

12 September 2013

**Meepo Ya Mmu Mineral Resources
(Pty) Ltd**

**PLAN OF STUDY
FOR THE PROPOSED ESTABLISHMENT OF A
SAND AND CLAY MINE ON PORTION 0 OF
THE FARM PAPKUILFONTEIN 469 JR,
MPUMALANGA PROVINCE**

Submitted to:

**The Mpumalanga Department of Economic Development,
Environment and Tourism (MDEDET)**

Directorate: Environmental Impact Management



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REPORT



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Abbreviations

DEA	Department of Environmental Affairs
EAP	Environmental Assessment Practitioner
ECA	Environment Conservation Act (ECA), 1989 (Act No. 73 of 1989)
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
GN	Government Notice
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
MDEDET	Mpumalanga Department of Economic Development, Environment and Tourism
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
PPP	Public Participation Process
ToR	Terms of Reference

1. INTRODUCTION

1.1 Project Background

The Applicant, Meepo Ya Mmu Mineral Resources (Pty) Ltd, is undertaking an application for environmental authorisation for the proposed establishment of sand and clay on Portion 0 of the Farm Papkuilfontein 469 JR in Bronkhorstspuit, Mpumalanga Province. The application is lodged in terms of the National Environmental Management Act, 1998 (Act 108 of 1998) (as amended) [NEMA] at the competent authority namely the Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET). The application is required since the proposed development includes activities which are listed in terms of the NEMA Environmental Impact Assessment (EIA) Regulations 2010. Environmental Assurance (Pty) Ltd [ENVASS], as independent environmental consultant, has been appointed by the Applicant, Meepo Ya Mmu Mineral Resources (Pty) Ltd, to undertake the Scoping and EIA process to ensure compliance with the requirements of the EIA Regulations of 2010, promulgated in terms of the NEMA (as amended).

The project proposal entails the following:

1. The construction of a sand and clay mine with associated infrastructure such as a wash plant, roads, etc.;
2. The abstraction of water for washing the sand and clay;
3. The storage of water for the washing plant activities as well as temporary storage of water in the return water dams; and
4. Mining activities which will take place within close proximity of the Malanspruit and wetland area.

1.2 Legislative Context

National Environmental Management Act, 1998 (Act 108 of 1998) [as amended]:

The proposed development requires compliance with the EIA Regulations of 2010, promulgated in terms of the NEMA. The proposed activity requires a Scoping and EIA process as listed activities 18 and 22 under Government Notice (GN) No. 544 as well as listed activities 15 and 20 of GN No. 545 of the EIA 2010 Regulations are triggered.

NEMA (Act 107 of 1998) GN 544 of 2010:

Item 18: The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock from

- i) A watercourse;
- ii) The sea;
- iii) The seashore;

iv) The littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater

The proposed activity will involve the excavation and removal of sand and clay from a watercourse. The excavation and removal will be undertaken using an excavator vehicle.

Item 22: The construction of a road outside urban areas –

- i) With a road reserve wider than 13,5 meters; or
- ii) Where no reserve exists where the road is wider than 8 meters; or
- iii) For which an environmental authorization was obtained for the route determination in terms of activity 5 in government notice 387 of 2006 or activity 18 in Notice 545 of 2010.

The current access road to the proposed site where sand will be removed will have to be upgraded.

NEMA (Act 107 of 1998) GN 545 of 2010:

Item 15: Physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more;

The land on which the mining of sand and clay will take place is currently vacant and not developed. The proposed mining activity will result in an alteration of more than 20 ha of the current physical state of the land.

Item 20: Any activity which requires a mining right or renewal thereof as contemplated in section 22 and 24 respectively of the Mining and Petroleum Resources Development Act, 2002 (Act 28 of 2002).

The excavation of sand and clay is defined as a mining activity which requires a mining right.

National Water Act, 1998 (Act 36 of 1998):

The proposed development also requires compliance with the National Water Act (NWA) as listed under GN No. 19182. An application for an integrated WUL in terms of Section 21, will be submitted, to authorise the following activities:

- a) Abstraction of water;
- b) Storing of water;
- c) Impeding or diverting the flow of water in a watercourse;
- i) Altering the bed, banks, course or characteristics of a watercourse; and
- g) Disposing of waste in a manner which may detrimentally impact on a water resource.

The requirements of the following legislation have also been considered:

- Constitution of South Africa (Act No. 108 of 1996);
- National Biodiversity Act (Act No.10 of 2004);
- National Environmental Management Air Quality Act (Act No. 39 of 2004);
- National Environmental Waste Management Act (Act No. 59 of 2008);

- Minerals and Petroleum Resources Development Act (Act No. 28 of 2002) (as amended); and
- Occupational Health and Safety Act (Act No. 85 of 1993).

1.3 Purpose of the Plan of Study

The PoS is a document which is intended to provide a summary of the key findings of the Scoping Phase of the EIA process, to ultimately describe the activities to be undertaken in the Impact Assessment Phase of the EIA process.

This PoS has been completed in terms of the requirements of Regulation 28 (n) (i-iv) of the EIA Regulations (2010), which sets out the approach to the EIA of the Application which includes *inter alia*:

- A description of the tasks that will be undertaken as part of the EIA process, including any specialised reports or specialised processes, and the manner in which such tasks will be undertaken;*
- An indication of the stages at which the competent authority will be consulted;*
- A description of the proposed method of assessing the environmental issues and alternatives, including the option of not proceeding with the activity; and*
- Particulars of the Public Participation Process (PPP) that will be conducted during the environmental impact assessment process.*

1.4 Details of the Applicant

NAME OF APPLICANT	Meepo Ya Mmu Mineral Resources (Pty) Ltd
REGISTRATION NO. OF APPLICANT	2008/013488/07
NAME OF MINE	The Portion 0 of the Farm Papkuilfontein 469 JR in Bronkhorstspuit, Mpumalanga Province
CONTACT PERSON	Conrad Weiss
POSTAL ADDRESS	317 Stonewall Lane Faerie Glen Pretoria 0184
PHYSICAL ADDRESS	317 Stonewall Lane Faerie Glen Pretoria 0184
TELEPHONE NUMBER	021 917 8840
FAX NUMBER	021 917 8822
CELL PHONE NUMBER	082 891 4826
EMAIL	conrad@psinvest.co.za
LOCATION OF MINE	The mine is situated on the Portion 0 of the Farm Papkuilfontein 469 JR in Bronkhorstspuit, Mpumalanga Province, in the Bronkhorstspuit area.
COMMODITY	Sand and Clay
ESTIMATED LIFE OF MINE	Estimated approximately 2 years

Table 1: Details of the Applicant

1.5 Details of the Environmental Assessment Practitioner

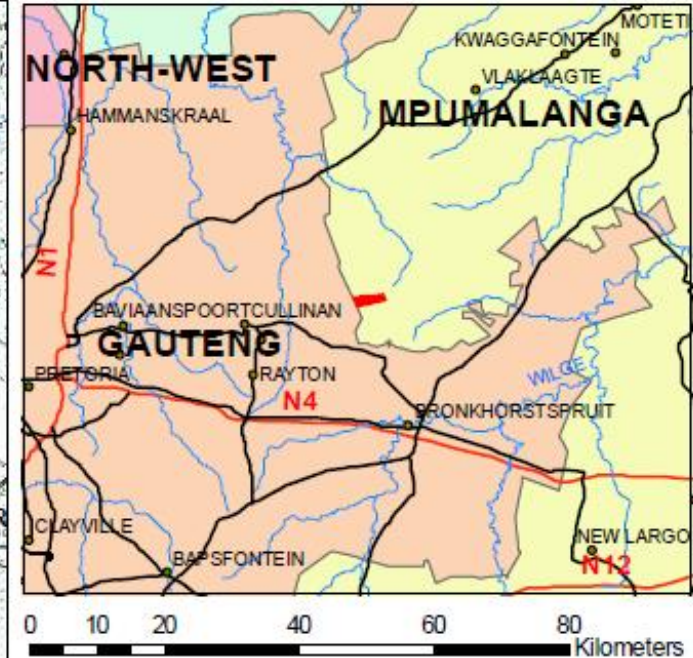
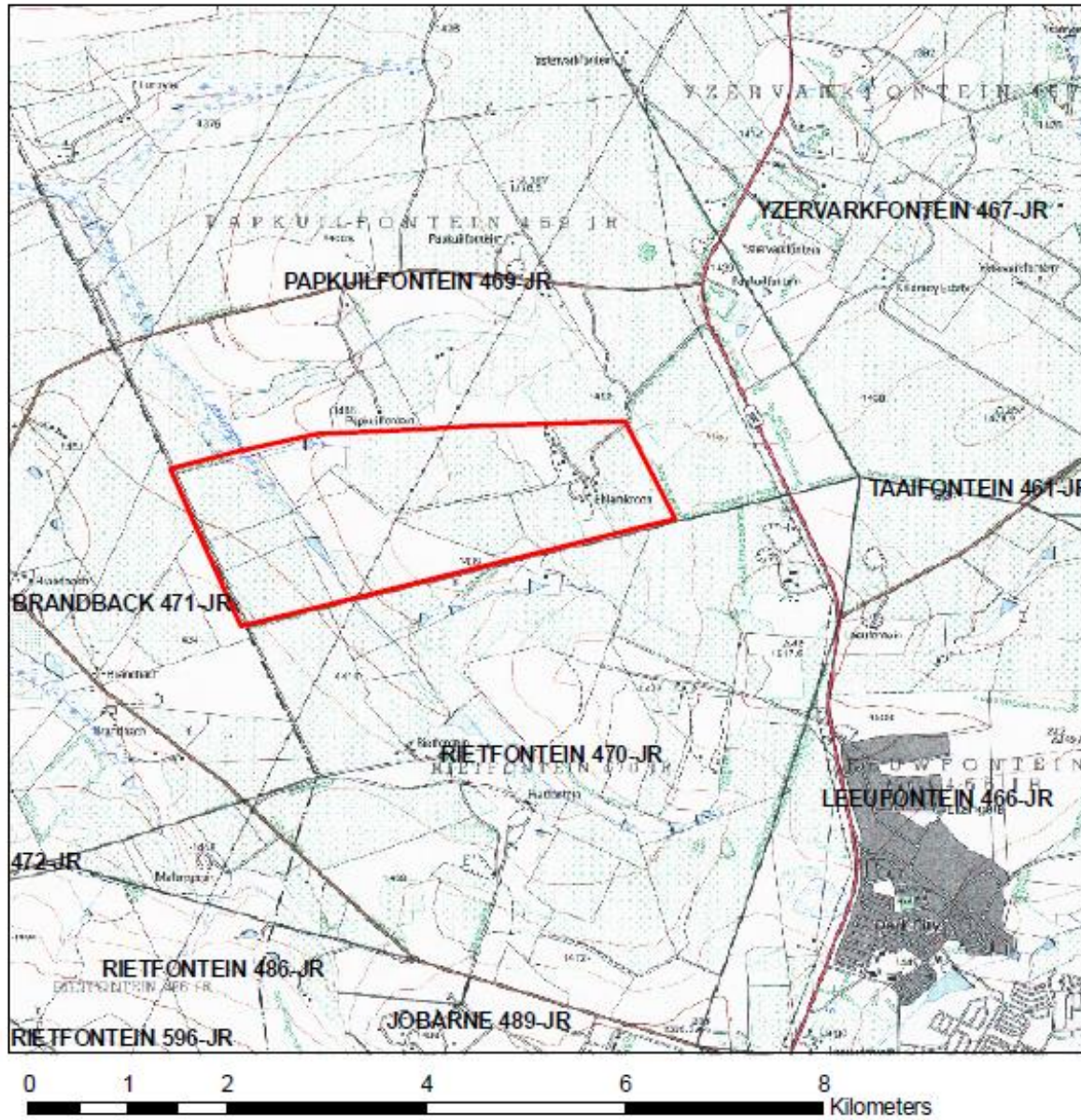
COMPANY	Environmental Assurance (Pty) Ltd [ENVASS]
ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)	Zelda le Roux
POSTAL / PHYSICAL ADDRESS	394 Tram Street, Brooklyn, Pretoria
TELEPHONE NUMBER	012 460 9768
FAX NUMBER	012 460 3071
EMAIL	zelda@envass.co.za
RESPONSIBILITY ON PROJECT	EAP / Project Manager

Table 2: Details of the EAP

2. PROJECT DESCRIPTION

Environmental Assurance (Pty) Ltd [ENVASS], as independent environmental consultant, has been appointed by the Applicant, Meepo Ya Mmu Mineral Resources (Pty) Ltd, to undertake the EIA for the proposed establishment of sand and clay for construction purposes. Mining will take place on Portion 0 of the Farm Papkuilfontein 469 JR in Bronkhorstspuit, Mpumalanga Province. The site is highly disturbed by illegal mining activities that previously took place. Because of the anthropogenic influences in the area it is highly unlikely that any cultural effects of high, medium or low significance are existent within the development footprint area.

Sand and clay is a basic material that is needed for construction and development projects. Five areas on the farm have been identified as containing significant sand resources. The total area that has been applied for is 1.5 hectares all of the proposed mining areas have been previously transformed and ploughed and used as pasture land for cattle, certain sections of the site has been illegally mined by illegal sand miners.



Legend

 Papkuilfontein 469JR

Data Sources;
 - ENPAT 2006
 - Cadastral WGS2528DB/DA

Figure 1: Locality Map

3. PROCESS TO ASSESS ALTERNATIVES

3.1 Identification of Alternatives

Feasible and reasonable alternatives have to be identified for a development as required by the NEMA EIA Regulations and applicable to BAs, SRs and EIARs. Each alternative is to be accompanied by a description and comparative assessment of the advantages and disadvantages that such development and activities will pose on the environment and socio-economy. When no feasible and/or reasonable alternatives could be identified and investigated in terms of a comparative assessment during the Scoping phase, no alternatives could be investigated during the EIA phase. Alternatives forms a vital part of the initial assessment process through the consideration of modifications in order to prevent and/or mitigate environmental impacts associated with a particular development. Alternatives are to be amended when the development's scope of work is amended. It is vital that original as well as amended alternative identification, investigation and assessment together with the generation and consideration of modifications and changes to the development and activities are documented (WC DEADP, 2011).

The EIA Regulations defines alternatives as the different means of meeting the general purpose and requirements of the activity, which may include alternatives 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.

Although an array of alternatives could be investigated for each project, such alternatives will not necessarily be applicable to each project and/or project phase. However there must always be strived to seek alternatives that maximises efficient and sustainable resource utilisation and minimise waste production.

11.2 Feasible Alternatives

TYPE OF ALTERNATIVE: Location	ALTERNATIVE EXPLANATION: <ul style="list-style-type: none"> • <i>Develop on an alternative property</i> • <i>Develop on alternative sites on the same property/properties</i>
The location of the proposed development is the most suitable due to its ideal location in terms of the requirements for sand and clay mining. The geotechnical assessment as well as prospecting boreholes indicated that the quality of the sand and clay in the area where the Applicant proposes to mine sand and clay, is of the best quality and therefore no alternative site has been investigated.	
TYPE OF ALTERNATIVE: Activity	ALTERNATIVE EXPLANATION: <i>Develop an alternative activity ex. Incineration of waste vs. landfill disposal, abstraction of water vs. re-use/recycling of water.</i>
The study area is only feasible for sand and clay mining and it is proposed that water return dams be constructed do re-use and recycle processed water rather than to dispose of it.	
TYPE OF ALTERNATIVE: Design	ALTERNATIVE EXPLANATION: <i>Adapt architectural and/or engineering designs.</i>

The Applicant is currently considering a wash plant with return dams as alternative for the design of the development. Details of such wash plant are however not available and need to be confirmed by the Applicant to be included in the EIAR.	
TYPE OF ALTERNATIVE: Layout	ALTERNATIVE EXPLANATION: <i>Adapt spatial configurations of an activity on any particular site ex. Locate manure dams away from water resources.</i>
Following the site visit it was established that a portion of the area is abutted by the sensitive river flood line of the Malanspruit, wetland and associated riparian ecosystems. This discovery lead to additional specialist studies to be conducted for the wetland as well as the sensitive ecological area. The conclusion of the specialist studies will delineate a buffer zone along the wetland which should be honoured. The buffer zone for wetlands for mining purposes is 100 meters; hence a portion of the total area was excluded for development purposes. No mining of sand and clay will be allowed in this portion.	
TYPE OF ALTERNATIVE: Technological	ALTERNATIVE EXPLANATION: <i>Adapt methods or processes that can be implemented to achieve the same goal ex. Introduction of bacteria rather than chemicals to waste water.</i>
Sand mining can take place according to any of the following types: <ul style="list-style-type: none"> • Dry pit; • Wet pit; • Bar skimming; or • Mining of pits on adjacent floodplains or river terraces. The Applicant still need to provide the EAP with confirmation on the type(s) of mining which is intended to be undertaken. These alternatives will be addressed in detail in the EIA.	
TYPE OF ALTERNATIVE: Demand	ALTERNATIVE EXPLANATION: <i>The demand for products and/or services can be met by other means ex. The demand for paper can be met through deforestation or rather by efficient and viable recycling.</i>
Not Applicable	
TYPE OF ALTERNATIVE: Input	ALTERNATIVE EXPLANATION: <i>Implement different input materials and/or sources ex. Utilisation of woodchips for fuelling boilers rather than electricity.</i>
Not Applicable	
TYPE OF ALTERNATIVE: Routing	ALTERNATIVE EXPLANATION: <i>Implement alternative routes for linear developments such as power line servitudes, transportation and pipeline routes ex. Elongate and divert a railway line to exclude a sensitive environment.</i>
No routing alternatives have been investigated by the Applicant.	
TYPE OF ALTERNATIVE: Scheduling and Timing	ALTERNATIVE EXPLANATION: <i>Adapt the order and/or scheduling of a number of measures which plays a part in a program as it will influence the overall effectiveness of the end result.</i>
It is recommended that construction takes place during the drier winter months to limit the impact of seasonal wetland depressions and sensitive areas, but also to limit siltation etc. No detailed information regarding the proposed time frame for the project is yet available. However, it is anticipated that construction starts as soon as possible once all the necessary approvals are obtained.	
TYPE OF ALTERNATIVE: Scale	ALTERNATIVE EXPLANATION: <i>Adapt the scale of an activity ex. 15 vs. 35 housing units, 12m² vs. 0.5km².</i>

	<i>P.S. Scale and magnitude is inter related.</i>
No scale alternatives have been investigated by the Applicant.	
TYPE OF ALTERNATIVE: Magnitude	ALTERNATIVE EXPLANATION: <i>Adapt the magnitude which is directly related to the extent of an activity.</i> <i><u>P.S. Scale and magnitude is inter related. An activity may be very small scale but can pose an extensive magnitude ex. Destroying an extremely sensitive wetland on a very small scale could result in a magnitude of such as destroying the whole wetland and/or ecological system.</u></i>
No magnitude alternatives have been investigated by the Applicant.	
TYPE OF ALTERNATIVE: No-go	ALTERNATIVE EXPLANATION: <i>The option of not undertaking and implementing the activity at all.</i>
<p>One of the options to be considered for this report is one of no development at all. This will entail leaving the site in its present state. The site is currently vacant. This would result in the site being unattended, uncontrolled and unmanaged which could subject the site to erosion and degradation, as no control mechanisms will be in place to ensure that environmental consequences are kept at a minimum.</p> <p>Vacant land within the Mpumalanga Province is a valuable commodity and resource. It is imperative that this kind of resource is not left vulnerable to the causes and effects of decay and sprawl and its negative economic and social implications. Due to the fact that the site is ideally located along the Malanspruit and forms part of the current development wave in the area, it is envisaged that the property value will demand site development in the short term alternatively the site may be exposed to further illegal mining activities.</p> <p>If this development should not get approval to continue the site will remain as it is. The wetland and riparian habitats identified on site will be exposed to human activities that might ultimately negatively impact these sensitive areas. Furthermore should the anthropogenic activities continue unchecked it could result in unnecessary stress on the already sensitive Malanspruit system.</p>	

Table 1: Alternative analysis

4. METHODOLOGY OF THE EIA PROCESS

4.1 Approach to the EIA

An EIA is a good planning tool. It identifies the environmental impacts of a proposed development and assists in ensuring that a project will be environmentally acceptable and integrated into the surrounding environment in a sustainable way. The EIA for this project complies with the NEMA (as amended) and the NEMA EIA Regulations (2010) of the Department of Environmental Affairs (DEA). The guiding principles of an EIA are listed below.

Box 1: Definition of the term “environment”

The term “environment” is used in the broadest sense in an environmental impact assessment. It covers the physical, biological, social, economic, cultural, historical, institutional and political environments.

4.2 Guiding principles for an EIA

The EIA must take an open participatory approach throughout. This means that there should be no hidden agendas, no restrictions on the information collected during the process and an open-door policy by the Applicant. Technical information must be communicated to stakeholders in a way that is understood by them and that enables them to meaningfully comment on the project.

There should be ongoing consultation with interested and affected parties representing all walks of life. Sufficient time for comment must be allowed. The opportunity for comment should be announced on an on-going basis.

There should be opportunities for input by specialists and members of the public. Their contributions and issues should be considered when technical specialist studies are conducted and when decisions are made.

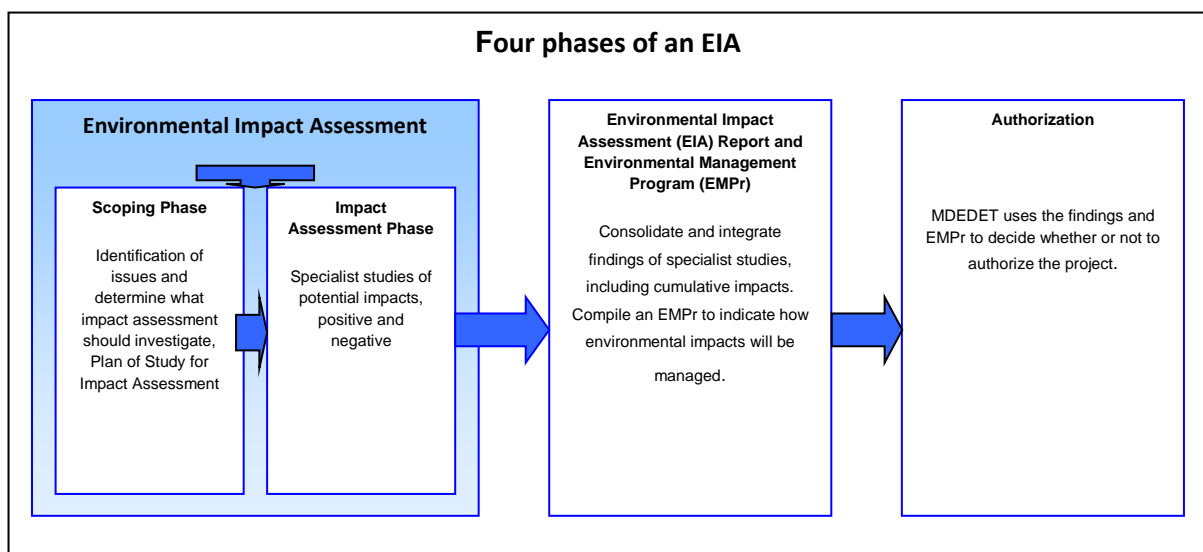


Figure 2: Four phases of the EIA

4.3 Consultation with authorities

The NEMA application for environmental authorisation was submitted to MDEDET and the project was registered on 18 October 2012. On 29 October 2012 the Department acknowledged receipt of the application form and provided the project reference number to the environmental consultant.

4.4 Information gathering

Early in the EIA process, the EAP will identify the information that would be required for the impact assessment and the relevant data which will be required. In addition, available information about the receiving environment will be gathered from reliable sources, Interested and Affected Parties (I&APs), previous documented studies in the area and previous assessment studies. The project team has already visited the site to gain first-hand information and an understanding of the proposed project.

4.5 Description of impacts identified during the scoping phase

The following potential impacts were identified during the Scoping Phase:

ASPECT	IMPACT
Water Resources	<ul style="list-style-type: none"> Contamination of soil and groundwater as a result of deposition of contaminants during the operational phase (mining activities); Contamination of surface water as a result of deposition of contaminants during the operational phase (mining activities); Abstraction of water for purposes of potable water supply and processing purposes; Alteration to the flood line and flow patterns, wetland and riparian environment due to abstraction of water / mining activities in areas such as the 1:50 flood line or within 100m from a watercourse/wetland Excess of suspended solids in water resources; Formation of depressions due to mineral extraction and cumulative effects if depressions are not rehabilitated and fill with water resulting from rain events or floodwater from the catchment; and When clay pit walls are not protected against erosion and storm water is allowed to pass unhindered through a clay pit, surface water may be affected by exceptional addition of suspended solids.
Air Quality	Air pollution caused by dust on temporary and permanent access and site roads.
Ecology	<ul style="list-style-type: none"> Damage to riparian and in stream vegetation and habitat due to mining activities; and The lack of appropriate designing and implementation of an alien vegetation management plan.
Soils and Land-use Capability	<ul style="list-style-type: none"> Unstable soil structures and gradual destruction of structures related especially to the operational phase; Erosion due to a lack of storm water management; Agricultural potential of the surrounding environment could be affected; Effect of stockpiles not located outside of the 1:50 year flood-line or a horizontal distance of 100 meters from the watercourse (whichever is the greatest); Damage to soil due to a lack of rehabilitation.
Noise Vibration And Shock	<ul style="list-style-type: none"> Noise impacts resulting from mining operations; and Noise impacts resulting from traffic.
Visual	Aesthetic quality of the area to the surrounding community due to the construction and various operations of the sand and clay mine
Roads and Traffic	Traffic due to the movement of heavy vehicles on a temporary and/or permanent basis on both temporary and permanent access and site routes
Socio-economic	<ul style="list-style-type: none"> Small scale job creation; Local, national and international economic potential due to the mining activities; and Influx of people to the surrounding area.
Heritage Resources	Disturbance of heritage and archaeological resources during the undertaking of construction and mining activities.
Storm water	Increase of discharge of storm water to the surrounding water resources.

Table 3: Table of impacts

Further details associated with the construction and operation of the various activities as listed in the project description section will be discussed in the (Environmental Impact Assessment Report (EIAR). The EIAR will assess the impacts of each of the activities as well as ascertain the cumulative impacts of the development in totality. The EIAR will outline the necessary mitigation measures and define any issues/areas which could be the cause for concern.

4.6 Specialist Assessments

Based on the impacts identified during the Scoping Phase, the following specialist studies have been identified to be completed and form part of the EIA. The main objective of the specialist studies is to provide independent scientifically sound information on issues of concern relating to the project proposal.

Specialist Studies to form part of the EIA:

- Land Capability Assessment;
- Geohydrological Assessment;
- Surface Water Assessment;
- Biodiversity and Ecological Assessment;
- Socio-economic Assessment;
- Wetland Delineation and Assessment;
- Heritage Impact Assessment; and
- Wetland Status and Functionality Assessment.

The findings of the various specialist studies undertaken will be incorporated into the Draft EIA Report. The Terms of Reference (ToR) for the various specialist assessments are as follows:

4.6.1 Land Capability Assessment

The ToR for the Land Capability Assessment are as follows:

The objectives of the investigation:

- Identification of soil forms present on site;
- The size of the area where a particular soil form is found;
- GPS readings of soil survey points;
- The depth of the soil at each survey point;
- Soil color;
- Limiting factors;
- Clay content;
- A detailed map indicating the locality of the soil forms;
- Slope of the site; and
- Size of the site.

4.6.2 Geohydrological Assessment

The ToR for the Geohydrological Assessment are as follows:

- Conduct a desktop study to gather information on the status quo of Geohydrological features of the study area;
- Conduct a borehole/surface water hydro census to assess groundwater occurrence and utilisation by neighbours;
- Construct a conceptual model to evaluate the hydrogeological environment;
- Interpretation of and collate the predication of possible environmental impacts and the design of rehabilitative measures.

4.6.3 Surface Water Assessment

The methodology for a surface water assessment are as follows:

- Field survey and collection of water samples and in situ measurements;
- Delineation of affected catchment and GIS map work identifying the various quaternary drainage areas in relation to project area;
- Desktop study to characterize the receiving water environment in terms of PES and EISC as well as recommended Eco-Health Class and Reserve (RQO's) based on the Aquatic Ecology study conducted;
- Describing the project area in terms of MAR, drainage density, normal dry weather flow, groundwater recharge and the environmental water balance;
- Based on the infrastructure layout, the requirement for flood-line calculation needs to be determined;
- As part of impact assessment the UP Flood model will be used to determine the various flood recurrence intervals to assist in the design of water related infrastructure and compilation of a conceptual Water Balance;
- Impact of activity will be assessed in terms of the identified water users in the area;
- Mitigation measures will be proposed as part of the EMP;
- Water quality data will be obtained as part of a field survey in order to establish baseline conditions and to assist in the development of a monitoring programme; and
- The water and salt balance will be compiled in the structure and format as depicted in the following departmental guideline: Department of Water Affairs and Forestry (2006): Best Practice Guideline BPG G2: Water and Salt Balances.

4.6.4 Biodiversity and Ecological Assessment

The ToR for the Ecological Assessment are as follows:

- To assess the current status of the habitat components and its conservation status;
- To identify the floral species on site and to recommend steps to be taken should a Red list or protected species be found;
- To identify the fauna species on the site and to recommend steps to be taken should a Red list species be found;
- To highlight the potential impacts the development may have on the ecosystem components of the study area; and

- Provide management recommendation to mitigate negative impacts and enhance positive impacts of the proposed activity.

4.6.5 Socio-economic Assessment

The ToR for the comparative economic analysis includes:

- Describe the demographic characteristics of the region;
- Identify trends in economic indicators, such as gross regional product, industry structure and sector drivers such as construction, mining and tourism;
- Outline other economic indicators such as building approvals and wages;
- Outline employment and unemployment trends in the region;
- Outline estimates of the scale of the project's economic impact on the local economy;
- Describe the project's social and cultural area of influence;
- Social and socio-economic characteristics of communities within the social and cultural area of influence;
- Outline the potential social and socio-economic impacts of the project on communities; and
- Outline measures and strategies to mitigate the social impacts of the project.

4.6.6 Wetland Delineation and Assessment

The ToR for the wetland delineation assessment includes:

- Determine the nature and importance of water resources potentially impacted by the proposed sand and clay mine;
- Delineation of areas classified as wetlands;
- Functionality and current status of the delineated wetlands; and
- Identify practicable mitigation measures to reduce negative impacts on the wetlands and indicate how these can be implemented during the construction, operational and closure of the proposed sand and clay mine.

4.6.7 Heritage Impact Assessment

The contents of the HIA are to include the following:

- Location of the sites that are found;
- Short description of the characteristics of each site;
- Short assessment of how important each site is, indicating which should be conserved and which mitigated;
- Assessment of the potential impact of the development on the site/s; and
- Recommendations for conservation or mitigation.

4.6.8 Wetland Status and Functionality Assessment

The ToR for the wetland status and functionality assessment includes:

- Identify and delineate all wetland areas within the proposed project area,
- Assess the status and ecosystem functionality of the wetlands found within the site,

- Assess potential impacts that may arise as a result of the proposed sand mining activity; and
- Provide suitable buffer zones to these wetland areas.

5. ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

A “**significant impact**” is defined as it is defined in the EIA Regulations (2010): “*an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect of one or more aspects of the environment*”. The objective of this EIA methodology is to serve as framework for accurately evaluating impacts associated with current or proposed activities in the biophysical, social and socio-economical spheres. It aims to ensure that all legal requirements and environmental considerations are met in order to have a complete and integrated environmental framework for impact evaluations.

The process of determining impacts to be assessed is one of the most important parts of the environmental impact assessment process. It is of such high importance because the environmental impacts identified can and are often linked to the same impact stream. In this method all impacts on the biophysical environment is assessed in terms of the overall integrity of ecosystems, habitats, populations and individuals affected. For example the removal of groundcover for the sloping or scraping of an embankment. This leads to higher amounts of water runoff which increases the rate of erosion. Further down in the river the amount of sediment increases because of the increased erosion. A number of fish species cannot endure the high amount of sediment and moves off. The habitat is thus changed or in the process of changing. Thus one needs to understand that the root of the problem (removal of groundcover) is assessed in terms of the degree of change in the health of the environment and/or components in relation to their conservation value. Thus if the impact of removal of groundcover of a definable system is high and the conservation value is also high then the impact of removal of groundcover is highly significant.

5.1 ENVIRONMENTAL IMPACT ASSESSMENT (EIA) 2010 REQUIREMENTS

The Environmental Impact Assessment (EIA) 2010 Regulations promulgated in terms of Sections 24 (5), 24M and 44 of the National Environmental Management Act (NEMA) (Act 107 of 1998) requires that all identified potential impacts associated with the proposed project be assessed in terms of their overall potential significance on the natural, social and economic environments. The criteria identified in the EIA Regulations (2010) include the following:

- Nature of the impact;
- Extent of the impact;
- Duration of the impact
- Probability of the impact occurring;
- Degree to which impact can be reversed;
- Degree to which impact may cause irreplaceable loss of resources;
- Degree to which the impact can be mitigated; and
- Cumulative impacts.

ENVASS has developed an impact assessment methodology (as defined in point 2 below) whereby the **Significance** of a potential impact is determined through the assessment of the relevant temporal and spatial scales determined of the **Extent, Magnitude** and **Duration** criteria associated with a particular impact. This

method does not explicitly define each of the criteria but rather combines them and results in an indication of the overall significance.

5.2 ENVASS IMPACT ASSESSMENT METHODOLOGY

a) *Nature of the impact*

The NATURE of an impact can be defined as: “a *brief description of the impact being assessed, in terms of the proposed activity or project, including the socio-economic or environmental aspect affected by this impact*”.

b) *Extent of the impact*

The EXTENT of an impact can be defined as: “a *brief description of the spatial influence of the impact or the area that will be affected by the impact*”.

EXTENT Extent or spatial influence of impact	Footprint	Only as far as the activity, such as footprint occurring within the total site area
	Site	Only the site and/or 500m radius from the site will be affected
	Local	Local area / district (neighbouring properties, transport routes and adjacent towns) is affected
	Region	Entire region / province is affected
	National	Country is affected

c) *Magnitude of the impact*

The MAGNITUDE of an impact can be defined as: “a *brief description of the intensity or amplitude of the impact on socio-economic or environmental aspects*”.

MAGNITUDE Magnitude / intensity of impact (at the specified scale)	Zero	Natural and/or social functions and/or processes remain <i>unaltered</i>
	Very low	Natural and/or social functions and/or processes are <i>negligibly</i> altered
	Low	Natural and/or social functions and/or processes are <i>slightly</i> altered
	Medium	Natural and/or social functions and/or processes are <i>notably</i> altered
	High	Natural and/or social functions and/or processes <i>severely</i> altered

d) *Duration of the impact*

The DURATION of an impact can be defined as: “a *short description of the period of time the impact will have an effect on aspects*”.

DURATION Duration of the impact	Short term	Construction phase up to 3 years after construction
	Medium term	Up to 6 years after construction
	Long term	More than 6 years after construction

e) Probability of the impact occurring

The PROBABILITY of an impact can be defined as: “the estimated chance of the impact happening”.

PROBABILITY	Unlikely	<i>Unlikely to occur (0 – 25% probability of occurring)</i>
	Possible	<i>May occur (26 – 50% chance of occurring)</i>
	Probable	<i>Likely to occur (51 – 75% chance of occurring)</i>
	Definite	<i>Will certainly occur (76-100% chance of occurring)</i>

f) Degree to which impact can be reversed

The REVERSABILITY of an impact can be defined as: “the ability of an impact to be changed from a state of affecting aspects to a state of not affecting aspects”.

REVERSABILITY	Reversible	Impacts can be reversed through the implementation of mitigation measures
	Irreversible	Impacts are permanent and can't be reversed by the implementation of mitigation measures

g) Degree to which impact may cause irreplaceable loss of resources

The IRRIPACIBILITY of an impact can be defined as:” the amount of resources that can/can't be replaced”.

IRRIPLACABILITY Irreplaceable loss of resources	No loss	<i>No loss of any resources</i>
	Low	<i>Marginal loss or resources</i>
	Medium	<i>Significant loss of resources</i>
	High	<i>Complete loss of resources</i>

h) Degree to which the impact can be mitigated

The degree to which an impact can be MITIGATED can be defined as: “the effect of mitigation measures on the impact and its degree of effectiveness”.

MITIGATION RATING	MITIGATED Degree impact can be mitigated	High	<i>Impact 100% mitigated</i>
		Medium	<i>Impact >50% mitigated</i>
		Low	<i>Impact <50% mitigated</i>

i) Confidence rating

CONFIDANCE in the assessment of an impact can be defined as the:” level of certainty of the impact occurring”.

CONFIDENCE RATING	CONFIDENCE	Unsure	Amount of information on and/or understanding of the environmental factors the potentially influence the impact is <i>unlimited and sound</i>
		Sure	Amount of information on and/or understanding of the environmental factors the potentially influence the impact is <i>reasonable and relatively sound</i>
		Certain	Amount of information on and/or understanding of the environmental factors the potentially influence the impact is <i>limited</i>

j) Cumulative impacts

The effect of CUMULATIVE impacts can be described as:” the effect the combination of past, present and “reasonably foreseeable” future actions have on aspects”.

CUMULATIVE RATING	CUMULATIVE EFFECTS	Low	<i>Minor</i> cumulative effects
		Medium	<i>Moderate</i> cumulative effects
		High	<i>Significant</i> cumulative effects

5.3 SIGNIFICANCE OF IMPACTS

The SIGNIFICANCE can be defined as:” the combination of the duration and importance of the impact, in terms of physical and socio-economic extent, resulting in an indicative level of mitigation required”.

SIGNIFICANCE RATING	SIGNIFICANCE	Neutral	<ul style="list-style-type: none"> • Zero magnitude with any combination of extent and duration
		Very low	<ul style="list-style-type: none"> • Very low magnitude with any combination of extent and duration except regional and long term • Low magnitude with a site specific extent and construction period
		Low	<ul style="list-style-type: none"> • Very low magnitude with a site specific extent and long term duration • Low magnitude with any combination of extent and duration except site specific and construction period or regional and long term • Medium magnitude with a site specific extent and construction period duration • High magnitude with a site specific extent and construction period duration
		Medium	<ul style="list-style-type: none"> • Low magnitude with a regional extent and long term duration • Medium magnitude with any combination of extent and

			<p>duration except site specific and construction period or regional and long term</p> <ul style="list-style-type: none"> • High magnitude with either a local extent and construction period duration or a site specific extent and medium term duration • High magnitude with a regional extent and construction period or a site specific extent and long term duration • High magnitude with a regional extent and construction period or a site specific extent and long term duration • High magnitude with a local extent and medium term duration
		High	<ul style="list-style-type: none"> • Medium 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 • High magnitude with a regional extent and long term duration
		Very high	<ul style="list-style-type: none"> • High magnitude with a regional extent and long term duration • High magnitude with either a regional extent and long term duration

Table 4: Table of significance

6. PUBLIC PARTICIPATION

6.1 Introduction

The section provides details about the proposed PPP activities to be undertaken during the EIA phase. The PPP undertaken to date is summarised in the Scoping Report.

Public Participation is an integral part of the EIA and must be undertaken in accordance with the requirements stipulated in Regulation 54 of the EIA Regulations (2010). Furthermore, in terms of Section 24(4) (a) of NEMA, procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment must, *inter alia*, ensure with respect to every application for environmental authorisations:

- *Coordination and cooperation between organs of state in the consideration of assessments where an activity falls under the jurisdiction of more than one organ of state;*
- *That the findings and recommendations flowing from an investigation, the general objectives of integrated environmental management laid down in Section 2 of NEMA are taken into account in any decision made by an organ of state in relation to any proposed policy, programme, plan or projects; consequences or impacts; and*

- *Public information and participation procedures which provide all I&AP's, including all organs of state in all spheres of government, that may have jurisdiction over any aspect of the activity, with a reasonable opportunity to participate in those information and participation procedures.*

6.2 Proposed Public Participation Process

The specific objects associated with the PPP for the EIA phase are to:

- *Provide all relevant stakeholders (organs of state and I&APs) with appropriate opportunities to raise potential issues, concerns and queries relating to the proposed project and EIA process;*
- *Facilitate the distribution of information through suitable means to ensure that all relevant stakeholders and I&APs are informed about the progress of the project and to give feedback and responses regarding queries and issues raised;*
- *Provide all relevant stakeholders and I&APs with the opportunity to be part of the decision making process by means of providing them with an opportunity to comment on the findings of the specialist assessments and other relevant information contained in the EIA Reports; and*
- *Gather the relevant skills and local knowledge to inform and improve the EIA process and impact assessment.*

STEPS TO BE COMPLETED FOR THE PUBLIC PARTICIPATION PROCESS DURING THE EIA PHASE:

A) Identification of Stakeholders and I&APs

Various I&APs and stakeholders have been identified to date. All have been notified of the proposed project (refer to Scoping Report). However, additional I&AP and stakeholder identification will be ongoing throughout the EIA process. All stakeholders will be kept informed on the progress of the EIA process and will be provided with an opportunity to comment on the Draft and Final EIA Reports.

B) Advertising and distribution of Draft and Final EIA Reports availability for comment

The Draft and Final EIA Reports will be distributed to all stakeholders and I&APs for review and comment. The Draft EIA Report will be made available for comment for a period of 40 calendar days and the Final EIA Report for 21 calendar days.

The EIA reports will be made available for review and comment by the public at the Bronkhorstspruit Community Library. The reports can also be obtained from the ENVASS website (<http://www.envass.co.za>). All relevant authorities will receive hardcopies and CDs of the EIA reports.

C) Public Meeting / Open Day

Quarterly public meetings will occur throughout the EIA process. Significant issues identified during each phase of the EIA will be addressed accordingly at the following public meeting. The purpose of these public meetings is

to present the findings and potential impact identified in the various reports after which key issues and concerns can be discussed and debated by stakeholders and I&APs. Additional issues raised will then be further assessed and addressed in the consecutive phase of the EIA.

D) *Feedback to stakeholders and I&APs on comments and issues raised*

The EIA Report will contain a Comments and Responses Report where all comments and issues raised by stakeholders and I&APs as well as the responses issued by EAP will be formally recorded. Proof of all correspondence will also be included in the EIA Report.

E) *Recordkeeping of PPP completed*

Proof of all correspondence (comments and responses) and additional activities undertaken during the PPP will also be included in the EIA Report documentation.

7. EIA MILESTONES AND PROJECT PROGRAMME

The following key milestones and timeframes for the EIA phase have been identified:

- Distribution of the Draft Environmental Impact Report (EIR) and EMPr for public comment – April 2014
- Distribution of the Final EIR and Environmental Management Program (EMPr) for public comment – May 2014
- Submission of the Final EIR and EMPr to CA (MDEDET) for authorisation – July 2014

Note: The proposed programme detailed above are provided as guidance only and are subject to change depending on the various components and external factors that informs and influences the EIA process.

8. CONCLUSION

This PoS developed for the EIA Phase for the development has been compiled to meet the requirements contained in Regulation 28 (n) (i-iv) of the EIA Regulations (2010). The proposed specialist assessments and PPP methodologies considered for the EIA is deemed to be adequate to inform the EIA Report and environmental process. The CA will therefore receive appropriate integrated information required to allow for informed decision making on the application for authorisation.