, there would be no possible mitigation and/or remedial activity to offset the impact at the spatial or time scale for which it was predicted. In the case of positive impacts, there is no real alternative to achieving the benefit. |

## (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)

In terms of the EIA regulations, consideration must be given to alternatives. Alternatives are different approaches and ways of meeting the need, purpose and objectives of a proposed activity. Alternatives may include a location site alternative, activity alternatives, processes or technology alternatives, temporal alternatives etc. the no-go alternative or option is also considered, as it provides the baseline against which the impacts or other alternatives may be compared.

However, for this specific project, no alternatives have been investigated, with the exception of the no-go alternative. The reason for this being that the mining permit is being applied for the sole purpose of mining clay. The no-go option entails the continuation of the current land use (natural grazing) on the study site. The project will contribute towards providing continued jobs for current staff. Should the proposed project therefore not be authorized to proceed, it is anticipated that current employment opportunities will be terminated once the mineral reserves have been depleted.

The no-go option is therefore not a feasible option in this case, as it suggests that the mineral reserves should not be exploited and current employment opportunities should not materialize or be prolonged

## (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 the results of consultation contained as **Appendix 2** for the issues that were raised by I&AP's and stakeholders during the review period of the

Consultation phase of the BAR/EMPr report, as well as the response to those issues made by the Environmental Assessment Practitioner.

The mitigation measures and technical management action plans which address potential impacts are discussed below.

**Table 9 - Assessment of the nature, extent, duration, probability and significance of the potential environmental, social and cultural impacts of the proposed prospecting operation, including the cumulative environmental impacts.**

| Environmental Component | Geology |
|---|---|
| **Environmental Management/Mitigation Measures/Action Plans/Commitments** | |
| • No mitigation exists except to slope the excavations.<br>• As mining progressed and the excavation has been sloped, a certain amount of topsoil would be placed on these areas. This will not restore the geology, but will mitigate the impact.<br>• Planned, systematic and thorough mining of the mineral resource (Aeolian deposits containing clay) should take place.<br>• Optimal utilization of the mineral resource should take place within the boundaries of the mining terrain.<br>• Strip, remove and store soil and overburden as far as practical in an orderly fashion and replace as far as possible on back-filled areas, in the reverse order once decision have been taken that no further mining would take place in a particular section or which might still be traversed by vehicles and disturbed in the process.<br>• Care must be taken that the removal of clay deposits by means of earthmoving equipment is restricted to what is really necessary to achieve the objective. | |
| **EMP Performance Assessment & Monitoring Reporting** | |
| To be included in EMP/EIA. | |
| **Closure Objective** | |
| Optimal exploration of the mineral resource in order to ensure to facilitate better rehabilitation planning. The overburden and topsoil (where available) must be | |

replaced in a responsible and planned manner in order to achieve some conformity with the surrounding undisturbed area.

| Environmental Component | Topography |
|---|---|
| **Environmental Management/Mitigation Measures/Action Plans/Commitments** | |
| • All trenches should be sloped to a sustainable angle and, covered with a shallow layer of topsoil (if available).<br>• Access to all active excavation areas should be controlled. The necessary warning signs should be put in place. All mining activities should be restricted to the fenced-off area.<br>• Surface run-off control should be put in place at active trenches (preventing water from entering).<br>Mining would be done according to a definite MWP (only disturbing an area that is really necessary). As part of the MWP the handling of tailings material, overburden material, construction of dumps and back-filling of trenches should also form part of it.<br>Rehabilitation of the new topographical landscape in such a way that it would blend in with the surrounding landscape and allow normal surface drainage to continue. As soon as a section of the mining site would not be explored anymore it should be rehabilitated (planned and phased manner). | |
| **EMP Performance Assessment & Monitoring Reporting** | |
| To be included in EMP/EIA. | |
| **Closure Objective** | |
| Rehabilitation of the new topographical landscape in such a way that it would blend in with the surrounding landscape and allow normal surface drainage to continue. Rehabilitation in such a way that the new landscape features would be stable and would not pose any safety hazard to human and animal anymore. | |

| Environmental Component | Soil (topsoil & access roads) |
|---|---|
| **Environmental Management/Mitigation Measures/Action Plans/Commitments** | |
| **Handling of topsoil as a natural resource:**<br>Any future expansion of the trenches or construction of infrastructure should be preceded by the removal of all available topsoil.<br>The surface of any new areas to be disturbed must be kept to a minimum. All available topsoil/overburden material should be removed and stockpiled for rehabilitation purposes.<br>**Access roads, etc:**<br>The clearing of soil surface areas would be restricted to what is really necessary for the construction of infrastructure.<br>Wherever possible all topsoil should be removed and stockpiled for rehabilitation purposes. Overburden material should also be stockpiled separately if practically possible. Topsoil and overburden material should be transported to an area earmarked for rehabilitation. | |
| **EMP Performance Assessment & Monitoring Reporting** | |
| To be included in EMP/EIA. | |
| **Closure Objective** | |
| The topsoil removed in the site preparation process should be replaced during the rehabilitation exercise. | |

| Environmental Component | Soil (soil compaction) |
|---|---|
| **Environmental Management/Mitigation Measures/Action Plans/Commitments** | |
| **Soil compaction:**<br>The mining operation should only be restricted to what is really required (demarcated area of exploitation) within the fenced-off area. **Access roads** towards the sites would be restricted only to the roads (exiting farm roads & roads established in consultation with the surface owner). No land would be disturbed unnecessarily.<br>Mining & rehabilitation should be done in a well-planned manner (according to a MWP) and in the process ensuring that activities are only restricted to surface areas really required.<br>Compaction of soil surface areas would be alleviated once rehabilitation of certain area starts. Certain roads would probably remain for access (in consultation with the surface owner). Those that would not be required would be ripped and rehabilitated. | |
| **EMP Performance Assessment & Monitoring Reporting** | |
| To be included in EMP/EIA. | |
| **Closure Objective** | |
| Alleviation of compaction of soils would be done during rehabilitation of the mining terrain, including roads. | |

| Environmental Component | Soil (Soil erosion) |
|---|---|
| **Environmental Management/Mitigation Measures/Action Plans/Commitments** | |
| **Soil Erosion:**<br>To take preventive steps against land disturbance like erosion. Implement and maintain cut-off trenches/berms to prevent erosion.<br>**Re-vegetation of exposed soil surfaces** (man-made surfaces on tailings dumps , overburden dumps, disturb surfaces in excavated sites, roads, etc) should happen as soon as a particular activity has ceased in order to act as a sufficient erosion prevention measure. | |
| **EMP Performance Assessment & Monitoring Reporting** | |
| To be included in EMP/EIA. | |
| **Closure Objective** | |
| No soil erosion must be visible and no potential for soil erosion must be present at closure. | |

| Environmental Component | Soil (Soil contamination) |
|---|---|
| **Environmental Management/Mitigation Measures/Action Plans/Commitments** | |
| **Potential for soil contamination:**<br>Vehicles to be inspected to ensure no oil and hydraulic fluid leaks occur.<br>All oil spills on soil to be removed and bio-remediate immediately (certain commercial products are available such as Terrasorb or it could be rehabilitated by means of the application of fertilizer and turn with a spade from time to time in order to enhance the natural occurring soil microbial activity).<br>No servicing of vehicles must occur except on a concrete floor or over PVC lined area in an area allocated for that. Training w.r.t pollution hazards and their impact on the environment must be given as part of induction training.<br>An incidence register for this purpose must be kept.<br>Drip trays must be available and used where emergency repairs is done. | |
| **EMP Performance Assessment & Monitoring Reporting** | |
| To be included in EMP/EIA. | |
| **Closure Objective** | |
| No soil contamination must be visible or known before closure can be given. | |

| Environmental Component | Soil (Soil structure) |
|---|---|
| **Environmental Management/Mitigation Measures/Action Plans/Commitments** | |
| **Change in Soil structure:**<br>Ensure that all available (if any) topsoil is carefully removed in different areas.<br>The soil must also be compacted as backfilling is done.<br>No unnecessary driving outside the active mining area is allowed due to soil compaction that may occur.<br>Use organic material e.g. manure to restore the soil structure during rehabilitation.<br>Ensure that the rehabilitation plan makes provision for ripping of roads and spreading of organic material and that this is used during rehabilitation. | |
| **EMP Performance Assessment & Monitoring Reporting** | |
| To be included in EMP/EIA. | |
| **Closure Objective** | |
| No compaction of any roads or any other area must be present during closure. If the soil structure is disturbed mitigation measures e.g. the use of organic material, lime and fertilizers must be implemented to restore the soil structure. | |

| Environmental Component | Soil (Soil fertility) |
|---|---|
| **Environmental Management/Mitigation Measures/Action Plans/Commitments** | |
| **Soil fertility:**<br>Little can be done to preserve the moisture status of the soil once it is exposed. The soil must be used for rehabilitation as quickly as possible.<br>The soil on the rehabilitated area must be analysed to determine the deficiencies and fertilizer and lime must be ploughed into the soil to restore its fertility, if necessary.<br>Ensure that stockpiled soil is kept clean and where possible ensure that the topsoil is treated with organic material and fertilized.<br>Do not use stockpiled soil for any other purpose but for rehabilitation.<br>Do not use topsoil to construct roads.<br>Ensure the rehabilitation plan makes provision for fertiliser.<br>Make sure rehabilitated topsoil is analyzed in a laboratory. The type of fertilizer would depend on a soil analyses and fertilizer recommendation. | |
| **EMP Performance Assessment & Monitoring Reporting** | |
| To be included in EMP/EIA. | |
| **Closure Objective** | |
| The soil must be fertile enough to sustain vegetation. | |

| Environmental Component | Land Capability |
|---|---|
| **Environmental Management/Mitigation Measures/Action Plans/Commitments** | |
| The disturbance of land must be restricted (kept to a minimum) to the planned fenced-off, active mining site only. Remove topsoil where it is available. Take care that roads needed are restricted to one entry to the area for mining purposes. If new land is used for roads to enter the area it must be done in consultation with the surface owner.<br>All rehabilitation will be done according to the final rehabilitation plans after approval by the Department of Mineral Resources (DMR). Topsoil will be placed in areas where it was removed and the areas will be re-vegetated accordingly. Ensure that the rehabilitation plan is implemented. | |
| **EMP Performance Assessment & Monitoring Reporting** | |
| To be included in EMP/EIA. | |
| **Closure Objective** | |
| Rehabilitated to the state that it is suitable for the predetermined and agreed land capability. | |