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: Mr. S.J. Meyer

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FILE REFERENCE NUMBER SAMRAD: FS30/5/1/3/2/10205MP

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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: Hanri van Jaarsveld

Tel No.: 051 451 1721

Fax No. : 051 451 1857

e-mail address: hanri@propercon.co.za

ii) Expertise of the EAP.

(1) **The qualifications of the EAP**
(with evidence). Refer to Appedix 1

B.Sc. Microbiology and Zoology
B.Sc. Honours in Zoology
Magister in Environmental Management

(2) **Summary of the EAP's past experience**.
(In carrying out the Environmental Impact Assessment Procedure) Refer to Appendix 1

H van Jaarsveld has 8 years' experience in environmental management. She has good knowledge of environmental legislation and its implementation. Projects for which H van Jaarsveld were responsible for and/or were involved with in obtaining the necessary Environmental Authorisations/licenses/permits included amongst other the rehabilitation of National and Provincial roads, landfill site, incinerator, asphalt plants, abattoirs, chicken broilers, mining, water uses, Environmental Management Framework (EMF) for Matjhabeng Municipality, municipal developments, etc. She also acted as Environmental Control Officer (ECO) on a number of SANRAL and Provinsial road projects.

b) Location of the overall Activity.

Farm Name:	Remaining Extent of the farm Hoffmans Rust 173
Application area (Ha)	4.9 Ha
Magisterial district:	Wepener
Distance and direction from nearest town	Approximately 6.5 km west of Wepener

21 digit Surveyor General Code for each farm portion	F04000000000017300000

c) Locality map

(show nearest town, scale not smaller than 1:250000). Refer to Figure 1 in 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

Refer to Figures 2 and 3 in Appendix 2

(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)***
Recovery of sand for commercial use in construction. Activities that will be associated with the operation includes: pumping of sand; stockpiling of sand; loading and hauling; rehabilitation activities.	4.9 Ha	x	Listing Notice 1, No. 21 of GNR 983 (EIA Regulations, 2014)
Clearance of vegetation prior to commencement of mining activities.	4.9 Ha	x	Listing Notice 1, No. 27 of GNR 983 (EIA Regulations, 2014)

(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)

Summary of the proposed operation and associated activities:

The banks and bed of the river at the proposed site has large sand offsets that will be recovered for use in construction. The proposed recovery of sand will be undertaken through the pumping of sand from the riverbed into three settling dams situated on the riverbank. Water will drain back to the river and the sand that has settled in the settling dam will be excavated by earthmoving equipment (i.e. excavator) and stockpiled for sale to commercial buyers. Product will be loaded onto tipper trucks with front end loaders and transported from site by the clients. No processing of material will be undertaken on site and no water will be used as part of the operation.

The pump will be situated on a floating platform on the river. No permanent structure will be constructed in the riverbed.

During dryer periods, sand will be excavated from areas where sand has deposited in the riverbed and along the banks of the river creating sand banks that cannot be pumped. Excavation will not be deeper than the existing bedrock and care will be taken not to impact the banks of the river. Storm water measures and erosion control measures will be implemented to limit damage to the riverbank and stability.

Apart from a temporary chemical toilet that will be situated above the 1 in 100 year flood line, no other infrastructure will be constructed on site. Access to the proposed operation will be gained via the existing R701 from where a gravel road will be graded (maximum 4m in width) to the operation.

The size of the area exposed and at risk for erosion at any given time will be limited as far as possible. The clearance of vegetation will be limited to operational areas, the access road, stockpile and loading areas. Concurrent rehabilitation will be undertaken on disturbed areas throughout all the phases of the project.

Vegetation that have been cleared for mining purposes will be stockpiled and used as cover material during rehabilitation as far as possible. Larger material such as trees will be cut to more manageable pieces and donated to local households for fire wood.

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)
National Environmental Management Act (Act 107 of 1998) and related regulations	Chapters 5 & 9	In terms of the NEMA EIA Regulations, 2014, an Environmental Authorisation (EA) is required for an activity that requires a mining permit in terms of Section 27 of the MPRDA, 2002 and for the clearance of vegetation of an area larger than 1 Ha but smaller than 20 Ha. A Basic Assessment process in terms of regulations 19 and 20 of the NEMA EIA regulations, 2014 for EA is herewith undertaken. The financial provisioning will be determined and subsequent reporting thereof and environmental perforance assessments will be in accordance with the NEMA Financial Provision Regulations, 2015.
National Environmental Management: Biodiversity Act (Act 10 of 2004)	Sections 52 and 56	An ecological and wetland survey was done by an ecologist within the study area. No Red or Orange List species were found to occur on the site. Any mitigations recommended by the specialist to prevent and/or mitigate any impacts on the riparian vegetation will be included in the Environmental

		Management Programme (EMPr).
National Water Act (Act 36 of 1998)	Section 21	An application for a Section 21(c) & 21(i) Water Use in terms of the NWA, 1998 (Act 36 of 1998) will be submitted to the Department of Water and Sanitation for processing.
National Heritage Resources Act (Act 25 of 1999)	Sections 34, 35, 36 and 38	A Phase 1 Archaeological Impact Assessment was done by a specialist. No sensitive artifacts and/or areas were identified during the study. Any mitigations recommended by the specialist to prevent any potential impact on possible heritage artefacts will be included in the EMPr.
Conservation of Agricultural Resources Act (Act 43 of 1983)	Section 15E	Invader and weed plant species that establishes on the site due to the disturbance by mining and associated activities will be managed in terms of Section 15E of the Act.
National Veld and Forest Fire Act (Act 101 of 1998)	Sections 12, 13, 17 and 18	The applicant should adhere to the management of fires and/or development of firebreaks in accordance with this Act.
Mineral and Petroleum Resources Development Act (Act 28 of 2002)	Section 27	An application for a mining permit is applied for under the MPRDA as part of the Environmental Authorisation in terms of the NEMA, 1998.
Mine Health and Safety Act (Act 29 of 1996)	Chapter 2	All operations at the borrow pit will comply with this Act to ensure the Health and Safety of persons working on site.
Occupational Health and Safety Act (Act 85 of 1993)	Sections 8, 9, 12, 13 and 14	The applicant will adhere to this Act in terms of the health and safety of the persons working on site

		and working with construction equipment.
National Environmental Management: Air Quality Act (Act 39 of 2004)	Sections 21, 32, 33, 34 and 37	An Atmospheric Emission License is not required. However, management on the borrow pit will be undertaken in terms of Section 32 – 34 in order to limit nuisance dust and noise.
National Environmental Management: Waste Management Act (Act 59 of 2008)	Sections 7, 16, 19, 21, 23 and 27	No activities expected to be undertaken as part of the proposed operation will require a Waste Management License in terms of Section 19 of the Act. However, measures will be implemented throughout the operation to manage any waste in accordance with Section 16 of the Act. Waste to be disposed at a landfill site will be done in accordance with the Norms and Standards for Disposal of Waste to Landfill set in terms of section 7(1) of the Act.

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).

Wepener is a small town in the Free State and previously formed part of the Naledi Local Municipality. However, this municipality was disestablished and merged into Mangaung Metropolitan Municipality on 3 August 2016 (The Local Government Handbook, 2016).

According to the final Consolidated Integrated Development Plan of Mangaung, 2016 - 2017, numerious development projects, including housing, roads, upgrading of water treatment plants and infrastructure in Wepener and surrounding towns such as Dewetsdorp are planned. Sand for construction purposes is required and the proposed sand recovery project will assist in the delivery of sand for this need. The site is also located on the outskirts of Wepener and is central to other towns such as Dewetsdorp where development is planned. Thus material can be transported to the town and surrounding areas without too high transport costs.

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

Preferred site:

The preferred site for the proposed operation of the recovery of sand from the Caledon River is Option 1 with a site layout of Option 2 as described in Part A Section 3(h)(i) (refer to Figure 3 of Appendix 2). The area is approximately 4.9 Ha on the Remaining Extent of the farm Hoffmans Rust 173 situated in the Magisterial District of Wepener. The site stretches along the northern banks of the Caledon River on the said property. The sand offset on this site is of suitable quality for construction purposes and a great resource of sand is available on this site. In addition, due to the nature of the river and site, sand is constantly deposited along the banks and riverbed during the flow of the river and during natural flooding events.

The preferred site layout excludes the wetland and allows a buffer area of 32 m as recommended in the Ecological Assessment in order to limit potential impacts on the wetland.

Preferred activities and technology:

The preferred technology will be to recover sand by pumping sand from the riverbed. However, during dry seasons when the river is not flowing to its full capacity, material may also be excavated from areas built up by the depositing of sand.

The pump will be situated on a floating platform on the river which will be secured to a stationary and secured point on the riverbank. Sediment will be pumped to three settling dams on the riverbank constructed with existing sand from the riverbank on site. Sedimentation from the river will settle in the settling dams and water will drain back to the river. Recoved sand will be removed from the settling dams with an excavator and stockpiled outside the 1:50 year flood line on the riverbank.

During dryer periods during the year, it is proposed that sand that has deposited in the river and along the riverbank creating islands and that cannot be pumped be recovered through excavation. This will only be undertaken if the river is dry enough for earthmoving equipment to operate on the riverbed. Excavation of material will not be undertaken deeper than the rockbed and not deeper than the natural riverbed level. Care will be taken not to impact on the stability of the banks of the river. Excavated material will be stockpiled in the stockpile area from where it will be loaded and hauled for construction use by commercial buyers.

No permanent infrastructure will be constructed on site as part of the proposed operation. A temporary toilet facility will be placed on site above the 1:100 year flood line and cleaned on a regular basis. No water will be abstracted or used as part of the operation. Workers on site will bring their own drinking water and food to site. No accommodation facilities will be set up on site.

Due to the proposed methodology to be used to recover the sand, the potential environmental impacts are anticipated to be low and localised in nature. The physical footprint that will be disturbed will be limited to the stockpile- and loading areas, haul road and settling dams. Disturbed areas will be rehabilitated during the Decommissioning Phase and will include levelling, sloping and revegetating disturbed areas where necessary. Measures e.g. vegetation establishment, will be implemented to create a stable riverbank. Vegetation and topsoil (if any) that was removed prior to the commencement of mining activities will be stockpiled outside the 1:50 year flood line and used as cover material during the rehabilitation of disturbed areas. If found necessary, areas that were rehabilitated will be seeded and establishment of vegetation and the stabilisation of the riverbank will be monitored.

The activities to be associated with the proposed operation will be undertaken in such manner to consider the 1:50 year and 1:100 year flood line as required and it will be managed accordingly.

Also refer to Part A, Section 3(d)(ii) of this document for information on the activities to be related with the operation and to Part A, Section 3(h) and (i) for a description of the alternatives that were considered for this project.

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) Proposed property/locality:

Option 1 - The proposed recovery of sand is proposed on the Remaining Extent of the farm Hoffmans Rust 173 situated in the Magisterial District of Wepener, Free State (refer to Appendix 2 for a locality map). A good offset of sand suitable for construction purposes is present on the property and the landowner does not have objections against the proposed operation. The property is in close proximity of Wepener and central to other towns such as Dewetsdorp where development is planned for the near future. No alternative property is applicable to this application.

The site, 4.9 Ha in size, streches approximately 500 m along the northern banks of the Caledon River (refer to Appendix 2). The locality was determined by the most economic offset of sand, type and quality of sand as well as access to the site. The general topography of the specific site makes the site accessible for earthmoving equipment and tipper trucks for hauling of material. The land along the river to the south of the property is more difficult to access. Longer access roads will be required which will not only be costly, but will potentially also influence the daily farming activities on the farm. For this reason the study area was limited to the site under investigation.

(b) Proposed activity type:

Option 1 - The activity type applied for is the recovery of sand from the Caledon River for construction purposes. There is no alternative type of activity considered for this application.

(c) Proposed layout:

Option 1 - The site stretches approximately 500m along the northern banks of the Caledon River. The proposed layout is based on the maximum use of the site. However, this may result in potential impacts on the wetland areas that have been identified during the Ecological Assessment of the study area.

Option 2 - Refer to Figure 3 attached in Appendix 2 for an indication of this site layout option. Being the preferred layout option, this layout is guided by information from the Ecological Assessment as well as the 1:100 year flood line. The main activities expected to be associated with the proposed operation will be pumping of sand, occassional excavation during dry periods, stockpiling, loading and hauling. This proposed layout is planned to manage these activities outside the potential sensitive areas as well as the 1:50 and 1:100 year flood lines.

No permanent infrastructure will be constructed on site as part of the proposed operation. The three settling dams will be constructed with existing sand on site and without any additives such as cement. These dams will allow drainage of water from the sand back to the river and will thus be located on the riverbank next to the river.

The pump will be situated on a floating platform on the river and will therefore have no impact on the riverbed or banks of the river. The platform will float on the river along and within the permitted section depending on the depth and flow of the river.

There will be no potential hazardous substances stored within the 1:100 year flood line. A movable toilet facility will be placed outside the 1:100 year flood line on site. The stockpile area of the recovered sand will be situated outside the 1:50 year flood line.

During natural flooding of the river, disturbed areas will be levelled and sand will be deposited on site again. It is therefore also a natural process of rehabilitation and material offset on the site.

(d) Proposed technology:

Option 1 - Pumping of sand from the riverbed with a pump situated on a floating platform on the river. The settled sand in the settling dams will be removed with an excavator and front end loader. Stockpiled material will be loaded on tipper trucks for hauling from site.

Option 2 - Excavation of material from the riverbed and banks of the river with earthmoving equipment, e.g an excavator and front end loader. Stockpiled material will be loaded on tipper trucks for hauling from site.

(e) Proposed operation method:

Option 1 - Pumping of sand from the riverbed with a pump situated on a floating platform on the river. The floating platform on the river will be secured to stationary and secured point on the riverbank. Sediment will be pumped to three settling dams on the riverbank constructed with existing sand from the riverbank on site. Sedimentation from the river will settle in the settling dams and water will drain back to the river. Recoved sand will be removed from the settling dams with an excavator and stockpiled outside the 1:50 year flood line on the riverbank. Disturbed areas will be limited to the settling dams, haul road and stockpile area.

Disturbed areas will be rehabilitated concurrently and will include levelling, sloping and revegetating disturbed areas where necessary. Measures will be implemented to create a stable riverbank. Vegetation and topsoil (if any) that was removed prior to the commencement of mining activities will be stockpiled outside the 1:50 year flood line and used as cover material during the rehabilitation of disturbed areas. If found necessary, areas that were rehabilitated will be seeded and establishment of vegetation and the stabilisation of the riverbank will be monitored. The activities to be associated with the proposed operation will be undertaken in such manner to consider the 1:50 year and 1:100 year flood line as required and it will be managed accordingly.

Option 2: An alternative method will be to recover sand from the riverbank and riverbed with earthmoving equipment, e.g. an excavator and front end loader. This will only be undertaken if the river is dry enough for earthmoving equipment to operate on the riverbed. Excavation of material will not be undertaken deeper than the rock bed of the riverbed and care will be taken not to impact on the stability of the banks of the river. Excavated material will be stockpiled outside the 1:50 year flood line on the riverbank from where it will be loaded and hauled for construction use by commercial buyers.

Disturbed areas will be limited to the haul road and stockpile area. If excavation of material is kept to deposited sand banks within the river and along existing sandbanks, the potential impact of excavated areas and subsequent stability problems along the riverbank is expected to be low.

Disturbed areas will be rehabilitated concurrently and will include levelling, sloping and revegetating disturbed areas where necessary. Measures will be implemented to create a stable riverbank. Vegetation and topsoil (if any) that was removed prior to the commencement of mining activities will be stockpiled outside the 1:50 year flood line and used as cover material during the rehabilitation of disturbed areas. If found necessary, areas that were rehabilitated will be seeded and establishment of vegetation and the stabilisation of the riverbank will be monitored. The activities to be associated with the proposed operation will be undertaken in such manner to consider the 1:50 year and 1:100 year flood line as required and it will be managed accordingly.

(f) The 'no-go' alternative was considered throughout the project application. Should the proposed development not be implemented, there will be no potential impacts on the riverbed and riverbank, including riparian vegetation present on the site. However, the opportunity for commercial development and income as a result

together with the providing of sand for the increased need for development in the Wepener and Dewetsdorp as well as greater Mangaung Metropolitan area will be lost. It is expected that 6 job opportunities will be lost.

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.

Refer to Appendix 3 for copies of notifications, comments and response, etc.

A public participation process in terms of regulations 41 – 44 of the NEMA EIA Regulations, 2014 was undertaken as part of the Environmental Authorisation process. The process included the following:

- Placement of an advertisement in the Volksblad.
- Placement of an on-site notice.
- A Background Information Document (BID) was sent to stakeholders and potential Interested and/or Affected Parties (I&APs) (including neighbours) identified at the onset of the application process together with written notice of the proposed project.
- Written notice to the landowner, i.e. Mr. J.S.F. Groenewald.
- • Written notice to identified stakeholders, including government departments, i.e. DESTEA FS, DWS FS, DARD FS and the Municipal Manager and Ward Councillor of Ward 50 of Mangaung Metropolitan.
- Written notice and enquiry on any possible land claims to the Department of Rural Development and Land Reform, Free State Province.
- Written notice and specialist Heritage assessment reports to the South African Heritage Resources Agency (SAHRA) through SAHRIS.
- Draft Basic Assessment Report (BAR) and Environmental Management Programme (EMPr) to registered I&APs & stakeholders for comment.

All parties were provided with 30 days to register as I&AP and/or submit any comments to Proper Consulting Engineers after notification of the proposed application for Environmental Authorisation as well as on the draft BAR and EMPR reports. Any comments received throughout the process will be noted and included in the "Report on the results of consultation" submitted to DMR as well as in the final BAR and EMPr.

A copy of the final BAR and EMPr will be submitted to DWS as supporting documents to the Water Use License Application for a Section 21(c) and 21(i) water use in terms of the NWA, 1998 (Act 36 of 1998).

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**				
Mr. J.S.F. Groenewald	X		No objection against the proposed project.	No response required.	Appendix 3
Lawful occupier/s of the land					
N/A					
Landowners or lawful occupiers on adjacent properties	**X**				Appendix 3; Part B: EMPr Report
Marib Beleggings Pty Ltd (Mr. A.J. Burger)	X	Letters: 2/12/2016; 9/12/2016	Michael Burger Attorneys registered as I&AP on behalf of Marib Beleggings Pty Ltd and stated that Marib Beleggings have interest in the rehabilitation of previous mining permit areas on their property, i.e. Jammerbergsdrift 540/RE and Glen Shee 546/1.	Proper Consulting Engineers Pty Ltd confirmed registration as I&AP and indicated that all communication in this regard will be done through Michael Burger Attorneys going forward. The process with regards to an application for a Closure Certificate for a mining permit was explained and it was highlighted that	Appendix 3

				the application for Closure on the affected properties was a separate process from this application for Environmental Authorisation. A letter providing information on the enquiry of 9 December 2016 and an electronic copy of the draft BAR and EMPR reports were provided to Michael Burger Attorneys for comment.	
Mr. A.F. Padt	X		No comments received up to date.	No response required.	Appendix 3
Mr. T.P. Nosi and Mrs. Nosi	X		No comments received up to date.	No response required.	Appendix 3
Municipal councillor	**X**		No comments received up to date.	No response required.	Appendix 3
Municipality	**X**		Mangaung Metropolitan registered as I&AP and requested a copy of the draft BAR and EMPR.	An electronic copy of the BAR and EMPR was provided to the Metropolitan for comment.	Appendix 3
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					
Department of Water and Sanitation	X	Meeting: 08/11/2016 Letter: 10/11/2016	A Water Use Authorisation for a Section 21(c) and 21(i) water use in terms of the NWA, 1998 (Act 36 of 1998) is required. DWS registered as stakeholder as part of the consultation process.	A WULA and supporting documentation will be submitted to DWS with the final BAR and EMPR for processing. Proof of submission and/or any approval received will be attached as Appendix 4 in the final BAR and EMPR. An electronic copy of the draft BAR and EMPr were submitted to DWS for comment.	Appendix 3; Part B: EMPr Report Appendix 4
Communities					
N/A					

Dept. Land Affairs	X				
Department of Rural Development and Land Reform	X	Letter: 2/12/2016	The Commission on Restitution of Land Rights confirmed that there are no land claims on the database in respect of the affected property.	A written notice and the BID were emailed the office of the Commission of Restitution of Land Rights to enquire whether there are any registered land claims on the affected property. No further response is required.	Appendix 3
Traditional Leaders					
N/A					
Dept. Environmental Affairs	X				
Department of Economic, Small business development, Tourism and Environmental Affairs	X		No comments were received up to date.	An electronic copy of the BAR and EMPR were submitted to DESTEA FS for comment.	Appendix 3
Other Competent Authorities affected	X				
Free State Department of Agriculture and Rural Development	X		No comments were received up to date.	An electronic copy of the draft BAR and EMPr was submitted to the department for comment.	Appendix 3; Part B: EMPr Report
South African Heritage Resources Agency	X		No comments were received up to date.	An electronic copy of the draft BAR and EMPr together with a notification letter and BID were submitted on SAHRIS for comment. Proper Consulting Engineers Pty Ltd is awaiting comment in this regard.	Appendix 3
OTHER AFFECTED PARTIES					
N/A					

INTERESTED PARTIES				
N/A				

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).

Also refer to the specialists reports attached in Appendix 5.

Geographical character:

- The proposed property is situated approximately 6.5km west of Wepener from where access to the farm is gained from the R701. The proposed site is situated in quarter degree square 2926CB. The proposed site has an altitude ranging between approximately 1418 and 1420m.
- The study area is located in the Upper Orange Water Management Area and is situated in quaternary catchment D23J.

Physical character:

- The geology of the area consists of mud and sandstone of the Beaufort Goup. The soils along the Caledon River are charecterised by deep sedimentary sand deposits while the plains next to the stream has Rensburg and Estcourt soil froms present (MacVicar et al. 1974). The stream banks at the study area has a moderate slope and consist of sand and deep clay deposits.
- According to Mucina & Rutherford (2006), the site is situated in a summer rainfall area of approximately 510 mm/annum and a mean annual temperature of 14.3 degrees celsius.
- According to the Ecological and Wetland assessment, the Present Ecological Status (PES) class and Ecological Importance Sensitivity (EIS) score of the Caledon River at the study area are a D and 0.7 respectively. This indicates a largely modified riparian area. Frequent floods, wood collection, overgrazing, erosion, alien plants and trampling have resulted in a large loss of natural habitat, biota and basic ecosystem functions in the study area.
- A seasonal stream on the western boundary of the study area with a medium sensitivity was identified during the ecological and wetland ssessment of the study area. According to the assessment, the wetlands identified on the floodplain and the riparian site can be regarded as sensitive ecosystems. However, the EIS score of the riparian vegetation was calculated to be low and it is therefore not regarded as ecologically important. It has a low biodiversity and plays a low role in moderating water quality and quantity.
- The water quality of the Caledon river at the proposed site indicates high Chemical Oxygen Demand (COD) concentrations, high levels of total dissolved solids and high concentrations of Total coli forms (including E. coli).
- According to the built-as plans of the Free State Department of Police, Roads and Transport of the bridge of the R26 over the Caledon River, the design of the new bridge allowed for a 1:100 year flood, of which the flood line for area was determined to be approximately 1419 masl (FSPG Plan Number 1944/B2).

Biological character:

- According to the ecological and wetland assessment, the study area is situated in the Aliwal North Dry Grassland Gh2) vegetation type. Although this vegetation type is classified to be 'Least Concerned', it is under threat in the greater region of Wepener mainly due to crop production and a lack of conservation aeas.
- The study area is situated along the Caledon River, which is a NFEPA-listed aquatic system.
- The site is not situated in any Critical Biodiversity Area (CBA) or threatened ecosystem.
- No Red or Orange List species were found to occur in the study area during the assessment. There are also no protected species on the site and the species richness is relatively low with a total of 18 species.

The riparian vegetation in the study area consists mainly of exotic trees, including Weeping Willows, poplars and Tamarix.

Socio-economic character (Data obtained from the 2011 census):

- As mentioned previously, Wepener formed part of the Naledi Local Municipality until it was disestablished and merged into Mangaung Metropolitan Municipality on 3 August 2016 (The Local Government Handbook, 2016). However, due to a lack of updated information of the Metropolitan, the latest results of the Community Census of 2016 and census of 2011 of the Naledi Local Municipal area are included in this section of the report.
- According to the Community Survey 2016 (Statistics SA), 24 800 people resides in the Naledi Local Municipal area. The latest results of the 2011 census indicates a population group of 92.4% black african persons, 4.9% white persons and 2.7% making up the other race groups. Naledi Local Municipality has a population growth rate of -1.22% (2001-2011) (Statistics SA, Census 2011).
- According to Statistics SA (Census 2011), of the total population of this municipality, 52% is female and 48% is male and 6.8% is elderly (i.e. persons 65 years and older), 32.5% are children (i.e. persons younger than 15 years) and 60.7% between the ages of 15 and 64 (working age). The unemployment rate is 26.4%. On average, grants and subsidies formed 57.7% of the total income of people in the Naledi Local Municipal area in 2015 (Statistics SA, Community Survey 2016).
- Economic activities currently undertaken on the affected property is limited to agriculture. Current known economic activities on neighbouring properties within a 1km radius from the centre of the proposed site is also limited to farming activities. Mining activities are undertaken approximately 2km upstream of the proposed site.

Cultural character:

- There are no tribes and/or communities on or in close proximity of the affected property. According to the Office of the Regional Land Claims Commission: Free State, there is no restitution claim on their database in respect of the affected property.
- According to the Heritage Assessment the study area is located a in sensitive region considering the history of the greater region and relative abundance of Stone Age and Iron Age archaeolical sites situated within the Caledon River Basin.
- According to the Phase 1 Archaeological assessment report, the study area is underlain by homogenous and culturally sterile overbank sediments (unconsolidated river sand).
- There was no evidence of any heritage importance found within the study area during the Heritage Assessment. A site rating of General Protection C (GP.C) was assigned in terms of the site's archaeological significance.

(b) Description of the current land uses.

The land uses in the area are mainly farming, mining and town development with Wepener being approximately 6km to the east of the affected property. The current land use of the affected property is limited to farmining activities.

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

Also refer to the specialist reports in Appendix 5 and to the photographic report in Appendix 8.

There is a seasonal stream with medium sensitivity on the western boundary of the study area and a wetland on the floodplain. The proposed site also include a part of the riparian area of the Caledon River. There are no infrastructure on the site proposed for the operation.

(d) Environmental and current land use map.

(Show all environmental, and current land use features)

Refer to Figure 3 in Appendix 2.

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).

Refer to the Environmental Impact/Risk and Management Report in Appendix 6 for the nature, significance, extent, duration and probability of the expected potential impacts.

The potential impacts expected to be associated with the proposed operation include the following:

- Clearance of vegetation and impact on the riparian area
- Habitat loss and effect on the general biodiversity
- Destabilisation of the riverbank
- Establishment of alien vegetation
- Erosion
- Change in storm water flow
- Impact on the water quality of the river (e.g. spillage, increase in suspended solids)
- Dust generation
- Elevated noise levels
- Health and safety risk to employees on site
- Safety risk for road users and degradation of the road due to an increase in heavy vehicles on the gravel access road
- Spillage of potential hazardous substances (e.g. fuel and oil) and sewage to the surrounding environment and into the river
- Pollution of the surrounding environment if waste is not managed
- Impact on the general aesthetics of the area and immediate visual impact
- Risk of veld fires
- Positive impact on employment opportunities and skills development
- Economic development in Wepener and opportunity to provide construction sand to needed development in the surrounding area

The main concerns raised by I&APs and stakeholders during consultation up to date included the following:

- The mining permit areas of permits that have lapsed on adjacent properties should be rehabilitated and closed.
- An application for a Water Use License in terms of Section 21 of the NWA, 1998 (Act 36 of 1998) is required.
- Implementation of storm water management measures and erosion control.

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).

The criteria for determining impact significance as specified in the "DEAT (2002) Impact Significance, Integrated Environmental Management, Information Series 5, Department of Environmental Affairs and Tourism (DEAT)" was adopted to determine and rank the potential impacts expected to be associated with the proposed operation as well as issues raised by Interested and/or Affected Parties (I&APs) during the consultation process.

The criteria is based on the a) Extent or spatial scale of the impact; b) Intensity or nature of the impact; c) Expected duration of the impact; d) Mitigatory potential of impacts; e) Acceptability of impacts; f) The probability of the impacts occurring; g) The status of the impact, i.e. positive, negative or neutral; and h) Identify the specific legal and permit requirements relevant to the project. All of these are used to determine the ultimate significance.

Refer to Appendix 6 attached to this report for the Impact and Risks Assessment and Management Plan for more detail regarding the methodology and results of the assessment.

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)

Proposed property/locality

Option 1

Advantages:
- The proposed operation provides an opportunity to the landowner to distribute risks and create an opportunity for more stability in terms of an income than to solely depend on an variable income from the current farming activities.
- A good economic offset of sand suitable for construction purposes is present on the property. The deposits are also of such nature that it can be pumped effectively in an economical manner with lower potential environmental impacts as well.
- The general topography of the specific site makes the site accessible for earthmoving equipment and tipper trucks for hauling of material.
- The property is in close proximity of Wepener and central to other towns such as Dewetsdorp where development is planned for the near future.
- Due to the type and scale of the activities that will be associated with the proposed operation, as well as the distance from surrounding dwellings, the potential noise impact is expected to be low.
- It is not anticipated that the proposed operation will be visible from the main public roads, i.e. R26 and R701 due to the site being further away from the public roads as well as that the site is situated close to a bend in the river and the area has large trees that will assist in acting as a natural visual screen.
- Six permanent job opportunities will be created.

Disadvantages:
- There are two existing and active mining right areas upstream of the proposed site. A cumulative impact on the general aesthetics of the area, instability of the riverbank, establishment of alien vegeetation as well as an increase in suspended solids in the river is likely.
  However, the Ecological and Wetland Assessment indicated that the study area's riparian vegetation and natural aesthetics have been highly modified by amongst other farming, natural flooding of the river and mining activities. The biological importance is therefore also low.

It is anticipated that with the implementation of good operational management measures, storm water control, erosion control and general environmental awareness of workers on site, that the potential environmental impacts and potential impact on the water quality can be low.

There were three mining permits on the adjacent property of Jammerbergsdrift 540/RE. These permits have lapsed and an application for a Closure Certificate for each of these permits have been submitted to the Department of Mineral Resources (DMR) for processing. Confirmation were received from the permit holder that final rehabilitation of the affected mining permit areas are being done. No operation activities have been undertaken on these mining permit areas during the past 2 years and will therefore also not have any effect on the potential cumulative impact concerning the proposed operation on the farm Hoffmans Rust 173/RE.

- The occurance of erosion is likely if proper management measures are not implemented.
- There is a seasonal stream on the western boundary of the proposed site as well as a wetland on the floodplain area. It is anticipated that the potential environmental impacts expected to be associated with the proposed operation can be avoided and limited through implementation of the appropriate management measures and alternative site layout that considers any potential sensitive areas.

Proposed site layout

Option 1

Advantages:

- The proposed proposed layout is based on the maximum use of the site of 4.9 Ha.
- The layout consider the placement of the stockpile areas outside the 1:50 year flood line.
- Storm water on site and water from the settling dams will drain back to the river.
- Due to the nature of the site and the river, the site will be levelled and reinstated naturally during natural flooding and high flow of the river. This also results in natural depositing of sand thus resulting in a constant mineable resource.

Disadvantages:

- This site layout may result in potential impacts on the wetland areas and seasonal stream that have been identified during the Ecological and Wetland Assessment of the study area. The stockpile area will be situated within on the wetland.
- The site layout does not consider the 1:100 year flood line for placement of the temporary toilet.

Option 2

Advantages:

- This proposed site layout avoids any physical mining related activities on the wetland areas and the seasonal stream to the west of the site.
- The 1:100 year flood line is considered during this layout and any sewage facilities, storage of fuel and waste management will be undertaken outside the 1:100 year flood line.
- The layout also consider the placement of stockpile areas outside the 1:50 year flood line.
- Storm water on site and water from the settling dams will drain back to the river.
- Due to the nature of the site and the river, the site will be levelled and reinstated naturally during natural flooding and high flow of the river. This also results in natural depositing of sand thus resulting in a constant mineable resource.
- Limited rehabilitation will be required and costs for rehabilitation will therefore also be kept relatively low.

Disadvantages:

- It is foreseen that the entire site of 4.9 Ha will not be available for mining related activities such as stockpiling.
- The 1:100 year flood line is outside the application area for this mine permit. Alternative management needs to be implemented in terms of storage of any substances/material with potential to pollute the river.

The no-go alternative

Advantages:

- Positive impacts include no potential impacts on the riparian vegetation, the wetland, the aesthetics of the area, potential cumulative impact on the water quality, destabilisation of the riverbank or elevated noise levels.

Disadvantages:
- Negative impacts include the loss of the opportunity for commercial development and income as a result together with the providing of sand for the increased need for development in Wepener and surroundings.
- Six potential job opportunities will be lost.

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).

The main concerns raised by I&APs and stakeholders during consultation up to date included the following:

- The mining permit areas of permits that have lapsed on adjacent properties should be rehabilitated and closed.
- An application for a Section 21(c) & 21(i) water use in terms of Section 21 of the NWA, 1996 (Act 36 of 1996) is required.
- Implementation of storm water management measures and erosion control.

The mitigation measures in this regard include the following:

- The farm is currently used for agriculture and mainly for grazing purposes. The locality of the proposed operation has been determined based on an economic offset of sand of a specific type and quality suitable for construction purposes. In addition, considering the locality of the proposed site in relation to the entire farm, the proposed site will have a limited impact on the current farming activities and the site is relatively easy accessible.
- Results from the Ecological and Wetland assessment indicated the presence of a wetland on the floodplain of the riverbank and a seasonal stream on the western boundary of the site. The preferred alternative site layout was determined in such way that a buffer area be created for the wetland and seasonal stream, thus preventing potential direct impacts on the wetland and stream.
- The preferred site layout considers the 1:100 year flood line of the Caledon River at the site. Activities such as storage of potential hazardous substances and toilet facilities that might cause pollution to the river will be placed outside the 1:100 year flood line. However, the this flood line is outside the proposed mining area. Therefore, it is recommended that no substances/material with the potential to cause pollution to the river be stored on site. In addition, the toilet facility will be placed on the access road entering the
- According to the NWA, 1998 (Act 36 of 1998) and comments from DWS, a Water Use Authorisation is required for the proposed activity and appropriate storm water management measures need to be implemented to limit erosion. A WULA will be applied for on the preferred locality and the preferred site layout has considered drainage and incorporated storm water control measures on site.
- An Erosion Control Management Plan has been developed for implementation throughout all the phases of the proposed operation.
- Confirmation has been received that the existing mining permit areas on the adjacent properties are being rehabilitated and an application for a Closure Certificate in terms of the Minerals and Petroleum Resources Development Act (MPRDA), 2002 (Act 28 of 2002) has been submitted to the Department of Mineral Resources (DMR) for processing. The preferred locality of the proposed new operation is not affected by these mining areas.
- The proposed mining method will address and assist in the general environmental management of the operation. The recovery of sand will be undertaken in such manner that potential environmental and residual impacts will be limited throughout all the phases of the operation.

Additional mitigation measures that should be implemented as minimum in order to prevent and/or limit the potential environmental impacts identified to be associated with the proposed operation include the following:

- Any topsoil and vegetation cover removed from the access road or mining area will be stockpiled outside the 1:100 year flood line for use during final rehabilitation of disturbed areas during the Decommissioning Phase.
- If Option 2 of the site layout is considered for approval, it is expected that the potential environmental impacts will be low and manageable.
- The affected property are fenced and access control to the mining area will be implemented to prohibit ilegal entrance to the mining area.
- On closure, any steep slopes will be landscaped, the settling dams will be levelled and the riverbank will be stabilised where necessary.
- The gravel access road on the affected property will be maintained by the applicant for the duration of the permit and rehabilitated during Closure if the landowner will not use the road.
- A maximum speed of 40 km/hr will be enforced on transport vehicles on the gravel access roads.
- Dust generating activities will be limited and/or stopped during high wind conditions.
- Mining activities will be limited to day time.
- Concurrent rehabilitation will be undertaken as far as possible to limit the area exposed to the natural elements and thereby possibly increasing environmental impacts and residual impacts.
- Storm water management measures such as berms will be implemented to divert clean storm to the river. The storm water management measures will also assist to mitigate erosion on site.
- Daily visual checks for signs of erosion will be undertaken by the site manager and any erosion will be repaired and measures implemented (e.g. gabions) to prevent reoccurence of erosion.
- Toilet facilities will be present for use by workers on site and will be situated outside the 1:100 year flood line.
- Any potential hazardous substance (e.g. hydraulic fluids, fuel, oils, etc.) will be stored in a designated bunded area with an impermeable layer to prevent spillage to the surrounding environment and/or water resources. The volume of substance stored shall fall within the specified volumes allowed for storage. Such storage will be situated outside the 1:100 year flood line of the river.
- No waste generated during the proposed operation will be disposed of on site. General waste will be collected in appropriate recepticles and disposed of at the landfill site in Wepener on a weekly basis or more regularly if necessary. Hazardous waste (if any) will be collected in appropriate receptacles and collected by a certified hazardous waste collection company or disposed of at a hazardous waste facility.
- The applicant will report incidents of major spillages to the Provincial Head: Department of Water and Sanitation within 24 hours.

Refer to Appendix 6 for an assessment of the impacts/risks after mitigation as well as for the recommended management measures to be implemented throughout all the phases of the proposed project to limit impacts.

ix) Motivation where no alternative sites were considered.

Refer to Part A, Section 3(h) for a description of the alternatives that were considered during this application for the proposed project.

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

Motivation for the final site layout proposed for this project:

The preferred site for the proposed operation of the recovery of sand from the Caledon River is situated in the Magisterial District of Wepener on a portion of the farm Hoffmans Rust 173/RE. The sand offset on this site is of suitable quality for construction purposes and a great resource of sand is available on this site. In addition, due to the nature of the river and site, sand is constantly deposited along the banks and riverbed during the flow of the river and during natural flooding events, resulting in a constant resource available for recovery.

The preferred site layout excludes the wetland and allows a buffer area of 32 m as recommended in the Ecological Assessment in order to prevent and/or limit potential impacts on the wetland and the seasonal stream on the western boundary of the proposed site. This layout also considers the 1:100 year flood line and any material/substances with potential pollution risks as well as the chemical toilet facility will be placed outside the 1:100 year flood line.

Vegetation and topsoil (if any) that was removed prior to the commencement of mining activities will be stockpiled outside the 1:50 year flood line and used as cover material during the rehabilitation of disturbed areas. The material stockpile area will also be situated above the 1:50 year flood line on the riverbank. No permanent infrastructure will be constructed on site as part of the proposed operation.

Also refer to Part A, Section 3(d)(ii) of this document for information on the activities to be related with the operation and to Part A, Section 3(h) for a description of the alternatives that were considered for this project.

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.)

A desktop study of the local area and its known environmental features was done. A site assessment was done by the Environmental Assessment Practitioner (EAP) to identify any potential sensitive features on site, identify potential I&APs and to identify potential environmental impacts on the study area as a result of the activities that will be associated with the proposed development. An ecological- and wetland assessment, as well as first phase heritage assessment were undertaken on the study area by specialists. Identified I&APs and stakeholders were involved through a public participation process. The comments and concerns raised by these parties were also considered during the assessment of the potential impacts.

Information gathered from the desktop study, specialist studies and the site assessment informed the recommendation for the final site layout as well as the recommended environmental management and mitigation measures to be implemented throughout all the phases of the operation.

Refer to Appendix 6 for the Environmental Impact/Risk and Management Report for an indication of the process undertaken to assess and rank the impacts/risks expected to be associated with the proposed development at the preferred site and with the preferred site layout. Also refer to this report for an indication of the: i) identified impacts/risks; and ii) assessment of the significance and extent to which it can be mitigated.

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
Site establishment (Clearance of vegetation; establishment of equipment; access road; etc.)	Clearance of riparian vegetation	Aesthetics; Land use; Biodiversity	Commissioning	Low	Avoid through site locality & layout; Remedy through rehabilitation; Limit footprint	Low
	Establishment of alien vegetation	Vegetation; Biodiversity	Commissioning	Medium	Remedy through rehabilitation; Limit footprint; Control through management and monitoring	Low
	Habitat destruction	Vegetation; Fauna; Biodiversity	Commissioning	Low	Avoid through site locality & layout; Remedy through rehabilitation; Limit footprint	Low

	Erosion	Aesthetics; Land use; Water quality	Commissioning	Medium	Remedy through rehabilitation; Limit footprint; Control through storm water control; Control through erosion measures and monitoring	Low
	Loss of topsoil	Soil	Commissioning	Low	Control through appropriate topsoil stockpiling; Control through storm water control; Control through erosion measures and monitoring; Remedy through rehabilitation	Low
	Visual scarring	Aesthetics; Visual	Commissioning	Low	Remedy through rehabilitation; Limit footprint; Limit through site layout	Low
	Elevated noise levels	Noise; I&APs; Health and Safety	Commissioning	Low	Control through operational procedures (including working hours); Control through noise control	Low
	Loss of agricultural potential	Land use	Commissioning	Low	Avoid through site locality & layout; Remedy through rehabilitation; Limit footprint	Low
	Destruction of wetlands	Vegetation; Fauna; Biodiversity;	Commissioning; Operational	Medium	Avoid through site locality & layout; Control through operational	Low

		Ecosystem function			procedures; Remedy through rehabilitation; Limit footprint	
Recovery of sand through pumping and excavation	Increase in suspended soilids	Water quality	Operational	Medium	Control through operational procedures; Limit footprint; Remedy through concurrent rehabilitation	Medium
	Instability of the riverbank	Riparian area; Land use	Operational; Decommissioning	Medium	Control through operational procedures; Remedy through concurrent rehabilitation; Control through slope management and monitoring	Low
	Change in surface water drainage	Natural flow path; Water quantity	Operational	Low	Control through operational procedures; Control through storm water controls; Limit through site layout	Low
	Visual scarring	Aesthetics; Visual	Operational	Low	Control through operational procedures; Remedy through concurrent rehabilitation; Limit through site layout	Low
	Dust generation	Air quality; I&APs	Operational	Low	Control through operational procedures; Control through monitoring	Low

	Elevated noise levels	Noise; I&APs	Operational	Low	Control through operational procedures (including working hours); Control through noise control	Low
	Destruction of objects/artefacts of importance	Heritage	Operational	Low	Avoid through site locality & layout; Limit footprint; Create awareness with employees	Low
Loading & hauling	Dust generation	Air quality; I&APs	Operational	Low	Control through operational procedures; Control through dust control; Control through monitoring	Low
	Elevated noise levels	Noise; I&APs	Operational	Low	Control through operational procedures (including working hours); Control through noise control	Low
	Deterioration of the gravel road	Infrastructure; I&APs; Road safety	Operational; Decommissioning	Medium	Remedy through maintenance of the road; Control through speed control; Control through monitoring	Low
Stockpiling	Dust generation	Air quality; I&APs	Operational	Low	Control through operational procedures; Control through dust control and monitoring;	Low

					Remedy through rehabilitation	
	Visual scarring	Aesthetics; Visual	Operational	Low	Remedy through rehabilitation; Limit through site layout	Low
	Change in surface water drainage	Topography; Storm water	Operational	Low	Control through storm water controls; Limit through site layout; Remedy through rehabilitation	Low
	Loss of topsoil	Soil	Operational	Low	Control through appropriate topsoil stockpiling; Control through storm water control; Control through erosion control and monitoring	Low
	Establishment of alien vegetation	Vegetation; Biodiversity	Operational; Decommissioning	Low	Remedy through rehabilitation; Control through management and monitoring	Low
Settling dams	Visual scarring	Aesthetics; Visual	Operational	Low	Limit through site layout; Control through operational procedures; Remedy through rehabilitation	Low
	Change in surface water drainage	Topography; Storm water; Water quantity	Operational	Low	Limit through site layout; Control through operational procedures; Control through storm	Low

					water controls; Remedy through rehabilitation	
	Erosion	Aesthetics; Land use; Water quality; Soil	Operational	Low	Control through operational procedures; Control through storm water controls; Control through erosion control and monitoring; Remedy through rehabilitation	Low
	Increase in suspended solids	Water quality	Operational	Medium	Control through operational procedures; Limit footprint; Remedy through rehabilitation	Low
	Instability of the riverbank	Riparian area; Land use	Operational; Decommissioning	Medium	Control through operational procedures; Avoid through construction method; Remedy through rehabilitation; Control through slope management and monitoring	Low
Material storage (e.g. fuel, oil, gas) and waste disposal	Soil contamination from spillages and waste disposal	Soil; Land use; Waste management	Operational; Decommissioning	Medium	Avoid through operational procedures; Prevent through management; Remedy through rehabilitation	Medium
	Water pollution due to spillages	Water quality	Operational, Decommissioning	Medium	Prevent through site layout; Avoid through	Medium

	and waste disposal				operational procedures; Prevent through management; Remedy through rehabilitation	
	Littering	Land use; Aesthetics; Water quality	Operational, Decommissioning	Low	Prevent through waste management	Low
	Fire risk	Health and safety; Biodiversity	Operational	Low	Avoid through operational procedures; Avoid through management & appropriate storage control	Low
General operational activities in respect of I&APs and employees	Impact on the general aesthetics of the area	Aesthetics; I&APs	Commissioning; Operational, Decommissioning	Low	Remedy through rehabilitation; Limit through site locality & layout; Control through operational procedures	Low
	Pollution to the surrounding environment as a result of sewage spillage	Water quality; Soil; Health and safety; I&APs	Commissioning; Operational; Decommissioning	Medium	Prevent through standard cleaning and management procedures; Limit through site locality & layout; Remedy through cleaning and rehabilitation	Low
	Risk of injury to people and animals entering the operational area	Health and safety; I&APs	Operational; Decommissioning	Medium	Avoid through access control; Avoid through rehabilitation	Low
	Risk of injury to employees	Health and safety	Operational; Decommissioning	Medium	Avoid through appropriate PPE; Avoid through	Medium

	working with machinery/ equipment on site				awareness & appropriate training to personnel on site	
	Job creation & skills upliftment	Community/ Economy	Commissioning, Operational; Decommissioning	Medium (Positive)	Achieve through continuation with proposed operation; Achieve through operational procedures; Achieve through training	Medium (Positive)
	Economic development in the region	Community/ Economy	Commissioning, Operational	Medium (Positive)	Achieve through continuation with proposed operation; Achieve through operational procedures	Medium (Positive)
Rehabilitation (e.g. removal of equipment, reshaping and revegetation of disturbed areas, etc.)	Soil contamination from spillages and waste disposal	Soil; Land use	Decommissioning	Medium	Avoid through rehabilitation procedures; Prevent through management; Remedy through rehabilitation	Medium
	Water pollution due to spillages and waste disposal	Water quality	Decommissioning	Medium	Avoid through rehabilitation procedures; Prevent through management; Remedy through rehabilitation	Medium
	Elevated noise levels	Noise; I&APs	Decommissioning	Low	Control through rehabilitation procedures; Control through noise control	Low

	Change in surface water drainage	Topography; Storm water; Water quantity	Decommissioning; Closure	Medium (Positive)	Achieve through levelling and rehabilitation of disturbed areas; Achieve through storm water controls	Medium (Positive)
	Erosion & loss of topsoil	Soil; Land use	Decommissioning; Closure	Medium	Control through storm water controls; Remedy through rehabilitation; Control through erosion control & monitoring	Low
	Establishment of alien vegetation	Vegetation; Biodiversity	Decommissioning; Closure	Medium	Remedy through rehabilitation; Control through management and monitoring	Low
	Establishment of a self-sustaining ecosystem	Land use; Aesthetics; Biodiversity	Decommissioning; Closure	Medium (Positive)	Achieve through rehabilitation	Medium (Positive)
Cumulative impacts	Dust generation	Air quality; I&APs	Operational; Decommissioning	Low	Control through operational procedures; Control through management and monitoring; Control through dust control; Remedy through rehabilitation	Low
	Visual scarring	Aesthetics; Visual	Commissioning; Operational	Medium	Reduced once existing mining areas on adjacent properties have been fully rehabilitated and closed;	Low

					Limit through operational procedures; Remedy through rehabilitation	
	Elevated noise levels	Noise; I&APs	Commissioning; Operational; Decommissioning	Low	Control through operational procedures (including working hours); Control through monitoring; Control through noise control	Low
	Instability of the riverbank	Riparian area; Land use	Operational; Decommissioning	Medium	Control through operational procedures; Avoid through construction method of settling dams; Remedy through rehabilitation; Control through slope management and monitoring	Low
	Loss of riparian vegetation and ecosystem	Vegetation; Biodiversity; Ecosystem function	Commissioning; Operational	Low	Limit through site locality & layout; Remedy through rehabilitation; Limit footprint; Control through operational procedures	Low
	Increase in suspended solids in the water	Water quality	Operational	Medium	Control through operational procedures; Limit footprint; Remedy through rehabilitation; Limit through storm water control measures; Limit	Medium

					through erosion control measures	

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.
Ecological and wetland survey	1) Care must be taken not to negatively affect the Caledon River ecosystem further and not to disturb and destabilise the stream banks of the river.	X	Parts A & B Appendix 5 Appendix 6
Ecological and wetland survey	2) Untreated water from the Caledon River should not be drunk by workers due to the poor quality thereof.	X	Parts A & B Appendix 5 Appendix 6
Ecological and wetland survey	3) An application for a Water Use Authorisation to DWS is required for the proposed project.	X	Parts A & B Appendix 4 Appendix 5 Appendix 6
Ecological and wetland survey	4) Management measures to control erosion must be implemented throughout all the phases of the proposed project.	X	Parts A & B Appendix 5 Appendix 6
Ecological and wetland survey	5) No waste or spoil material may be dumped on site but should be disposed off at a licensed landfill site.	X	Parts A & B Appendix 5 Appendix 6
Ecological and wetland survey	6) Weed control must be applied on disturbed areas in and around the proposed mine site to eradicate the noxious weeds (i.e. Category 1a and 1b species).	X	Parts A & B Appendix 5 Appendix 6
Ecological and wetland survey	7) An Environmental Control Officer (ECO) must be appointed to oversee that the aspects stipulated in the Environmental Authorisation (if considered for approval) are implemented properly.	X	Parts A & B Appendix 5 Appendix 6

Phase 1 Archaeological Impact Assessment	The proposed development footprint is assigned a site rating of General Protection C (GP.C). Based on the field rating categories as prescribed by SAHRA, the significance of the proposed operation will have a low significance on the heritage importance of the area.	X	Parts A & B Appendix 5 Appendix 6

Attach copies of Specialist Reports as appendices

l) Environmental impact statement

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

The key findings of the EIA are as follow:

- The proposed site is in a highly degraded state due to crop production, grazing, flash floods and upstream mining activities.
- The site has been invaded by alien trees and shrubs and large Weeping Willow trees and Poplar trees are present on the riverbanks of the study area.
- There is a seasonal stream on the western boundary of the proposed site and a wetland on the floodplain which can be regarded as sensitive.
- No Red or Orange list species, neither protected plant species were found to occur within the study area.
- The Present Eccological Status (PES) of the site was calculated as a class D (i.e. Largely modified), while the riparian areas have an Ecological Importance and Sensitivity (EIS) score of 0.7, as calculated by the specialist.
- The general water quality of the Caledon River at the site is poor with high concentrations of COD, electrical conductivity, total dissolved solids, turbidity and Total coli forms (including E. coli).
- The Caledon River is a NFEPA-listed aquatic system. However, the river is presently highly modified.
- There are no objects or artefacts of heritage importance within the study area.
- The development will have both positive and negative social impacts.
- There are no environmental fatal flaws that prevent the continuation of the proposed operation provided that the preferred site layout is implemented and all management measures as described in the management plan are implemented throughout all the phases of the proposed operation.
- The expected cumulative impacts will be limited with appropriate management measures. The expected duration of these cumulative impacts will be short term and limited to the duration of the mining permit (if considered for approval). The required rehabilitation of the mining permit areas of which the mining permits have lapsed will enhance the overall aesthetics of the area.

(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**

Refer to Figure 3 attached in Appendix 2.

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

Proposed operation on preferred site/layout (This option refers to the recovery of sand on the preferred locality, i.e. option 1 and alternative site layout of option 2 which takes the wetland and 1:100 year flood line into account.)

Positive impacts:
- Six permanent job opportunities will be created
- Economic offset of the resources with a continued offset during the natrual flow of the river
- Physical recovery of sand from the riverbed will not be affected by the proposed site layout, thus still ensuring an economically viable operation
- Access to the site
- Limited distribution of dust to the surrounding area due to the type of activities and locality
- Limited visual impact due to the type of activities and locality
- Limited impact on I&APs in terms of elevated noise levels due to the type of activities and locality
- Consider the 1:100 year flood line and buffer area of the wetland areas in the site layout
- Prevent and/or limit impact on the wetland and seasonal stream
- Prevent and/or limit impact on habitat and general biodiversity
- Limit impact and risks of instability of the riverbank
- Limit the footprint of the operation
- Limited to no impact on the topography of the site due to the type of activities
- The proposed site is already highly degraded with a low PES and EIS score

Negative impacts:
- Smaller area available for mining related activities
- Removal of riparian vegetation
- Possible loss of topsoil
- Possible erosion
- Destabilisation of the riverbank
- Local disturbance to the riverbed and riverbank
- Increase in suspended solids in the river as a result of the activities on the riverbank and within the riverbed
- Change in natural drainage of storm water
- Risk in pollution due to spillages
- Health and safety risks

Alternatives that were considered in terms of the locality and site layout (This option refers to the recovery of sand on the preferred locality, i.e. option 1 and site layout of option 1 which is based on the maximum use of the 4.9 Ha applied for as part of the application.)

Positive impacts:
- The entire area of 4.9 Ha is available for mining related activities
- Six permanent job opportunities
- Economic offset of the resources with a continued offset during the natrual flow of the river
- Physical recovery of sand from the riverbed will not be affected by the proposed site layout, thus ensuring an economically viable operation
- Limit impact and risks of instability of the riverbank
- Access to the site
- Limited distribution of dust to the surrounding area due to the type of activities and locality
- Limited visual impact due to the type of activities and locality
- Limited impact on I&APs in terms of elevated noise levels due to the type of activities and locality
- Limited to no impact on the topography of the site due to the type of activities
- The proposed site is already highly degraded with a low PES and EIS score

Negative impacts:
- Destruction of the wetland and subsequent impact on habitat and biodiversity
- This site layout does not consider the 1:100 year flood line and buffer area of the wetland areas
- Removal of riparian vegetation
- Possible loss of topsoil
- Possible erosion
- Change in natural drainage of storm water

- Increase in suspended solids in the river as a result of the activities on the riverbank and within the riverbed
- Destabilisation of the riverbank
- Local disturbance to the riverbed and riverbank
- Risk in pollution due to spillages
- Health and safety risks

The no-go alternative:

Positive impacts:
- No potential impacts on the environment
- No potential visual impact
- No additional loss of riparian vegetation on the already degraded area
- No potential impacts on the wetland and seasonal stream
- No potential of additional suspended solids in the river, althrough these concentrations are already relatively high and the river is classified to be highly modified

Negative impacts:
- Loss of the opportunity for commercial development and income in the region
- Loss of the opportunity to provide sand for construction purposes to the surrounding area
- Six job opportunities will be lost

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

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

The main impact management objectives and outcomes are as follow:

- To ensure that environmental Best Practice is implemented in terms of the management and mitigation of environmental impacts throughout the operation.
- To implement management measures and develop sustainable mining methods to limit and/or prevent the potential environmental impacts expected to be associated with the proposed operation to a minimum.
- To ensure compliance with the relevant environmental legislation.
- To obtain the necessary Environmental Authorisations.
- To implement mining methods in such manner that the end land use and rehabilitation objectives are reached at closure of the operation.
- To undertake concurrent rehabilitation where possible to limit further environmental impacts and also limit the final rehabilitation costs.
- To create environmental awareness to all personnel on site.

n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

Management of the following:

- Storm water control measures
- Erosion control measures
- Operational procedures in terms of the recovery of sand to limit potential impacts on especially the riverbank and beds
- Removal of vegetation and topsoil prior to disturbing an area where necessary
- Implement appropriate waste management
- Management of spills

- Appropriate stockpiling of topsoil and product material
- Stabilisation of the riverbank if it is found to be unstable

The applicant / permit holder shall submit environmental performance assessments and a revised quantum in accordance with the NEMA Regulations on Financial Provision for mining, 2015.

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

(Which relate to the assessment and mitigation measures proposed)

During the assessment and development of the management measures, it was assumed that the information provided by the applicant, input from I&APs and stakeholders and assessment by specialists were true, correct to the best of their knowledge and unbiased.

The annual volume of sand that will be recovered during the proposed operation is uncertain due to the regular offset of sand during the natural and high flow of the Caledon River.

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.

There are no environmental fatal flaws that prevent the continuation of the proposed operation provided that the preferred site layout is implemented and all management measures as described in the management plan are implemented throughout all the phases of the proposed operation. The expected cumulative impacts will be limited with appropriate management measures.

ii) Conditions that must be included in the authorisation

- Erosion control and storm water control measures must be applied during the operation.
- Alien weeds must be eradicated and removed prior to seeding.
- Management measures should be implemented to ensure stability of the riverbank as far as possible.
- Activities should stop and the provincial department of SAHRA be contacted immediately should any artefact or object of heritage importance be discovered during the operation.
- The access road on the affected property to the operation should be maintained and appropriate storm water control measures should be implemented on the road.
- Topsoil should be removed and stockpiled for use during rehabilation.
- Although the wetland has a low ecological importance, measures should be implemented to prevent and/or limit any potential impacts on the wetland and the seasonal stream.
- The applicant should employ an Environmental Officer (EO) or Environmental Control Officer (ECO) to verify compliance with the management measures stipulated in the BAR, EMPr and conditions in the Environmental Authorisation (if considered for approval).
- An application for a water use license should be submitted to Department of Water and Sanitation in terms of any water uses.

q) Period for which the Environmental Authorisation is required.

This application for Environmental Authorisation is for a listed activity requiring a mining permit in terms of Section 27 of the MPRDA, 2002 (Act 28 of 2002). Mining is a temporary activity and currently a mining permit is valid for two years after which the permit can be renewed annually for another 3 years. The Environmental Authorisation is thus required for at least 5 years, dependant on the regulations and

requirements in terms of NEMA, 1998 (Act 107 of 1998) and regulations at the time that the permit reaches its expiry date. After decommissioning, application for Environmental Authorisation for closure will be applied for.

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.

The undertaking by the applicant to comply with this BAR and EMPr is provided at the end of the EMPr and is aplicable to the BAR and the EMPr.

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.

The quantum for financial provision was calculated in accordance with DMR's guideline titled "Guideline document for evaluation of the quantum of closure-related financial provision provided by a mine", dated 2005 considering the latest master rates in Section B as well as current rehabilitation costs.

The calculated cost for final closure of the operation by the applicant (i.e. Sub-total 1 of the Quantum) is R177 383.91. Due to the type of activities that will be associated with the proposed operation, the physical footprint of disturbance is expected to be limited and concurrent rehabilitation of disturbed areas will be undertaken during the Operational Phase where possible. Therefore, it is anticipated that the final amount required for rehabilitation will be significantly lower. The calculated cost for current environmental liability by a Third Party (i.e. Grand Total of the Quantum plus VAT) is R246 705.54.

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

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

The amount required for financial provisioning in respect of rehabilitation by the applicant and concurrent rehabilitation costs during the operation are included in the operating expenditure. Refer to the Financial and Technical Competence Report as part of this application for Environmental Authorisation. Also refer to Appendix 7 for a copy of the quantum calculation.

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** .

There are no tribes and/or communities on or in close proximity of the affected property. There is also no land claim on the affected property.

There is a lease agreement between the applicant and the landowner. The landowner supports the proposed development.

There ar no person(s) or existing activity at the proposed locality that will be directly affected by the proposed operation or that have to be relocated from the affected property.

There are a few existing small scale sand winning operations upstream from the affected property. The potential indirect effect on the current sales of these operations is expected to be limited due to the large current demand for sand for construction purposes. It is also expected that these operations already have there own existing clientele and business contracts. In addition, different grading and quality sand is available throughout the extent of these works that are required for different construction activities. Although it is uncertain what quality is available at the proposed site, it is possible that the material at the proposed site is a different grading and quality than that of existing operations.

(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 heritage assessment was undertaken by a specialist on the study area proposed for the sand mining operation. According to the specialist there is no evidence of any archaeological important remains within the study area. A site rating of General Protection C (GP.C) was assigned to the proposed development footprint. According to the specialist, the type and nature of the proposed operation does not require a palaeontological assessment. The minimum management measures will be implemented should any objects of heritage importance be unearthed during the operation. Refer to Appendix 5 for the specialist's reports.

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)**.

Refer to Part A, Section 3(h) for a description of the alternatives that were considered during this application for the proposed operation.

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).

Details of the EAP is provided in Part A, Section 1(a). Also refer to Appendix 1 attached hereto.

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).

The aspects of the proposed activity were described in Part A, Section (1)(h) of this report.

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)

Refer to Figure 3 in Appendix 2.

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 closure objectives took into account the current status quo of the environment, the potential impacts expected to be associated with the proposed operation as well as the end land use potential after decommissioning of the operation.

The closure objectives are to:

- Rehabilitate the area disturbed by the operation and related activities to a land use potential of at least grazing and to similar conditions of the surrounding natural environment.
- To rehabilitate disturbed areas to a post mining environment that is safe and with stable slopes.
- To limit and/or reduce any residual impacts after decommissioning of the operation.
- To reduce the need for long-term monitoring and maintenance.
- Obtain a closure certificate after decommissioning of the mining activities.

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

No consumptive water use will be undertaken during the operation.

Section 1(d)(iii) Has a water use license been applied for?

An application for a Water Use Authorisation for the proposed activities that will be undertaken on the banks of the river and riverbed will be submitted to DWS for processing. Proof of submission of this application together with any response and/or approvals will be attached as Appendix 4 of the final BAR and EMPR documentation.

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 m²)	**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.
Site establishment (e.g. clearance of vegetation; establishment of equipment; access road; etc.)	Commissioning; Operational	4.9 Ha	Refer to Appendix 6	Clearance of the site and establishment of equipment will be kept within the perimeters of the permitted mine boundary area.	Limit the footprint during commissioning; Management during commissioning and operational phases; Rehabilitation upon cessation of sand mining.
Recovery of sand	Operational	2 Ha	Refer to Appendix 6	The recovery of sand will be undertaken within the permitted mine boundary area. Visual checks and monitoring will be undertaken to ensure compliance with	Management during operational phase; Concurrent rehabilitation during operational phase where possible and final rehabilitation on cessation

				Environmental Best Practice. The operational procedures will aim to comply with the relevant environmental as well as Health and Safety legislation. The NWA, 1998 (Act 36 of 1998) will be complied with in terms of the proposed activities to be undertaken on riverbank and riverbed.	of sand mining during the decommissioning phase.
Loading and hauling	Operational; Decommissioning	72000m3/ year	Refer to Appendix 6	The operational procedures will ensure that minimum dust is generated and that trucks will not be loaded beyond its specified load capacity. Speed limits will be enforced in accordance with the general limits on the National and Provincial roads.	Management during operational and decommisioning phase; Maintenance of gravel access road during operational phase; Rehabilitation of loading area on cessation of the sand mining.
Stockpiling	Operational; Decommissioning	0.7 Ha	Refer to Appendix 6	Stockpiles will be placed within the permitted mine boundary area outside any storm water drainage lines. Any chemicals used for weed control will be registered products and classified to be safe for use close to water resources.	Management during operational phase; Rehabilitation of stockpile area on cessation of the sand mining
Setlling dams	Operational;	0.4 Ha	Refer to Appendix 6	The settling dams will be situated within the permitted	Management during operational phase; Final

	Decommissioning			mine boundary area. The dams will be formed with sand on site and no additional material such as cement will be used that could result in pollution to the river. No consumptive water will be used as part of the operation. No permanent structures will be constructed on site. The NWA, 1998 (Act 36 of 1998) will be complied with in terms of the proposed activities to be undertaken on riverbank and riverbed.	rehabilitation during cessation of the sand mining during the decommisioning phase.
Material storage (e.g. fuel, oil, gas) and waste disposal	Operational; Decommissioning	200m2 waste/month	Refer to Appendix 6	Material will be stored according to best practice as specified for the material type and volume, e.g. fuel. The storage area will be situated outside the 1:100 year flood line. No waste will be disposed on site. Waste seperation will be undertaken and each waste type (e.g. general waste, hazardous waste) will be managed and disposed of at registered facilities accordingly.	Management during operational phase; Monitoring during operational phase; Rehabilitation and removal of any waste during the decommissioning phase.
General operational activities in respect of I&APs & employees	Commissioning; Operational;	4.9 Ha	Refer to Appendix 6	Management and monitoring will ensure compliance with environmental standards.	Management during operational phase; Concurrent rehabilitation where possible during

	Decommissioning			Operational procedures, waste management and site establishment as per the preferred site layout will limit potential pollution. Adherence to SHE legislation will prevent and limit injuries.	operational phase and final rehabilitation on cessation of the sand mining.
Rehabilitation (e.g. removal of equipment, reshaping and revegetation of disturbed areas)	Operational; Decommissioning & Closure	4.9 Ha	Refer to Appendix 6	The aim of rehabilitation will be to limit environmental impacts, residial impacts, the need for management and monitoring after cessation of mining and to obtain a Closure Certificate after rehabilitation to DMR's specifications. Financial Provision will also form part of the application as required in terms of NEMA (Act 107 of 1998): Regulations pertaining to the Financial Provision for mining.	Management during operational phase; Concurrent rehabilitation where possible during the operational phase and final rehabilitation during cessation of the sand mining activities.
Cumulative impacts	Commissioning; Operational; Decommissioning	4.9 Ha	Refer to Appendix 6	All the mining activities that will be associated with the proposed operation will be undertaken within the permitted mining area. Management and monitoring will ensure compliance with environmental standards and best practice. Operational	Management during the commissioning and operational phases. Concurrent rehabilitation during operational phase as possible and final rehabilitation during cessation of the sand mining activities.

				procedures, appropriate management and site establishment as per the preferred site layout will limit potential cumulative environmental impacts	

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.**
Site establishment (clearance of vegetation; establishment of equipment; access road; etc.)	Clearance of riparian vegetation; Establishment of alien vegetation; Habitat destruction; Erosion; Loss of topsoil; Visual scarring; Elevated noise levels; Loss of agricultural potential; Destruction of wetlands	Vegetation; Biodiversity; Fauna; Aesthetics; Land use; Water quality; Soil; Noise; I&APs; Health & Safety	Commissioning; Operational	Avoid and limit through site locality & layout; Remedy through rehabilitation; Limit footprint; Control through management and monitoring; Control through storm water control; Control through erosion measures and monitoring; Control through appropriate topsoil stockpiling; Control through operational procedures (including working hours); Control through noise control	Impact avoided or limited and managed effectively where avoidance is not possible; Acceptable noise levels; Rehabilitate to a self-sustaining environment; No long-term water quality impact

Recovery of sand	Increase in suspended soilids; Destabilisation of the riverbank; Change in surface water drainage; Visual scarring; Dust generation; Elevated noise levels; Destruction of objects of heritage importance	Water quality; Riparian area; Land use; Natural flow path; Aesthetics; Air quality; I&APs; Noise; Heritage	Operational; Decommisioning	Control through operational procedures; Remedy through concurrent rehabilitation; Limit footprint; Control through slope management and monitoring; Control through storm water controls; Control through monitoring; Control through noise control; Avoid and limit through site locality & layout; Create awareness with employees	Impact avoided or limited and managed effectively where avoidance is not possible; Acceptable noise and dust levels; Rehabilitate to a self-sustaining environment; No impact on objects of heritage importance; Limited and acceptable visual impact; No long-term water quality impact; No long-term impact on the stability of the riverbank
Loading and hauling	Dust; Noise; Deterioration of the gravel road	Air quality; Noise; I&APs; Infrastructure; Road safety	Operational; Decommissioning	Control through operational procedures; Control through dust control; Control through monitoring; Control through noise control; Remedy through maintenance of the road; Control through speed control	Impact managed effectively where avoidance is not possible; Acceptable noise and dust levels; Compliance with Particulate Matter (PM) standards; Acceptable and safe rideability of the gravel access road.
Stockpiling	Dust; Visual; Change in surface water drainage; Loss	Air quality; I&APs; Aesthetics; Topography;	Operational; Decommissioning	Control through operational procedures; Control through dust control and monitoring;	Impact managed effectively where avoidance is not possible;

	of topsoil; Establishment of alien vegetation	Storm water; Soil; Vegetation; Biodiversity		Remedy through rehabilitation; Limit through site layout; Control through storm water controls; Control through appropriate topsoil stockpiling; Control through erosion control and monitoring; Control through management and monitoring	Acceptable dust levels and compliance with Particulate Matter (PM) standards; Rehabilitate to a self-sustaining environment
Settling dams	Erosion; Increase in suspended soilds; Instability of the riverbank	Aesthetics; Land use; Water quality; Soil; Riparian area	Operational; Decommissioning	Control through operational procedures; Control through storm water controls; Control through erosion control and monitoring; Remedy through rehabilitation; Limit footprint; Avoid through construction method; Control through slope management and monitoring	Impact avoided or limited and managed effectively where avoidance is not possible; Rehabilitate to a self-sustaining environment; No long-term water quality impact; No long-term impact on the stability of the riverbank
Material storage (e.g. fuel, oil, gas) and waste disposal	Soil contamination; Water pollution; Littering; Fire risk	Soil; Land use; Waste management; Water quality; Aesthetics; Health and safety; Biodiversity	Operational; Decommissioning	Avoid through operational procedures; Prevent through management; Remedy through rehabilitation; Prevent through site layout; Prevent through waste management; Avoid through management & appropriate storage control	Impact avoided or limited and managed effectively where avoidance is not possible; Rehabilitate any affected areas to a potential land use similar to that of the surrounding environment; No long-term water quality impact

General operational activities in respect of I&APs and employees	Impact on the general aesthetics of the area; Pollution to the surrounding environment from sewage spillage; Risk of injuries of animals and people entering the operational area; Risk of injury to employees; Job creation, skills upliftment and economic development	Aesthetics; Water quality; Soil; I&APs; Health & Safety; Community/ Economy	Commissioning; Operational; Decommissioning l	Remedy through cleaning and rehabilitation; Avoid or limit through site locality and layout; Control through operational procedures; Prevent through standard cleaning and management procedures; Avoid through access control; Avoid through appropriate PPE; Avoid through awareness & appropriate training to personnel on site; Achieve through operational procedures and training;	Impact avoided or limited and managed effectively where avoidance is not possible; Rehabilitate to a self-sustaining environment; No long-term water quality impact; Impact on downstream users avoided; No fatalities; Positive impact on the economy and lifestyle of employees
Rehabilitation (e.g. removal of equipment, reshaping & revegetation of disturbed areas, etc.)	Soil contamination; Water pollution; Noise; Change in surface water drainage; Erosion & loss of topsoil; Establishment of alien	Soil; Land use; Water quality and quantity; Noise; I&APs; Topography; Storm water; Vegetation; Biodiversity; Aesthetics	Decommissioning & Closure	Avoid and remedy through rehabilitation procedures; Prevent through management; Control through noise control; Achieve through levelling and rehabilitation of disturbed areas; Achieve and control through storm water controls; Control through erosion control & monitoring;	Impact avoided or limited and managed effectively where avoidance is not possible; Rehabilitate to a self-sustaining environment; Positive visual impact on the area; Acceptable noise levels; No long-term water quality impact;

	vegetation; Positive impact of the establishment of a self-sustaining ecosystem			Control through management and monitoring; Achieve through rehabilitation;	Positive impact on the environment and end land use
Cumulative impacts	Dust; Visual; Noise; Instability of the riverbank; Loss of vegetation and ecosystem function; Increase in suspended solids of the river	Air quality; I&APs; Aesthetics; Noise; Riparian area; Land use; Vegetation; Biodiversity; Ecosystem function; Water quality	Commissioning; Operational; Decommissioning	Limit and control through operational procedures; Control through management and monitoring; Control through dust control; Remedy through rehabilitation; Reduced once existing mining areas on adjacent properties have been fully rehabilitated and closed; Control through noise control; Avoid through construction method of settling dams; Control through slope management and monitoring; Limit through site locality & layout; Limit footprint; Limit through storm water control measures; Limit through erosion control measures	Impact avoided or limited and managed effectively where avoidance is not possible; Rehabilitate to a self-sustaining environment; Acceptable visual impact; Acceptable noise and dust levels; No long-term water quality impact; No long-term stability impact on the riverbank.

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)
Site establishment (Clearance of vegetation; establishment of equipment; access road; etc.)	Clearance of riparian vegetation; Establishment of alien vegetation; Habitat destruction; Erosion; Loss of topsoil; Visual scarring; Elevated noise levels; Loss of agricultural potential; Destruction of wetlands	Avoid and limit through site locality & layout; Remedy through rehabilitation; Limit footprint; Control through management and monitoring; Control through storm water control; Control through erosion measures and monitoring;	Limit the footprint during commissioning; Management during commissioning and operational phases; Rehabilitation upon cessation of sand mining.	Clearance of the site and establishment of equipment will be kept within the perimeters of the permitted mine boundary area.

		Control through appropriate topsoil stockpiling; Control through operational procedures (including working hours); Control through noise control		
Recovery of sand	Increase in suspended soilids; Destabilisation of the riverbank; Change in surface water drainage; Visual scarring; Dust generation; Elevated noise levels; Destruction of objects of heritage importance	Control through operational procedures; Remedy through concurrent rehabilitation; Limit footprint; Control through slope management and monitoring; Control through storm water controls; Control through monitoring; Control through noise control; Avoid and limit through site locality & layout; Create awareness with employees	Management during operational phase; Concurrent rehabilitation during operational phase where possible and final rehabilitation on cessation of sand mining during the decommissioning phase.	The recovery of sand will be undertaken within the permitted mine boundary area. Visual checks and monitoring will be undertaken to ensure compliance with Environmental Best Practice. The operational procedures will aim to comply with the relevant environmental as well as Health and Safety legislation. The NWA, 1998 (Act 36 of 1998) will be complied with in terms of the proposed activities to be undertaken on riverbank and riverbed.
Loading and hauling	Dust; Noise; Deterioration of the gravel road	Control through operational procedures; Control through dust control; Control through monitoring; Control through noise control;	Management during operational and decommisioning phase; Maintenance of gravel access road during operational phase; Rehabilitation of loading	The operational procedures will ensure that minimum dust is generated and that trucks will not be loaded beyond its specified load capacity. Speed limits will be enforced in accordance with the general limits on the

		Remedy through maintenance of the road; Control through speed control	area on cessation of the sand mining.	National and Provincial roads.
Stockpiling	Dust; Visual; Change in surface water drainage; Loss of topsoil; Establishment of alien vegetation	Control through operational procedures; Control through dust control and monitoring; Remedy through rehabilitation; Limit through site layout; Control through storm water controls; Control through appropriate topsoil stockpiling; Control through erosion control and monitoring; Control through management and monitoring	Management during operational phase; Rehabilitation of stockpile area on cessation of the sand mining	Stockpiles will be placed within the permitted mine boundary area outside any storm water drainage lines. Any chemicals used for weed control will be registered products and classified to be safe for use close to water resources.
Settling dams	Erosion; Increase in suspended soilds; Instability of the riverbank	Control through operational procedures; Control through storm water controls; Control through erosion control and monitoring; Remedy through rehabilitation; Limit footprint; Avoid through construction method; Control through slope management and monitoring	Management during operational phase; Final rehabilitation during cessation of the sand mining during the decommisioning phase.	The settling dams will be situated within the permitted mine boundary area. The dams will be formed with sand on site and no additional material such as cement will be used that could result in pollution to the river. No consumptive water will be used as part of the operation. No permanent structures will be constructed on site. The NWA, 1998 (Act 36 of 1998) will be complied with in

				terms of the proposed activities to be undertaken on riverbank and riverbed.
Material storage (e.g. fuel, oil, gas) and waste disposal	Soil contamination; Water pollution; Littering; Fire risk	Avoid through operational procedures; Prevent through management; Remedy through rehabilitation; Prevent through site layout; Prevent through waste management; Avoid through management & appropriate storage control	Management during operational phase; Monitoring during operational phase; Rehabilitation and removal of any waste during the decommissioning phase.	Material will be stored according to best practice as specified for the material type and volume, e.g. fuel. The storage area will be situated outside the 1:100 year flood line. No waste will be disposed on site. Waste seperation will be undertaken and each waste type (e.g. general waste, hazardous waste) will be managed and disposed of at registered facilities accordingly.
General operational activities in respect of I&APs and employees	Impact on the general aesthetics of the area; Pollution to the surrounding environment from sewage spillage; Risk of injuries of animals and people entering the operational area; Risk of injury to employees; Job creation, skills upliftment and economic development	Remedy through cleaning and rehabilitation; Avoid or limit through site locality and layout; Control through operational procedures; Prevent through standard cleaning and management procedures; Avoid through access control; Avoid through appropriate PPE; Avoid through awareness & appropriate training to personnel on site;	Management during operational phase; Concurrent rehabilitation where possible during operational phase and final rehabilitation on cessation of the sand mining.	Management and monitoring will ensure compliance with environmental standards. Operational procedures, waste management and site establishment as per the preferred site layout will limit potential pollution. Adherence to SHE legislation will prevent and limit injuries.

		Achieve through operational procedures and training		
Rehabilitation (e.g. removal of equipment, reshaping and revegetation of disturbed areas, etc.)	Soil contamination; Water pollution; Noise; Change in surface water drainage; Erosion & loss of topsoil; Establishment of alien vegetation; Positive impact of the establishment of a self-sustaining ecosystem	Avoid and remedy through rehabilitation procedures; Prevent through management; Control through noise control; Achieve through levelling and rehabilitation of disturbed areas; Achieve and control through storm water controls; Control through erosion control & monitoring; Control through management and monitoring; Achieve through rehabilitation	Management during operational phase; Concurrent rehabilitation where possible during the operational phase and final rehabilitation during cessation of the sand mining activities.	The aim of rehabilitation will be to limit environmental impacts, residial impacts, the need for management and monitoring after cessation of mining and to obtain a Closure Certificate after rehabilitation to DMR's specifications. Financial Provision will also form part of the application as required in terms of NEMA (Act 107 of 1998): Regulations pertaining to the Financial Provision for mining.
Cumulative impacts	Dust; Visual; Noise; Instability of the riverbank; Loss of vegetation and ecosystem function; Increase in suspended solids of the river	Limit and control through operational procedures; Control through management and monitoring; Control through dust control; Remedy through rehabilitation; Reduced once existing mining areas on adjacent properties have been fully rehabilitated and closed;	Management during the commissioning and operational phases. Concurrent rehabilitation during operational phase as possible and final rehabilitation during cessation of the sand mining activities.	All the mining activities that will be associated with the proposed operation will be undertaken within the permitted mining area. Management and monitoring will ensure compliance with environmental standards and best practice. Operational procedures, appropriate management and site establishment as per the preferred site layout will limit

		Control through noise control; Avoid through construction method of settling dams; Control through slope management and monitoring; Limit through site locality & layout; Limit footprint; Limit through storm water control measures; Limit through erosion control measures		potential cumulative environmental impacts

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.

The closure objectives took into account the current status quo of the environment, the potential impacts expected to be associated with the proposed operation as well as the end land use potential after decommissioning of the operation.

The closure objectives include:

- The rehabilitation of the area disturbed by the operation and related activities to a land use potential of at least grazing and to similar conditions of the surrounding natural environment.
- The rehabilitation of disturbed areas to a post mining environment that is safe and with a stable riverbank.
- To limit and/or reduce any residual impacts after decommissioning of the operation.
- To reduce the need for long-term monitoring and maintenance.
- Obtain a closure certificate after decommissioning of the mining activities.

Environmental management measures have been developed for implementation in terms of the potential impacts identified to be associated with the proposed operation based on the activities to be undertaken and the current status quo of the study area. These measures together with the rehabilitation activities expected to be undertaken during the Decommissioning Phase are used to determine the rehabilitation cost.

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

The environmental objectives as described in this report have been consulted with the landowner. The environmental objectives were included in the draft BAR and EMPr provided to stakeholders for comment.

(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.

Concurrent rehabilitation will be undertaken where possible and the exposed/disturbed areas will be limited in size as far as

possible. Due to the type and nature of the proposed operation, the physical footprint that will be disturbed is expected to be limited. Any topsoil (if available) will be removed from the area to be disturbed and stockpiled for future use during rehabilitation.

Once mining activities have ceased, final rehabilitation of the disturbed areas (e.g. stockpile areas and settling dams) will be undertaken. Rehabilitation will include landscaping of the disturbed areas, topsoiling (where require) and revegetated with natural occurring vegetation. Refer to Figure 4 in Appendix 2 for an indication of the proposed rehabilitation plan.

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

The Rehabilitation plan was developed with the aim to achieve the closure objectives considering the nature of the impacts expected to be associated with the operation.

If the proposed rehabilitation measures are implemented, it is expected that a stable and self-sustainable ecosystem will be established at closure.

(e) Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline.

The quantum for financial provision was calculated in accordance with DMR's guideline titled "Guideline document for evaluation of the quantum of closure-related financial provision provided by a mine", dated 2005 considering the latest master rates in Section B as well as current rehabilitation costs.

The calculated cost for final closure of the operation by the applicant (i.e. Sub-total 1 of the Quantum) is R177 383.91. Due to the type of activities that will be associated with the proposed operation, the physical footprint of disturbance is expected to be limited and concurrent rehabilitation of disturbed areas will be undertaken during the Operational Phase where possible. Therefore, it is anticipated that the final amount required for rehabilitation will be significantly lower. The calculated cost for current environmental liability by a Third Party (i.e. Grand Total of the Quantum plus VAT) is R246 705.54.

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

The financial provision as calculated in terms of the quantum calculation and as required by the DMR will be provided in respect of this application.

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
Site establishment (clearance of vegetation; establishment of equipment; access road; etc.)	Clearance of riparian vegetation; Establishment of alien vegetation; Habitat destruction; Erosion; Loss of topsoil; Visual scarring; Elevated noise levels; Loss of agricultural potential; Destruction of wetlands	Visual checks; Verify compliance with conditions of the EA and EMPr; Identify non-compliances; Monitor key parameters, e.g. noise levels	Site manager Environmental Control Officer (when required)	Weekly visual checks for erosion, establishment of alien vegetation, vegetation clearance and destruction of wetland. Report environmental incidents immediately. Record incidents and non-compliances in a register monthly. Implement management measures throughout all the phases of the operation.
Recovery of sand	Increase in suspended solids; Destabilisation of the riverbank; Change in surface water drainage; Visual scarring; Dust	Visual checks; Verify compliance with conditions of the EA and EMPr; Identify non-compliances; Monitor key parameters, e.g. noise levels	Site manager Operator Environmental Control Officer (when required)	Weekly visual checks of the riverbank to identify any unstable areas. Report environmental incidents and any findings of objects of heritage importance immediately.

	generation; Elevated noise levels; Destruction of objects of heritage importance			Record incidents and non-compliances in a register monthly. Record any complaints received from I&APs and response taken in a register. Implement the management measures throughout the operational phase.
Loading and hauling	Dust; Noise; Deterioration of the gravel road	Visual checks; Verify compliance with conditions of the EA and EMPr; Identify non-compliances; Monitor key parameters, e.g. noise levels	SHE representative Site manager Applicant Environmental Control Officer (when required)	Weekly visual checks for signs of deterioration of the gravel access road. Record incidents and non-compliances in a register monthly. Record any complaints received from I&APs and response taken in a register. Implement the management measures throughout the operational phase.
Stockpiling	Dust; Visual; Change in surface water drainage; Loss of topsoil; Establishment of alien vegetation	Visual checks; Verify compliance with conditions of the EA and EMPr; Identify non-compliances; Monitor key parameters, e.g. dust	Site manager Environmental Control Officer (when required)	Weekly visual checks for loss of topsoil. Record incidents and non-compliances monthly. Implement the management measures throughout the operational phase.
Settling dams	Erosion; Increase in suspended solids;	Visual checks; Verify compliance with conditions of the EA and EMPr; Identify non-compliances;	Site manager Environmental Control Officer (when required)	Weekly visual checks of the riverbank to identify any unstable areas.

	Instability of the riverbank	Monitor key parameters, e.g. water quality		Weekly visual checks for signs of erosion. Report environmental incidents immediately. Record incidents and non-compliances in a register monthly. Implement the management measures throughout the operational phase.
Material storage (e.g. fuel, oil, gas) and waste disposal	Soil contamination; Water pollution; Littering; Fire risk	Visual checks for spillages and littering; Visual checks of the integrity of any storage containers; Verify compliance with conditions of the EA and EMPr; Identify non-compliances	Site manager Environmental Control Officer (when required)	Weekly visual checks for any spillages and littering. Weekly visual checks of storage containers to identify any malfunctioning or spillages. Report environmental incidents immediately. Record incidents and non-compliances in a register monthly. Implement the management measures throughout all the phases of the operation.
General operational activities in respect of I&APs and employees	Impact on the general aesthetics of the area; Pollution to the surrounding environment from sewage spillage; Risk of injuries of	Visual checks for spillages; Verify compliance with conditions of the EA and EMPr; Identify non-compliances; Verify compliance with the Occupational Health and Safety Act; Compliants register with	Site manager Operator SHE representative Environmental Control Officer (when required)	Weekly visual checks for any spillages. Report environmental and safety incidents immediately. Record incidents and non-compliances in a register monthly.

	animals and people entering the operational area; Risk of injury to employees	comments from I&APs; Record of employee awareness training.		Implement the management measures throughout all the phases of the operation.
Rehabilitation (e.g. removal of equipment, reshaping and revegetation of disturbed areas, etc.)	Soil contamination; Water pollution; Noise; Change in surface water drainage; Erosion & loss of topsoil; Establishment of alien vegetation; Positive impact of the establishment of a self-sustaining ecosystem	Visual checks for contamination, spillages and waste; Visual checks for the establishment of alien vegetation and signs of erosion; Verify compliance with conditions of the EA and EMPr; Identify non-compliances.	Site manager Environmental Control Officer (when required)	Weekly visual checks for contamination, establishment of alien vegetation and erosion. Record incidents and non-compliances in a register monthly. Implement the management measures throughout the decommissioning phase.
		Compliants register with comments from I&APs; Log sheets of legal entrances to the mining area; Record of employee awareness training.		

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

It is recommended that an environmental audit be undertaken by an Environmental Control Officer to measure compliance with the measures stipulated in the BAR, EMPr and Environmental Authorisation (if considered for approval) on at least a bi-annual basis. A summary of the environmental audit report should be included in the annual environmental performance assessment report for submission to DMR. The environmental performance assessment and rivision of the quantum will be undertaken on a yearly basis in accordance with the NEMA Regulations on Financial Provision, 2015.

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.

Induction on environmental awareness will be provided to all permanent and temporary employees as well as sub-contractors (if applicable) at the start of their employment on site.

The induction will contain as minimum:
- The environmental policy of the employer;
- The role of each employee to conserve the environment in accordance with the policy;
- The impact that the employee's action or work could have on the environment;
- General measures to be implemented during the operation to prevent environmental impacts, e.g. waste management, dust control, water conservation, etc.;
- Emergency procedures and the individuals to contact in the event of an incident, e.g. major spillage of fuel.

Proof of environmental training/induction will be kept on site and availabe for inspection on request.

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

Refer to Table 11 in the Environmental Impacts/Risks and Management Report in Appendix 6 for environmental management and mitigation measures to be implemented to limit and/or prevent environmental impacts/risks expected to be associated with the proposed operation.

n) Specific information required by the Competent Authority
(Among others, confirm that the financial provision will be reviewed annually).

The financial provision will be reviewed annually in accordance with the NEMA Regulations on Financial Provision, 2015.

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. ☒

Hanri van Jaarsveld

Signature of the environmental assessment practitioner:

Proper Consulting Engineers Pty Ltd

Name of company:

23 February 2017

Date:

-END-