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: Hantam Local Muncipality

TEL NO: 027 341 8500

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POSTAL ADDRESS: Private Bag X14, Calvinia, 8190

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FILE REFERENCE NUMBER SAMRAD: NC30/5/1/3/2/10610MP

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1. IMPORTANT NOTICE

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

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

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

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

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

2. Objective of the basic assessment process

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

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

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

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

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

  (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and
  (ii) the degree to which these impacts—
    (aa) can be reversed;
    (bb) may cause irreplaceable loss of resources; and
    (cc) can be managed, avoided or mitigated;

(e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—
  (i) identify and motivate a preferred site, activity and technology alternative;
  (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and
  (iii) identify residual risks that need to be managed and monitored.

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: Inge Erasmus

Tel No.: 021 851 1616

Fax No. : 086 512 0154

e-mail address: admin@enviroafrica.com or inge@enviroafrica.com

ii) Expertise of the EAP.

(1) **The qualifications of the EAP**
(with evidence). Inge Erasmus has a BA (Hons) in Geography and Environmental Studies at the University of Stellenbosch
Bernard de Wit has a BSc in Forestry (Nature Conservation)

Please see Appendix 1 for CVs of the EAPs

(2) **Summary of the EAP's past experience**.
(In carrying out the Environmental Impact Assessment Procedure)
Bernard De Witt:
After qualifying with a B. Sc. in Forestry and a B. A. (Hons) in Public Administration at the University of Stellenbosch Bernard joined the Department of Forestry as an Indigenous Forest Planner in 1983, going on to become Manager of the Table Mountain Reserve with the Cape Town Council. He then joined Cape Nature Conservation (CNC) and headed its Conservation Planning Section before taking up the position of District Manager of the Boland area (inc. the Hottentots Holland and Kogelberg). As a Regional Ecologist, he co-ordinated managerial and scientific inputs into Provincial Nature Reserves in the Boland, Overberg and West Coast regions. For the last four years of his employment he assessed and evaluated development applications, from an environmental perspective, on behalf of CNC (now DEA&DP). Since he left DEA&DP 10 years ago he has been involved in environmental consulting in the private sector as a member of EnviroAfrica.

Inge Erasmus:
Inge completed her BA Honours Degree in Geography and Environmental Studies at Stellenbosch University in 2016. Before completing her honours degree Inge gained practical experience as a junior environmental consultant at Hatch Goba in Johannesburg from 2014 until 2015. Inge acted as an environmental control officer on a variety of projects in the Northern Cape, conducting environmental compliance audits, as well as being part of a project team working on a major resettlement project for Kumba Iron ore. Inge joined EnviroAfrica in February 2017, generally performing duties as an environmental assessment practitioner with regards to NEMA EIA applications.

Please refer to Appendix 1 for CVs

b) Location of the overall Activity.

Farm Name:	Portion 5 of Farm Hol Pads Leegte Number 32
Application area (Ha)	0.7 ha + 0.072 ha = 0.772 ha (Less than 1 ha).
Magisterial district:	Namakwa Distrit Municipality
Distance and direction from nearest town	150 km north of Calvinia and 140km south of Kenhardt
21 digit Surveyor General Code for each farm portion	C02600000000003200005

c) Locality map

(show nearest town, scale not smaller than 1:250000). Please see Appendix 2.

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

Please see Appendix 3A for the Layout Plan (Prefered) of the proposed borrow pit.

A mining permit is required for the construction of a small scale borrow pit (0.7ha) near Brandvlei. Gravel material extracted from the borrow pit will be used for the development of the new Brandvlei WWTW upgrades. The gravel extracted from the borrow pit will be used as planting medium for reed bed /sedges within the treatment ponds, an artificial wetland treatment system. 2400 m^3 of gravel will be extracted. The site selected would provide the correct quality and quantity of gravel material needed and is also the site with the least visual impact, as it will be hidden from the R357 behind the hillock. Excavations will occur on the higher side of the hillock, not visible from the road, and will go as deep as the existing low point. The natural slope of the hill will be kept intact, no additional depressions will be made.

An access route (less than 4 m) will be scraped as well as a 3m wide access gate, which will allow one truck to enter the laydown area at a time.

It is proposed that the historically disturbed land adjacent to the proposed borrow pit site be used as a laydown area (0.072 ha). Here, hauling of excavated material will take place. Trucks will use this area to turn around. Strict control measures must be implemented to ensure trucks turn around in this designated area and do not deviate off the access route.

(i) Listed and specified activities

NAME OF ACTIVITY **(E.g. For prospecting -** drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **E.g. for mining**,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	**Aerial extent of the Activity** **Ha or m²**	**LISTED ACTIVITY** **Mark with an X where applicable or affected.**	**APPLICABLE LISTING NOTICE (*GNR 544, GNR 545 or GNR 546)***
Excavation for the borrow pit	0,7 ha	x	GNR327 (EIA Listing Notice 1)Activity 20
Laydown area establishment	0,072 ha	x	GNR327 (EIA Listing Notice 1) Activity 20
Access road establishment	less than 4 m	N/A	Not triggered
Access gate	3 m wide	N/A	

(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)

A mining permit is required for the construction of a small scale borrow pit (0.7ha) near Brandvlei. Gravel material extracted from the borrow pit will be used for the development of the new Brandvlei WWTW upgrades. The gravel extracted from the borrow pit will be used as planting medium for reed bed /sedges within the treatment ponds, an artificial wetland treatment system. 2400 m^3 of gravel will be extracted. The site selected would provide the correct quality and quantity of gravel material needed and is also the site with the least visual impact, as it will be hidden from the R357 behind the hillock. Excavations will occur on the higher side of the hillock, not visible from the road, and will go as deep as the existing low point. The natural slope of the hill will be kept intact, no additional depressions will be made. An excavator and TLB will be used to do the excavations.

An access route (less than 4 m) will be scraped as well as a 3m wide access gate, which will allow one truck to enter the laydown area at a time.

It is proposed that the historically disturbed land adjacent to the proposed borrow pit site be used as a laydown area (0.072 ha). Here, hauling of excavated material will take place. Trucks will use this area to turn around. Strict control measures must be implemented to ensure trucks turn around in this

designated area and do not deviate off the access route. Is is expected that 2 trucks (10ton and 30ton) will be used for the hauling of excavated material to the designated WWTW site.

e) Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLIY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)
NEMA EIA Regulations of 2014 as amended, Listing Notice 1, Activity 21 Any activity including the operation of that activity which requires a mining permit ito Section 27 of the Mineral and Petroleum Resource Development Act, 28 of 2002, including earhtworks directly related to the extraction of a mineral resource.	Excavations, Laydown area	In terms of the NEMA EIA regs a mining permit have been applied for as the proposed activity aims to excavate minerals (2400 m³ of gravel material) together with NEMA Environmental Authorisation has been applied for through DMR.
NEMA Environmental Impact Assessement Guidelines and Information Document Series (March 2013)	Entire process	Guidelines were used of Alternatives, Public Participation process, Needs and Desirability,
Mineral and Petroleum Resource Development Act 28 of 2002	Excavations	In terms of the MPRDA a mining permit has been applied for

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).

While the concept of need and desirability relates to the type of development being proposed, the concept of need and desirability can be explained in terms of the general meaning of its two components in which need refers to time and desirability to place - i.e. is this the right time and place for locating the type of land-use/ activity being proposed? Need and desirability can be equated to wise use of land - i.e. the question of what is most sustainable use of land

The need existed to develop a small borrow pit near Brandvlei for the extraction of gravel material that will be used within the development of the new Brandvlei WWTW upgrades. The gravel extracted from the borrow pit will be used as planting medium for sedges within the treatment ponds for an ariticual wetland treatment system.

Disirability can be equated to the wise use of land. The proposed site is considered "desirabile" as the correct quality and quantity of substrate is available for excavation for the development of the artificial wetland.The proposed site is located behind a small hillock, within a small natural inlet (approximatly 0,7ha in size). This will significantly reduce the potential visual impact of the proposed borrow pit.

Excavations will occur on the NW side of the hillock that's not visible from the road, and go as deep as the existing low point, thereby creating a level ground. There will be no additional depressions made. The historically disturbed area adjacent to the site could then be used as the laydown area and still fall within the less than 1ha limitation as per NEMA 2014 Listing Notice 1 as amended.

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

Since only 2400 m³ of gravel will be extracted it was decided that the entire hill would not have to be excavated. Excavations will be done with an excavator and TLB. Excavations will occur on the NW side of the hillock that's not visible from the road, and go as deep as the existing low point, thereby creating a level ground. There will be no additional depressions made. Rehabilitation will be minimal as landscaping and shaping of slopes will continue as excavations progress.

The preferred proposed site had the correct quality and quantity of substrate needed for the development of the artificial wetland with the least visual impact as it will be hidden from the R357 behind the hillock. The historically disturbed area could then be used as the laydown area and still fall within the less than 1ha limitation as per NEMA 2014 Listing Notice 1 as amended.

Rehabilitation will involve reshaping the slopes of the borrow pit with an excavator and TLB as the works continue. The "cut" will be on (NW) the side of the hillock that's not visible from the road, and go as deep as the existing low point. Thereby creating a level ground. There will be no additional depressions made. Rehabilitation will consist of landscaping as excavation progresses.

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

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

i) Details of the development footprint alternatives considered.

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

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

(a) Property/Site Alternatives

No Site Alternatives were considered as the prefered proposed site will provide the correct quality and quantity of gravel material needed for the construction of the artificial wetland for the WWTW. Layout alternatives were considered on the same property/ site.

(b) the type of activity to be undertaken

No alternative activity types were considered as gravel material from the prefered site (As per Appendix 3A) is deemed the correct quantity and quality of materials needed for the contruction of the artificial wetland.

(c) Layout Alternative

Layout alternative 2 (NOT PREFERRED) was immediately adjacent to the current preferred site, located to the South East of the proposed preferred site. It was proposed that the entire hill be excavated (Please refer to Appendix 3B for layout alternative 2). However, this possible site would have been very visible from the R357 and is thus not preferred. Rehabilitation costs would also have been high for this layout suggestion because the footprint would have been huge and depressions will have to be made to extract the gravel.

Layout alternative 1 (PREFERRED)

Since only 2400 m^3 of gravel will be extracted it was decided that the entire hill would not have to be excavated. The footprint has been reduced dramatically when compared to layout 2 (not preferred). The preferred proposed site (as per Appendix 3A) had the correct quality and quantity of substrate needed for the development of the artificial wetland with the least visual impact as it will be hidden from the R357 behind the hillock. No additional depressions will be made, excavations will go as deep as the existing low point. Rehabilitation will consist of landscaping and shaping the slopes of the borrow pit as excavations progress.

The historically disturbed area could then be used as the laydown area and still fall within the less than 1ha limitation as per NEMA 2014 Listing Notice 1 as amended.

(d) Technology to be used:

No technology alternatives were considered. An excavator and TLB will be used for excavations. 2 trucks (10ton and 30ton truck) will be used to transport gravel from the site to the WWTW site.

(e) Operational Aspects of the activity

No operational aspects were considered. Operations will consist of excavating gravel material. The slopes of the borrow pit will be reshaped as excavations continue, which means that rehabilitation will consist of landscaping as excavations progresses.

(f) No-go alternative - this would be the option of not constructing a borrow pit. The "No-Go"alternative does not signify significant biodiversity gain or loss. However, it will ensure that the gravel for constructing the artificial wetland for the WWTW will not be obtained and the WWTW project would not be successful . The current status quo will remain and there will be no immediate additional impact on the vegetation.

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.

Public Participation for this development was conducted in accordance with the requirements outlined in Regulation 41, 42, 43 and 44 of the NEMA EIA Regulations 2014, as well as

the Department of Environmental Affairs and Development Plannings guideline of Public Participation 2011.

Please refer to Appendix 5 for proof of Public Participation undertaken.

Posters was be displayed on the site of the proposed development as well as library and municipality (See photographs as proof in Appendix 5).

Initial Notification letters was left at the municipality and KLK Brandvlei Boere Koperasie for interested and affected parties.

Initial Notification letters was also sent to: Adjacent land owners and neighbours, municipal ward councilors and municipal managers of the Hantam Local Municipality, Namakwa District Municipality, other organs of state DENC, DAFF. SAHRA, DWS. Dept Minerals and Energy. (Please refer to the I&APs register in Appendix 5)

An advert was placed in the local newspaper, Die Noordwester (See proof in Appendix 5)

A register will be kept with all Interested and Affected parties (I&AP) (See Appendix 5).

A comments and response report will be kept up to date with all comments form I&APs.
No comments were received this far.

iii) Summary of issues raised by I&Aps

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

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
AFFECTED PARTIES					
Landowner/s	**X**				
Dirk Jacobus Laubscher		None to date	None	None	N/A
Lawful occupier/s of the land					
Pieter Conradie Laubscher		None to date	None	None	N/A
Landowners or lawful occupiers on adjacent properties	**X**				
Gawie Krugel		None to date			
Erik Huyshamen		None to date			
Municipal councillor	**X**	None to date			

Municipality	**X**	None to date			
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					
SAHRA - Northern Cape	None to date				
NC Departure of Water and Sanitation	None to date				
Dept of Minerals and Energy	None to date				
Communities					
None					
Dept. Land Affairs					
NC Dept of Agriculture, Land reform, Rural Development NC Dept of Agriculture, Forestry Fisheries					
Traditional Leaders					
None					
Dept. Environmental Affairs					
DENC - Kimberley DENC - Springbok					
Other Competent Authorities affected					
None to date					

OTHER AFFECTED PARTIES					
INTERESTED PARTIES					
Mnr P.A Gerber asked to register as an I&AP	8 June 2017	No complaints, asked to register as I&AP	Registered	Please refer to Appendix 5 for the I&AP invitation register	

iv) The Environmental attributes associated with the alternatives. (The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)

(1) Baseline Environment

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

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

There are no site alternatives, only layout alternatives. Layout 1 (preferred) will have a less significant effect on the environment when compared to layout 2 (not preferred). This is because the footprint for layout 1 (preferred) is much smaller and will have a less visible impact when compared to layout 2.

The effect of the proposed activity as proposed in layout 1 (preferred) on the environment will now be discussed. A Biodiversity Study was commissioned (See Appendix 7.1)

Brandvlei is located in the Bushmanland, also know as "Dorsland". The surface of the area is very flat and water does not run away easily, this allows rain water to spread over a larger area and sink into the soil. The moisture in the area allows for farming on a very small scale. Brandvlei is associated with a desert climate, there is virtually no rainfall during the year. Average annual rainfall is 54mm, most of which occur during autumn. Lowest rainfall (0mm) occurs in August and highest (17mm) in March. Average daily maximum temperatures range from 17.7 degrees celsius in July to 32 degrees celsius in January.

According to the Biodiversity study conducted (Appendix 7), the proposed site is expected to fall within the Bushmanland Basin Shrubland vegetation type (Please see Appendix 6 for the vegetation map). This vegetation type is classified as "Least Threatened" and forms part of the Nama-Karoo Biome. The site is not located within any formal or informal protected areas.

The Nama-Karoo flora is not particularly rich in flora and does not contain any centre of endemism. Unlike other biomes of South Africa, local endemism are very low, which might indicate a relatively youthful biome linked to the remarkable geological and environmental homogenneity if the Nama-Karoo. .Rainfall seasonality and frequency are too unpredictable and winter temperatures too low to enable leaf succulents to dominate (like in the Succulent Karoo), while summers are too dry for dominance by perennial grasses alone, and the soils are generally too shallow and rainfall too low for trees. On the other hand, soil type, soil depth and local differences in moisture availability can cause abrupt changes in vegetation structure and composition.

According to the Namakwa District Biodiversirty Sector Plan (Refer to Appendix 7 for the CBA map) the proposed site will be located within an identified ecological support area (ESA), class ESA_T (terrerstrial corridor), proposed for conservation as part of the Sak River's migration corridor. Because of the small size of the activity it is unlikely to have any significant impact on the ESA.

No species were encountered that are protected in terms of the Red list of South African Plants, NFA, or NEMBA. However, two species listed in terms of the NCNCA were encountered along the route, but are considered to be of Least Concern in ternms of IUCN status. In most cases these species was locally abundant, however, a flora permit will have to be applied for in terms of the NCNCA since there remains a possibility that some of these species will be impacted. It is expected that the construction o the borrow pit would not affect these protected species and they would not have to be removed.

According to the Palaeontological Heritage Impact Assessment conducted (Appendix 7.2) the proposed borrow pit study area is underlain by basinal mudrocks of the Prince Albert Formation (lower Ecca Group) of Early Permian age. Elsewhere in the Main Karoo Basin these mudrocks have yielded a range of fossil fish, marine to non-marine invertebrates and petrified wood, often preserved within diagenetic

nodules, as well as various trace fossils (e.g. invertebrate burrows, coprolites, fish swimming trails and arthropod trackways). However, only low-diversity trace fossil assemblages (mainly horizontal burrows) were recorded within and on the outskirts of the Brandvlei borrow pit study area during field assessment. These fossil borrows are of widespread occurrence while the overlying suface gravels are apparently unfossiliferous. Ancient (Tertiary) elevated alluvial gravels of the Sakrivier drainage system do not occur in the study area itself, although these are mapped a few kilometres to the north. Unique or rare fossil heritage resources are therefore not threatened by the proposed development.

According to the Archaeological Impact Assessment, Tusenius recorded a high density scatter of Later Stone Age (LSA) implements more or less in the centre of the proposed borrow pit site. The material is concentrated among the gravels at the bottom of the slope (probably 40 to 50 pieces per m² in a small area), becoming less dense and finally petering out higher up the gravel slope. Fluvial activity indicates some possible movement of tools downslope.

Tools recorded on the proposed site include small round, cylindrical and bladelet cores, bladelets, chips, chunks, utilized and retouched pieces (no formal tools were described), in fine grained chert, flint, chalcedony's/opaline and some hornfels. In addition, fragments of ostrich eggshell, a single sherd of pottery and some bone were also found. Some historical archaeological material is also present which points to some 19th Century European contact. Historical literature confirms that this part of Bushmanland was occupied by San hunter-gatherers during the early part of the 19th Century.

The Brandvlei finds are comparable to scatters of LSA tools recorded by Webley and Halkett (2012) on a series of small kopjes alongside a dry stream bed north of Loeriesfontein. Tools identified included scrapers, backed pieces, grooved stones, pottery and ostrich eggshell fragments. According to Webley and Halkett (2012) the sites they recorded are considered unique, which have not been recorded in combination in Western Bushmanland before. `The sites have the potential to inform us on a regional pattern of Later Stone Age settlement and to high significance' (Webley & Halket 2017:16). The Proposed site appears to complement this regional pattern of LSA settlement, located on a kopje, close to the floodplain of the Sak River.

The overall impact significance of the proposed borrow pit development at Brandvlei is rated as LOW. Given the low impact significance of the proposed development, no further specialist palaeontological heritage studies or mitigation are recommended for this project, pending the discovery of substantial new fossil material during borrow pit excavation.

(b) Description of the current land uses.

The property is currently being used for sheep farming by the tenant of the farm. According to the Memorandum of Agreement (Appendix 8) both the tenant and the property owner agreed to provide Hantam Municipality (the applicant), its agents and contractors access to the property. Vegetation of this desert like landscape is sparse, open, low shrubland with grasses prominent after rains.

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

The site itself showed signs of previous disturbance (probably earlier gravel extraction) and had a very low species turnover. The proposed site is located within a natural shallow inlet behind a small hillock, covering approximately 0.7 ha. Vegetation cover was as low as 30% for most of the area with clumps of larger Lycium dominated vegetation in the lower lying areas. It can be described as a medium to low sparse shrubland dominated by Lycium cinereum and Tetraena retrofracta in the lower lying areas and Mesembryanthemum subnodosum along the ridges of the hillock. Other species encountered were:

Aridaria noctiflora, Eriocephalus cf. microphyllus, Phaeoptilum spinosum, Pteronia viscosa, Rhigozum trichotomum, Salsola cf. aphylla, Stipagrostis ciliata and Stipagrostis obtusa. A single individual of the alien invasive species Prosopis grandulosa was also encountered.

(d) Environmental and current land use map.

(Show all environmental, and current land use features)

Please see Appendix 6 for the Vegetation Map, CBA map

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).

Please refer to Appendix 9 and 10 for the Environmetal Risk Rating Conducted. The EAP considered all the environmental aspects that will be affected by the proposed developmet while considering the inputs from the Botanical Specialist and Heritage Specialists.

vi) Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;

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

Please refer to Appendicx 10 for the methodology used in determining the riks of the proposed development on the receiving environment.

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)

Positive and negative impacts of the proposed activity ito Layout 2 (not preferred):

Positive: Correct quantity and quality of gravel material to be used in contruction of the WWTW, which will have an indirect postive impact on the brandvlei community

Negative: Visual impact will be large, site will be visible from the road.
The entire hill would have been excavated.

Positive and negative impacts of the proposed activity ito Layout 1 (preferred):

Positvie: Correct quantity and quality of gravel material to be used in contruction of the WWTW, which will have an indirect postive impact on the brandvlei community

Minimal visual impact, as layout suggests that excavation take place behind the hillock and borrow pit will not be visible from the road. Excavations will occur on the higher side of the hillock, not visible from the road, and will go as deep as the existing low point. The natural slope of the hill will be kept intact, no additional depressions will be made.

Negative: No severly negative impact are expected, the proposed borrow pit and laydown area will be n previously disturbed land. Strickt controll measures should be in place to ensure trucks stay off the flood plane to the west of the site. The access road, laydown area and proposed borrow pit area will be fenced off to ensure there is no access to the no-go area as indicated in Appendix 3A.

One potentially negative impact of the proposed development can be associated with the medium to high significance of the proposed borrowpit will have on archeaological resources. It is suggested by the specialist that a targeted and systematic collection of archeological remains must be conducted prior to the any excavations. 2. A permit to collect archaeological remains must be requested from the South African Heritage Resources Agency (SAHRA

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).

No comments were made by I&APs.

Please refer to the EMP Appendix 10 for mitigation measures associated with possible risks.

ix) Motivation where no alternative sites were considered.

No Site alternatives were considered as the proposed preferred site will provide the correct quality and quantity of gravel material. Layout alternatives were considered on the same site.

x) Statement motivating the alternative development location within the overall site. **(Provide a statement motivating the final site layout that is proposed)**

The reason the site was chosen can be attributed to the fact that the areas was previously disturbed. The preferred site also provides the correct quantity and quality of gravel material required for the contruction of the artificial wetland for the Brandvlei WWTW.

The reason that Layout 1 is the preferred layout for the proposed borrow pit can be attributed to the fact that it is behind a hillock which will cause the least visual impact. The footprint was also reduced when compared to layout 2 (not preferred) and no additional depressions will be made as excavations will only go as deep as the lowest point.

i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity. (Including (i) a description of all environmental issues and risks that erer identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.)

Please refer to Appendix 9 for the methodology behind the significance rating.

j) Assessment of each identified potentially significant impact and risk

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

NAME OF ACTIVITY **(E.g. For prospecting -** drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **E.g. For mining**,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	**POTENTIAL IMPACT** (Including the potential impacts for cumulative impacts) (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)	**SIGNIFICANCE** if not mitigated	**MITIGATION TYPE** (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc) E.g. Modify through alternative method. Control through noise control Control through management and monitoring through rehabilitation..	**SIGNIFICANCE** if mitigated
Please refer to Appendix 10						

The supporting impact assessment conducted by the EAP must be attached as an appendix, marked **Appendix**

k) Summary of specialist reports.

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

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
Botanical Scan (Appendix 7.1)	• The development site should be located within the corner coordinates given in Table 1, Page 6 of the specialist study. This will ensure that the site overlaps the already disturbed area, and will also reduce the potential visual impact (placing it behind the small hillock). • The access route MUST be placed outside of the floodplain associated with the Sak River (to the east of the river). This will minimise potential impact on riparian ecology, but will also keep the road out of the floodplain and further away from the Sak River. • A flora permit application must be submitted to DENC as a result of the impact on the identified listed species in terms of Schedule 1 and 2 of the NCNCA (no search and rescue is considered necessary). It is expected that these protected species will not have to be removed. • The top layer of soil (the top 10-20 cm of soil which contains 80-90% of seed and bulbs) must be removed from the footprint and stored separately and protected. This topsoil must be re-used during rehabilitation of the site (replaced over the disturbed soil to provide a source of seed and a seed bed to encourage re-growth of plant species). • Before site closure, the site must be reshaped aiming specifically at erosion control and to minimising the visual impact. • All alien vegetation must be removed from the footprint and its immediate surroundings.	X all recommendations were included	Please refer to the Impact Risk Rating (Appendix 10) the EMP (Appendix 11) and Section B of this report.

	• Good pollution management (e.g. prevention of oil and fuel spillages) and waste management must be implemented during the life span of the project.		
Paleontological Heritage Impact Assessment (Appendix 7.2)	The responsible Environmental Control Officer (ECO) should monitor all substantial (> 1 m deep) excavations for fossil material. In the case of any significant fossil finds during construction (e.g. vertebrate teeth, bones, burrows, petrified wood, shells), these should be safeguarded - preferably in situ - and reported by the ECO as soon as possible to SAHRA (Contact details: Dr Ragna Redelstorff, SAHRA, P.O.Box 4637, Cape Town 8000. Tel: 021 202 8651. Email: rredelstorff@sahra.org.za, so that appropriate mitigation (i.e. recording, sampling or collection) by a palaeontological specialist can be considered and implemented.	X all recommendations were included	Please refer to the Impact Risk Rating (Appendix 10) the EMP (Appendix 11) and Section B of this report.
Archeological Impact Assessment	The site must be subjected to a targeted and systematic collection of archaeological remains prior to any construction/mining operations commencing. A permit to collect archaeological remains must be requested from the South African Heritage Resources Agency (SAHRA).	X all recommendations were included	Please refer to the Impact Risk Rating (Appendix 10) the EMP (Appendix 11) and Section B of this report.

Attach copies of Specialist Reports as appendices

l) Environmental impact statement

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

Impacts and risk of the proposed development of the borrow pit was assessed in the Impact Significance Assessment Table in Appendix 10.

The removal of topsoil for the excavation area and establishment of the access route will have an overall insignificant (low to very low) impact on the biophysical environment, if development stays within the proposed corner coordinates. This will ensure development of the borrow pit overlaps the already disturbed areas, reduce the visual impact and ensure no access is allowed in the floodplain area. It is expected that the protected plant species found in the area will not be impacted by the proposed development, these species are commonly found locally and are not considered vulnerable. The small development will not have any significance on the proposed ESA or connectivity of the larger area (Please also refer to the specialist impacts conducted Appendix 7).

The removal of topsoil for the excavation area and establishment of the access route will have an overall insignificant (low to very low) impact on heritage resources. Should any heritage resources be discovered during this phase of the project, all work must stop and SAHRA should be contacted immediately so that appropriate mitigation measures be initiated.

The establsihment of the laydown area will have an insignificant (very low) impact on the the biophysical environment aswell as heritage resources as no site preperation is deemed necessary due to the fact that the area is already disturbed (Please refer to the site phtographs in Appendix 4). Demarcation of the laydoewn area will ensure that access is restricted to the floodplain/ No-Go Area.

Excavations is expected to have an insigificant visual impact (Very low). The site selected would provide the least visual impact, as it will be hidden from the R357 behind the hillock. Excavations will occur on the higher side of the hillock, not visible from the road, and will go as deep as the existing low point.

Excavatons/ hauling of excavated material is expected to have an insignificant impact on air quality associated with fuel burning engines from trucks/ excavator/ TLB. The Contractor will ensure that all vehicles and machinery are fitted with appropriate emission control equipment, are maintained frequently and serviced to the manufacturers' specifications.

Excavations is expected to have an insignificant impact on paleontoligal resources (Please refer to Appendix 7.2 and 7.3). The responsible Environmental Control Officer (ECO) should monitor all substantial (> 1 m deep) excavations for fossil material. In the case of any significant fossil finds during construction (e.g. vertebrate teeth, bones, burrows, petrified wood,

shells), these should be safeguarded - preferably in situ - and reported by the ECO as soon as possible to SAHRA (Tel: 021 202 8651), so that appropriate mitigation can be implemented.

Site clearing and excavations are expected to have a medium significance on the archaeological resources. It is recommended that the proposed site must be subjected to a targeted and systematic collection of archaeological remains prior to excavations. A permit to collect archaeological remains must be requested from SAHRA.

A permit to collect archaeological remains must be requested from the South African Heritage Resources Agency (SAHRA).

Potential soil contamination from trucks and excavator as well as temorary ablution facilities, is expected to be insignificant. Before mitigation, significance is expected to be low but with mitigation measures in place significance is expected to be very low. No hazardous waste (i.e. hydrocarbon/ fuel/ oil) to be stored on site. No refuelling will be permitted on site. Ensure spill kits are available on site to clean up potential spills and leaks. The contractor is responsible fo the training of workers with regards to spill response. Ensure drip trays are available to place under stationary vehicles/ excavator. Ensure temporary ablution facilities are maintained and services and sewage is disposed of at a licensed facility. Any accidential spills to be corrected immediatly. Waste records must be kept available for review.

Loss of vegetation from the use of the access route is expected to be insignificant (very low), the access route will be demarcates and strick control measures must be implemented to ensure theree is no deviation from the route.

Noise pollution associated with excavations is expected to be insignificant (very low). Excavations should be restricted to day time hours to minimise noise pollution, although no communities in the immediate surroundings. Employes will be provided with PPE.

The overall impact on dust pollution is expected to be insignificant (Very low) Dust will be monitored. If dust becomes a problem, dust will be controlled by means of water spary vehicles. Under extreme windy conditions work will be stopped. Workers will be provided with PPE.

Rehabilitation of the area will have a positive impact on the affected environment. The reestablishment of topsoil over distrurbed sites will provide a source of seed and a seed bed to encourage re-growth of the plant species.

The overall impact of the proposed borrow pir development is expected to have a low significance on the receiving environment, if strong control measures are implemented and adhered to.

(ii) Final Site Map

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

Please refer to Appendix 3

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

The overall impact sigificance of the proposed development of the borrow pit is very low. There are thus limited negative impacts associated with the proposed development. Strong control measures should be implemented to ensure development and transportation will only occur in demarcated areas, away from the floodplain. Site clearing and excavations are expected to have a medium significance on the archaeological resources. It is recommended that the proposed site must be subjected to a targeted and systematic collection of archaeological remains prior to excavations. A permit to collect archaeological remains must be requested from SAHRA.

Positive impacts can be attributed to:
The removal of 2 alien invasive trees within the development area.
Correct quantity and quality of gravel material to be used in contruction of the WWTW, which will have an indirect postive impact on the brandvlei community
Minimal visual impact, as layout suggests that excavation take place behind the hillock and borrow pit will not be visible from the road. Excavations will occur on the higher side of the hillock, not visible from the.
Rehabilitation costs will be low as rehabilitation will occur as excavation progress.

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

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

Mangement Objective 1: Preserve Biodiversity
Impact Management outcomes: Ensure development is located within demarcated areas, strick control measures must be in place to ensure compliance.

Management Objective 2: Preserve Heritage Resources
Impact Management outcomes: Ensure the responsible Environmental Control Officer (ECO) should monitor all substantial (> 1 m deep) excavations for fossil material. In the case of any significant fossil finds during construction (e.g. vertebrate teeth, bones, burrows, petrified wood, shells), these should be safeguarded - preferably in situ - and reported by the ECO as soon as possible to SAHRA(Tel: 021 202 8651), so that appropriate mitigation can be implemented.
The proposed site must be subjected to a targeted and systematic collection of archaeological remains prior to any construction/mining operations commencing.
A permit to collect archaeological remains must be requested from the South African Heritage Resources Agency (SAHRA).

n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

None

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

(Which relate to the assessment and mitigation measures proposed)

None

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

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

The proposed activity should be authorised because the construction of the borrow pit would provide the correct gravel substrate neccesary to construct an artificail wetland which is crucial for the success of the Brandvlei WWTW. The WWTW will have various positive impacts on the Brandvlei community. The site on which the borrow pit is proposed does not have any significant biological features that need to be protected.

ii) Conditions that must be included in the authorisation

q) Period for which the Environmental Authorisation is required.

Excavations with rehabilitation is expected to take a total of 2 months and thus EA is required for those 2 months.

r) Undertaking

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

s) Financial Provision

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

i) Explain how the aforesaid amount was derived.

PLease refer to Appendix 12 section 4.4 for the amount determined for the construction and rehabilitation of the proposed borrow pit

ii) Confirm that this amount can be provided for from operating expenditure.

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

Please refer to Appendix 12 section 4.4 for the amount determined for the construction and rehabilitation of the proposed borrow pit.

t) Specific Information required by the competent Authority

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

(1) Impact on the socio-economic conditions of any directly affected person.

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

An agreement was signed between Hantam municipality (The Applicant) and Mr Laubscher (the land owner). Please refer to Appendix 8 for the Memorandum of Agreement

(2) Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act. **(**Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) with the exception of the national estate contemplated in section 3(2)(*i*)(vi) and (vii) of that Act, attach the investigation report as **Appendix 2.19.2** and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6.and 2.12.herein).

A Paleontological and Archealogical impact was conducted, please refer to Appendix 7.2 and 7.3. Mitigation measures are discussed in the risk assessment.

u) Other matters required in terms of sections 24(4)(a) and (b) of the Act.

(the EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as **Appendix 4)**.

Please refer to Appendix 7.2 and 7.3 for the Heritage Impact Assessments

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1) Draft environmental management programme.

a) **Details of the EAP,** (Confirm that the requirement for the provision of the details and expertise of the EAP are already included in PART A, section 1(a) herein as required).

Please see Part A, section 3 (1) and Appendix 1.

b) **Description of the Aspects of the Activity** (Confirm that the requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section (1)(h) herein as required).

Please refer to Part a.

c) Composite Map

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

Please refer to Appendix 3 for the preferred layout plan of the proposed borrow pit

d) **Description of Impact management objectives including management statements**

i) **Determination of closure objectives.** (ensure that the closure objectives are informed by the type of environment described)

The area is to be re-instated to an acceptable state, as close as possible to its natural state.

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

None, no water use license is needed.

iii) **Has a water use licence has been applied for?**

iv) Impacts to be mitigated in their respective phases

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

ACTIVITIES **(E.g. For prospecting -** drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **E.g. For mining**,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	**PHASE** (of operation in which activity will take place. State; Planning and design, Pre-Construction' Construction, Operational, Rehabilitation, Closure, Post closure).	**SIZE AND SCALE of disturbance** (volumes, tonnages and hectares or m^2)	**MITIGATION MEASURES** (describe how each of the recommendations in herein will remedy the cause of pollution or degradation and migration of pollutants)	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:-.. Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Please refer to the EMP Appendix 11 for site specific Mitigation measures ito. Soil Management, Noise Management, Air quality, handling of hazardous waste and management procedures					
Excavation	Pre construction/ Operation/ Rehabilitation	0,7 ha	• Any excavations must be undertaken within the confines of the corner coordinates given on the locality map. • The perimeter of the mining area and laydown area	Compliance ito NEMA, NEM:WA, NEM:AQ, MPRDA	Demarcations of mining area must take place prior to any operations/ excavations/ site clearing

			shall be fenced with stockpile fencing to keep out animals and to ensure that excavations do not take place in no-go areas or outside of the development footprint. . • Topsoil stripped from borrow pit site will be stockpiled, stored and protected on site for rehabilitation after the project is completed. Topsoil stripped from borrow pit site will be stockpiled, stored and protected on site for rehabilitation after the project is completed to ensure the site is restored to its natural state as far as possible. • Excavations should be limited to day time hours to minimise noise pollution, although there are no communities in the immediate surroundings. The responsible Environmental Control Officer (ECO) should monitor all substantial (> 1 m deep) excavations for fossil material. In the case of any significant fossil finds during construction (e.g. vertebrate teeth, bones, burrows, petrified wood, shells), these should be safeguarded - preferably in situ -		Excavations are expected to take place whitin a time frame of 5 days. Rehabilitation will consist of lanscaping and shaping of slopes as excavations progress. Topsoil will be replaced as soon as excavations are done. The responsible Environmental Control Officer (ECO) should monitor all substantial (> 1 m deep) excavations for fossil material. In the case of any significant fossil finds during construction (e.g. vertebrate teeth, bones, burrows, petrified wood, shells), these should be safeguarded - preferably in situ - and reported by the ECO as soon as possible to SAHRA (Contact details: Dr Ragna Redelstorff, SAHRA, P.O.Box 4637, Cape Town 8000. Tel: 021 202 8651. Email: rredelstorff@sahra.org.za, so that appropriate mitigation (i.e. recording,

			and reported by the ECO as soon as possible to SAHRA (Contact details: Dr Ragna Redelstorff, SAHRA, P.O.Box 4637, Cape Town 8000. Tel: 021 202 8651. Email: rredelstorff@sahra.org.za, so that appropriate mitigation (i.e. recording, sampling or collection) by a palaeontological specialist can be considered and implemented.		sampling or collection) by a palaeontological specialist can be considered and implemented.
ppAccess road	Pre construction/ Operation/ Rehabilitation	less than 4 m wide	• The perimeter of the access route will be demarcated and fenced with stockpile fencing to keep out animals and to ensure that trucks and vehicles do not tresspass on no-go areas. • Topsoil will be removed when the access route is scraped. Due to the short duration of the project, topsoil stripped from the access route will be kept next to the route, to use for rehabilitation. • Speed limits must be enforced on access routes. Max speed of 40km/h for safety reasons aswell as possible dust pollution.	Compliance ito NEMA, NEM, NEM:AQ	Topsoil will be stripped and kept on side of the road and will be replaced as soos as the excavations are done. The Contractor/ Contractor's environmental officer should ensure very strict control measures daily to ensure trucks stay on the access route. Control measures should be in place until excavations are completed.

Laydown area	Operations	0,072 ha	The laydown area, where trucks will upload gravel material (on previously desturbed land), will also be fenced with stockpile fencing to ensure trucks stay clear of no-go areas. • In the event of a hydrocarbon spill, the contractor must take the suitable measures to contain the pollution and prevent it from spreading or seepage. Once this spill has been contained, contaminated material (soil, etc) shall be removed and disposed of at a registered hazardous waste disposal site. • Ensure drip trays are available to place under any stationary vehicles/ excavator. • Ensure vehicles/ excavator is maintained/ serviced to reduce potential oil/ hydrocarbon spills Ensure vehiclesand machinery are fitted with appropriate emission control equipment.		The Contractor/ Contractors Environmental Officer should do daily inspections to ensure that stationary vehicles and the excavator have drip trays to prevent hydro carbon or oil spills after excavation is completed for the day. The Contractor/ Contractors Environmental Officer should implement daily, strickt control measures to ensure trucks only turn around in the designated laydown area and do not deviate off the access route.
Temporary ablution facilities on laydown area	Operations /	1 portaloo in the	• Ensure temporary ablution facilities are maintained	NEM:WA	Contractor/ Contractor's Environmental Control Officer should ensure

	Rehabilitation	laydown area	and serviced and sewage is disposed of at a licensed facility.		ablution facilities are maintained daily and ensure sewage is disposed of at a licensed facility.

e) Impact Management Outcomes

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

ACTIVITY (whether listed or not listed). **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc.…etc…)**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated **(e.g. Construction, commissioning, operational Decommissioning, closure, post-closure)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc)** **E.g.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** • **Remedy through rehabilitation..**	**STANDARD TO BE ACHIEVED** **(Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.**
Excavations	Loss of vegetation and flora	Botanical	Construction/ Operations	Remedy through rehabilitation, replace topsoil removed. Ensure excavations only take place within the designated areas (coordinates on layout plan) through management and monitoring Ensure excavations only take place during day time hours through management and monitoring. Ensure permits for the removal of 2 plant species protected ito NCNC is applied for.	Rehabilitation standards, impact avoided, noise levels

				Ensure workers are trained to stop all work if any material associated with heritage significance is found during excavation through environmental awareness training.	
Access road	Loss of vegetation and flora Dust control	Botanical	Construction/ Operation	Remedy through rehabilitation, replace topsoil removed Ensure trucks do not deviate from access route through management and monitoring Control dust through management and monitoring, ensure maximum speed of 40km/ h is maintained	Rehabilitation standards, impact avoided, dust levels
Laydown area	Contamination of soil	Botanical		Ensure trucks only turn around in laydown area through management and monitoring Ensure stationary vehicles, trucks have drip trays to avoid soil pollution through management and monitoring Ensure there are designated dustbins for potential hazardous was (i.e oil spills) and general waste from construction workers through management and monitoring.	Impact avoided

				Ensure workers do not litter through environmental awareness training Ensure sewage from temporary ablution facilities are disposed of in correct manner through manangement and monitoring	

f) Impact Management Actions

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

ACTIVITY whether listed or not listed. **(E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.).**	**POTENTIAL IMPACT** **(e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc….etc…)**	**MITIGATION TYPE** **(modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc. etc)** **E.g.** • **Modify through alternative method.** • **Control through noise control** • **Control through management and monitoring** **Remedy through rehabilitation..**	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. .With regard to Rehabilitation, therefore state either:-.. Upon cessation of the individual activity or. Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
Excavations	Loss of vegetation and flora	Remedy through rehabilitation, replace topsoil removed. Ensure excavations only take place within the designated areas (coordinates on layout plan) through management and monitoring Ensure excavations only take place during day time	Demarcations of mining area must take place prior to any operations/ excavations/ site clearing Excavations are expected to take place whitin a time frame of 2 months Rehabilitation will consist of lanscaping and shaping of slopes as excavations progress.	Rehabilitation standards will be achieved, environmental impact avoided, noise levels maintained in terms of compliance with NEMA, NEM:WA, NEM:AQ, MPRDA

		hours through management and monitoring. Ensure permits for the removal of 2 plant species protected ito NCNC is applied for. Ensure workers are trained to stop all work if any material associated with heritage significance is found during excavation through environmental awareness training.	Topsoil will be replaced as soon as excavations are done. The responsible Environmental Control Officer (ECO)/ Contractor/ Contractor's Environmental Control Officer should monitor all substantial (> 1 m deep) excavations for fossil material. In the case of any significant fossil finds during construction (e.g. vertebrate teeth, bones, burrows, petrified wood, shells), these should be safeguarded - preferably in situ - and reported by the ECO as soon as possible to SAHRA (Contact details: Dr Ragna Redelstorff, SAHRA, P.O.Box 4637, Cape Town 8000. Tel: 021 202 8651. Email: rredelstorff@sahra.org.za, so that appropriate mitigation (i.e. recording, sampling or collection) by a palaeontological specialist can be considered and implemented.	

Access road	Loss of vegetation and flora; Dust control	Through monitoring and management the perimeter of the access route will be demarcated and fenced with stockpile fencing to keep out animals and to ensure that trucks and vehicles do not tresspass on no-go areas. Remedy through rehabilitation, replace topsoil removed Ensure trucks do not deviate from access route through management and monitoring Control dust through management and monitoring, ensure maximum speed of 40km/ h is maintained	Topsoil will be stripped and kept on side of the road and will be replaced as soos as the excavations are done. The Contractor/ Contractor's Environmental Control Officer should ensure very strict control measures daily to ensure trucks stay on the access route. Control measures should be in place until excavations are completed.	Rehabilitation standards will be achieved, environmental impact avoided, noise levels maintained in terms of compliance with NEMA, NEM:WA, NEM:AQ
Laydown area	Contamination of soil; loss of vegetation and	Through monitoring and management the perimeter of the laydown will be demarcated and fenced with stockpile fencing to keep out animals and to ensure that trucks and vehicles do not tresspass on no-go areas like the flood plane.	The Contractor/ Contractor's Environmental Control Officer should do daily inspections to ensure that stationary vehicles and the excavator have drip trays to prevent hydro carbon or	Enviromental Impacts will be avoided in term of compliance with NEMA, NEM:WA

		Ensure trucks only turn around in laydown area through management and monitoring Ensure stationary vehicles, trucks have drip trays to avoid soil pollution through management and monitoring Ensure there are designated dustbins for potential hazardous was (i.e oil spills) and general waste from construction workers through management and monitoring. Ensure workers do not litter through environmental awareness training Ensure sewage from temporary ablution facilities are disposed of in correct manner through manangement and monitoring	oil spills after excavation is completed for the day. The Contractor/ Contractor's Environmental Control Officer should implement daily, strickt control measures to ensure trucks only turn around in the designated laydown area and do not deviate off the access route. ECO should do environmental awareness training before excavations begin. The Contractor should ensure sewage from temporary ablution facilities are disposed of in correct manner after rehablilitation was done on site.	

i) Financial Provision

(1) Determination of the amount of Financial Provision.

(a) Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation.

Keeping in mind that the proposed site is situated on previously disturbed land, the site closure objective is to rehabilitate the site so its is as close to its natural state before any construction/operations took place.

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

Please refer to the Memorandum of Agreement (Appendix 8).

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

The site closure objective is to rehabilitate the site so its is as close to its natural state before any operations took place. Rehabilitation of the excavated area will continue as excavations progress and will consist of landscaping and reshaping the slope. Topsoil will be placed over the excavated area, aswell as the access route to provide a source of seed and a seed bed to encourage the re-growth of plant species.

The Independed ECO shall do a final site visit after rehabilitation was completed to ensure conpliance with environmental standards.

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

Placing of topsoil over affected areas will provide a source of seed and a seed bed to encourage the re-growth of plant species that previously grew there, and rehabilitating the site to as close as its natural state as possible.

(e) Calculate and state the quantum of the financial provision required to manage and rehabilitate the

environment in accordance with the applicable guideline.

Please refer to Appendix 12 for the Bill of Quantities refer to section 4.4.

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

Please refer to Appendix 12 for the Bill of Quantities refer to section 4.4

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

g) Monitoring of Impact Management Actions
h) Monitoring and reporting frequency
i) Responsible persons
j) Time period for implementing impact management actions
k) Mechanism for monitoring compliance

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
Vegetation clearning	Loss of Bushmanland Basin Shrubland	Demarcation	ECO will do the demarcation of the site with the contracor. Contractor should ensure construction/ operation is only in designated areas. Independent ECO will conduct 2 monthly visits to ensure compliance	Daily inspections to ensure workers are only operating in designated areas.
Excavations	Loss of Heritage Resources	Visual inspections	Contractor/ contractor's environmental control officer shall monitor all sustantial (>1 m deep) excavations for fossil material. In the case that any significant fossil finds during construction, they should be safeguarded and reported to SAHRA, so that appropriate mitigation (i.e. recording, sampling or collection) by a palaeontological specialist can be considered and implemented.	Daily inspections if excavation is more than 1 m deep. Report to SAHRA immedialty at: Dr Ragna Redelstorff, SAHRA, P.O.Box 4637, Cape Town 8000. Tel: 021 202 8651. Email: rredelstorff@sahra.org.za,

Use of excavator, TLB and Trucks	Soil contamination	Spill kits, drip trays	Contractor shall ensure drip trays are placed under stationary excavator, TLB, trucks at all times. Contractor's environmental control officer shall do weekly inspection to ensure compliance. Independed ECO shall do monthly inspections to ensure compliance.	Contractor/ contractor's environmental control officer:weekly inspections, record and remedy spills if any Independ ECO shall do monthly audit and inspect if oil spills were recorded and remidied corretly.
Dust pollution	Dust	Visual observations	Contractor/ Contractor's environmmental control officer/ ECO should monitor compliance to dust control	Daily visual observations, work should be stopped under extreme windy conditions.

l) Indicate the frequency of the submission of the performance assessment/ environmental audit report.

The project is expected to take a total of 2 months.

The contractor's environmental control officer should conduct weekly site inspections and write up audit reports. The Independed ECO will conduct monthly audit inspections and write up audit reports.

m) Environmental Awareness Plan

(1) Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work.

The independent ECO will conduct Environmental Awareness training with the contractor/and staff before excavation commence. Workers will be informed of all environmental riks and how these riks could be mitigated and remedied.

Please refer to the EMP in Appendix 11 for guidelines with regards to training, the "Do's and don'ts" and basic rules of conduct.

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

The independent ECO will conduct Environmental Awareness traing with all workers/ contractors before excavation commence. Workers will be informed of all environmental riks and how these riks could be mitigated and remedied.

Please refer to the EMP in Appendix 11 where penalties for non-compliance is discussed.

n) Specific information required by the Competent Authority

(Among others, confirm that the financial provision will be reviewed annually).

N/A

Refer to Appendix 12 for the BOQ section 4.4 that makes provision for construction and rehabilitation of the borrow pit. Excavations are only expected to talke a total of 2 months.

2) UNDERTAKING

The EAP herewith confirms

a) the correctness of the information provided in the reports ☐

b) the inclusion of comments and inputs from stakeholders and I&APs ; ☐

c) the inclusion of inputs and recommendations from the specialist reports where relevant; ☐and

d) that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected. parties are correctly reflected herein. ☐

Signature of the environmental assessment practitioner:

Name of company:

Date:

-END-